



Alliant Energy  
4902 North Biltmore Lane  
P.O. Box 77007  
Madison, WI 53707-1007

1-800-ALLIANT (800-255-4268)  
alliantenergy.com

November 25, 2025

Mr. Brian Rath  
Land Quality Bureau  
Iowa Department of Natural Resources  
6200 Park Ave  
Des Moines, IA 50321

**Subject: 2025 Annual Water Quality Report  
Interstate Power and Light Company – Marshalltown East and West  
Closed Landfills  
Permits #64-SDP-05-91C; #64-SDP-03-90C**

Dear Mr. Rath:

On behalf of Interstate Power and Light Company (IPL), Alliant Energy is providing the enclosed 2025 Annual Water Quality Report for the closed Marshalltown East and West landfills, as required by Permits #67-SDP-05-91C, #64-SDP-03-90C, and associated amendments.

Please call me at (515) 558-9704 or email me at [jennycoughlin@alliantenergy.com](mailto:jennycoughlin@alliantenergy.com) with any questions regarding the enclosed report.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jenny Coughlin", is written over a light gray rectangular background.

Jenny Coughlin  
Sr. Environmental Specialist  
Alliant Energy Corporate Services, Inc.

Enclosures

Cc: IDNR Field Office #5  
Isaac Torres – IPL Marshalltown Generating Station  
Meghan Blodgett, Thomas Karwoski – SCS Engineers

# 2025 Annual Water Quality Report

## Interstate Power and Light Company Marshalltown East and West Closed Landfills Permit #64-SDP-5-91C and #64-SDP-3-90C

Interstate Power and Light, an Alliant Energy Company  
200 First Street SE  
Cedar Rapids, Iowa 52401

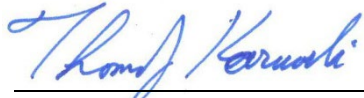
**SCS ENGINEERS**

25225064.00 | November 25, 2025

2830 Dairy Drive  
Madison, WI 53718  
608-224-2830

## CERTIFICATION

I, Thomas J. Karwoski, hereby certify that this report was prepared by me, or under my direct supervision, and that I am a qualified ground water scientist as defined in Iowa Administrative Code (IAC) SS 113.10(1)d.

  
\_\_\_\_\_  
Signature

November 25, 2025  
\_\_\_\_\_  
Date

**Pages or Sheets Covered by this Certification:**

2025 Annual Water Quality Report – November 2025, Interstate Power and Light Company, Marshalltown East and West Closed Landfills

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## EXECUTIVE SUMMARY

### Period of Report Coverage

The period of coverage for this report is from November 2024 through October 2025 and includes the April 2025 water level measurement event and the September 2025 groundwater sampling event conducted at the Marshalltown East and West Closed Landfills (Site), Coal Combustion Residual (CCR) landfills located near Marshalltown, Iowa (**Figure 1**).

### Report Priority

Comparison of the September 2025 results to the GWPSs indicated that there were no new GWPS exceedances in 2025, with the exception of molybdenum at MW-22. 2025 was the first monitoring event since molybdenum was added to the sampling program during which sufficient water was present in MW-22 for sample collection. Lithium and molybdenum were included in the sampling event for the first time in 2023. The GWPS exceedances detected in September 2025 are:

- Lithium: MW-3, MW-10, MW-11AR, MW-13, MW-14, MW-18, MW-20, MW-21, and MW-23
- Molybdenum: MW-20, MW-21 and MW-22

Monitoring well MW-10 is a background well for the East Landfill, and lithium concentrations detected at many of the other wells with GWPS exceedances were similar to the concentration at MW-10. The September 2025 sampling event was the third time samples were tested for lithium and molybdenum at the Site, so there is limited historical data to compare to the GWPS exceedances for lithium and molybdenum. A UPL for lithium cannot yet be calculated, but these results indicate that lithium concentrations in groundwater at the site may be at least partly attributable to natural conditions.

Exceedances of the background UPLs were generally consistent with previous results.

Dedicated pumps were installed in 2023 at MW-4, MW-5, and MW-18, and in 2025 at MW-20 and MW-21, to reduce turbidity in samples from these wells. Fewer UPL and/or GPS exceedances were recorded at MW-5 and MW-18 in 2023 through 2025 as compared to previous years. While TSS data from years prior to 2023 are not available for comparison, these results indicate that the installation of dedicated pumps did apparently improve sample quality at some wells and some standards exceedances previously detected at MW-4, MW-5 and MW-18 may be attributable to suspended sediment in the samples.

Groundwater samples collected in 2025 were unfiltered, in accordance with the variance to Iowa Administrative Code (IAC) 567-103.1(2)f granted on September 16, 2016, and the conditions of Permit Amendment #7 dated December 22, 2016. The 2025 sampling event was the tenth round of unfiltered samples collected at the site, and 2025 was the seventh reporting period during which the new statistical approach was applied at the Site.

SCS Engineers (SCS) recommends that the current monitoring program be continued during 2026.

No additional requests or amendments to the permit are needed at this time.

## Site Status and Applicable Rules

The following summarizes the site status and applicable rules associated with groundwater sampling at the Marshalltown East and West Closed Landfills:

- **Landfill Status:** Closed
- **Types of Wastes Accepted:** CCR
- **Applicable IAC Rules:** 567-103 current version, certain provisions of 567-115.26(6) 567-115.21 (referenced for monitoring well maintenance and evaluation requirements, in place of the rescinded 567-110.9).

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## ACRONYMS/ABBREVIATIONS

AWQR = Annual Water Quality Report  
CCR = Coal Combustion Residual  
COC = Chain of Custody  
DO = Dissolved Oxygen  
EPA = Environmental Protection Agency  
GWGCS = Groundwater Gradient Control System  
GWPS = Groundwater Protection Standard  
IAC = Illinois Administrative Code  
IDNR = Iowa Department of Natural Resources  
LCS = Laboratory Control Sample  
mg/L = milligrams per liter  
MS = Matrix Spike  
MSD = Matrix Spike Duplicate  
MCL = EPA Maximum Contaminant Level  
ORP = Oxidation-Reduction Potential  
QA/QC = Quality Assurance/Quality Control  
RCRA = Resource Conservation and Recovery Act  
Site = Marshalltown East and West Closed Landfills  
SMCLs = Secondary Maximum Contaminant Levels  
SSI = Statistically Significant Increase above background  
SWS = Statewide Standard  
TDS = Total Dissolved Solids  
TSS = Total Suspended Solids  
UPL = Upper Prediction Limits  
U.S. EPA = U.S. Environmental Protection Agency  
Unified Guidance = Unified Guidance for Statistical Analysis of Groundwater Monitoring Data  
at Resource Conservation and Recovery Act Facilities

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## 1.0 SITE BACKGROUND

### 1.1 SITE HISTORY

The Marshalltown East and West Closed Landfills are closed coal combustion residual (CCR) landfills located near Marshalltown, Iowa (**Figure 1**). The Marshalltown East and West Landfills were used for disposal of CCR. No CCR or other waste has been disposed at the site since 1995, when the East Landfill was capped and closed. The West Landfill was capped and closed in 1993. A site plan is shown on **Figure 2**. A Facility Inspection Report for 2025 is included in **Appendix A**. IDNR Field Office 5 staff inspected the site on February 3, 2025, and did not identify issues needing attention (Solid Waste Doc ID #112243). Erosion features were not noted at the site in 2025.

### 1.2 SITE HYDROGEOLOGY

#### 1.2.1 Geology

A detailed description of the regional and local geology is provided in the Phase II Hydrogeological Investigation Report prepared by James M. Montgomery, submitted in December 1991 (Montgomery, 1991), and in earlier investigation reports. A summary of the site geology, as described in the December 1991 report, is presented here.

The unconsolidated geology at the site generally consists of loess, glacial till, and alluvium. The loess consists of fine-grained sediment; the till includes material ranging in size from clay to boulders; and the alluvium primarily consists of sand, silt, and clay deposited by the stream on the western border of the site.

The unconsolidated material overlies Mississippian limestone bedrock. The limestone unit at the site is classified as an aquifer. Prior to landfilling, the limestone unit was mined at the site. The bedrock surface at the site is highly variable as a result of erosion and weathering, and depth to bedrock ranges from 6 feet at MW-8 to 69 feet at MW-10.

#### 1.2.2 Hydrogeology/Groundwater Flow Conditions

Groundwater, surface water, and leachate levels were measured during April and September 2025. The groundwater levels during the September event were measured prior to purging the wells for sampling. The groundwater and surface water elevation data are presented in **Table 4A**, and vertical gradients are presented in **Table 4B**. The 2025 water level data were used to create water table and potentiometric surface maps (**Figures 3 through 6**).

Groundwater flow directions in 2025 were consistent with historical data. Shallow groundwater flow at the site is generally to the west and south across the site. Flow in the deeper hydrogeologic unit is generally to the south-southeast. Groundwater elevations in 2025 were within the historical range at the site but were higher than elevations observed since 2021.

Vertical gradients at the Site were consistent with historical data and were generally downward in 2025, with the exceptions of an upward gradient at MW-5/MW-19 in April. Gradients at this well nest have historically fluctuated between weakly downward and weakly upward.

A biennial evaluation of water level conditions is included in **Section 3.0**. The next biennial evaluation will be completed in 2027.

## 2.0 SAMPLING STATUS SUMMARY

The Iowa Department of Natural Resources (IDNR) has requested that sampling data be summarized in a series of tables to consistently convey information related to groundwater monitoring at CCR landfills throughout Iowa. These tables are discussed within the text in appropriate sections as noted and included in the Tables section at the end of the text. **Table 1** provides an overview of the sampling status for the Site, including the monitoring points in the program, current monitoring program, comparative statistics findings, and the number of samples collected. **Figure 2** summarizes the monitoring network for Marshalltown.

Field sheets from the 2025 monitoring events are included in **Appendix B**. Sampling completed in 2018 to 2025 and anticipated sampling for 2026 is summarized in **Table 2**. The laboratory analytical report for samples collected in 2025 is included in **Appendix C**. Groundwater chemistry summary tables for historic data collected before 2019 are included in **Appendix D**. Groundwater chemistry tables for all data collected since the transition to unfiltered sampling in 2016 are also included in **Appendix D**.

As proposed in the 2024 AWQR, dedicated sampling pumps were installed in monitoring wells MW-20 and MW-21 prior to the September 2025 monitoring event.

As requested by IDNR, calcium, lithium, molybdenum, total dissolved solids (TDS), and total suspended solids (TSS) were added to the sampling parameters for all monitoring wells, surface water monitoring points, and leachate sampling points reported in the AWQR beginning in 2023 and continued for the current monitoring period. Because of the low number of samples for the parameters listed above, UPLs cannot be calculated at this time. UPL calculations for these parameters will be included in the report when a minimum of four samples have been collected at background wells.

Additionally, field parameters dissolved oxygen (DO) and oxidation-reduction potential (ORP) are included in the tables of this AWQR for the third time for evaluation of the potential influences on groundwater chemistry due to reducing groundwater conditions. DO and ORP are used to evaluate stability during low-flow sampling and have been included in previous AWQRs on field sheets.

Copper and zinc were not included in the analytical parameter list for monitoring wells or surface water points in 2025, as proposed in the June 22, 2023, Assessment Workplan. IDNR's July 14, 2023, response to this submittal approved the recommendation to remove copper and zinc, with the exception that they should be retained for leachate samples in sampling events 2023 onwards.

## 3.0 MONITORING WELL MAINTENANCE AND PERFORMANCE SUMMARY

IAC 567-115.21 was referenced for monitoring well maintenance and evaluation, in place of the rescinded 567-110.9. Each requirement is listed below in *italics*, followed by text describing how the requirement was addressed.

All site monitoring wells and leachate head wells were resurveyed in October 2025. As noted in the tables included with this report, the resurveyed top-of-casing elevations were used in groundwater and leachate elevation calculations for April and September 2025.

- a. *A biennial examination of high and low water levels accompanied by a discussion of the acceptability of well location (vertically and horizontally) and exposure of the screened interval to the atmosphere.*

Water levels are measured twice, in April and September. The screened intervals of several water table wells monitoring the shallow hydrogeologic unit were submerged during at least one monitoring event in 2025. Groundwater elevations in 2025 were within the historical range at the site but were higher than elevations observed since 2021. Groundwater flow directions at the site in 2025 were consistent with historical conditions, and the horizontal and vertical well locations remain acceptable.

- b. *A biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths.*

As described in **Section 1.2.2**, comparison of the 2025 groundwater contour map and calculated vertical gradients to previous data indicates that the April and September 2025 groundwater flow conditions are consistent with historical conditions.

- c. *Annual measurement of well depths to ensure that wells are physically intact and not filling with sediment.*

Measured well depths are summarized in **Table 4A**. The difference between the previously-measured total depths and the most recent total depths were less than 1 foot in all wells except MW-20. The measured total depth at MW-20 was more than 1 foot deeper than the documented total depth in April 2025. The total depth at this well was not measured in September 2025 due to the presence of a dedicated sampling pump. These measurements appear to reflect the measurement variability inherent to measuring total depth in a deep well using a flexible water level tape. It does not appear siltation is affecting the ability of the monitoring wells to produce representative groundwater samples and groundwater elevation data.

- d. *Every five years conduct in-situ permeability tests on monitoring wells to compare test data with those collected originally to determine if well deterioration is occurring.*

A variance to IAC 567-110.9(2)(d) for in situ permeability tests every 5 years was granted by the IDNR in a letter dated May 4, 1999. Although IAC 567-110 has been rescinded since the variance was granted, the same permeability test requirements are now in IAC 567-115.21(2), and our understanding is that the conditions of the variance still apply. The conditions of the variance state that, if a well cannot be sampled or purged because of plugging, the well will be replaced within 6 months of reporting this condition to IDNR in the annual report. The monitoring wells at this site are performing adequately as noted above.

**Table 3** provides the years in which each requirement was previously met and for which it is next scheduled.

### **3.1 DEDICATED PUMP INSTALLATIONS AND NETWORK UPDATES**

Dedicated bladder pumps were installed at monitoring wells MW-4, MW-5, and MW-18 prior to the September 2023 monitoring event, to reduce turbidity in samples and assess whether lower-turbidity samples may affect detected metals concentrations.

Removal of the Leachate Tank from the sampling program was proposed in the June 22, 2023 Recommended Assessment Steps submittal, and approved by IDNR on July 14, 2023. Suspension of water level monitoring at LL-1 was approved by IDNR in the 2022 AWQR review letter, dated February 17, 2023.

### **3.2 WELL MAINTENANCE RECOMMENDATIONS**

No well maintenance activities are recommended based on observations during the 2025 monitoring events.

## **4.0 QUALITY ASSURANCE/QUALITY CONTROL SUMMARY**

Data validation quality assurance/quality control (QA/QC) procedures are performed on analytical results for laboratory quality control samples, and a quality assurance assessment of the data is conducted as the data are generated. The QA/QC review procedure provides documentation of the accuracy and precision of the analytical data and confirms that the analyses are sufficiently sensitive to detect constituents at levels below regulatory standards, where such standards exist. QA/QC data validation includes review of sample handling, analytical sensitivity, blanks, accuracy, and precision. The QA/QC and data validation procedures and findings are discussed in more detail below.

### **4.1 SAMPLE COLLECTION AND HANDLING**

Groundwater samples are collected using a dedicated QED Well Wizard bladder pump, or a QED Sample Pro pump with disposable bladders and dedicated tubing. In wells without dedicated pumps, the QED Sample Pro pump is decontaminated between wells and a new bladder is used for each well. Samples are not field filtered. The water level measurement tape is decontaminated between wells. All samples are placed on ice after collection and are transported to the laboratory in sealed coolers under Chain of Custody (COC).

Sample receipt forms were reviewed and checked to verify that samples were received in good condition and within the acceptable temperature range. COC records for each sampling event were reviewed and confirmed that information was complete.

For the September 2025 sampling event, no issues with sample preservation or with sample collection and handling procedures were identified.

### **4.2 ANALYTICAL SENSITIVITY AND BLANKS**

Laboratory QA/QC procedures and post-analysis data validation assist in producing data of acceptable quality and reliability. Eurofins - Cedar Falls is a certified laboratory in Iowa and performed QA/QC procedures, including analyzing laboratory method blanks in association with samples collected for the project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. A field blank was submitted with the groundwater samples to assess whether cross-contamination occurred during sample handling and transport.

There were no detections in the September 2025 field or laboratory method blank samples.

### 4.3 ACCURACY

Laboratory analytical accuracy can be assessed by evaluating the constituent recoveries from the following laboratory QA/QC samples: laboratory control sample (LCS), and matrix spike/matrix spike duplicate (MS/MSD). LCS samples assess the accuracy of analytical procedures by checking the ability to recover constituents added to clean aqueous matrices. MS/MSD samples assess the accuracy of analytical procedures by checking the ability to recover constituents added to submitted samples. The MS and MSD results for iron exceeded the control limits.

### 4.4 DATA QUALITY SUMMARY

Based on the above QA/QC procedures and the field sampling standard operating procedures, the samples collected during this reporting period are considered to be representative of site conditions at the locations and times they were obtained. Based on the QA/QC review, no samples were rejected as unusable due to QC failures.

## 5.0 COMPARISON TO STANDARDS

### 5.1 STATISTICAL ANALYSIS

Following the eighth sampling round in 2023, the schedule for prediction limit updates changed from annual to every 2-3 years. Therefore, no updated statistical summary report is included with this AWQR, and the next statistical summary report is planned for 2026. The 2023 statistical summary report is included in **Appendix E** for reference. **Table 5** provides the background and GWPS summary for the Site.

When prediction limits are next recalculated, IPL may propose combining the monitoring networks at both the East and West Landfills and using the same background wells for both landfills. The number of wells in the network has an effect on UPL calculations, therefore this change was not considered for 2025 reporting. At this time, IPL does not anticipate combining the monitoring networks when UPLs are next calculated. If this change is reconsidered in the future, a proposal on the network combination will be submitted to IDNR prior to the preparation of the associated AWQR.

Groundwater samples collected in September 2025 were unfiltered, in accordance with the variance to 567-103.1(2)f granted on September 16, 2016, and the conditions of Permit Amendment #7 dated December 22, 2016. The 2025 sampling event was the tenth round of unfiltered samples collected at the Site, and 2025 was the seventh reporting period during which the new statistical approach was applied at the Site.

The selected statistical analysis method uses a prediction interval approach as recommended for detection monitoring in the March 2009 U.S. Environmental Protection Agency (U.S. EPA) Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (Unified Guidance).

Interwell testing was selected for the prediction interval evaluation. Monitoring results from the downgradient wells were compared to the UPLs to evaluate whether a statistically significant increase (SSI) over background has occurred. UPLs were calculated separately for the East and West

Landfills. Consistent with previous sampling events, monitoring wells MW-9 and MW-10 were used as the background wells for the East Landfill and MW-8, MW-13, and MW-14 were used as the background wells for the West Landfill.

Monitoring results from the downgradient wells were compared to the UPLs to evaluate whether an SSI over background has occurred. UPL calculations were updated in 2023 using the eight rounds of unfiltered sample results for metals and a longer data record for anions that are not typically affected by filtration (e.g., chloride, sulfate).

Detection of an SSI at a compliance well indicates that the groundwater quality is different than the background groundwater quality but does not necessarily indicate an impact to public health or the environment.

To evaluate potential health impacts, the monitoring results were compared to health-based GWPS values. The GWPS values were set at the drinking water Maximum Contaminant Level (MCL) if one exists, otherwise the Iowa Statewide Standard (SWS) for protected groundwater. If the UPL established based on background monitoring was higher than the MCL or SWS, then the GWPS was set at the UPL. Secondary Maximum Contaminant Levels (SMCLs) were not used to establish GWPS values because SMCLs are not health-based standards, but they are shown in **Table 5** for comparison with the UPL and GWPS values.

## 5.2 2025 RESULTS

**Table 6** is a summary of monitoring points/detected constituents from the 2025 sampling events that did not exceed a UPL. **Table 7** provides a summary of ongoing and newly identified SSIs and compares these concentrations to the GWPS values.

**Table 8** provides a visualization of the historic SSIs and regulatory standard exceedances since 2016, the first year during which unfiltered samples were collected at the site. **Table 8** does not identify UPL exceedances prior to 2019, as this was the first year UPLs were calculated.

## 5.3 STANDARDS HISTORY

The standards for 2019 through 2025 are summarized in **Table 9**. Graphs of standards history are included in **Appendix F**.

## 6.0 SUMMARY OF FINDINGS FOR GROUNDWATER

### 6.1 COMPARISON TO STANDARDS

Comparison of the September 2025 results to the GWPSs indicated that there were no new GWPS exceedances in 2025, with the exception of molybdenum at MW-22. 2025 was the first monitoring event since molybdenum was added to the sampling program during which sufficient water was present in MW-22 for sample collection. Lithium and molybdenum were included in the sampling event for the first time in 2023. The GWPS exceedances detected in September 2025 are:

- Lithium: MW-3, MW-10, MW-11AR, MW-13, MW-14, MW-18, MW-20, MW-21, and MW-23
- Molybdenum: MW-20, MW-21 and MW-22

Monitoring well MW-10 is a background well for the East Landfill, and lithium concentrations detected at many of the other wells with GWPS exceedances were similar to the concentration at MW-10. The September 2025 sampling event was the third time samples were tested for lithium and molybdenum at the Site, so there is limited historical data to compare to the GWPS exceedances for lithium and molybdenum. A UPL for lithium cannot yet be calculated, but these results indicate that lithium concentrations in groundwater at the site may be at least partly attributable to natural conditions. IPL anticipates calculating UPLs for lithium and molybdenum for the first time in 2026, when four rounds of data are available.

Exceedances of the background UPLs were generally consistent with previous results.

Dedicated pumps were installed in 2023 at MW-4, MW-5, and MW-18 to reduce turbidity in samples from these wells. Fewer UPL and/or GPS exceedances were recorded at MW-5 and MW-18 in 2023 through 2025 as compared to previous years. While TSS data from years prior to 2023 are not available for comparison, these results indicate that the installation of dedicated pumps did apparently improve sample quality at some wells and some standards exceedances previously detected at MW-4, MW-5 and MW-18 may be attributable to suspended sediment in the samples.

## **6.2 TREND ANALYSIS**

Mann-Kendall trend tests were not performed in 2025 as no parameters with GWPS exceedances have sufficient data available for trend analysis. Only lithium and molybdenum were detected at concentrations exceeding GWPSs, and 2025 is the third year for which data are available for these parameters.

## **6.3 TOTAL SUSPENDED SOLIDS EVALUATION**

TSS was added to the parameter list in 2023. TSS over 5 mg/L was detected at more than half of monitoring wells, including one well with a dedicated pump (MW-4, TSS = 12 mg/L).

Elevated TSS does not appear to be correlated with higher metals concentrations when comparing results between wells, as the three wells with the highest TSS results had relatively few or no UPL or GWPS exceedances in 2025. As discussed in **Section 6.1**, fewer UPL and GWPS exceedances were recorded at MW-5 and MW-18 in 2023 following the installation of dedicated pumps. TSS data from previous years are not available for comparison, but field turbidity at MW-5 and MW-18 was previously variable and the 2023 results appear to indicate that installation of dedicated pumps at these wells improved sample quality.

Installation of additional dedicated pumps at MW-20 and MW-21, as proposed in the 2024 AWQR, was completed before the September 2025 sampling event to assess whether relatively high lithium and/or molybdenum concentrations at these wells may be affected by reducing TSS. September 2025 sample results at these wells were generally consistent or slightly higher than the previous years, indicating that the installation of dedicated pumps did not have a significant effect on the groundwater standards exceedances at these wells, though TSS at both wells was less than 5 mg/L.

## 7.0 LEACHATE MONITORING SYSTEM

In September 2025, LW-4 had an insufficient amount leachate for sample collection, but enough liquid to measure field parameters. LW-1, LW-2 and LW-3 were dry in September 2025. Sampling results for leachate monitoring are included in **Table 11**.

During the April and September monitoring events, leachate levels are measured at leachate head wells LW-1 through LW-4. LW-1, LW-2, and LW-3 are located in the West Landfill and are generally dry or nearly dry. LW-1 contained 4.38 feet of leachate in April 2025 and was dry in September 2025. LW-2 and LW-3 were dry during both 2025 sampling events. LW-4 is located in the East Landfill and is not typically dry; it contained 1.75 feet of leachate during the April 2025 sampling event and 2.4 feet of leachate during the September 2025 sampling event.

Leachate depths and elevations measured during 2025 are summarized in **Table 12**.

## 8.0 GROUNDWATER GRADIENT CONTROL SYSTEM

A sample was voluntarily collected from the Groundwater Gradient Control System (GWGCS) in September 2025. This point has not been sampled in recent years because it was dry. Analytical results for the September 2025 GWGCS sample are included in **Table 11**.

## 9.0 RECEPTOR SURVEY

SCS performed an updated receptor survey for the site in 2024. Mr. Tyler Kelly of Marshall County Planning and Zoning informed SCS that most of the county is on Rural Water and that the best sources of potentially active private water supply well information are the GeoSAM database and the Private Well Tracking System database. SCS searched these two databases for wells within 1 mile of the Site. Search results, excluding wells listed as “plugged,” are summarized in **Appendix G**.

IDNR’s response to the 2024 AWQR, received by email on October 9, 2025, requested additional discussion in regards to wells identified as #80727 and #30897 in the receptor survey. Well #80727 is located generally to the west of the site based on available location information, and the well data available in GeoSAM indicates that it is 85 feet deep and open to the bedrock unit. As groundwater flow at the site within the deeper monitoring wells is generally to the south-southeast, this well does not appear to be downgradient of the site. Well #30897 is located approximately 0.5 miles to the south-southeast of the site. Well data available in GeoSAM indicate that this well is 436 feet deep and that the ground surface elevation at the well (902 feet) is within the range of elevations recorded at the closed landfill site, therefore this supply well is open to a bedrock zone several hundred feet below the landfill elevation.

## 10.0 RECOMMENDATIONS

SCS recommends that the current monitoring program be continued during 2026, with the inclusion of calcium, lithium, molybdenum, TDS, TSS, field dissolved oxygen, and field redox potential. Fluoride was included in the sampling program in 2023. Based on communication with IDNR in 2023, fluoride should be included in the sampling program in 2028 and reevaluated.

The planned monitoring schedule for 2026 is summarized in **Table 2**.

## **11.0 REFERENCES**

Montgomery, James M., 1991, Phase II Hydrogeologic Investigation Report and Hydrologic Monitoring System Plan for the Existing Marshalltown CCR Landfill, Iowa Electric Light and Power Company, December 1991.

SCS Engineers, 2018, 2018 Annual Water Quality Report, Interstate Power and Light Company – Marshalltown East and West Closed Landfill, November 28, 2018.

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**Table 1**  
**Monitoring Program Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Monitoring Point                            | Landfill       | Formation | Current Monitoring Program              | Change for Next Sampling Event | UPL Exceedances                 | Total # of Samples in each monitoring program since January 1, 2018 |
|---------------------------------------------|----------------|-----------|-----------------------------------------|--------------------------------|---------------------------------|---------------------------------------------------------------------|
|                                             |                |           |                                         |                                |                                 | Routine                                                             |
| Sampled Monitoring Wells                    |                |           |                                         |                                |                                 |                                                                     |
| MW-3                                        | West           | Shallow   | Routine                                 | NC                             | Boron, Selenium                 | 8                                                                   |
| MW-4                                        | West           | Shallow   | Routine                                 | NC                             | Arsenic, boron                  | 8                                                                   |
| MW-5                                        | West           | Shallow   | Routine                                 | NC                             | Barium, selenium                | 8                                                                   |
| MW-7                                        | West           | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-8                                        | West           | Shallow   | Routine                                 | NC                             | none                            | 7**                                                                 |
| MW-9                                        | East           | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-10                                       | East           | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-11AR                                     | East           | Deep      | Routine                                 | NC                             | Magnesium                       | 8                                                                   |
| MW-13                                       | East and West* | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-14                                       | East and West* | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-18                                       | East           | Shallow   | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-19                                       | West           | Deep      | Routine                                 | NC                             | none                            | 8                                                                   |
| MW-20                                       | East           | Deep      | Routine                                 | NC                             | Boron, selenium, sulfate        | 8                                                                   |
| MW-21                                       | West           | Deep      | Routine                                 | NC                             | Boron, selenium                 | 8                                                                   |
|                                             |                |           |                                         |                                | Arsenic, boron, lead, selenium, |                                                                     |
| MW-22                                       | East           | Shallow   | Routine                                 | NC                             | sulfate                         | 4**                                                                 |
| MW-23                                       | East           | Deep      | Routine                                 | NC                             | none                            | 8                                                                   |
| Surface Water Monitoring Points             |                |           |                                         |                                |                                 |                                                                     |
| SW-1                                        | East and West  | N/A       | Routine                                 | NC                             | N/A                             | 6                                                                   |
| SW-2                                        | West           | N/A       | Routine                                 | NC                             | N/A                             | 5                                                                   |
| SW-3                                        | East           | N/A       | Routine                                 | NC                             | N/A                             | 0                                                                   |
| Leachate Monitoring Points                  |                |           |                                         |                                |                                 |                                                                     |
| LW-1                                        | West           | N/A       | Routine (Voluntary)^                    | NC                             | N/A                             | 5                                                                   |
| LW-2                                        | West           | N/A       | Routine (Voluntary)^                    | NC                             | N/A                             | 0                                                                   |
| LW-3                                        | West           | N/A       | Routine (Voluntary)^                    | NC                             | N/A                             | 0                                                                   |
| LW-4                                        | East           | N/A       | Routine (Voluntary)^                    | NC                             | N/A                             | 3                                                                   |
| Leachate Collection Tank                    | East           | N/A       | Removed from monitoring program in 2023 | NC                             | N/A                             | 5                                                                   |
| LL-1                                        | East           | N/A       | Removed from monitoring program in 2023 | NC                             | N/A                             | N/A                                                                 |
| Other Monitoring Points                     |                |           |                                         |                                |                                 |                                                                     |
| Groundwater Gradient Control System (GWGCS) | East           | N/A       | Routine (Voluntary)                     | NC                             | N/A                             | 5                                                                   |

\*: MW-13, MW-14, and SW-1 are included in the monitoring program for both the East and West landfills. MW-13 and MW-14 are the upgradient wells for the West landfill.

\*\*:: Insufficient water was available in MW-8 for sample collection in September 2021, and at MW-22 for sample collection in September 2021, 2022, 2023, and 2024.

^: Leachate elevations are required at LW-1 through LW-4. Samples are voluntarily collected for laboratory analysis.

Updated By: LH, 10/28/2025  
Checked By: MB 11/6/2025

I:\25225064.00\Deliverables\2025 AWQR\Tables\[awqreport\_Marshalltown\_2025.xlsx]2 - Implementation Schedule

Table 2  
Monitoring Program Implementation Schedule  
2025 Annual Water Quality Report  
Marshalltown East and West Closed Landfills  
Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C

| Monitoring Point                            | Recent Sampling Dates and Constituents |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      | Upcoming Sampling Dates and Constituents |                      |
|---------------------------------------------|----------------------------------------|----------------|----------------------------------------------|----------------|-----------------------|----------|------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|------------------------------------------|----------------------|
|                                             | 4/16/2020                              | 9/1-2/2020     | 4/29/2021                                    | 9/27-29/2021   | 4/20/2022             | 7/7/2022 | 9/20-22/2022     | 4/13/2023             | 9/18-22/2023         | 4/8/2024              | 9/23-27/2024         | 4/24/2025             | 9/16-18/2025         | April 2026                               | September 2026       |
| East Landfill Monitoring Wells              |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-9                                        | Groundwater Elevation                  | List A**       | Groundwater Elevation (plus List A at MW-10) | List A^        | Groundwater Elevation | --       | List A^          | Groundwater Elevation | List A^              | Groundwater Elevation | List A^              | Groundwater Elevation | List A^              | Groundwater Elevation                    | List A               |
| MW-10                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-11AR                                     |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-13*                                      |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-14*                                      |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-18                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-20                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-22                                       | Total and dissolved arsenic            |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-23                                       | --                                     |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| West Landfill Monitoring Wells              |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-3                                        | Groundwater Elevation                  | List A         | Groundwater Elevation                        | List A^        | Groundwater Elevation | --       | List A           | Groundwater Elevation | List A               | Groundwater Elevation | List A               | Groundwater Elevation | List A               | Groundwater Elevation                    | List A               |
| MW-4                                        |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-5                                        |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-7                                        |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-8R                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-13*                                      |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-14*                                      |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-19                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| MW-21                                       |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| Surface Water Monitoring Wells              |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| SW-1                                        | Surface Water Depth                    | DRY            | Surface Water Depth                          | List A         | Surface Water Depth   | --       | List A           | Surface Water Depth   | List A               | Surface Water Depth   | List A               | Surface Water Depth   | List A               | Surface Water Depth                      | List A               |
| SW-2                                        |                                        | DRY            |                                              | List A         |                       |          | DRY              |                       |                      |                       |                      |                       |                      |                                          |                      |
| SW-3                                        |                                        | DRY            |                                              | DRY            |                       |          | DRY              |                       |                      |                       |                      |                       |                      |                                          |                      |
| Leachate Monitoring Points <sup>1, #</sup>  |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| LW-1                                        | Leachate Elevation                     | List A         | Leachate Elevation                           | List A         | Leachate Elevation    | --       | List A           | Leachate Elevation    | List A               | Leachate Elevation    | List A               | Leachate Elevation    | DRY                  | Leachate Elevation                       | List A               |
| LW-2                                        |                                        | DRY            |                                              | DRY            |                       |          | DRY              |                       | DRY                  |                       |                      |                       |                      |                                          |                      |
| LW-3                                        |                                        | DRY            |                                              | DRY            |                       |          | DRY              |                       | DRY                  |                       |                      |                       |                      |                                          |                      |
| LW-4                                        |                                        | List A         |                                              | DRY            |                       |          | DRY <sup>#</sup> |                       | DRY                  |                       |                      |                       |                      |                                          |                      |
| Leachate Collection Tank <sup>##</sup>      | Leachate Depth                         | List A         | Leachate Depth                               | List A         | Leachate Depth        | --       | List A           | Leachate Depth        | Removed from Program | Removed from Program  | Removed from Program | Removed from Program  | Removed from Program | Removed from Program                     | Removed from Program |
| LL-1 <sup>##</sup>                          |                                        | Leachate Depth |                                              | Leachate Depth |                       |          | Leachate Depth   | Removed from Program  | Removed from Program | Removed from Program  | Removed from Program | Removed from Program  | Removed from Program |                                          |                      |
| Other Monitoring Points                     |                                        |                |                                              |                |                       |          |                  |                       |                      |                       |                      |                       |                      |                                          |                      |
| Groundwater Gradient Control System (GWGCS) | --                                     | DRY            | --                                           | List A         | --                    | --       | List A           | --                    | List A               | --                    | List A               | --                    | List A               | --                                       | List A               |

Notes:

List A: arsenic, barium, beryllium, boron, cobalt, copper, iron, lead, magnesium, manganese, selenium, zinc, chloride, sulfate, field pH, field specific conductance, field temperature, and groundwater elevation, leachate depth, or surface water depth. Metals are reported as total starting in 2016 (previously reported as dissolved). Calcium, fluoride, lithium, molybdenum, TSS, and TDS were added to the list in 2023.

1) Leachate elevations are required at LW-1 through LW-4. Samples are voluntarily collected for laboratory analysis.

\*: MW-13, MW-14, and SW-1 are included in the monitoring program for both the East and West landfills. MW-13 and MW-14 are the upgradient wells for the West landfill.

\*\*: MW-10 was not sampled during the September 2020 event; the well was inaccessible due to downed trees around the well. A strong derecho storm on August 10, 2020 caused significant tree damage in the area.

^: MW-8R and MW-22 did not produce sufficient water for sample collection in September 2021. MW-22 did not produce sufficient water for sample collection in September 2022, 2023, or 2025.

^^: The well produced sufficient water for field parameter measurement, but not for sample collection.

<sup>#</sup>: Depth to liquid measurements were obtained at LW-4 in September 2022, but there was insufficient water to sample for field parameters or List A parameters.

<sup>##</sup>: LL-1 was removed from the sampling program after approval from Iowa DNR granted February 17, 2023. Leachate Collection Tank was removed from the sampling program after approval from Iowa DNR granted July 14, 2023.

Updated: LH, 10/13/2025  
Checked: RM, 10/21/2025

**Table 3**  
**Monitoring Well Maintenance and Performance Reevaluation Schedule**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Compliance with:                                                                | Monitoring Calendar Years                                     |           |           |           |           |           |           |           |
|---------------------------------------------------------------------------------|---------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                                                                 | 2019                                                          | 2020      | 2021      | 2022      | 2023      | 2024      | 2025      | 2026      |
| 567 IAC 115.21(2)a. high and low water levels (biennial)                        | Completed                                                     |           | Completed |           | Completed |           | Completed |           |
| 567 IAC 115.21(2)b. changes in the hydrologic setting and flow paths (biennial) | Completed                                                     |           | Completed |           | Completed |           | Completed |           |
| 567 IAC 115.21(2)c. well depths (annual)*                                       | Completed                                                     | Completed | Completed | Completed | Completed | Completed | Completed | Scheduled |
| 567 IAC 115.21(2)d. in-situ permeability tests (every 5 years)**                | Not Applicable - Variance granted by IDNR (see comment below) |           |           |           |           |           |           |           |

Comments:

\*: To avoid the potential for cross-contamination and increased sample turbidity associated with removing and re-installing dedicated pumps, well depths are not measured annually at wells with dedicated pumps.

\*\* : A variance to IAC 567-110.9(2)(d) for in situ permeability tests every 5 years was granted by IDNR in a letter dated May 4, 1999. Although IAC 567-110 has been rescinded since the variance was granted, the same permeability test requirements are now in IAC 567-115.21(2), and our understanding is that the conditions of the variance still apply.

Updated By: LH, 10/13/2025  
Checked By: RM, 10/21/2025

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**Table 4A**  
**Monitoring Well Maintenance and Performance Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|                                  | Well  | Top of Casing<br>(Ft MSL)** | Screen Length^ | Top of Screen^<br>(Ft MSL) | Total Depth<br>(ft) |                                | Date of Measurements |              | Depth Discrepancy (ft)<br>(April) | Depth Discrepancy (ft)<br>(September) |
|----------------------------------|-------|-----------------------------|----------------|----------------------------|---------------------|--------------------------------|----------------------|--------------|-----------------------------------|---------------------------------------|
|                                  |       |                             |                |                            |                     |                                | 4/24/2025            | 9/16-18/2025 |                                   |                                       |
| Shallow Hydrogeologic Unit Wells | MW-3  | 883.79                      | 5              | 867.2                      | 21.59               | Groundwater Level (ft)         | 11.48                | 13.85        | -0.24                             | -0.02                                 |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 872.31               | 869.94       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 21.83                | 21.61        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-4  | 880.41                      | 5              | 866.39                     | 19.02               | Groundwater Level (ft)         | 6.15                 | 7.35         | -0.22                             | --                                    |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 874.26               | 873.06       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 19.24                | --*          |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-5  | 891.37                      | 10             | 879.88                     | 21.49               | Groundwater Level (ft)         | 14.60                | 14.85        | -0.03                             | --                                    |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 876.77               | 876.52       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 21.52                | --*          |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | N                    | N            |                                   |                                       |
|                                  | MW-7  | 903.69                      | 10             | 871.04                     | 42.65               | Groundwater Level (ft)         | 25.82                | 27.03        | -0.22                             | -0.30                                 |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 877.87               | 876.66       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 42.87                | 42.95        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-8  | 902.43                      | 10             | 883.09                     | 29.34               | Groundwater Level (ft)         | 15.59                | 21.74        | -0.25                             | 0.17                                  |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 886.84               | 880.69       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 29.59                | 29.17        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | N            |                                   |                                       |
|                                  | MW-9  | 917.88                      | 10             | 907.84                     | 20.04               | Groundwater Level (ft)         | 3.84                 | 7.32         | -0.31                             | -0.14                                 |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 914.04               | 910.56       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 20.35                | 20.18        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-10 | 941.18                      | 10             | 931.17                     | 20.01               | Groundwater Level (ft)         | 11.89                | 11.57        | -0.17                             | -0.14                                 |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 929.29               | 929.61       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 20.18                | 20.15        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | N                    | N            |                                   |                                       |
|                                  | MW-13 | 920.62                      | 10             | 908.15                     | 22.47               | Groundwater Level (ft)         | 2.92                 | 10.00        | -0.22                             | -0.24                                 |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 917.70               | 910.62       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 22.69                | 22.71        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-14 | 929.42                      | 10             | 916.87                     | 22.55               | Groundwater Level (ft)         | 7.23                 | 11.36        | -0.33                             | 0.24                                  |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 922.19               | 918.06       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 22.88                | 22.31        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                  | MW-18 | 921.58                      | 10             | 905.08                     | 26.50               | Groundwater Level (ft)         | 13.09                | 17.30        | -0.06                             | --                                    |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 908.49               | 904.28       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 26.56                | --*          |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | N            |                                   |                                       |
|                                  | MW-23 | 926.75                      | 10             | 916.39                     | 20.36               | Groundwater Level (ft)         | 6.11                 | 10.70        | 0.01                              | 0.01                                  |
|                                  |       |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 920.64               | 916.05       |                                   |                                       |
|                                  |       |                             |                |                            |                     | Measured Well Depth (ft)       | 20.35                | 20.35        |                                   |                                       |
|                                  |       |                             |                |                            |                     | Submerged screen               | Y                    | N            |                                   |                                       |

**Table 4A**  
**Monitoring Well Maintenance and Performance Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|                                       | Well    | Top of Casing<br>(Ft MSL)** | Screen Length^ | Top of Screen^<br>(Ft MSL) | Total Depth<br>(ft) |                                | Date of Measurements |              | Depth Discrepancy (ft)<br>(April) | Depth Discrepancy (ft)<br>(September) |
|---------------------------------------|---------|-----------------------------|----------------|----------------------------|---------------------|--------------------------------|----------------------|--------------|-----------------------------------|---------------------------------------|
|                                       |         |                             |                |                            |                     |                                | 4/24/2025            | 9/16-18/2025 |                                   |                                       |
| Piezometers (Deep Hydrogeologic Unit) | MW-11AR | 922.35                      | 10             | 874.66                     | 57.69               | Groundwater Level (ft)         | 46.71                | 47.85        | -0.01                             | 0.03                                  |
|                                       |         |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 875.64               | 870.93       |                                   |                                       |
|                                       |         |                             |                |                            |                     | Measured Well Depth (ft)       | 57.70                | 57.66        |                                   |                                       |
|                                       |         |                             |                |                            |                     | Submerged screen               | Y                    | N            |                                   |                                       |
|                                       | MW-19   | 891.30                      | 10             | 861.25                     | 40.05               | Groundwater Level (ft)         | 14.25                | 14.97        | 0.00                              | -0.01                                 |
|                                       |         |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 877.05               | 876.33       |                                   |                                       |
|                                       |         |                             |                |                            |                     | Measured Well Depth (ft)       | 40.05                | 40.06        |                                   |                                       |
|                                       |         |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                       | MW-20   | 920.76                      | 10             | 851.64                     | 79.12               | Groundwater Level (ft)         | 45.12                | 46.16        | -1.48                             | --                                    |
|                                       |         |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 875.64               | 874.60       |                                   |                                       |
|                                       |         |                             |                |                            |                     | Measured Well Depth (ft)       | 80.60                | --*          |                                   |                                       |
|                                       |         |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                       | MW-21   | 879.97                      | 10             | 853.95                     | 36.02               | Groundwater Level (ft)         | 5.89                 | 6.99         | 0.00                              | 0.27                                  |
|                                       |         |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 874.08               | 872.98       |                                   |                                       |
|                                       |         |                             |                |                            |                     | Measured Well Depth (ft)       | 36.02                | 35.75        |                                   |                                       |
|                                       |         |                             |                |                            |                     | Submerged screen               | Y                    | Y            |                                   |                                       |
|                                       | MW-22   | 926.52                      | 10             | 880.62                     | 55.90               | Groundwater Level (ft)         | 50.81                | 52.53        | -0.02                             | --                                    |
|                                       |         |                             |                |                            |                     | Groundwater Elevation (Ft MSL) | 875.71               | 873.99       |                                   |                                       |
|                                       |         |                             |                |                            |                     | Measured Well Depth (ft)       | 55.92                | --*          |                                   |                                       |
|                                       |         |                             |                |                            |                     | Submerged screen               | N                    | N            |                                   |                                       |
| Surface Water Monitoring Points       | SW-1    | NA                          |                | NA                         | NA                  | Surface Water Depth            | 0.2                  | 1.0          | NA                                | NA                                    |
|                                       | SW-2    | NA                          |                | NA                         | NA                  | Surface Water Depth            | DRY                  | 1.5          | NA                                | NA                                    |
|                                       | SW-3    | NA                          |                | NA                         | NA                  | Surface Water Depth            | NM                   | DRY          | NA                                | NA                                    |

^: Screen lengths for wells except MW11AR, MW22, and MW23 from December 1991 Phase II Hydrogeological Investigation & Hydrologic Monitoring System Plan for the Marshalltown Disposal Site. Original well construction forms for MW11AR, MW22, and MW23 were not available for review at the time this table was prepared, and 10 foot screen lengths were assumed for these wells.

\*: Total depths not measured due to dedicated pumps in wells.

\*\*: Wells were resurveyed in October 2025. Elevations were surveyed in reference to an existing on-site benchmark.

NA - Not Applicable

NM - Not Measured

Updated By: LH, 10/15/2025  
Checked By: RM, 10/21/2025

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**Table 4B**  
**Vertical Gradients**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well Pair      |             | Vertical Hydraulic Gradient (feet/foot) <sup>(1)</sup> |                |
|----------------|-------------|--------------------------------------------------------|----------------|
| Shallower Well | Deeper Well | April 2025                                             | September 2025 |
| MW-4           | MW-21       | -0.010                                                 | -0.005         |
| MW-5           | MW-19       | 0.017                                                  | -0.012         |
| MW-13          | MW-20       | -0.78                                                  | -0.72          |
| MW-18          | MW-11AR     | -0.96                                                  | -0.93          |

Notes:

(1) A negative value indicates a downward gradient; a positive value indicates an upward gradient.

Updated: MDB 11/6/2025  
 Checked: LH, 11/7/2025

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**Table 5**  
**Background and GWPS Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Interwell Background                          |          |          |            |        |                  |              |            |                   |
|-----------------------------------------------|----------|----------|------------|--------|------------------|--------------|------------|-------------------|
| Constituent                                   | Units    | Samples* | Detections | UPL    | Statistical Test | Action Level | Source     | Other Standards   |
| <b>East Landfill - MW-9 and MW-10</b>         |          |          |            |        |                  |              |            |                   |
| Field pH                                      | SU       | 20       | 20         | N/A    | N/A              | none         | --         | SMCL <6.5 or >8.5 |
| Field Temperature                             | deg C    | 20       | 20         | N/A    | N/A              | none         | --         | --                |
| Field Specific Conductance                    | µmhos/cm | 20       | 20         | N/A    | N/A              | none         | --         | --                |
| Field Dissolved Oxygen                        | mg/L     | 6        | 6          | N/A    | N/A              | none         | --         | --                |
| Field Oxidation Potential                     | mV       | 6        | 6          | N/A    | N/A              | none         | --         | --                |
| Arsenic                                       | µg/l     | 20       | 7          | 1.60   | PL(NP)           | 10           | MCL        | --                |
| Barium                                        | µg/l     | 20       | 20         | 203    | PL(P)            | 2,000        | MCL        | --                |
| Beryllium                                     | µg/l     | 20       | 2          | 0.330  | PL(NP)           | 4            | MCL        | --                |
| Boron                                         | µg/l     | 20       | 4          | 815    | PL(P)            | 6,000        | SWS        | --                |
| Calcium                                       | mg/L     | 6        | 6          | N/A    | N/A              | none         | --         | --                |
| Chloride                                      | mg/L     | 54       | 37         | 46.0   | PL(NP)           | none         | --         | SMCL 250          |
| Cobalt                                        | µg/l     | 20       | 16         | 4.95   | PL(P)            | 4.95         | Background | SWS 2.1           |
| Fluoride                                      | mg/L     | 6        | 0          | N/A    | N/A              | 4.00         | MCL        | SMCL 2            |
| Iron                                          | µg/l     | 20       | 18         | 3,520  | PL(P)            | none         | --         | SMCL 300          |
| Lead                                          | µg/l     | 20       | 8          | 1.90   | PL(NP)           | 15           | SWS        | --                |
| Lithium                                       | µg/l     | 6        | 6          | N/A    | N/A              | 14           | SWS        | --                |
| Magnesium                                     | µg/l     | 20       | 20         | 27,400 | PL(P)            | none         | --         | --                |
| Manganese                                     | µg/l     | 20       | 19         | 3,050  | PL(NP)           | 3,050        | Background | SWS 300, SMCL 50  |
| Molybdenum                                    | µg/l     | 6        | 1          | N/A    | N/A              | 40           | SWS        | --                |
| Selenium                                      | µg/l     | 20       | 4          | 4.00   | PL(NP)           | 50           | MCL        | --                |
| Sulfate                                       | mg/L     | 54       | 54         | 120    | PL(NP)           | none         | --         | SMCL 250          |
| Total Dissolved Solids                        | mg/L     | 6        | 6          | N/A    | N/A              | none         | --         | SMCL - 500        |
| Total Suspended Solids                        | mg/L     | 6        | 4          | N/A    | N/A              | none         | --         | --                |
| <b>West Landfill - MW-8, MW-13, and MW-14</b> |          |          |            |        |                  |              |            |                   |
| Field pH                                      | SU       | 29       | 29         | N/A    | N/A              | none         | --         | SMCL <6.5 or >8.5 |
| Field Temperature                             | deg C    | 29       | 29         | N/A    | N/A              | none         | --         | --                |
| Field Specific Conductance                    | µmhos/cm | 29       | 29         | N/A    | N/A              | none         | --         | --                |
| Field Dissolved Oxygen                        | mg/L     | 9        | 9          | N/A    | N/A              | none         | --         | --                |
| Field Oxidation Potential                     | mV       | 9        | 9          | N/A    | N/A              | none         | --         | --                |
| Arsenic                                       | µg/l     | 29       | 12         | 1.60   | PL(NP)           | 10           | MCL        | --                |
| Barium                                        | µg/l     | 29       | 29         | 163    | PL(P)            | 2,000        | MCL        | --                |
| Beryllium                                     | µg/l     | 29       | 1          | 0.330  | PL(NP)           | 4            | MCL        | --                |
| Boron                                         | µg/l     | 29       | 24         | 1,340  | PL(P)            | 6,000        | SWS        | --                |
| Calcium                                       | mg/L     | 9        | 9          | N/A    | N/A              | none         | --         | --                |
| Chloride                                      | mg/L     | 80       | 47         | 51.9   | PL(NP)           | none         | --         | SMCL 250          |
| Cobalt                                        | µg/l     | 29       | 25         | 3.58   | PL(P)            | 3.58         | Background | SWS 2.1           |
| Fluoride                                      | mg/L     | 9        | 4          | N/A    | N/A              | 4.00         | MCL        | SMCL 2            |
| Iron                                          | µg/l     | 29       | 27         | 5,220  | PL(P)            | none         | --         | SMCL 300          |
| Lead                                          | µg/l     | 29       | 21         | 2.55   | PL(P)            | 15           | SWS        | --                |
| Lithium                                       | µg/l     | 9        | 9          | N/A    | N/A              | 14           | SWS        | --                |
| Magnesium                                     | µg/l     | 29       | 29         | 27,600 | PL(P)            | none         | --         | --                |
| Manganese                                     | µg/l     | 29       | 29         | 637    | PL(P)            | 637          | Background | SWS 300, SMCL 50  |
| Molybdenum                                    | µg/l     | 9        | 3          | N/A    | N/A              | 40           | SWS        | --                |
| Selenium                                      | µg/l     | 29       | 15         | 3.49   | PL(P)            | 50           | MCL        | --                |
| Sulfate                                       | mg/L     | 80       | 80         | 175    | PL(P)            | none         | --         | SMCL 250          |
| Total Dissolved Solids                        | mg/L     | 9        | 9          | N/A    | N/A              | none         | --         | SMCL - 500        |
| Total Suspended Solids                        | mg/L     | 9        | 9          | N/A    | N/A              | none         | --         | --                |

PL(NP) - Prediction Limit (Non-Parametric)

PL(P) - Prediction Limit (Parametric)

MCL - Maximum Contaminant Level

SMCL - Secondary Maximum Contaminant Level

SWS - Iowa Statewide Standard for a Protected Groundwater Source (Health-Based)

µg/l - micrograms per liter

mg/L - milligrams per liter

mV - millivolts

µmhos/cm - micromhos per centimeter

\*: For all parameters except chloride, sulfate, DO, and ORP, these columns reflect the number of samples since 2016, when unfiltered sample collection for metals analysis began. Additional historical data are included for chloride and sulfate, which were reported as totals prior to 2016. DO and ORP have been sampled as part of low-flow stabilization in the past, but were only required to be reported as part of the AWQR beginning in 2023.

\*\*: Parameters calcium, lithium, molybdenum, TDS, and TSS were added to the sampling program in 2023. Prediction limits will be calculated once the minimum of 4 samples have been obtained.

Updated: RM, 10/21/2025

Checked: LH, 10/28/2025

I:\25225064.00\Deliverables\2025 AWQR\Tables\awqreport\_Marshalltown\_2025.xlsx]6- Detection Summary - No SSIs

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well          |                      | Constituent                | Units    | Most Recent Result | UPL |
|---------------|----------------------|----------------------------|----------|--------------------|-----|
| East Landfill | MW-9 <sup>(3)</sup>  | Field pH                   | SU       | 7.09               | N/A |
|               |                      | Field Temperature          | deg C    | 15.1               | N/A |
|               |                      | Field Specific Conductance | µmhos/cm | 593                | N/A |
|               |                      | Field Dissolved Oxygen     | mg/L     | 7.48               | N/A |
|               |                      | Field Oxidation Potential  | mV       | -25.9              | N/A |
|               |                      | Arsenic                    | µg/l     | 0.76 J             | N/A |
|               |                      | Barium                     | µg/l     | 180                | N/A |
|               |                      | Calcium                    | mg/L     | 89                 | N/A |
|               |                      | Chloride                   | mg/L     | 11                 | N/A |
|               |                      | Cobalt                     | µg/l     | 1.3                | N/A |
|               |                      | Iron                       | µg/l     | 1100               | N/A |
|               |                      | Lead                       | µg/l     | 0.51               | N/A |
|               |                      | Lithium                    | µg/l     | 11                 | N/A |
|               |                      | Magnesium                  | µg/l     | 17000              | N/A |
|               |                      | Manganese                  | µg/l     | 650                | N/A |
|               |                      | Sulfate                    | mg/L     | 7.6                | N/A |
|               |                      | Total Dissolved Solids     | mg/L     | 310                | N/A |
|               |                      | Total Suspended Solids     | mg/L     | 15                 | N/A |
|               | MW-10 <sup>(3)</sup> | Field pH                   | SU       | 7.15               | N/A |
|               |                      | Field Temperature          | deg C    | 12.7               | N/A |
|               |                      | Field Specific Conductance | µmhos/cm | 475                | N/A |
|               |                      | Field Dissolved Oxygen     | mg/L     | 6.87               | N/A |
|               |                      | Field Oxidation Potential  | mV       | 236.1              | N/A |
|               |                      | Barium                     | µg/l     | 120                | N/A |
|               |                      | Calcium                    | mg/L     | 69                 | N/A |
|               |                      | Chloride                   | mg/L     | 2.3 J              | N/A |
|               |                      | Iron                       | µg/l     | 77 J               | N/A |
|               |                      | Lithium                    | µg/l     | 17                 | N/A |
|               |                      | Magnesium                  | µg/l     | 20000              | N/A |
|               |                      | Manganese                  | µg/l     | 7.6 J              | N/A |
|               |                      | Sulfate                    | mg/L     | 8.6                | N/A |
|               |                      | Total Dissolved Solids     | mg/L     | 260                | N/A |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |                      | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|----------------------|----------------------------|----------|--------------------|-------|
| East Landfill (continued) | MW-11AR              | Field pH                   | SU       | 7.35               | N/A   |
|                           |                      | Field Temperature          | deg C    | 13.4               | N/A   |
|                           |                      | Field Specific Conductance | µmhos/cm | 793                | N/A   |
|                           |                      | Field Dissolved Oxygen     | mg/L     | 9.19               | N/A   |
|                           |                      | Field Oxidation Potential  | mV       | 234.7              | N/A   |
|                           |                      | Arsenic                    | µg/l     | 1.0 J              | 1.6   |
|                           |                      | Barium                     | µg/l     | 41                 | 203   |
|                           |                      | Boron                      | µg/l     | 470                | 815   |
|                           |                      | Calcium                    | mg/L     | 110                | N/A   |
|                           |                      | Chloride                   | mg/L     | 16                 | 46    |
|                           |                      | Cobalt                     | µg/l     | 1.30               | 5.0   |
|                           |                      | Iron                       | µg/l     | 850                | 3520  |
|                           |                      | Lead                       | µg/l     | 1.4                | 1.9   |
|                           |                      | Lithium                    | µg/l     | 22                 | N/A   |
|                           |                      | Manganese                  | µg/l     | 86                 | 3050  |
|                           |                      | Molybdenum                 | µg/l     | 2.0                | N/A   |
|                           |                      | Selenium                   | µg/l     | 3.4 J              | 4.0   |
|                           |                      | Sulfate                    | mg/L     | 100                | 120   |
|                           |                      | Total Dissolved Solids     | mg/L     | 490                | N/A   |
|                           |                      | Total Suspended Solids     | mg/L     | 49                 | N/A   |
|                           | MW-13 <sup>(3)</sup> | Field pH                   | SU       | 6.91               | N/A   |
|                           |                      | Field Temperature          | deg C    | 17.1               | N/A   |
|                           |                      | Field Specific Conductance | µmhos/cm | 786                | N/A   |
|                           |                      | Field Dissolved Oxygen     | mg/L     | 6.70               | N/A   |
|                           |                      | Field Oxidation Potential  | mV       | 229.9              | N/A   |
|                           |                      | Arsenic                    | µg/l     | 0.69 J             | 1.6   |
|                           |                      | Barium                     | µg/l     | 100                | 203   |
|                           |                      | Boron                      | µg/l     | 110                | 815   |
|                           |                      | Calcium                    | mg/L     | 130                | N/A   |
|                           |                      | Cobalt                     | µg/l     | 1.5                | 5.0   |
|                           |                      | Iron                       | µg/l     | 900                | 3520  |
|                           |                      | Lead                       | µg/l     | 0.9                | 1.9   |
|                           |                      | Lithium                    | µg/l     | 20                 | N/A   |
|                           |                      | Magnesium                  | µg/l     | 22000              | 27400 |
|                           |                      | Manganese                  | µg/l     | 120                | 3050  |
|                           |                      | Sulfate                    | mg/L     | 120                | 120   |
|                           |                      | Total Dissolved Solids     | mg/L     | 490                | N/A   |
|                           |                      | Total Suspended Solids     | mg/L     | 56                 | N/A   |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |                      | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|----------------------|----------------------------|----------|--------------------|-------|
| East Landfill (continued) | MW-14 <sup>(3)</sup> | Field pH                   | SU       | 7.00               | N/A   |
|                           |                      | Field Temperature          | deg C    | 16.2               | N/A   |
|                           |                      | Field Specific Conductance | µmhos/cm | 602                | N/A   |
|                           |                      | Field Dissolved Oxygen     | mg/L     | 1.80               | N/A   |
|                           |                      | Field Oxidation Potential  | mV       | 119.3              | N/A   |
|                           |                      | Barium                     | µg/l     | 61                 | 203   |
|                           |                      | Boron                      | µg/l     | 460                | 815   |
|                           |                      | Calcium                    | mg/L     | 93                 | N/A   |
|                           |                      | Cobalt                     | µg/l     | 0.17 J             | 5.0   |
|                           |                      | Iron                       | µg/l     | 94 J               | 3520  |
|                           |                      | Lithium                    | µg/l     | 28                 | N/A   |
|                           |                      | Magnesium                  | µg/l     | 23000              | 27400 |
|                           |                      | Manganese                  | µg/l     | 80                 | 3050  |
|                           |                      | Molybdenum                 | µg/l     | 1.9 J              | N/A   |
|                           |                      | Selenium                   | µg/l     | 2.3 J              | 4.0   |
|                           |                      | Sulfate                    | mg/L     | 25                 | 120   |
|                           |                      | Total Dissolved Solids     | mg/L     | 360                | N/A   |
|                           |                      | Total Suspended Solids     | mg/L     | 17.0               | N/A   |
|                           | MW-18                | Field pH                   | SU       | 6.82               | N/A   |
|                           |                      | Field Temperature          | deg C    | 14.7               | N/A   |
|                           |                      | Field Specific Conductance | µmhos/cm | 623                | N/A   |
|                           |                      | Field Dissolved Oxygen     | mg/L     | 1.00               | N/A   |
|                           |                      | Field Oxidation Potential  | mV       | 203.2              | N/A   |
|                           |                      | Arsenic                    | µg/l     | 0.63 J             | 1.60  |
|                           |                      | Barium                     | µg/l     | 160                | 203   |
|                           |                      | Calcium                    | mg/L     | 110                | N/A   |
|                           |                      | Cobalt                     | µg/l     | 0.86               | 4.95  |
|                           |                      | Iron                       | µg/l     | 180                | 3520  |
|                           |                      | Lead                       | µg/l     | 0.36 J             | 1.90  |
|                           |                      | Lithium                    | µg/l     | 14                 | N/A   |
|                           |                      | Magnesium                  | µg/l     | 15,000             | 27400 |
|                           |                      | Manganese                  | µg/l     | 55                 | 3050  |
|                           |                      | Sulfate                    | mg/L     | 16                 | 120   |
|                           |                      | Total Dissolved Solids     | mg/L     | 360                | N/A   |
|                           |                      | Total Suspended Solids     | mg/L     | 8.3                | N/A   |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |       | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|-------|----------------------------|----------|--------------------|-------|
| East Landfill (continued) | MW-20 | Field pH                   | SU       | 7.01               | N/A   |
|                           |       | Field Temperature          | deg C    | 14.1               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 919                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 1.65               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 194.6              | N/A   |
|                           |       | Arsenic                    | µg/l     | 1.1 J              | 1.60  |
|                           |       | Barium                     | µg/l     | 93                 | 203   |
|                           |       | Calcium                    | mg/L     | 120                | N/A   |
|                           |       | Chloride                   | mg/L     | 21                 | 46    |
|                           |       | Lithium                    | µg/l     | 82                 | N/A   |
|                           |       | Magnesium                  | µg/l     | 22000              | 27400 |
|                           |       | Molybdenum                 | µg/l     | 780                | N/A   |
|                           |       | Total Dissolved Solids     | mg/L     | 570                | N/A   |
|                           |       | Total Suspended Solids     | mg/L     | 2.0                | N/A   |
|                           | MW-22 | Field pH                   | SU       | 7.32               | N/A   |
|                           |       | Field Temperature          | deg C    | 21.1               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 822                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 7.39               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 235.3              | N/A   |
|                           |       | Barium                     | µg/l     | 53                 | 203   |
|                           |       | Calcium                    | mg/L     | 38                 | N/A   |
|                           |       | Cobalt                     | µg/l     | 1.40               | 4.95  |
|                           |       | Iron                       | µg/l     | 1300               | 3520  |
|                           |       | Lithium                    | µg/l     | 5.9 J              | N/A   |
|                           |       | Magnesium                  | µg/l     | 7900               | 27400 |
|                           |       | Manganese                  | µg/l     | 130                | 3050  |
|                           |       | Molybdenum                 | µg/l     | 840                | N/A   |
|                           |       | Total Dissolved Solids     | mg/L     | 450                | N/A   |
|                           |       | Total Suspended Solids     | mg/L     | 67                 | N/A   |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|                           | Well  | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|-------|----------------------------|----------|--------------------|-------|
| East Landfill (continued) | MW-23 | Field pH                   | SU       | 6.90               | N/A   |
|                           |       | Field Temperature          | deg C    | 17.3               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 718                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 4.89               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 202.9              | N/A   |
|                           |       | Barium                     | µg/l     | 95                 | 203   |
|                           |       | Boron                      | µg/l     | 110                | 815   |
|                           |       | Calcium                    | mg/L     | 110                | N/A   |
|                           |       | Iron                       | µg/l     | 57 J               | 3520  |
|                           |       | Lithium                    | µg/l     | 31                 | N/A   |
|                           |       | Magnesium                  | µg/l     | 21000              | 27400 |
|                           |       | Manganese                  | µg/l     | 58                 | 3050  |
|                           |       | Molybdenum                 | µg/l     | 2.7                | N/A   |
|                           |       | Selenium                   | µg/l     | 1.6 J              | 4.0   |
|                           |       | Sulfate                    | mg/L     | 94                 | 120   |
|                           |       | Total Dissolved Solids     | mg/L     | 430                | N/A   |
|                           |       | Total Suspended Solids     | mg/L     | 1.8 J              | N/A   |
| West Landfill             | MW-3  | Field pH                   | SU       | 6.80               | N/A   |
|                           |       | Field Temperature          | deg C    | 16.4               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 772                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 2.30               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 161.4              | N/A   |
|                           |       | Arsenic                    | µg/l     | 0.60 J             | 1.60  |
|                           |       | Barium                     | µg/l     | 150                | 163   |
|                           |       | Calcium                    | mg/L     | 130                | N/A   |
|                           |       | Chloride                   | mg/L     | 17                 | 52    |
|                           |       | Lithium                    | µg/l     | 22                 | N/A   |
|                           |       | Magnesium                  | µg/l     | 20000              | 27600 |
|                           |       | Molybdenum                 | µg/l     | 8.1                | N/A   |
|                           |       | Sulfate                    | mg/L     | 96                 | 175   |
|                           |       | Total Dissolved Solids     | mg/L     | 450                | N/A   |
|                           |       | Total Suspended Solids     | mg/L     | 1.4 J              | N/A   |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |      | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|------|----------------------------|----------|--------------------|-------|
| West Landfill (continued) | MW-4 | Field pH                   | SU       | 6.79               | N/A   |
|                           |      | Field Temperature          | deg C    | 15.1               | N/A   |
|                           |      | Field Specific Conductance | µmhos/cm | 921                | N/A   |
|                           |      | Field Dissolved Oxygen     | mg/L     | 1.12               | N/A   |
|                           |      | Field Oxidation Potential  | mV       | -79.6              | N/A   |
|                           |      | Barium                     | µg/l     | 140                | 163   |
|                           |      | Calcium                    | mg/L     | 150                | N/A   |
|                           |      | Chloride                   | mg/L     | 13                 | 52    |
|                           |      | Cobalt                     | µg/l     | 0.35 J             | 3.58  |
|                           |      | Iron                       | µg/l     | 5000               | 5220  |
|                           |      | Lithium                    | µg/l     | 14                 | N/A   |
|                           |      | Magnesium                  | µg/l     | 23000              | 27600 |
|                           |      | Manganese                  | µg/l     | 610                | 637   |
|                           |      | Molybdenum                 | µg/l     | 29                 | N/A   |
|                           |      | Sulfate                    | mg/L     | 92                 | 175   |
|                           |      | Total Dissolved Solids     | mg/L     | 560                | N/A   |
|                           |      | Total Suspended Solids     | mg/L     | 12                 | N/A   |
|                           | MW-5 | Field pH                   | SU       | 6.30               | N/A   |
|                           |      | Field Temperature          | deg C    | 13.9               | N/A   |
|                           |      | Field Specific Conductance | µmhos/cm | 553                | N/A   |
|                           |      | Field Dissolved Oxygen     | mg/L     | 3.37               | N/A   |
|                           |      | Field Oxidation Potential  | mV       | 249.5              | N/A   |
|                           |      | Arsenic                    | µg/l     | 0.69 J             | 1.60  |
|                           |      | Boron                      | µg/l     | 730                | 1340  |
|                           |      | Calcium                    | mg/L     | 81                 | N/A   |
|                           |      | Chloride                   | mg/L     | 5.9                | 52    |
|                           |      | Cobalt                     | µg/l     | 0.84               | 3.58  |
|                           |      | Iron                       | µg/l     | 60 J               | 5220  |
|                           |      | Magnesium                  | µg/l     | 22000              | 27600 |
|                           |      | Manganese                  | µg/l     | 4.6 J              | 637   |
|                           |      | Sulfate                    | mg/L     | 37                 | 175   |
|                           |      | Total Dissolved Solids     | mg/L     | 280                | N/A   |
|                           |      | Total Suspended Solids     | mg/L     | 1.9                | N/A   |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |                     | Constituent                | Units    | Most Recent Result | UPL     |
|---------------------------|---------------------|----------------------------|----------|--------------------|---------|
| West Landfill (continued) | MW-7                | Field pH                   | SU       | 7.05               | N/A     |
|                           |                     | Field Temperature          | deg C    | 12.0               | N/A     |
|                           |                     | Field Specific Conductance | µmhos/cm | 630                | N/A     |
|                           |                     | Field Dissolved Oxygen     | mg/L     | 6.54               | N/A     |
|                           |                     | Field Oxidation Potential  | mV       | 214.8              | N/A     |
|                           |                     | Arsenic                    | µg/l     | 0.63 J             | 1.60    |
|                           |                     | Barium                     | µg/l     | 110                | 163     |
|                           |                     | Boron                      | µg/l     | 140                | 1340    |
|                           |                     | Calcium                    | mg/L     | 94                 | N/A     |
|                           |                     | Chloride                   | mg/L     | 20                 | 52      |
|                           |                     | Cobalt                     | µg/l     | 0.18 J             | 3.58    |
|                           |                     | Iron                       | µg/l     | 77 J               | 5220    |
|                           |                     | Lithium                    | µg/l     | 7.1 J              | N/A     |
|                           |                     | Magnesium                  | µg/l     | 20000              | 27600   |
|                           |                     | Manganese                  | µg/l     | 7.9 J              | 637     |
|                           |                     | Sulfate                    | mg/L     | 20                 | 175     |
|                           |                     | Total Dissolved Solids     | mg/L     | 370                | N/A     |
|                           |                     | Total Suspended Solids     | mg/L     | 4.4                | N/A     |
|                           | MW-8 <sup>(3)</sup> | Field pH                   | SU       | 6.93               | N/A     |
|                           |                     | Field Temperature          | deg C    | 19.6               | N/A     |
|                           |                     | Field Specific Conductance | µmhos/cm | 674                | N/A     |
|                           |                     | Field Dissolved Oxygen     | mg/L     | 5.47               | N/A     |
|                           |                     | Field Oxidation Potential  | mV       | 171.8              | N/A     |
|                           |                     | Arsenic                    | µg/l     | 0.57 J             | 1.6     |
|                           |                     | Barium                     | µg/l     | 140                | 163.0   |
|                           |                     | Calcium                    | mg/L     | 94                 | N/A     |
|                           |                     | Chloride                   | mg/L     | 20                 | 51.9    |
|                           |                     | Cobalt                     | µg/l     | 0.21 J             | 3.6     |
|                           |                     | Iron                       | µg/l     | 93 J               | 5220.0  |
|                           |                     | Lithium                    | µg/l     | 6.2 J              | N/A     |
|                           |                     | Magnesium                  | µg/l     | 22000              | 27600.0 |
|                           |                     | Manganese                  | µg/l     | 11                 | 637.0   |
|                           |                     | Sulfate                    | mg/L     | 19                 | 175.0   |
|                           |                     | Total Dissolved Solids     | mg/L     | 340                | N/A     |
|                           |                     | Total Suspended Solids     | mg/L     | 5.1                | N/A     |

**Table 6**  
**Summary of Well/Detected Constituent Pairs With No Immediately Preceding SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Well                      |       | Constituent                | Units    | Most Recent Result | UPL   |
|---------------------------|-------|----------------------------|----------|--------------------|-------|
| West Landfill (continued) | MW-19 | Field pH                   | SU       | 7.05               | N/A   |
|                           |       | Field Temperature          | deg C    | 13.6               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 618                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 3.17               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 216.1              | N/A   |
|                           |       | Arsenic                    | µg/l     | 0.56 J             | 1.60  |
|                           |       | Barium                     | µg/l     | 110                | 163   |
|                           |       | Boron                      | µg/l     | 170                | 1340  |
|                           |       | Calcium                    | mg/L     | 91                 | N/A   |
|                           |       | Chloride                   | mg/L     | 19                 | 52    |
|                           |       | Lithium                    | µg/l     | 7.8 J              | N/A   |
|                           |       | Magnesium                  | µg/l     | 21,000             | 27600 |
|                           |       | Selenium                   | µg/l     | 2.4 J              | 3     |
|                           |       | Sulfate                    | mg/L     | 22                 | 175   |
|                           |       | Total Dissolved Solids     | mg/L     | 360                | N/A   |
|                           | MW-21 | Field pH                   | SU       | 6.87               | N/A   |
|                           |       | Field Temperature          | deg C    | 13.7               | N/A   |
|                           |       | Field Specific Conductance | µmhos/cm | 772                | N/A   |
|                           |       | Field Dissolved Oxygen     | mg/L     | 1.84               | N/A   |
|                           |       | Field Oxidation Potential  | mV       | 167.2              | N/A   |
|                           |       | Arsenic                    | µg/l     | 0.66 J             | 1.60  |
|                           |       | Barium                     | µg/l     | 95                 | 163   |
|                           |       | Calcium                    | mg/L     | 110                | N/A   |
|                           |       | Chloride                   | mg/L     | 17                 | 52    |
|                           |       | Lithium                    | µg/l     | 36                 | N/A   |
|                           |       | Magnesium                  | µg/l     | 21000              | 27600 |
|                           |       | Manganese                  | µg/l     | 5.4 J              | 637   |
|                           |       | Molybdenum                 | µg/l     | 290                | N/A   |
|                           |       | Sulfate                    | mg/L     | 110                | 175   |
|                           |       | Total Dissolved Solids     | mg/L     | 470                | N/A   |
|                           |       | Total Suspended Solids     | mg/L     | 1.9                | N/A   |

Comments:

1. This table includes results for wells/constituents that were below the UPL in 2025.
2. Results below the limit of quantitation (J flags) are estimated values and are not compared to the UPL or GPS. They are included in this table regardless of whether the estimated value is higher or lower than the UPL.
3. MW-9 and MW-10 are background wells for the East Landfill. MW-8, MW-13, and MW-14 are background wells for the West Landfill. UPLs do not apply for background wells.

µg/l - micrograms per liter

mV - millivolts

J - Result is less than the reporting limit but greater than or equal to the minimum detection limit and the concentration is an approximate value.

mg/L - milligrams per liter

µmhos/cm - micromhos per centimeter

Updated by: LH, 10/13/2025  
 Checked by: BLJ, 10/29/2025

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**Table 7**  
**Summary of Ongoing and Newly Identified SSIs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|               | Well    | Constituent | Units | Most Recent Result | UPL   | Action Level |
|---------------|---------|-------------|-------|--------------------|-------|--------------|
| East Landfill | MW-11AR | Magnesium   | µg/l  | 40,000             | 27400 | none         |
|               | MW-20   | Boron       | µg/l  | 5,500              | 815   | 6,000        |
|               |         | Selenium    | µg/l  | 22                 | 4.0   | 50           |
|               |         | Sulfate     | mg/l  | 190                | 120   | none         |
|               | MW-22   | Arsenic     | µg/l  | 8.30               | 1.60  | 10           |
|               |         | Boron       | µg/l  | 1400               | 815   | 6,000        |
|               |         | Lead        | µg/l  | 3.4                | 1.90  | 15           |
|               |         | Selenium    | µg/l  | 43                 | 4     | 50           |
|               |         | Sulfate     | mg/L  | 250                | 120   | none         |
| West Landfill | MW-3    | Boron       | µg/l  | 1500               | 1340  | 6,000        |
|               |         | Selenium    | µg/l  | 7.5                | 3.49  | 50           |
|               | MW-4    | Arsenic     | µg/l  | 5.1                | 1.60  | 10           |
|               |         | Boron       | µg/l  | 4,100              | 1340  | 6,000        |
|               | MW-5    | Barium      | µg/l  | 200                | 163   | 2,000        |
|               |         | Selenium    | µg/l  | 18                 | 3.49  | 50           |
|               | MW-21   | Boron       | µg/l  | 2,400              | 1340  | 6,000        |
|               |         | Selenium    | µg/l  | 7.7                | 3.49  | 50           |

Comments:

1. This table includes results for wells/constituents that exceeded the the applicable UPL in 2025.
2. Results below the limit of quantitation (J flags) are estimated values and are not compared to the UPL or GPS.

UPL - Upper Prediction Limit

µg/l - micrograms per liter

mV - millivolts

mg/L - milligrams per liter

µmhos/cm - micromhos per centimeter

Updated by: LH, 10/28/2025

Checked by: BLJ, 10/29/2025

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**Table 8**  
**Historic UPL and Action Level Exceedances**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|               |         | Key: gray =UPL exceedance; black =action level exceedance |      |      |      |      |      |      |      |      |      |
|---------------|---------|-----------------------------------------------------------|------|------|------|------|------|------|------|------|------|
|               |         | 2016                                                      | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
| East Landfill | MW-9    | Manganese                                                 |      |      |      |      |      |      |      |      |      |
|               | MW-10   | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               | MW-11AR | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Lead                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               | MW-13   | Magnesium                                                 |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               | MW-14   | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Cobalt                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               | MW-18   | Manganese                                                 |      |      |      |      |      |      |      |      |      |
|               |         | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Arsenic                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Barium                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Cobalt                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Copper                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Iron                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Lead                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Manganese                                                 |      |      |      |      |      |      |      |      |      |
|               | MW-20   | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Molybdenum*                                               |      |      |      |      |      |      |      |      |      |
|               | MW-22   | Selenium                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Arsenic                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Lead                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Magnesium                                                 |      |      |      |      |      |      |      |      |      |
|               | MW-23   | Selenium                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
| West Landfill | MW-3    | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Selenium                                                  |      |      |      |      |      |      |      |      |      |
|               | MW-4    | Arsenic                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Barium                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               |         | Iron                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Manganese                                                 |      |      |      |      |      |      |      |      |      |
|               | MW-5    | Arsenic                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Barium                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Cobalt                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Copper                                                    |      |      |      |      |      |      |      |      |      |
|               |         | Iron                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Lead                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Manganese                                                 |      |      |      |      |      |      |      |      |      |
|               |         | Selenium                                                  |      |      |      |      |      |      |      |      |      |
|               | MW-8    | Sulfate                                                   |      |      |      |      |      |      |      |      |      |
|               |         | Boron                                                     |      |      |      |      |      |      |      |      |      |
|               | MW-21   | Lead                                                      |      |      |      |      |      |      |      |      |      |
|               |         | Lithium*                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Molybdenum*                                               |      |      |      |      |      |      |      |      |      |
|               |         | Selenium                                                  |      |      |      |      |      |      |      |      |      |
|               |         | Sulfate                                                   |      |      |      |      |      |      |      |      |      |

**Comments:**

1. UPLs were calculated annually beginning in 2019 when at least four sampling events with unfiltered (total) data.
2. For results in 2016-2018, prior to calculation of UPLs, the Statewide Standards for cobalt and manganese were used as the GWPS values. For 2019 and later, the UPLs based on background for cobalt and manganese exceeded the SWs and the UPLs were used as the GWPS values.

\*: Lithium and molybdenum were added to the monitoring program in 2023.

Updated by: LH, 10/28/2025  
Checked by: BLJ, 10/29/2025

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Table 9  
Historic Prediction Limits and Groundwater Protection Standards  
2025 Annual Water Quality Report  
Marshalltown East and West Closed Landfills  
Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C

|               | Constituent           | Units | UPL    |        |        |        |        |        |        | GWPS  |       |       |       |       |       |       |
|---------------|-----------------------|-------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
|               |                       |       | 2019   | 2020   | 2021   | 2022   | 2023   | 2024   | 2025   | 2019  | 2020  | 2021  | 2022  | 2023  | 2024  | 2025  |
| East Landfill | Arsenic               | µg/L  | 1.11   | 1.31   | 0.88   | 0.88   | 1.60   | 1.60   | 1.60   | 10    | 10    | 10    | 10    | 10    | 10    | 10    |
|               | Barium                | µg/L  | 186    | 185    | 185    | 184    | 203    | 203    | 203    | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
|               | Beryllium             | µg/L  | 0.27   | 0.27   | 0.27   | 0.27   | 0.33   | 0.33   | 0.330  | 4     | 4     | 4     | 4     | 4     | 4     | 4     |
|               | Boron                 | µg/L  | 110    | 110    | 110    | 110    | 815    | 815    | 815    | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 |
|               | Chloride              | mg/L  | 32.20  | 36.10  | 33.50  | 33.60  | 46.00  | 46.00  | 46.0   | none  | none  | none  | none  | none  | none  | none  |
|               | Cobalt                | µg/L  | 3.65   | 4.21   | 3.53   | 3.24   | 4.95   | 4.95   | 4.95   | 3.65  | 4.21  | 3.53  | 3.24  | 4.95  | 4.95  | 4.95  |
|               | Copper <sup>(1)</sup> | µg/L  | 3.38   | 3.45   | 3.59   | 3.75   | N/A    | N/A    | N/A    | 1,300 | 1,300 | 1,300 | 1,300 | N/A   | N/A   | N/A   |
|               | Iron                  | µg/L  | 1,680  | 1,790  | 1,480  | 3,200  | 3,520  | 3,520  | 3,520  | none  | none  | none  | none  | none  | none  | none  |
|               | Lead                  | µg/L  | 0.55   | 0.55   | 0.55   | 0.55   | 1.90   | 1.90   | 1.90   | 15    | 15    | 15    | 15    | 15    | 15    | 15    |
|               | Magnesium             | mg/L  | 29,500 | 29,700 | 29,000 | 27,800 | 27,400 | 27,400 | 27,400 | none  | none  | none  | none  | none  | none  | none  |
|               | Manganese             | µg/L  | 2,100  | 2,100  | 2,100  | 2,100  | 3,050  | 3,050  | 3,050  | 3,050 | 3,050 | 2,100 | 2,100 | 3,050 | 3,050 | 3,050 |
|               | Selenium              | µg/L  | 1.00   | 1.00   | 1.60   | 1.60   | 4.00   | 4.00   | 4.00   | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
|               | Sulfate               | mg/L  | 44.00  | 44.00  | 44.00  | 44.00  | 120.00 | 120.00 | 120    | none  | none  | none  | none  | none  | none  | none  |
|               | Zinc <sup>(1)</sup>   | µg/L  | 14.70  | 16.50  | 62.10  | 56.90  | N/A    | N/A    | N/A    | 2,000 | 2,000 | 2,000 | 2,000 | N/A   | N/A   | N/A   |
| West Landfill | Arsenic               | µg/L  | 1.49   | 1.54   | 1.47   | 1.60   | 1.60   | 1.60   | 1.60   | 10    | 10    | 10    | 10    | 10    | 10    | 10    |
|               | Barium                | µg/L  | 169    | 174    | 168    | 163    | 163    | 163    | 163    | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
|               | Beryllium             | µg/L  | 0.27   | 0.33   | 0.27   | 0.27   | 0.33   | 0.33   | 0.330  | 4     | 4     | 4     | 4     | 4     | 4     | 4     |
|               | Boron                 | µg/L  | 1,890  | 2,140  | 1,850  | 1,630  | 1,340  | 1,340  | 1,340  | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 | 6,000 |
|               | Chloride              | mg/L  | 51.90  | 51.90  | 51.90  | 51.90  | 51.90  | 51.90  | 51.90  | none  | none  | none  | none  | none  | none  | none  |
|               | Cobalt                | µg/L  | 5.88   | 5.41   | 4.20   | 3.49   | 3.58   | 3.58   | 3.58   | 5.88  | 5.41  | 4.20  | 3.49  | 3.58  | 3.58  | 3.58  |
|               | Copper <sup>(1)</sup> | µg/L  | 5.30   | 6.45   | 5.68   | 5.55   | N/A    | N/A    | N/A    | 1,300 | 1,300 | 1,300 | 1,300 | N/A   | N/A   | N/A   |
|               | Iron                  | µg/L  | 11,800 | 9,900  | 8,410  | 5,940  | 5,220  | 5,220  | 5,220  | none  | none  | none  | none  | none  | none  | none  |
|               | Lead                  | µg/L  | 3.30   | 2.83   | 2.24   | 1.89   | 2.55   | 2.55   | 2.55   | 15    | 15    | 15    | 15    | 15    | 15    | 15    |
|               | Magnesium             | mg/L  | 30,200 | 29,800 | 29,200 | 28,200 | 27,600 | 27,600 | 27,600 | none  | none  | none  | none  | none  | none  | none  |
|               | Manganese             | µg/L  | 891    | 1,040  | 863    | 667    | 637    | 637    | 637    | 891   | 1,040 | 863   | 667   | 637   | 637   | 637   |
|               | Selenium              | µg/L  | 5.03   | 5.24   | 4.50   | 3.71   | 3.49   | 3.49   | 3.49   | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
|               | Sulfate               | mg/L  | 104    | 109    | 110    | 173    | 175    | 175    | 175    | none  | none  | none  | none  | none  | none  | none  |
|               | Zinc <sup>(1)</sup>   | µg/L  | 15.60  | 16.10  | 15.80  | 14.50  | N/A    | N/A    | N/A    | 2,000 | 2,000 | 2,000 | 2,000 | N/A   | N/A   | N/A   |

(1) Copper and zinc were analyzed only at leachate wells in 2023 and 2024. Parameters calcium, fluoride, lithium, molybdenum, TDS, and TSS were added in 2023. UPLs will be calculated once the minimum of four samples for each parameter have been collected.

µg/l - micrograms per liter  
mV - millivolts

mg/L - milligrams per  
µmhos/cm - micromhos per centimeter

UPL - Upper Prediction Limit      GWPS - Groundwater Protection Standard

Updated by:                RM, 10/21/2025  
Checked by:                LH, 10/28/2025

I:\25225064.00\Deliverables\2025 AWQR\Tables\[awqreport\_Marshalltown\_2025.xlsx]9 - UPL History and Graphs

**Table 10**  
**Groundwater Quality Trend Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| <b>Well</b> | <b>Current GWPS Exceedances</b> | <b>Significant Trend</b> |
|-------------|---------------------------------|--------------------------|
| None        | *                               | N/A                      |

Comments:

\*Only well/constituent pairs with GWPS exceedances and with sufficient historical data for trend analysis (8 rounds) are included in this summary. Lithium and molybdenum trends are not included because only 3 rounds of data are available.

GWPS = Groundwater Protection Standard

Updated by: LH, 10/29/2025

Checked by: BLJ, 10/30/2025

I:\25225064.00\Deliverables\2025 AWQR\Tables\[awqreport\_Marshalltown\_2025.xlsx] 10- Trend Summary

**Table 11**  
**Summary of Leachate Well, Underdrain, and Surface Water Point/Detected Constituent Pairs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Monitoring Point | Constituent                | Units    | September 2025 |
|------------------|----------------------------|----------|----------------|
| LW-04            | Field pH                   | SU       | 8.86           |
|                  | Field Temperature          | deg C    | 14.6           |
|                  | Field Specific Conductance | µmhos/cm | 629            |
|                  | Field Dissolved Oxygen     | mg/l     | 4.04           |
|                  | Field Oxidation Potential  | mV       | 168            |
| GWGCS            | Field pH                   | SU       | 5.86           |
|                  | Field Temperature          | deg C    | 19             |
|                  | Field Specific Conductance | µmhos/cm | 1,192          |
|                  | Chloride                   | mg/L     | ND             |
|                  | Fluoride                   | mg/L     | ND             |
|                  | Sulfate                    | mg/L     | 230            |
|                  | Arsenic                    | µg/l     | ND             |
|                  | Barium                     | µg/l     | 44             |
|                  | Beryllium                  | µg/l     | ND             |
|                  | Boron                      | µg/l     | 140            |
|                  | Calcium                    | mg/L     | 190            |
|                  | Cobalt                     | µg/l     | 0.18 J         |
|                  | Iron                       | µg/l     | 100            |
|                  | Lead                       | µg/l     | 0.39 J         |
|                  | Lithium                    | µg/L     | 28             |
|                  | Magnesium                  | µg/l     | 44,000         |
|                  | Manganese                  | µg/l     | 360            |
|                  | Molybdenum                 | µg/l     | ND             |
|                  | Selenium                   | µg/l     | ND             |
|                  | Total Suspended Solids     | mg/L     | 6.6            |
|                  | Total Dissolved Solids     | mg/L     | 770            |
| SW-1             | Field pH                   | SU       | 7.78           |
|                  | Field Temperature          | deg C    | 20.8           |
|                  | Field Specific Conductance | µmhos/cm | 593            |
|                  | Field Turbidity            | NTU      | 17.55          |
|                  | Chloride                   | mg/l     | 22             |
|                  | Fluoride                   | mg/l     | ND             |
|                  | Sulfate                    | mg/l     | 18             |
|                  | Arsenic                    | µg/l     | 1.1 J          |
|                  | Barium                     | µg/l     | 160            |
|                  | Beryllium                  | µg/l     | ND             |
|                  | Boron                      | µg/l     | ND             |
|                  | Calcium                    | mg/l     | 74             |
|                  | Cobalt                     | µg/l     | ND             |
|                  | Iron                       | µg/l     | 92 J           |
|                  | Lithium                    | µg/l     | 8.0 J          |
|                  | Lead                       | µg/l     | ND             |
|                  | Magnesium                  | µg/l     | 24,000         |
|                  | Manganese                  | µg/l     | 71             |
|                  | Molybdenum                 | µg/l     | ND             |
|                  | Selenium                   | µg/l     | 1.7 J          |
|                  | Total Suspended Solids     | mg/l     | 65             |
|                  | Total Dissolved Solids     | mg/l     | 340            |

**Table 11**  
**Summary of Leachate Well, Underdrain, and Surface Water Point/Detected Constituent Pairs**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

| Monitoring Point | Constituent                | Units    | September 2025 |
|------------------|----------------------------|----------|----------------|
| SW-2             | Field pH                   | SU       | 7.75           |
|                  | Field Temperature          | deg C    | 18.8           |
|                  | Field Specific Conductance | µmhos/cm | 642            |
|                  | Field Turbidity            | NTU      | 4.91           |
|                  | Chloride                   | mg/l     | 21             |
|                  | Fluoride                   | mg/l     | ND             |
|                  | Sulfate                    | mg/l     | 24             |
|                  | Arsenic                    | µg/l     | 1.1 J          |
|                  | Barium                     | µg/l     | 150            |
|                  | Beryllium                  | µg/l     | ND             |
|                  | Boron                      | µg/l     | 430            |
|                  | Calcium                    | mg/l     | 79             |
|                  | Cobalt                     | µg/l     | ND             |
|                  | Iron                       | µg/l     | 93 J           |
|                  | Lead                       | µg/l     | ND             |
|                  | Lithium                    | µg/l     | 9.4 J          |
|                  | Magnesium                  | µg/l     | 24,000         |
|                  | Manganese                  | µg/l     | 100            |
|                  | Molybdenum                 | µg/l     | 11             |
|                  | Selenium                   | µg/l     | ND             |
|                  | Total Suspended Solids     | mg/l     | 3.9            |
|                  | Total Dissolved Solids     | mg/l     | 340            |

Notes:

(1): Insufficient liquid was present at LW-2, LW-3, LW-4, and SW-3 for sample collection in 2025.

µg/l - micrograms per liter

mV - millivolts

NTU - Nephelometric Turbidity Units

mg/L - milligrams per liter

µmhos/cm - micromhos per centimeter

Updated by: RM, 10/21/2025  
Checked by: LH, 10/28/2025

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**Table 12**  
**Leachate Management Summary**  
**2025 Annual Water Quality Report**  
**Marshalltown East and West Closed Landfills**  
**Permit Nos. 64-SDP-5-91C and 64-SDP-3-90C**

|                | <b>Leachate Depth (ft)</b> |             |             |             | <b>Leachate Elevation*</b> |             |             |             |
|----------------|----------------------------|-------------|-------------|-------------|----------------------------|-------------|-------------|-------------|
| <b>Month</b>   | <b>LW-1</b>                | <b>LW-2</b> | <b>LW-3</b> | <b>LW-4</b> | <b>LW-1</b>                | <b>LW-2</b> | <b>LW-3</b> | <b>LW-4</b> |
| April 2025     | 4.38                       | DRY         | DRY         | 1.75        | 894.47                     | DRY         | DRY         | 915.61      |
| September 2025 | DRY                        | DRY         | DRY         | 2.40        | DRY                        | DRY         | DRY         | 916.26      |

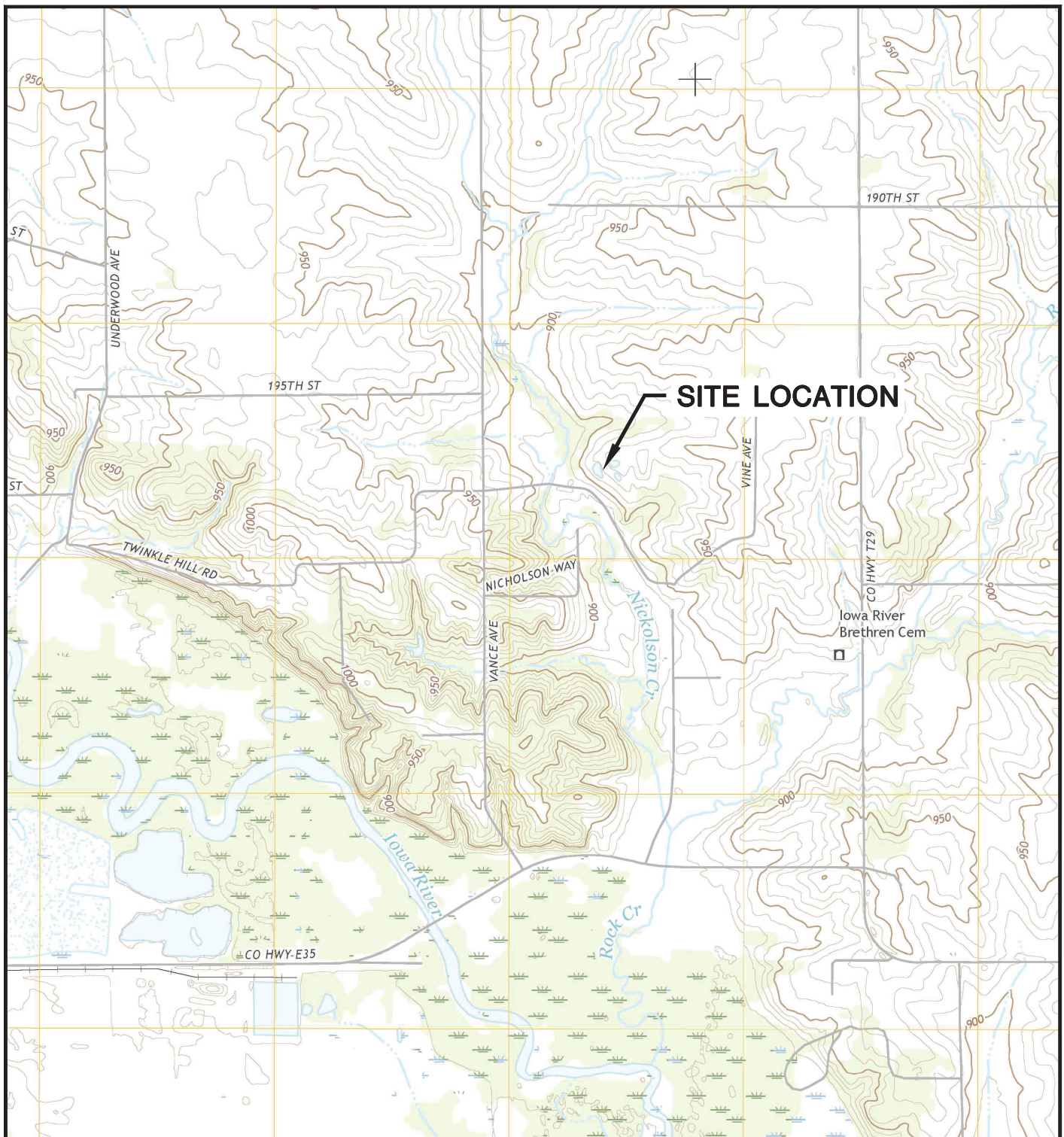
\*All site monitoring and leachate head wells were resurveyed in October 2025. Leachate elevations reported for 2025 were calculated using the updated top-of-casing elevations.

Updated by: MDB, 11/6/2025  
 Checked by: LH, 11/7/2025

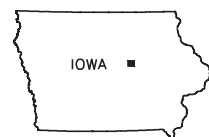
I:\25225064.00\Deliverables\2025 AWQR\Tables\[awqreport\_Marshalltown\_2025.xlsx]12 - Leachate Summary

## Figures

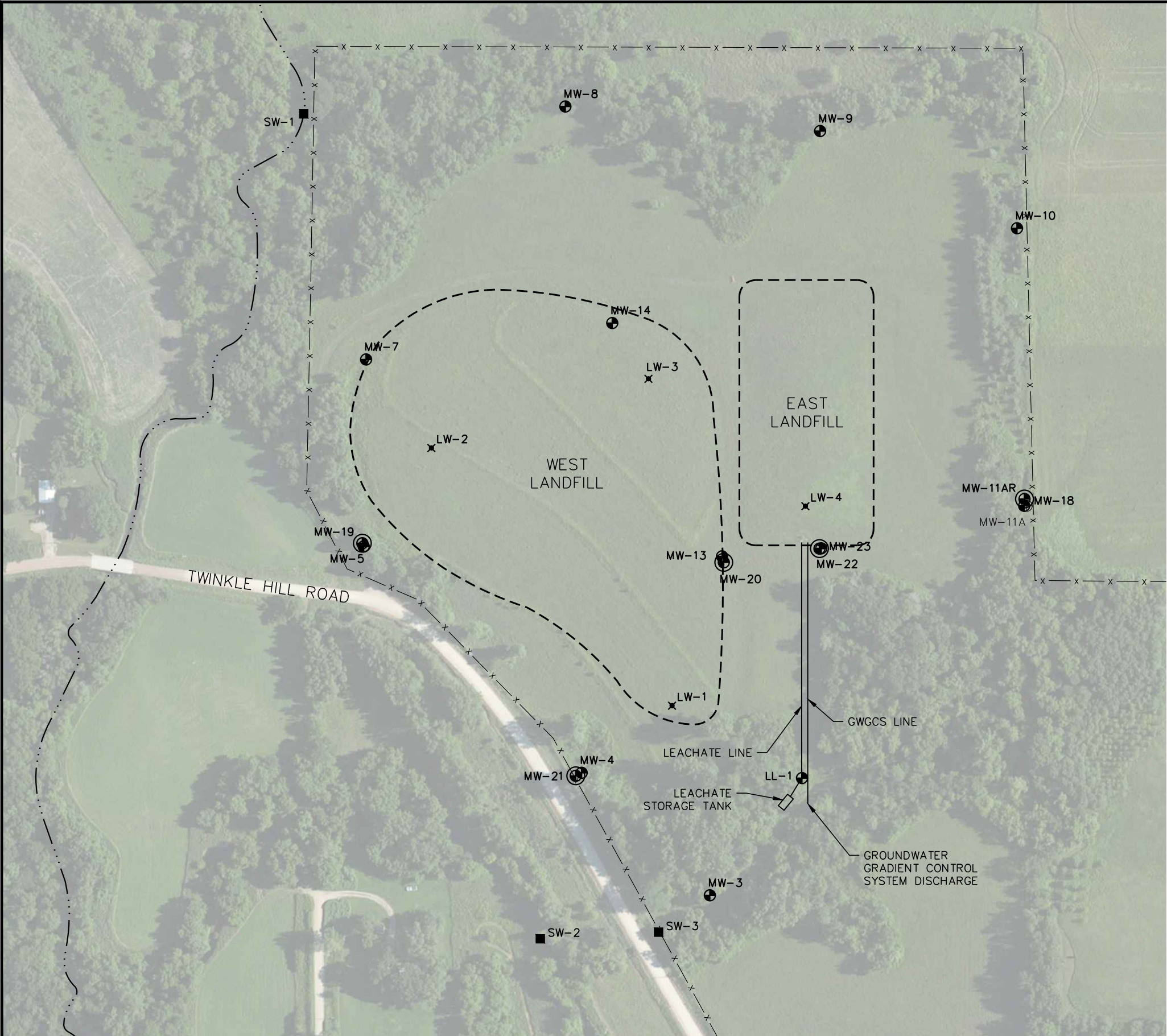
- 1 Site Location Map
- 2 Monitoring Well Locations
- 3 Water Table Contour Map, April 2025
- 4 Piezometer Potentiometric Surface Map, April 2025
- 5 Water Table Contour Map, September 2025
- 6 Piezometer Potentiometric Surface Contour Map,  
September 2025



LE GRAND QUADRANGLE  
IOWA  
7.5 MINUTE SERIES (TOPOGRAPHIC)  
2015  
SCALE: 1" = 2,000'



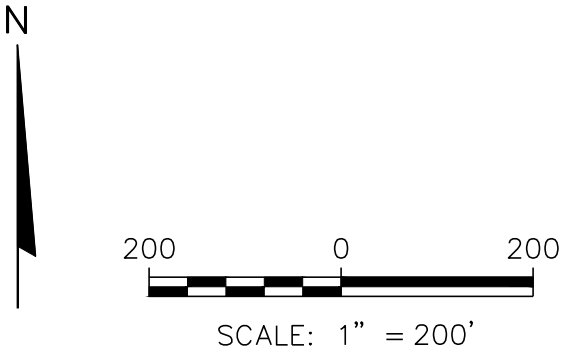
|        |                                                                                                                   |  |      |                                                                      |  |                                                                                                                                                          |        |
|--------|-------------------------------------------------------------------------------------------------------------------|--|------|----------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| CLIENT | <br>INTERSTATE POWER AND LIGHT |  | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA |  | SITE LOCATION MAP                                                                                                                                        |        |
|        | PROJECT NO. 25216064.00                                                                                           |  |      | DRAWN BY: AHB                                                        |  | <br>2830 DAIRY DRIVE MADISON, WI 53718-6751<br>PHONE: (608) 224-2830 | FIGURE |
|        | DRAWN: 10/28/16                                                                                                   |  |      | CHECKED BY: MDB                                                      |  |                                                                                                                                                          | 1      |
|        | REVISED: 10/28/16                                                                                                 |  |      | APPROVED BY: TK 11/20/2017                                           |  |                                                                                                                                                          |        |



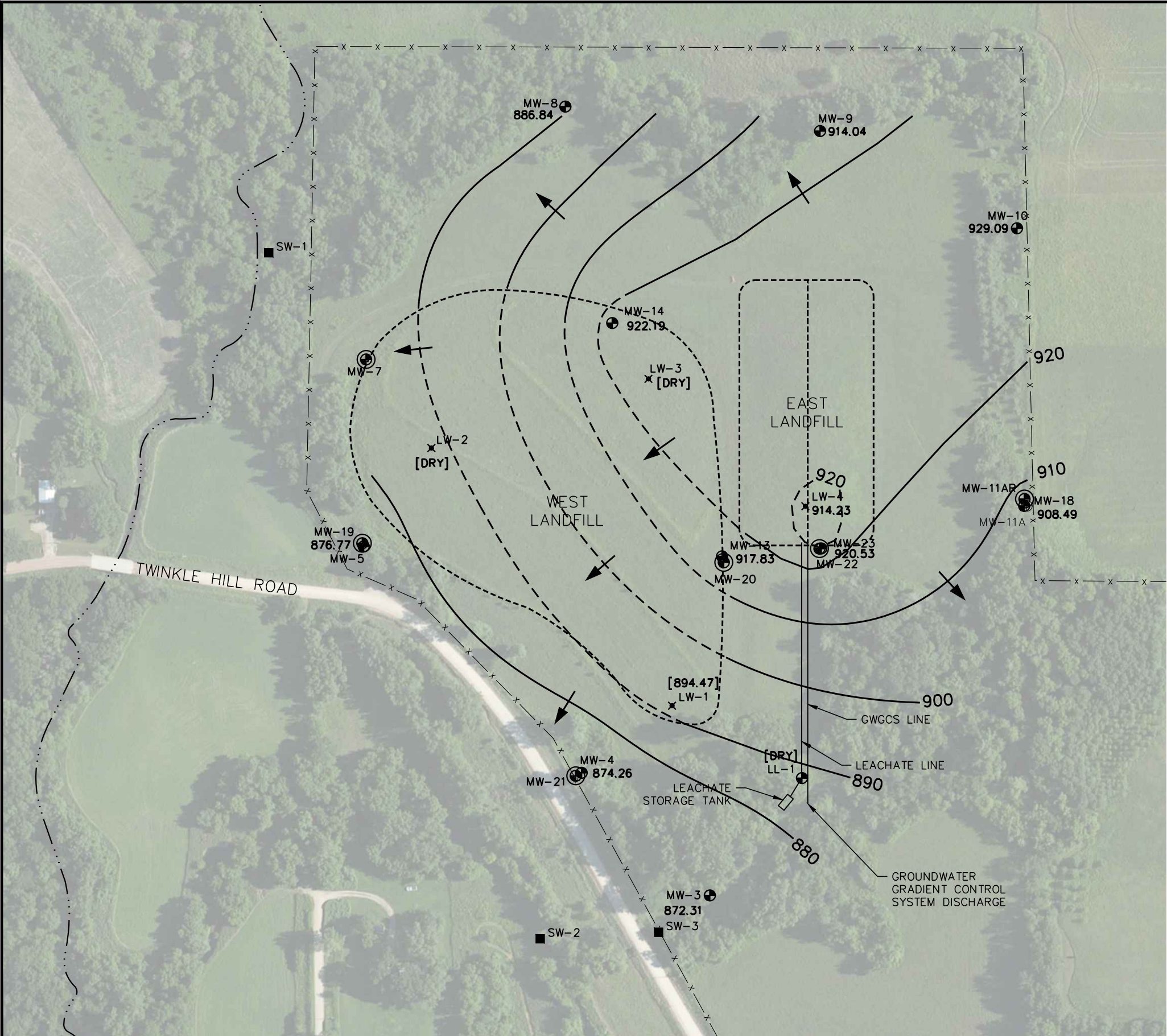
- LEGEND
- APPROXIMATE LIMITS OF ASH DISPOSAL
  - x - x - FENCE
  - . . . - STREAM
  - ⊕ MONITORING WELL
  - ⊕ DEEP MONITORING WELL
  - ⊕ ABANDONED WELL
  - ✕ LEACHATE HEAD WELL
  - SURFACE WATER SAMPLING POINT

NOTES:

1. MONITORING WELL AND LEACHATE HEAD WELL LOCATIONS BASED ON SURVEY PERFORMED BY CLAPSADDLE-GARBER ASSOCIATES IN OCTOBER 2025. OTHER SITE FEATURE LOCATIONS ARE APPROXIMATE.



|                         |  |                            |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                           |        |
|-------------------------|--|----------------------------|--|----------|-------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------|---------------------------|--------|
| PROJECT NO. 25219064.00 |  | DRAWN BY: BJM/RVG          |  | ENGINEER | <div>SCS ENGINEERS</div> 2830 DAIRY DRIVE MADISON, WI 53718-6751<br>PHONE: (608) 224-2830 | CLIENT | <div> ALLIANT ENERGY</div> INTERSTATE POWER AND LIGHT | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA | MONITORING WELL LOCATIONS | FIGURE |
| DRAWN: 10/28/16         |  | CHECKED BY: KAK            |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                           | 2      |
| REVISED: 11/07/2025     |  | APPROVED BY: TK 11/20/2025 |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                           |        |



LEGEND

-----

APPROXIMATE LIMITS OF ASH DISPOSAL

— x — x —

FENCE

— ··· —

STREAM

MONITORING WELL

DEEP MONITORING WELL

ABANDONED WELL

LEACHATE HEAD WELL

SURFACE WATER SAMPLING POINT

**923.40**

WATER TABLE ELEVATION

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WATER TABLE CONTOUR LINE  
DASHED WHERE INFERRED  
(10' CONTOUR INTERVAL)

APPROXIMATE GROUNDWATER FLOW  
DIRECTION

-----

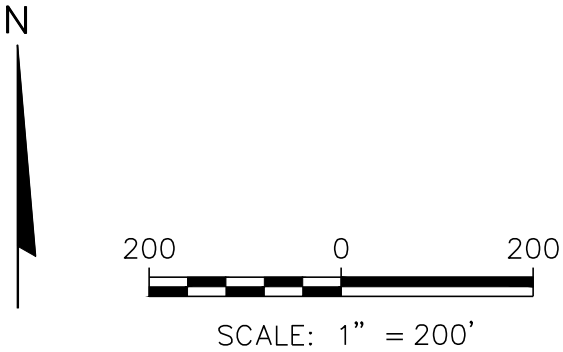
APPROXIMATE GROUNDWATER UNDERDRAIN  
PIPE LOCATION

- NOTES:
1. MONITORING WELL AND LEACHATE HEAD WELL  
LOCATIONS BASED ON SURVEY PERFORMED BY  
CLAPSADDLE-GARBER ASSOCIATES IN OCTOBER 2025.  
OTHER SITE FEATURE LOCATIONS ARE APPROXIMATE.

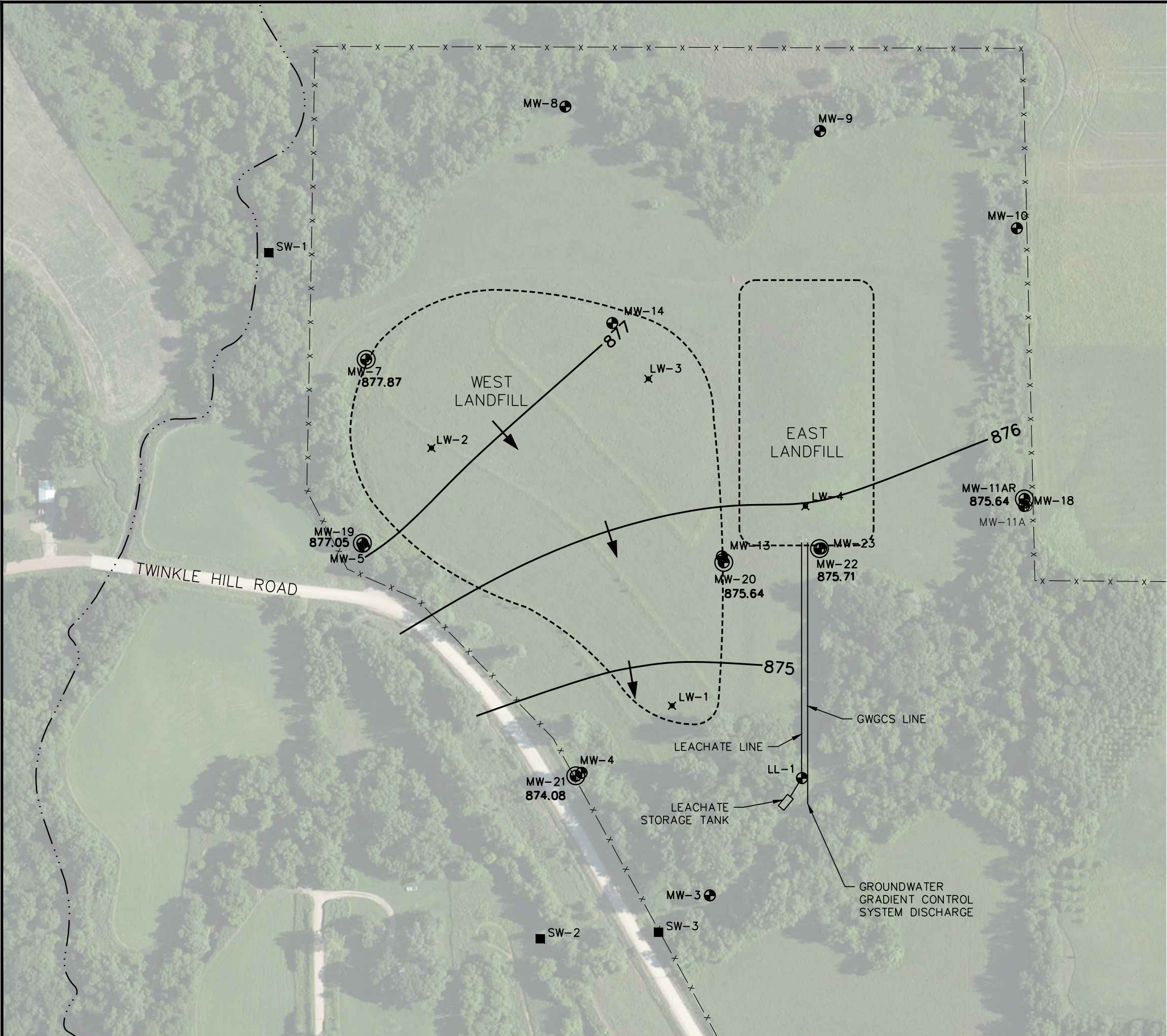
2. WATER LEVELS MEASURED ON APRIL 24, 2025.

3. LEACHATE WELLS LW-2 AND LW-3 WERE DRY IN  
APRIL 2025.

4. APPROXIMATE GROUNDWATER UNDERDRAIN PIPE  
LOCATION BASED ON JAMES M. MONTGOMERY  
CONSULTING ENGINEERS, INC. DRAWINGS DATED  
8/9/1992. THESE DRAWINGS INDICATE AN UNDERDRAIN  
ELEVATION OF APPROXIMATELY 915' AT THE NORTH  
END OF THE EAST LANDFILL AND APPROXIMATELY 905'  
AT THE SOUTH END OF THE EAST LANDFILL.



|             |             |              |                |          |                                                                                   |        |                                              |      |                                                                      |                                           |        |
|-------------|-------------|--------------|----------------|----------|-----------------------------------------------------------------------------------|--------|----------------------------------------------|------|----------------------------------------------------------------------|-------------------------------------------|--------|
| PROJECT NO. | 25225064.00 | DRAWN BY:    | SB             | ENGINEER | SCS ENGINEERS<br>2830 DAIRY DRIVE MADISON, WI 53718-6751<br>PHONE: (608) 224-2830 | CLIENT | ALLIANT ENERGY<br>INTERSTATE POWER AND LIGHT | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA | WATER TABLE CONTOUR MAP<br>APRIL 24, 2025 | FIGURE |
| DRAWN:      | 04/29/2025  | CHECKED BY:  | NLB 05/05/2025 |          |                                                                                   |        |                                              |      |                                                                      |                                           | 3      |
| REVISED:    | 11/11/2025  | APPROVED BY: | TK 11/20/2025  |          |                                                                                   |        |                                              |      |                                                                      |                                           |        |



LEGEND

----- APPROXIMATE LIMITS OF ASH DISPOSAL

— x — x — FENCE

— · · · — STREAM

⊕ MONITORING WELL

⊕ DEEP MONITORING WELL

⊕ ABANDONED WELL

✕ LEACHATE HEAD WELL

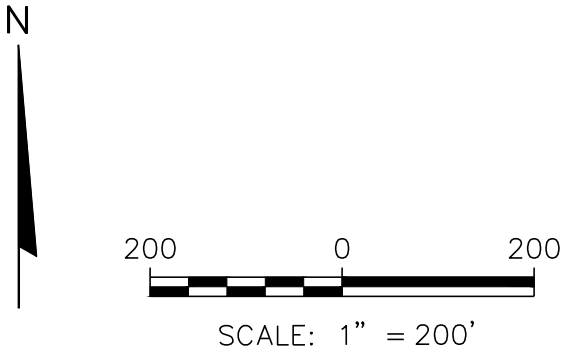
■ SURFACE WATER SAMPLING POINT

**871.50** POTENTIOMETRIC SURFACE ELEVATION

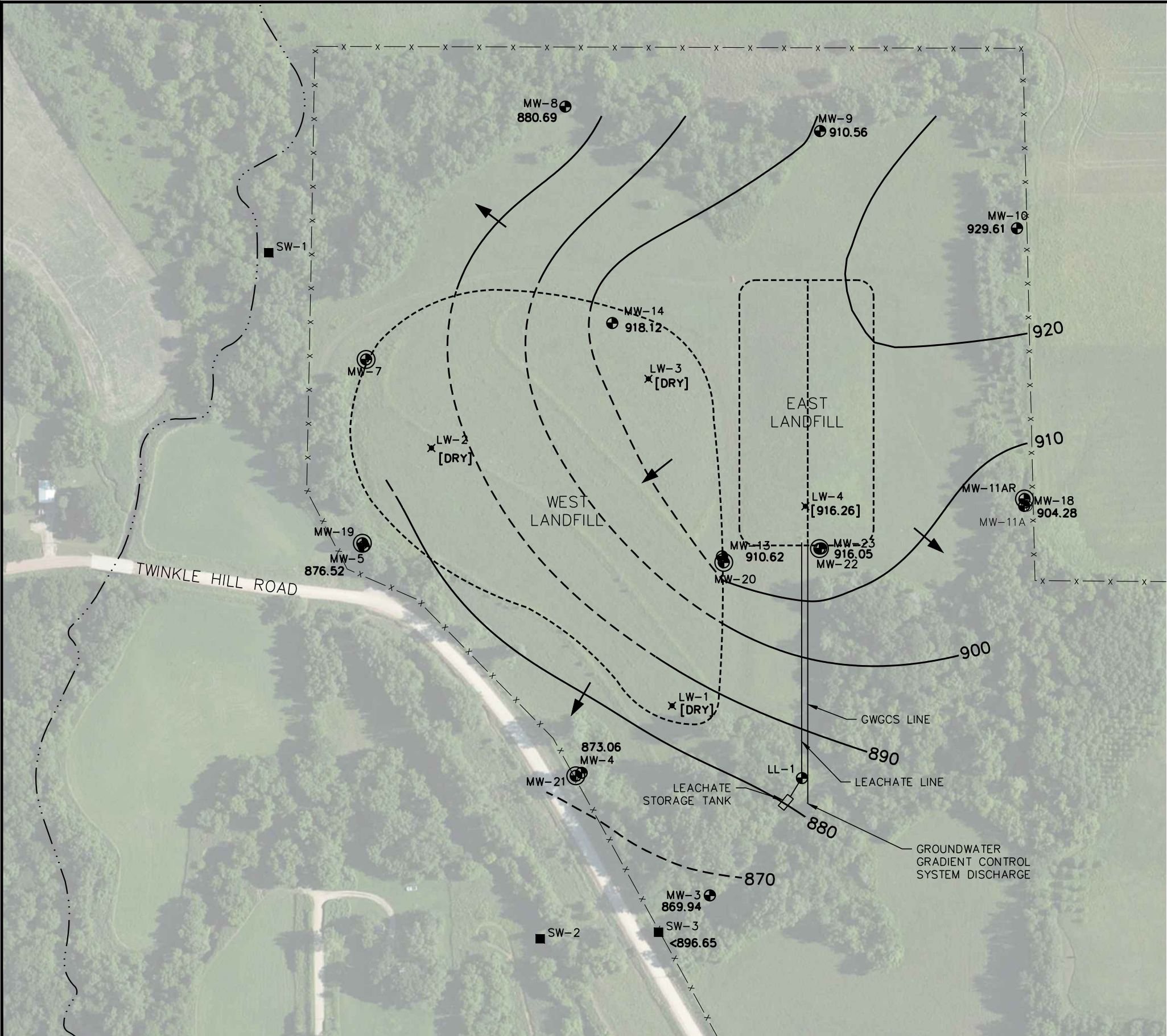
— — — PIEZOMETER POTENTIOMETRIC SURFACE CONTOUR LINE  
DASHED WHERE INFERRED  
(0.5' CONTOUR INTERVAL)

➔ APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTES:
1. MONITORING WELL AND LEACHATE HEAD WELL LOCATIONS BASED ON SURVEY PERFORMED BY CLAPSADDLE-GARBER ASSOCIATES IN OCTOBER 2025. OTHER SITE FEATURE LOCATIONS ARE APPROXIMATE.
  2. WATER LEVELS MEASURED ON APRIL 24, 2025.



|                         |  |                            |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                                                                    |        |
|-------------------------|--|----------------------------|--|----------|-------------------------------------------------------------------------------------------|--------|--------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------|--------------------------------------------------------------------|--------|
| PROJECT NO. 25225064.00 |  | DRAWN BY: SB               |  | ENGINEER | <div>SCS ENGINEERS</div> 2830 DAIRY DRIVE MADISON, WI 53718-6751<br>PHONE: (608) 224-2830 | CLIENT | <div> ALLIANT ENERGY</div> INTERSTATE POWER AND LIGHT | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA | PIEZOMETER POTENTIOMETRIC SURFACE<br>CONTOUR MAP<br>APRIL 24, 2025 | FIGURE |
| DRAWN: 04/29/2025       |  | CHECKED BY: NLB 05/05/2025 |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                                                                    | 4      |
| REVISED: 11/11/2025     |  | APPROVED BY: TK 11/20/2025 |  |          |                                                                                           |        |                                                                                                                                            |      |                                                                      |                                                                    |        |



LEGEND

-----

APPROXIMATE LIMITS OF ASH DISPOSAL

— x — x —

FENCE

— ··· —

STREAM

MONITORING WELL

DEEP MONITORING WELL

ABANDONED WELL

LEACHATE HEAD WELL

SURFACE WATER SAMPLING POINT

**923.40**

WATER TABLE ELEVATION (SEPTEMBER 2025)

**[923.40]**

ELEVATION NOT USED FOR WATER TABLE INTERPRETATION (SEPTEMBER 2025)

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WATER TABLE CONTOUR LINE  
DASHED WHERE INFERRED  
(10' CONTOUR INTERVAL)

APPROXIMATE GROUNDWATER FLOW DIRECTION

-----

APPROXIMATE GROUNDWATER UNDERDRAIN PIPE LOCATION

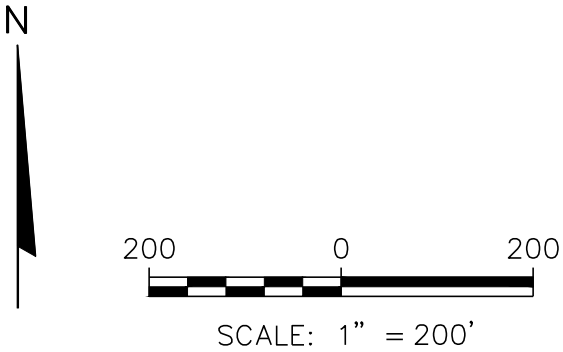
- NOTES:
1.

MONITORING WELL AND LEACHATE HEAD WELL LOCATIONS BASED ON SURVEY PERFORMED BY CLAPSADDLE-GARBER ASSOCIATES IN OCTOBER 2025. OTHER SITE FEATURE LOCATIONS ARE APPROXIMATE.
2.

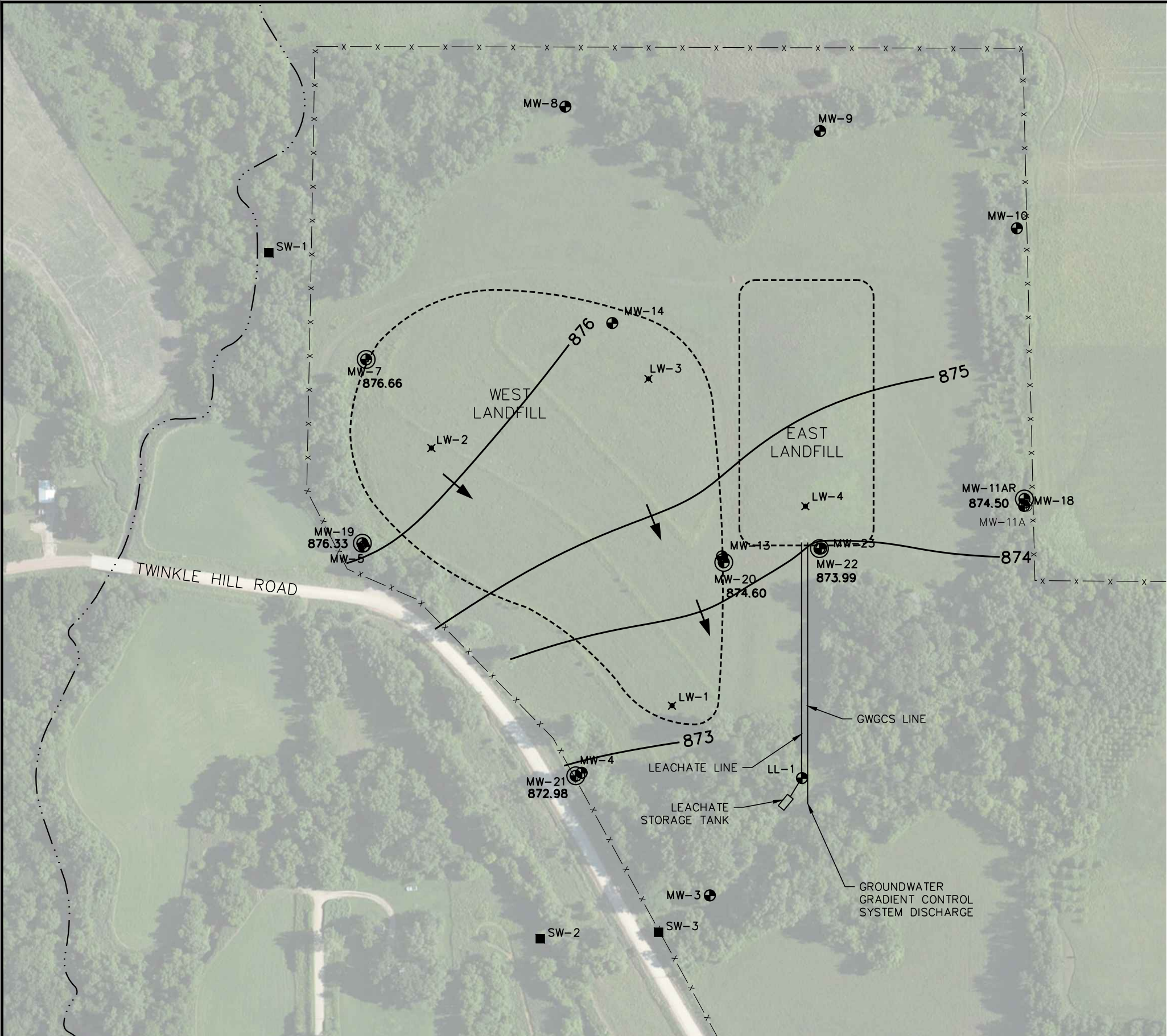
WATER LEVELS MEASURED ON SEPTEMBER 16-17, 2025.
3.

LEACHATE WELLS LW-2 AND LW-3 WERE DRY IN APRIL 2025.
4.

APPROXIMATE GROUNDWATER UNDERDRAIN PIPE LOCATION BASED ON JAMES M. MONTGOMERY CONSULTING ENGINEERS, INC. DRAWINGS DATED 8/9/1992. THESE DRAWINGS INDICATE AN UNDERDRAIN ELEVATION OF APPROXIMATELY 915' AT THE NORTH END OF THE EAST LANDFILL AND APPROXIMATELY 905' AT THE SOUTH END OF THE EAST LANDFILL.



|             |             |              |                |          |                                                                                   |        |                                              |      |                                                                      |                                                  |        |
|-------------|-------------|--------------|----------------|----------|-----------------------------------------------------------------------------------|--------|----------------------------------------------|------|----------------------------------------------------------------------|--------------------------------------------------|--------|
| PROJECT NO. | 25225063.00 | DRAWN BY:    | RVG            | ENGINEER | SCS ENGINEERS<br>2830 DAIRY DRIVE MADISON, WI 53718-6751<br>PHONE: (608) 224-2830 | CLIENT | ALLIANT ENERGY<br>INTERSTATE POWER AND LIGHT | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA | WATER TABLE CONTOUR MAP<br>SEPTEMBER 16-17, 2025 | FIGURE |
| DRAWN:      | 09/30/2025  | CHECKED BY:  | NLB 10/16/2025 |          |                                                                                   |        |                                              |      |                                                                      |                                                  | 5      |
| REVISED:    | 11/11/2025  | APPROVED BY: | TK 10/20/2025  |          |                                                                                   |        |                                              |      |                                                                      |                                                  |        |



LEGEND

-----

APPROXIMATE LIMITS OF ASH DISPOSAL

— x — x —

FENCE

— · · · —

STREAM

⊕

MONITORING WELL

⊕

DEEP MONITORING WELL

⊕

ABANDONED WELL

✕

LEACHATE HEAD WELL

■

SURFACE WATER SAMPLING POINT

871.50

POTENTIOMETRIC SURFACE ELEVATION

— — —

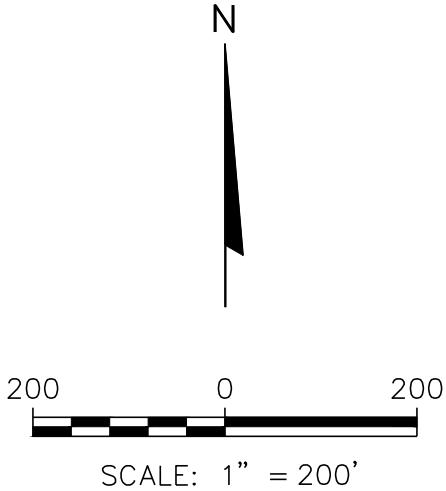
PIEZOMETER POTENTIOMETRIC SURFACE  
CONTOUR LINE  
DASHED WHERE INFERRED  
(0.5' CONTOUR INTERVAL)

➔

APPROXIMATE GROUNDWATER FLOW  
DIRECTION

- NOTES:
1. MONITORING WELL AND LEACHATE HEAD WELL LOCATIONS  
BASED ON SURVEY PERFORMED BY CLAPSADDLE-GARBER  
ASSOCIATES IN OCTOBER 2025. OTHER SITE FEATURE  
LOCATIONS ARE APPROXIMATE.

2. WATER LEVELS MEASURED ON SEPTEMBER 16-17, 2025.



|                         |  |                            |  |          |                                                                                                              |        |                                                                                                                                                       |      |                                                                      |                                                                           |        |
|-------------------------|--|----------------------------|--|----------|--------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------|---------------------------------------------------------------------------|--------|
| PROJECT NO. 25225063.00 |  | DRAWN BY: RVG              |  | ENGINEER | <div>SCS ENGINEERS</div> <div>2830 DAIRY DRIVE MADISON, WI 53718-6751</div> <div>PHONE: (608) 224-2830</div> | CLIENT | <div> ALLIANT ENERGY</div> <div>INTERSTATE POWER AND LIGHT</div> | SITE | MARSHALLTOWN EAST AND WEST<br>CLOSED LANDFILLS<br>MARSHALLTOWN, IOWA | PIEZOMETER POTENTIOMETRIC SURFACE<br>CONTOUR MAP<br>SEPTEMBER 16-17, 2025 | FIGURE |
| DRAWN: 09/30/2025       |  | CHECKED BY: NLB 10/16/2025 |  |          |                                                                                                              |        |                                                                                                                                                       |      |                                                                      |                                                                           | 6      |
| REVISED: 11/07/2025     |  | APPROVED BY: TK 11/20/2025 |  |          |                                                                                                              |        |                                                                                                                                                       |      |                                                                      |                                                                           |        |



## Appendix A

### Inspections

**SEMIANNUAL FACILITY INSPECTION REPORT 2025  
INTERSTATE POWER AND LIGHT COMPANY  
MARSHALLTOWN EAST AND WEST CLOSED LANDFILL  
PERMIT NO. 57-SDP-5-91C AND 57-SDP-3-90C**

The semiannual inspections of the Interstate Power and Light Company (IPL) Marshalltown East and West Closed Landfill were conducted on April 24 and September 17, 2025. As required in the general provisions of the permits (Sanitary Disposal Permit No. 57-SDP-5-91C and 57-SDP-3-90C), inspections must be performed by, or under the direct supervision of, an Iowa registered engineer, and a brief report must be submitted to the Iowa Department of Natural Resources (IDNR).

## **SITE CONDITIONS**

The Marshalltown East and West Closed Landfills were used for the disposal of coal combustion residue (CCR). No CCR or other waste has been placed at the site since 1995. The site is in generally good condition. Facility Inspection Reports for April and September 2025 are included in **Attachment A**.

## **SITE INSPECTIONS**

On April 24 and September 17, 2025, staff from SCS Engineers (SCS) conducted site inspections under the supervision of Licensed Professional Engineer Eric Nelson, PE, of SCS. This inspection report discusses the items observed during the inspections.

### **Access Road and Perimeter Fencing**

The access road at the entrance of the property and perimeter fencing were inspected during the site inspections. The perimeter fencing was generally observed to be in good condition. During the April inspection, SCS's vehicle and trailer got stuck in mud and vegetation and created some rutting in the area near LL-1. This area is not part of the capped landfill area, and repair of the ruts is being coordinated with other work at the site. During the September inspection it was noted the access road required some clearing of vegetation.

### **Erosion Control**

The property was generally well vegetated with note of woody vegetation growing on the north side of the landfill in both the April and September inspections. No erosional features were noticed on the landfill cover during the inspections.

### **Groundwater Wells**

Groundwater wells were observed to be in generally good condition.

### **IDNR Inspections**

The most recent IDNR inspection of the facility was performed on December 14 and 15, 2014.

LH/lmh/MDB



## Attachment A

### Site Inspection Forms

## SITE INSPECTION REPORT

**Project:** IPL – Marshalltown East & West Closed Landfill **Project #:** 25216064  
**Site:** Marshalltown East Closed Ash Landfill **Permit number:** 64-SDP-5-91C  
**Date:** 4/24/25 **Prepared by:** Michael Morgan  
**Weather:** cloudy with sporadic rain, 66°F **On site/Off site:** 9:00 a.m. 3:00 p.m.  
**Personnel:** Michael Morgan  
**Equipment:** Water level indicator, Leachate level indicator, loppers, back saw

**Landfill Cover and Erosion Control** (Provide description of cover condition, whether grass appears mowed, and any erosional features or other observed issues)

Photos Taken ☒ (check)

**Notes:** Grass cover was without bare patches or ~~no~~ erosion features. Persistent rain in the week leading up to the inspection (and during), some surface water pooling in drainage swells. Some woody vegetation ~~on~~<sup>North</sup> side of west landfill.

**Primary Access Roads and Perimeter Fencing** (Provide description of current road and perimeter fencing condition and if improvements are necessary) Photos Taken ☒ (check)

Draw/Note location of necessary improvements on the attached figure.

**Notes:** Perimeter fencing appeared to be well maintained with no noticeable damage. Primary access rd/path from SE entrance, vehicle got stuck in mud & vegetation near LL-1. Some vegetation cleared & ruts created truck & trailer free getting

**Leachate System Performance** (Provide description of leachate system components (head wells, leachate tank) in need of improvements if necessary)

Photos Taken ☒ (check)

**Notes:** LW-1 → well lid won't fully close - hinge at back is stiff may need adjusting or replacing.

**Groundwater** (Provide description of current groundwater wells in need of improvements if necessary)

Photos Taken ☒ (check)

**Notes:** MW-7 → panel falling off the ~~front~~ front of well casing  
 MW-22 → No hole - hole required  
 MW-5 & MW-19 → vegetation will need to be cut back.



## SITE INSPECTION REPORT

**Miscellaneous Notes:** Broken lock cut by Alliant staff member Jeremiah Spooner on the western gate. Replaced with a new Alliant lock.

**Communications with Onsite Personnel:** Jenny Coughlin by phone &  
Jeremiah Spooner in person & phone

**Signature:** 

## SITE INSPECTION REPORT

**Project:** IPL – Marshalltown East & West Closed Landfill **Project #:** 25216064  
**Site:** Marshalltown East Closed Ash Landfill **Permit number:** 64-SDP-5-91C  
**Date:** 9/17/25 **Prepared by:** Michael Morgan  
**Weather:** cloudy, rain 75°-85°F **On site/Off site:** 8:30 a.m. 5:00 p.m.  
**Personnel:** Michael Morgan & Garrett Horale  
**Equipment:** \_\_\_\_\_

**Landfill Cover and Erosion Control** (Provide description of cover condition, whether grass appears mowed, and any erosional features or other observed issues)  
 Photos Taken ☒ (check)

**Notes:** Cross on landfill cover mowed some time ago. Grass length mid cut high - Paths to monitoring points mowed

**Primary Access Roads and Perimeter Fencing** (Provide description of current road and perimeter fencing condition and if improvements are necessary) Photos Taken ☒ (check)  
Draw/Note location of necessary improvements on the attached figure.

**Notes:** Perimeter fence appeared in good condition. No road access to East landfill

**Leachate System Performance** (Provide description of leachate system components (head wells, leachate tank) in need of improvements if necessary)  
 Photos Taken ☒ (check)

**Notes:** Leachate points appeared to be in good condition.

**Groundwater** (Provide description of current groundwater wells in need of improvements if necessary)  
 Photos Taken ☐ (check)

**Notes:** Groundwater wells no immediate maintenance.



## SITE INSPECTION REPORT

### Miscellaneous Notes:

### Communications with Onsite Personnel:

Jenny Coughlin by text message upon arrival & departure

Signature: \_\_\_\_\_





## Appendix B

### Groundwater Sampling Field Sheets

## Groundwater Sampling Log

|                                                                                                                                                                                                                                                                                                                                                                 |             |  |                                                                      |                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--|----------------------------------------------------------------------|-----------------------|--|
| Project No.                                                                                                                                                                                                                                                                                                                                                     | 25225064.00 |  | Site                                                                 | Marshalltown E & W CL |  |
| Well No.                                                                                                                                                                                                                                                                                                                                                        | MW-3        |  | Date                                                                 | 9/17/25               |  |
| Sampling Personnel <u>Michael Morgan</u>                                                                                                                                                                                                                                                                                                                        |             |  |                                                                      |                       |  |
| Total Well Depth                                                                                                                                                                                                                                                                                                                                                | 21.61       |  | pH/temp/cond/DO/ORP meter                                            |                       |  |
| Depth to Water                                                                                                                                                                                                                                                                                                                                                  | 13.25       |  | model & unit ID # <u>PRO Djs 23A105517</u>                           |                       |  |
| Well Volume*                                                                                                                                                                                                                                                                                                                                                    |             |  | Date/time pH Calibration Last Checked: <u>9/17/25</u> <u>7:20 AM</u> |                       |  |
| Sampling Device: <input checked="" type="radio"/> Bladder Pump <input type="radio"/> Peristaltic Pump <input type="radio"/> Other:                                                                                                                                                                                                                              |             |  | Pumping Rate: <u>150 ml/min</u>                                      |                       |  |
| Water Color/Odor <u>clear</u> / <u>none</u>                                                                                                                                                                                                                                                                                                                     |             |  | Pump Start/Stop Time <u>10:37</u> / <u>11:29</u>                     |                       |  |
| Temperature: <u>76°F</u> Wind Direction: <input checked="" type="radio"/> N <input checked="" type="radio"/> E <input type="radio"/> S <input type="radio"/> W Precip: <input type="radio"/> None <input type="radio"/> Light <input type="radio"/> Heavy Sky: <input checked="" type="radio"/> Cloudy <input type="radio"/> Sunny <input type="radio"/> Partly |             |  |                                                                      |                       |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 10:40                                                                | 14.16               | 17.0           | 6.97                | 6.38                            | 599           | 134.7    | 17.71                        |        |
| 10:45                                                                | 14.32               | 14.2           | 6.80                | 2.54                            | 723           | 162.6    | 7.00                         |        |
| 10:50                                                                | 13.98               | 15.2           | 6.63                | 2.39                            | 732           | 163.1    | 5.51                         |        |
| 10:55                                                                | 13.99               | 15.6           | 6.71                | 2.42                            | 764           | 163.0    | 4.70                         |        |
| 11:00                                                                | 13.99               | 16.1           | 6.74                | 2.35                            | 769           | 162.9    | 4.72                         |        |
| 11:05                                                                | 14.00               | 16.4           | 6.77                | 2.32                            | 771           | 162.1    | 4.94                         |        |
| 11:10                                                                | 14.00               | 16.4           | 6.80                | 2.30                            | 772           | 161.4    | 4.83                         | SAMPLE |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: Fine particulate initially.Non-dedicated pump

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                          |                                                                         |                                        |                                                                                                                                                                                                                     |
|------------------------------------------|-------------------------------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project No.                              | 25225064.00                                                             | Site                                   | Marshalltown E & W                                                                                                                                                                                                  |
| Well No.                                 | MW-4                                                                    | Date                                   | 9/16/25                                                                                                                                                                                                             |
| Sampling Personnel <u>Michael Morgan</u> |                                                                         |                                        |                                                                                                                                                                                                                     |
| Total Well Depth                         | pH/temp/cond/DO/ORP meter<br>model & unit ID # <u>Pro Dss 23A10SS17</u> |                                        |                                                                                                                                                                                                                     |
| Depth to Water                           | 7.35                                                                    | Date/time pH Calibration Last          | Checked: <u>9/16/25</u> <u>8:45 am</u>                                                                                                                                                                              |
| Well Volume*                             | Turbidity meter model & unit ID #                                       |                                        |                                                                                                                                                                                                                     |
| Sampling Device:                         | <input checked="" type="radio"/> Bladder Pump                           | <input type="radio"/> Peristaltic Pump | Other:                                                                                                                                                                                                              |
|                                          |                                                                         | Pumping Rate:                          | <u>200 ml/min</u>                                                                                                                                                                                                   |
| Water Color/Odor                         | <u>slight yellow/ slight ocean</u>                                      | Pump Start/Stop Time                   | <u>13:02</u> / <u>13:54</u>                                                                                                                                                                                         |
| Temperature:                             | Wind <u>light</u>                                                       | Direction:                             | N E S W Precip: <input checked="" type="radio"/> None <input type="radio"/> Light <input type="radio"/> Heavy Sky: <input checked="" type="radio"/> Cloudy <input type="radio"/> Sunny <input type="radio"/> Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 13:03                                                                | 7.47                | 17.9           | 6.90                | 5.27                            | 882           | -34.3    | 24.17                        |        |
| 13:08                                                                | 7.46                | 15.5           | 6.72                | 1.99                            | 943           | -70.1    | 15.94                        |        |
| 13:13                                                                | 7.47                | 15.1           | 6.75                | 1.38                            | 940           | -77.1    | 14.48                        |        |
| 13:18                                                                | 7.44                | 14.8           | 6.76                | 1.24                            | 934           | -78.6    | 12.09                        |        |
| 13:23                                                                | 7.46                | 14.9           | 6.77                | 1.11                            | 932           | -79.5    | 9.05                         |        |
| 13:28                                                                | 7.46                | 15.0           | 6.77                | 1.10                            | 929           | -79.5    | 7.43                         | clear  |
| 13:33                                                                | 7.46                | 14.9           | 6.78                | 1.05                            | 926           | -79.9    | 5.91                         |        |
| 13:38                                                                | 7.45                | 15.1           | 6.79                | 1.07                            | 923           | -80.0    | 5.38                         |        |
| 13:43                                                                | 7.45                | 15.1           | 6.79                | 1.12                            | 921           | -79.6    | 5.51                         | SAMPLE |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: Dedicated Pump.

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                                                                                                                                                                                                                                                                          |  |                                                          |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------|--|
| Project No. <u>23225064.00</u>                                                                                                                                                                                                                                                           |  | Site <u>Marshall town</u>                                |  |
| Well No. <u>MW-5</u>                                                                                                                                                                                                                                                                     |  | Date <u>9-16-25</u>                                      |  |
| Sampling Personnel <u>GTH</u>                                                                                                                                                                                                                                                            |  |                                                          |  |
| Total Well Depth <u>Dedicated</u>                                                                                                                                                                                                                                                        |  | pH/temp/cond/DO/ORP meter model & unit ID #              |  |
| Depth to Water <u>14.55</u>                                                                                                                                                                                                                                                              |  | Date/time pH Calibration Last Checked: <u>9-16 9:00a</u> |  |
| Well Volume*                                                                                                                                                                                                                                                                             |  | Turbidity meter model & unit ID #                        |  |
| Sampling Device: <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other:                                                                                                                                              |  | Pumping Rate: <u>600 ml/min</u>                          |  |
| Water Color/Odor <u>Clear / none</u>                                                                                                                                                                                                                                                     |  | Pump Start/Stop Time <u>13503/1437</u>                   |  |
| Temperature: <u>67°F</u> Wind Direction: <u>N</u> <u>E</u> <u>S</u> <u>W</u> Precip: <input checked="" type="radio"/> None <input type="radio"/> Light <input type="radio"/> Heavy Sky: <input checked="" type="radio"/> Cloudy <input type="radio"/> Sunny <input type="radio"/> Partly |  |                                                          |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 1355                                                                 | 15.11               | 16.3           | 6.55                | 4.97                            | 561           | 233.3    | 58.49                        |        |
| 1400                                                                 | 15.19               | 13.9           | 6.34                | 3.47                            | 561           | 244.5    | 13.89                        |        |
| 1405                                                                 | 15.19               | 13.9           | 6.32                | 3.38                            | 562           | 248.0    | 8.50                         |        |
| 1410                                                                 | 15.20               | 13.8           | 6.32                | 3.37                            | 563           | 249.1    | 6.41                         |        |
| 1415                                                                 | 15.20               | 13.9           | 6.31                | 3.38                            | 560           | 249.9    | 7.54                         |        |
| 1420                                                                 | 15.20               | 13.9           | 6.30                | 3.37                            | 553           | 244.5    | 9.95                         | Sample |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: 1436

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                    |              |                  |                                                   |               |   |   |         |      |       |       |      |        |       |        |
|--------------------|--------------|------------------|---------------------------------------------------|---------------|---|---|---------|------|-------|-------|------|--------|-------|--------|
| Project No.        | 25225064.00  |                  | Site                                              | Marshalltown  |   |   |         |      |       |       |      |        |       |        |
| Well No.           | mv-7         |                  | Date                                              | 9-17-25       |   |   |         |      |       |       |      |        |       |        |
| Sampling Personnel |              |                  |                                                   |               |   |   |         |      |       |       |      |        |       |        |
| Total Well Depth   | 42.95        |                  | pH/temp/cond/DO/ORP meter model & unit ID #       |               |   |   |         |      |       |       |      |        |       |        |
| Depth to Water     | 27.03        |                  | Date/time pH Calibration Last Checked: 9-17 9:00a |               |   |   |         |      |       |       |      |        |       |        |
| Well Volume*       |              |                  | Turbidity meter model & unit ID #                 |               |   |   |         |      |       |       |      |        |       |        |
| Sampling Device:   | Bladder Pump | Peristaltic Pump | Other:                                            | Pumping Rate: |   |   |         |      |       |       |      |        |       |        |
| Water Color/Odor   | Clear / none |                  | Pump Start/Stop Time 6:35 /                       |               |   |   |         |      |       |       |      |        |       |        |
| Temperature:       | 80°F         | Wind Direction:  | N                                                 | E             | S | W | Precip: | None | Light | Heavy | Sky: | Cloudy | Sunny | Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 10:41                                                                | 26.99               | 13.0           | 6.96                | 4.30                            | 630           | 218.5    | 18.52                        |        |
| 10:46                                                                | 26.99               | 12.4           | 6.96                | 5.03                            | 631           | 221.1    | 15.15                        |        |
| 10:41                                                                | 26.99               | 12.0           | 7.01                | 5.69                            | 630           | 216.6    | 12.31                        |        |
| 10:46                                                                | 26.99               | 11.9           | 7.05                | 6.55                            | 629           | 215.0    | 12.56                        |        |
| 10:51                                                                | 26.99               | 12.0           | 7.05                | 6.51                            | 630           | 214.9    | 12.47                        |        |
| 10:56                                                                | 26.99               | 12.0           | 7.05                | 6.54                            | 630           | 214.8    | 12.71                        | Sample |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: 9/18/25 11:15

Additional Notes:

used alconox + Wasp spray on nest

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                   |              |                                                               |                                                           |
|-----------------------------------|--------------|---------------------------------------------------------------|-----------------------------------------------------------|
| Project No.                       | 2522506400   | Site                                                          | Manitowish Water E & W CL                                 |
| Well No.                          | MW-8         | Date                                                          | 9/17/25                                                   |
| Sampling Personnel Michael Morgan |              |                                                               |                                                           |
| Total Well Depth                  | 29.17        | pH/temp/cond/DO/ORP meter model & unit ID # Pro DSS 234205517 |                                                           |
| Depth to Water                    | 21.74        | Date/time pH Calibration Last Checked: 9/17/25 12:40 PM       |                                                           |
| Well Volume*                      |              | Turbidity meter model & unit ID #                             |                                                           |
| Sampling Device:                  | Bladder Pump | Peristaltic Pump                                              | Other:                                                    |
| Pumping Rate:                     |              | 75 ml/min                                                     |                                                           |
| Water Color/Odor                  | /            | Pump Start/Stop Time 12:46 / 14:03                            |                                                           |
| Temperature:                      | 80°F         | Wind Direction:                                               | N E S W Precip: None Light Heavy Sky: Cloudy Sunny Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 12:51                                                                | 21.80               | 26.1           | 7.22                | 7.50                            | 1034          | 110.2    | 8.28                         |        |
| 12:56                                                                | 21.97               | 21.6           | 6.98                | 6.55                            | 748           | 154.9    | 12.78                        |        |
| 13:01                                                                | 22.10               | 20.1           | 6.95                | 5.80                            | 682           | 163.8    | 11.81                        |        |
| 13:06                                                                | 22.24               | 19.9           | 6.94                | 5.60                            | 674           | 167.8    | 11.79                        |        |
| 13:11                                                                | 22.34               | 19.6           | 6.93                | 5.47                            | 674           | 171.9    | 12.48                        | SAMPLE |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: Wasp nest, sprayed with wasp spray at 12:20 on 9/17/25  
Non-dedicated Pump

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                                     |                                                                                                                            |                                                                       |                                               |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------|
| Project No. <u>25225064.00</u>                      |                                                                                                                            | Site <u>Marshalltown B&amp;W CL</u>                                   |                                               |
| Well No. <u>mw-9</u>                                |                                                                                                                            | Date <u>9/17/25</u>                                                   |                                               |
| Sampling Personnel <u>Michael Morgan</u>            |                                                                                                                            |                                                                       |                                               |
| Total Well Depth <u>20.18</u>                       |                                                                                                                            | pH/temp/cond/DO/ORP meter model & unit ID # <u>Pro DSS 23A105547</u>  |                                               |
| Depth to Water <u>7.32</u>                          |                                                                                                                            | Date/time pH Calibration Last Checked: <u>9/17/25</u> <u>12:40 PM</u> |                                               |
| Well Volume*                                        |                                                                                                                            | Turbidity meter model & unit ID #                                     |                                               |
| Sampling Device:                                    | <input checked="" type="checkbox"/> Bladder Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other: | Pumping Rate: <u>250 ml/min</u>                                       |                                               |
| Water Color/Odor <u>yellow tint / slight sulfur</u> |                                                                                                                            | Pump Start/Stop Time <u>15:38</u> / <u>16:01</u>                      |                                               |
| Temperature: <u>80 F</u>                            | Wind Direction: <u>N</u> <u>E</u> <u>S</u> <u>W</u>                                                                        | Precip: <u>None</u> <u>Light</u> <u>heavy</u>                         | Sky: <u>Cloudy</u> <u>Sunny</u> <u>Partly</u> |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 15:39                                                                | 9.98                | 16.2           | 7.10                | 8.52                            | 659           | 12.5     | 15.19                        |       |
| 15:44                                                                | 8.85                | 14.7           | 7.12                | 6.23                            | 631           | -26.5    | 30.66                        |       |
| 15:49                                                                | 8.69                | 15.0           | 7.16                | 7.35                            | 612           | -29.2    | 37.32                        |       |
| 15:54                                                                | 8.49                | 15.0           | 7.14                | 7.68                            | 603           | -28.9    | 37.14                        |       |
| 15:59                                                                | 8.43                | 15.1           | 7.09                | 7.45                            | 593           | -25.9    | 38.34                        |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: non-dedicated pump

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                    |                 |                  |                                                 |                          |                          |
|--------------------|-----------------|------------------|-------------------------------------------------|--------------------------|--------------------------|
| Project No.        | 25225064-00     |                  | Site                                            | Marshalltown             |                          |
| Well No.           | MW-10           |                  | Date                                            | 9-18-25                  |                          |
| Sampling Personnel |                 |                  |                                                 |                          |                          |
| Total Well Depth   | 20.15           |                  | pH/temp/cond/DO/ORP meter model & unit ID #     |                          |                          |
| Depth to Water     | 11.57           |                  | Date/time pH Calibration Last Checked: 9-18 12P |                          |                          |
| Well Volume*       |                 |                  | Turbidity meter model & unit ID #               |                          |                          |
| Sampling Device:   | Bladder Pump    | Peristaltic Pump | Other:                                          | Pumping Rate: 250 ml/min |                          |
| Water Color/Odor   | /               |                  | Pump Start/Stop Time 1356 / 1451                |                          |                          |
| Temperature: 80    | Wind Direction: | N E S W          | Precip:                                         | None                     | Light                    |
|                    |                 |                  |                                                 | Heavy                    | Sky: Cloudy Sunny Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 1359                                                                 | 11.59               | 13.9           | 7.30                | 7.43                            | 452.0         | 222.1    | 47.25                        |        |
| 1404                                                                 | 11.58               | 13.4           | 7.22                | 7.06                            | 440.0         | 226.4    | 33.11                        |        |
| 1409                                                                 | 11.57               | 13.0           | 7.08                | 7.09                            | 451.3         | 221.1    | 17.18                        |        |
| 1414                                                                 | 11.59               | 12.9           | 7.11                | 6.99                            | 462.3         | 235.2    | 9.61                         |        |
| 1419                                                                 | 11.59               | 12.9           | 7.12                | 6.98                            | 461.8         | 236.1    | 8.39                         |        |
| 1424                                                                 | 11.59               | 12.9           | 7.13                | 6.96                            | 466.9         | 238.1    | 7.46                         |        |
| 1429                                                                 | 11.60               | 12.8           | 7.14                | 6.93                            | 470.1         | 238.3    | 6.60                         |        |
| 1434                                                                 | 11.60               | 12.8           | 7.14                | 6.88                            | 471.9         | 236.1    | 6.29                         |        |
| 1439                                                                 | 11.60               | 12.7           | 7.15                | 6.87                            | 475.1         | 236.1    | 6.19                         | Sample |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                                                                                                                                    |  |                                                                                                                                 |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------|--|
| Project No. <u>25225064</u>                                                                                                                        |  | Site <u>Marshalltown</u>                                                                                                        |  |
| Well No. <u>NW-11AR</u>                                                                                                                            |  | Date <u>9-18-25</u>                                                                                                             |  |
| Sampling Personnel                                                                                                                                 |  |                                                                                                                                 |  |
| Total Well Depth <u>57.66</u>                                                                                                                      |  | pH/temp/cond/DO/ORP meter<br>model & unit ID #                                                                                  |  |
| Depth to Water <u>47.85</u>                                                                                                                        |  | Date/time pH Calibration Last<br>Checked: <u>9-18 12:00P</u>                                                                    |  |
| Well Volume*                                                                                                                                       |  | Turbidity meter model & unit ID #                                                                                               |  |
| Sampling Device: <u>Bladder Pump</u> <input checked="" type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other: <input type="checkbox"/> |  | Pumping Rate: <u>1250</u> <u>113023</u>                                                                                         |  |
| Water Color/Odor <u>/</u>                                                                                                                          |  | Pump Start/Stop Time <u>1250</u> <u>113023</u>                                                                                  |  |
| Temperature: <u>          </u>                                                                                                                     |  | Wind Direction: <u>          </u> N E S W Precip: <u>          </u> None Light Heavy Sky: <u>          </u> Cloudy Sunny Partly |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV)     | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|--------------|------------------------------|-------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV     | +/- 10% or 3 readings <5 NTU |       |
| <u>1257</u>                                                          | <u>48.80</u>        | <u>14.0</u>    | <u>7.38</u>         | <u>0.28</u>                     | <u>787</u>    | <u>2219</u>  | <u>56.15</u>                 |       |
| <u>1302</u>                                                          | <u>48.81</u>        | <u>13.0</u>    | <u>7.35</u>         | <u>9.64</u>                     | <u>791</u>    | <u>233.9</u> | <u>49.51</u>                 |       |
| <u>1307</u>                                                          | <u>48.83</u>        | <u>13.0</u>    | <u>7.35</u>         | <u>9.38</u>                     | <u>790</u>    | <u>234.5</u> | <u>56.97</u>                 |       |
| <u>1310</u>                                                          | <u>48.87</u>        | <u>13.4</u>    | <u>7.35</u>         | <u>9.19</u>                     | <u>793</u>    | <u>234.7</u> | <u>59.49</u>                 |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |
|                                                                      |                     |                |                     |                                 |               |              |                              |       |

Sample Bottles Collected: 1317

Sample Date /Time:                     

Additional Notes:                     

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                    |                                                                           |                  |                                                    |                          |  |
|--------------------|---------------------------------------------------------------------------|------------------|----------------------------------------------------|--------------------------|--|
| Project No.        | 25225064.00                                                               |                  | Site                                               | Marshalltown             |  |
| Well No.           | MW-13                                                                     |                  | Date                                               | 9-17-25                  |  |
| Sampling Personnel |                                                                           |                  |                                                    |                          |  |
| Total Well Depth   | 22.71                                                                     |                  | pH/temp/cond/DO/ORP meter model & unit ID #        |                          |  |
| Depth to Water     | 10.00                                                                     |                  | Date/time pH Calibration Last Checked: 9-17 @ 9 am |                          |  |
| Well Volume*       |                                                                           |                  | Turbidity meter model & unit ID #                  |                          |  |
| Sampling Device:   | Bladder Pump                                                              | Peristaltic Pump | Other:                                             | Pumping Rate: 300 ml/min |  |
| Water Color/Odor   | Gray / None                                                               |                  | Pump Start/Stop Time 1148 / 1240                   |                          |  |
| Temperature:       | Wind Direction: N E S W Precip: None Light Heavy Sky: Cloudy Sunny Partly |                  |                                                    |                          |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 1151                                                                 | 10.01               | 19.1           | 6.85                | 4.77                            | 792           | 170.0    | 91.08                        |        |
| 1156                                                                 | 10.06               | 16.9           | 6.86                | 5.64                            | 801           | 203.5    | 151.51                       |        |
| 1201                                                                 | 10.07               | 17.1           | 6.88                | 6.24                            | 793           | 215.1    | 119.70                       |        |
| 1206                                                                 | 10.09               | 17.1           | <del>6.88</del>     | 6.53                            | 788           | 223.7    | 96.80                        | 6.8900 |
| 1211                                                                 | 10.10               | 17.1           | 6.90                | 6.56                            | 787           | 226.8    | 90.77                        |        |
| 1216                                                                 | 10.10               | 17.1           | 6.91                | 6.70                            | 786           | 229.0    | 98.85                        |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: used Wasp Spray

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                                                                                                                                |  |                                                                                                                                                                                          |  |
|------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Project No. <u>25225064.00</u>                                                                                                                 |  | Site <u>Marshall town E &amp; W</u>                                                                                                                                                      |  |
| Well No. <u>mw-14</u>                                                                                                                          |  | Date <u>9/16/24</u>                                                                                                                                                                      |  |
| Sampling Personnel <u>Michael Morgan</u>                                                                                                       |  |                                                                                                                                                                                          |  |
| Total Well Depth <u>22.31</u>                                                                                                                  |  | pH/temp/cond/DO/ORP meter model & unit ID # <u>Pro DSS 23A105517</u>                                                                                                                     |  |
| Depth to Water <u>11.36</u>                                                                                                                    |  | Date/time pH Calibration Last Checked: <u>9/16/25</u> <u>8:45 am</u>                                                                                                                     |  |
| Well Volume*                                                                                                                                   |  | Turbidity meter model & unit ID #                                                                                                                                                        |  |
| Sampling Device: <u>Bladder Pump</u> <input type="checkbox"/> <u>Peristaltic Pump</u> <input type="checkbox"/> Other: <input type="checkbox"/> |  | Pumping Rate: <u>100 ml/min</u>                                                                                                                                                          |  |
| Water Color/Odor <u>hazy tint / none</u>                                                                                                       |  | Pump Start/Stop Time <u>14:38 / 17:26</u>                                                                                                                                                |  |
| Temperature: <u>69°F</u> Wind Direction: <u>N (E) (S) W</u>                                                                                    |  | Precip: <u>None</u> <input checked="" type="radio"/> Light <input type="radio"/> Heavy <input type="radio"/> Sky: <u>Cloudy</u> <input type="radio"/> Sunny <input type="radio"/> Partly |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 14:40                                                                | 11.89               | 19.8           | 7.09                | 5.94                            | 715           | 3.8      | 51.11                        |       |
| 14:45                                                                | 12.42               | 15.1           | 6.98                | 0.95                            | 663           | 47.8     | 76.28                        |       |
| 14:50                                                                | 12.11               | 16.3           | 6.99                | 1.16                            | 657           | 68.6     | 69.70                        |       |
| 15:35                                                                | 11.61               | 22.8           | 6.96                | 1.15                            | 673           | 75.3     | 49.04                        |       |
| 15:40                                                                | 11.80               | 19.8           | 6.96                | 2.26                            | 674           | 108.3    | 47.19                        |       |
| 16:15                                                                | 11.71               | 20.7           | 6.97                | 1.58                            | 683           | 86.6     | 50.94                        |       |
| 16:20                                                                | 11.85               | 18.0           | 6.98                | 1.75                            | 659           | 103.8    | 32.14                        |       |
| 16:25                                                                | 11.96               | 16.4           | 6.99                | 1.29                            | 639           | 104.8    | 24.75                        |       |
| 16:30                                                                | 11.99               | 16.0           | 7.00                | 1.40                            | 623           | 106.9    | 27.81                        |       |
| 16:35                                                                | 12.06               | 15.9           | 7.01                | 1.63                            | 611           | 110.2    | 37.88                        |       |
| 16:40                                                                | 12.11               | 15.9           | 7.01                | 1.74                            | 604           | 112.8    | 29.514                       |       |
| 16:45                                                                | 12.15               | 16.0           | 7.01                | 1.83                            | 603           | 115.1    | 25.73                        |       |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: Non-Dedicated Pump

Stop work due to blunderbore x 2

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                          |                         |                                                      |                          |
|------------------------------------------|-------------------------|------------------------------------------------------|--------------------------|
| Project No. <u>25225064.80</u>           |                         | Site <u>Marshalltown E &amp; W</u>                   |                          |
| Well No. <u>MW-14 Cont...</u>            |                         | Date <u>9/16/25</u>                                  |                          |
| Sampling Personnel <u>Michael Morgan</u> |                         |                                                      |                          |
| Total Well Depth _____                   |                         | pH/temp/cond/DO/ORP meter<br>model & unit ID # _____ |                          |
| Depth to Water _____                     |                         | Date/time pH Calibration Last<br>Checked: _____      |                          |
| Well Volume* _____                       |                         | Turbidity meter model & unit ID # _____              |                          |
| Sampling Device:                         | Bladder Pump _____      | Peristaltic Pump _____                               | Other: _____             |
|                                          |                         | Pumping Rate: _____                                  |                          |
| Water Color/Odor _____ / _____           |                         | Pump Start/Stop Time _____ / _____                   |                          |
| Temperature: _____                       | Wind Direction: N E S W | Precip: None Light Heavy                             | Sky: Cloudy Sunny Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes  |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|--------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |        |
| 16:50                                                                | 12.20               | 15.8           | 7.01                | 1.82                            | 601           | 117.0    | 38.24                        |        |
| 16:55                                                                | 12.22               | 15.8           | 7.01                | 1.81                            | 602           | 118.2    | 38.29                        |        |
| 17:00                                                                | 12.26               | 16.2           | 7.00                | 1.80                            | 602           | 119.3    | 38.04                        | SAMPLE |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |
|                                                                      |                     |                |                     |                                 |               |          |                              |        |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                    |                                                                           |                  |                                             |               |  |
|--------------------|---------------------------------------------------------------------------|------------------|---------------------------------------------|---------------|--|
| Project No.        | 252205064.00                                                              |                  | Site                                        | Marshalltown  |  |
| Well No.           | MW-18                                                                     |                  | Date                                        | 9-17-25       |  |
| Sampling Personnel |                                                                           |                  |                                             |               |  |
| Total Well Depth   | Dec.                                                                      |                  | pH/temp/cond/DO/ORP meter model & unit ID # |               |  |
| Depth to Water     | 17.30                                                                     |                  | Date/time pH Calibration Last Checked:      |               |  |
| Well Volume*       |                                                                           |                  | Turbidity meter model & unit ID #           |               |  |
| Sampling Device:   | Bladder Pump                                                              | Peristaltic Pump | Other:                                      | Pumping Rate: |  |
| Water Color/Odor   | Oily / None                                                               |                  | Pump Start/Stop Time 1527 /                 |               |  |
| Temperature:       | Wind Direction: N E S W Precip: None Light Heavy Sky: Cloudy Sunny Partly |                  |                                             |               |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 1530                                                                 | 17.30               | 16.2           | 7.02                | 2.09                            | 756           | 2310     | 79.17                        |       |
| 1535                                                                 | 17.30               | 14.7           | 6.82                | 2.16                            | 624           | 223.1    | 57.41                        |       |
| 1540                                                                 | 17.30               | 14.7           | 6.82                | 2.13                            | 624           | 222.6    | 50.84                        |       |
| 1545                                                                 | 17.30               | 14.7           | 6.81                | 2.04                            | 622           | 218.5    | 29.81                        |       |
| 1550                                                                 | 17.30               | 14.6           | 6.81                | 1.85                            | 625           | 215.4    | 14.88                        |       |
| 1555                                                                 | 17.30               | 14.6           | 6.81                | 1.66                            | 623           | 213.2    | 9.89                         |       |
| 1600                                                                 | 17.30               | 14.6           | 6.81                | 1.50                            | 623           | 211.3    | 8.12                         |       |
| 1605                                                                 | 17.30               | 14.6           | 6.81                | 1.49                            | 623           | 211.0    | 6.68                         |       |
| 1610                                                                 | 17.30               | 14.6           | 6.81                | 1.30                            | 623           | 208.3    | 5.97                         |       |
| 1615                                                                 | 17.30               | 14.7           | 6.82                | 1.18                            | 622           | 206.3    | 8.73                         |       |
| 1620                                                                 | 17.30               | 14.7           | 6.82                | 1.07                            | 622           | 206.5    | 4.99                         |       |
| 1625                                                                 | 17.30               | 14.7           | 6.82                | 1.06                            | 623           | 204.5    | 4.82                         |       |
| 1630                                                                 | 17.30               | 14.7           | 6.82                | 1.00                            | 623           | 203.2    | 4.57                         |       |

Sample Bottles Collected:

Sample Date /Time:

Additional Notes:

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                    |                        |                  |                                             |               |                                           |
|--------------------|------------------------|------------------|---------------------------------------------|---------------|-------------------------------------------|
| Project No.        | 25225064.00            |                  | Site                                        | Marshalltown  |                                           |
| Well No.           | MW-19                  |                  | Date                                        | 9-16-25       |                                           |
| Sampling Personnel | GTH                    |                  |                                             |               |                                           |
| Total Well Depth   | <del>40.06</del> 40.06 |                  | pH/temp/cond/DO/ORP meter model & unit ID # |               |                                           |
| Depth to Water     | 14.97                  |                  | Date/time pH Calibration Last Checked:      | 9-16 9:00am   |                                           |
| Well Volume*       |                        |                  | Turbidity meter model & unit ID #           |               |                                           |
| Sampling Device:   | Bladder Pump           | Peristaltic Pump | Other:                                      | Pumping Rate: | 250 ml/min                                |
| Water Color/Odor   | Clear / none           |                  | Pump Start/Stop Time                        | 1305 / 1338   |                                           |
| Temperature:       | 87°                    | Wind Direction:  | N E S W                                     | Precip:       | None Light Heavy Sky: Cloudy Sunny Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements – last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 1310                                                                 | 14.97               | 13.7           | 6.87                | 4.20                            | 624           | 204.4    | 5.68                         |       |
| 1315                                                                 | 14.95               | 13.8           | 7.05                | 3.30                            | 620           | 218.7    | 3.96                         |       |
| 1320                                                                 | 14.93               | 13.8           | 7.05                | 3.21                            | 619           | 218.3    | 3.35                         |       |
| 1325                                                                 | 14.94               | 13.6           | 7.05                | 3.17                            | 618           | 216.1    | 3.30                         |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: 1339

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                      |  |                                                                           |  |
|--------------------------------------|--|---------------------------------------------------------------------------|--|
| Project No. <u>25225064-00</u>       |  | Site <u>Marshalltown</u>                                                  |  |
| Well No. <u>MW-20</u>                |  | Date <u>9-17-25</u>                                                       |  |
| Sampling Personnel <u>GTH</u>        |  |                                                                           |  |
| Total Well Depth <u>Dee. center</u>  |  | pH/temp/cond/DO/ORP meter model & unit ID #                               |  |
| Depth to Water <u>46.16</u>          |  | Date/time pH Calibration Last Checked: <u>9-17 9am</u>                    |  |
| Well Volume*                         |  | Turbidity meter model & unit ID #                                         |  |
| Sampling Device: <u>Bladder Pump</u> |  | Peristaltic Pump Other:                                                   |  |
| Pumping Rate:                        |  |                                                                           |  |
| Water Color/Odor /                   |  | Pump Start/Stop Time /                                                    |  |
| Temperature:                         |  | Wind Direction: N E S W Precip: None Light Heavy Sky: Cloudy Sunny Partly |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm)  | ORP (mV) | Turbidity (NTU)              | Notes   |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|----------------|----------|------------------------------|---------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%         | +/- 10mV | +/- 10% or 3 readings <5 NTU |         |
| 43:34                                                                | 13.13               | 17.5           | 7.38                | <del>4.82</del>                 | 812            | 1946     | 12.88                        | 6.60 DO |
| 1318                                                                 | 43.34               | 14.8           | 7.13                | 3.79                            | 872            | 2028     | 8.72                         |         |
| 1324                                                                 | 43.34               | 14.7           | 7.08                | 2.51                            | 897            | 202.6    | 6.12                         |         |
| 1329                                                                 | 43.34               | 14.7           | 7.06                | 2.32                            | 905            | 221      | 5.65                         |         |
| 1334                                                                 | 43.34               | 14.6           | 7.03                | 2.06                            | 914            | 2008     | 5.30                         |         |
| 1339                                                                 | 43.34               | 14.4           | 7.02                | 1.40                            | 918            | 1998     | 5.04                         |         |
| 1444                                                                 | 43.34               | 14.1           | 7.02                | 1.82                            | <del>918</del> | 1989     | 4.95                         | 9190RP  |
| 1449                                                                 | 43.34               | 14.1           | 7.01                | 1.72                            | 918            | 1974     | 4.81                         |         |
| 1454                                                                 | 43.34               | 14.4           | 7.01                | 1.66                            | 921            | 1969     | 4.82                         |         |
| 1359                                                                 | 43.34               | 14.1           | 7.01                | 1.65                            | 919            | 1946     | 4.81                         |         |
|                                                                      |                     |                |                     |                                 |                |          |                              |         |
|                                                                      |                     |                |                     |                                 |                |          |                              |         |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                                                                       |  |                                                                                             |  |
|---------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------|--|
| Project No. <u>25725064.00</u>                                                        |  | Site <u>Marghilltown E &amp; W</u>                                                          |  |
| Well No. <u>MW-21</u>                                                                 |  | Date <u>9/16/25</u>                                                                         |  |
| Sampling Personnel <u>Michael Morgan</u>                                              |  |                                                                                             |  |
| Total Well Depth <u>          </u>                                                    |  | pH/temp/cond/DO/ORP meter<br>model & unit ID # <u>Pro DSS 23A105517</u>                     |  |
| Depth to Water <u>6.99</u>                                                            |  | Date/time pH Calibration Last<br>Checked: <u>9/16/25</u> <u>8:45 am</u>                     |  |
| Well Volume* <u>          </u>                                                        |  | Turbidity meter model & unit ID # <u>          </u>                                         |  |
| Sampling Device: <u>Bladder Pump</u> <u>Peristaltic Pump</u> <u>Other:</u>            |  | Pumping Rate: <u>200 ml/min</u>                                                             |  |
| Water Color/Odor <u>clear</u> / <u>none</u>                                           |  | Pump Start/Stop Time <u>12:00</u> / <u>12:59</u>                                            |  |
| Temperature: <u>          </u> Wind<br>Direction: <u>N</u> <u>E</u> <u>S</u> <u>W</u> |  | Precip: <u>None</u> <u>Light</u> <u>Heavy</u> Sky: <u>Cloudy</u> <u>Sunny</u> <u>Partly</u> |  |

[illegible]

**Sample Bottles Collected:**

**Sample Date /Time:**

**Additional Notes:**

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                |                                                  |                                                             |                          |
|--------------------------------|--------------------------------------------------|-------------------------------------------------------------|--------------------------|
| Project No. <u>25225064.00</u> |                                                  | Site <u>Marshall town</u>                                   |                          |
| Well No. <u>MW-22</u>          |                                                  | Date <u>9-16-25</u>                                         |                          |
| Sampling Personnel <u>G74</u>  |                                                  |                                                             |                          |
| Total Well Depth               |                                                  | pH/temp/cond/DO/ORP meter<br>model & unit ID #              |                          |
| Depth to Water <u>52.53</u>    |                                                  | Date/time pH Calibration Last<br>Checked: <u>9-16-25 9a</u> |                          |
| Well Volume*                   |                                                  | Turbidity meter model & unit ID #                           |                          |
| Sampling<br>Device:            | <input checked="" type="radio"/> Bladder<br>Pump | <input type="radio"/> Peristaltic<br>Pump                   | Other: _____             |
| Pumping Rate: _____            |                                                  |                                                             |                          |
| Water Color/Odor               | /                                                | Pump Start/Stop Time                                        | /                        |
| Temperature:                   | Wind<br>Direction: N E S W                       | Precip: None Light Heavy                                    | Sky: Cloudy Sunny Partly |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes     |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-----------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |           |
| 1538                                                                 | <del>20.8</del>     | 20.8           | 7.42                | 7.61                            | 790           | 245      | 21.78                        | SW1 52.31 |
| 1538                                                                 | Pump                | 21.1           | 7.32                | 7.39                            | 822           | 235      | 20.38                        |           |
| Dry during Stabilization                                             |                     |                |                     |                                 |               |          |                              |           |

**Sample Bottles Collected:**

**Sample Date /Time:**

**Additional Notes:**

Additional Notes:  
Water below pump, purged dry will return Thursday  
used alconex on wasps

\*: Volume in a 2-inch well = 617 ml/ft

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returned 9-18 SWI 51.98

## Groundwater Sampling Log

|                        |                                                                           |                  |                                             |                          |  |
|------------------------|---------------------------------------------------------------------------|------------------|---------------------------------------------|--------------------------|--|
| Project No.            | 25225064-00                                                               |                  | Site                                        | Marshalltown             |  |
| Well No.               | MV-23                                                                     |                  | Date                                        | 9-16-25                  |  |
| Sampling Personnel GTH |                                                                           |                  |                                             |                          |  |
| Total Well Depth       | 20.35                                                                     |                  | pH/temp/cond/DO/ORP meter model & unit ID # |                          |  |
| Depth to Water         | 10.70                                                                     |                  | Date/time pH Calibration Last Checked:      |                          |  |
| Well Volume*           |                                                                           |                  | Turbidity meter model & unit ID #           |                          |  |
| Sampling Device:       | Bladder Pump                                                              | Peristaltic Pump | Other:                                      | Pumping Rate: 500 ml/min |  |
| Water Color/Odor       | Clear / None                                                              |                  | Pump Start/Stop Time 1600 / 1654            |                          |  |
| Temperature: 75°       | Wind Direction: N E S W Precip: None Light Heavy Sky: Cloudy Sunny Partly |                  |                                             |                          |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 1601                                                                 | 10.71               | 15.8           | 6.96                | 7.25                            | 1093          | 222.8    | 14.26                        |       |
| 1606                                                                 | 11.60               | 15.9           | 7.05                | 7.01                            | 850           | 168.8    | 22.79                        |       |
| 1611                                                                 | 11.62               | 17.5           | 6.94                | 6.39                            | 781           | 182.9    | 22.4                         |       |
| 1616                                                                 | 11.71               | 16.2           | 6.92                | 5.97                            | 752           | 189.3    | 22.28                        |       |
| 1621                                                                 | 11.72               | 17.1           | 6.90                | 5.36                            | 722           | 192.0    | 22.45                        |       |
| 1626                                                                 | 11.72               | 17.4           | 6.90                | 5.05                            | 717           | 199.6    | 23.10                        |       |
| 1631                                                                 | 11.72               | 17.3           | 6.90                | 4.89                            | 718           | 202.9    | 23.98                        |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: 16:54

Additional Notes: \_\_\_\_\_

\*: Volume in a 2-inch well = 617 ml/ft

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## Groundwater Sampling Log

|                                          |              |                  |                                                                         |                                                         |  |
|------------------------------------------|--------------|------------------|-------------------------------------------------------------------------|---------------------------------------------------------|--|
| Project No.                              | 25225064.00  |                  | Site                                                                    | Marshalltown E & W                                      |  |
| Well No.                                 | CWCES        |                  | Date                                                                    | 9/17/25                                                 |  |
| Sampling Personnel <u>Michael Morgan</u> |              |                  |                                                                         |                                                         |  |
| Total Well Depth                         | -            |                  | pH/temp/cond/DO/ORP meter<br>model & unit ID # <u>Pro DSS 23A105517</u> |                                                         |  |
| Depth to Water                           | -            |                  | Date/time pH Calibration Last<br>Checked: <u>9/17/25</u> <u>7:20 AM</u> |                                                         |  |
| Well Volume*                             |              |                  | Turbidity meter model & unit ID #                                       |                                                         |  |
| Sampling Device:                         | Bladder Pump | Peristaltic Pump | Other:                                                                  | <u>Grab sample</u>                                      |  |
|                                          |              |                  | Pumping Rate:                                                           | <u>Flow rate 100ml/5sec</u>                             |  |
| Water Color/Odor                         | <u>clear</u> |                  | <u>/slight landfill</u>                                                 |                                                         |  |
|                                          |              |                  | Pump Start/Stop Time                                                    | <u>/</u>                                                |  |
| Temperature:                             | <u>79°F</u>  | Wind             | Direction:                                                              | <u>(N)(E) S W</u>                                       |  |
|                                          |              |                  | Precip:                                                                 | <u>None</u> Light Heavy Sky: <u>Cloudy</u> Sunny Partly |  |

| Time                                                                 | Depth to Water (ft) | Temp. (deg. C) | pH (standard units) | DO (mg/L)                       | Cond. (µs/cm) | ORP (mV) | Turbidity (NTU)              | Notes |
|----------------------------------------------------------------------|---------------------|----------------|---------------------|---------------------------------|---------------|----------|------------------------------|-------|
| Stability Requirements - last 3 consecutive readings must be within: |                     | +/- 3%         | +/- 0.1 unit        | +/- 10% or 3 readings <0.5 mg/L | +/- 3%        | +/- 10mV | +/- 10% or 3 readings <5 NTU |       |
| 11:52                                                                | -                   | 19.0           | 6.86                | 7.16                            | 1192          | 164.4    | 5.40                         |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |
|                                                                      |                     |                |                     |                                 |               |          |                              |       |

Sample Bottles Collected: \_\_\_\_\_

Sample Date /Time: \_\_\_\_\_

Additional Notes: Flow rate measured at 10:05, let sampling point recharge, sample at 11:52

\*: Volume in a 2-inch well = 617 ml/ft

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## SURFACE WATER SAMPLING FORM

Site Name: Marshalltown Elk W CL

Permit No.: \_\_\_\_\_

Surface Monitoring Point No.: SW-01

Date/Time: 9/16/25 18:23

Sampler Name: Michael Morgan

### A. TYPE OF MONITORING POINT

☒ Stream

☐ Open Tile

☐ Road Ditch

☐ Tile with Riser

☐ Drainage Ditch

☐ Other (describe) \_\_\_\_\_

### B. PURPOSE OF MONITORING POINT

☐ Upstream

☐ Downstream

☐ Within Landfill

☐ Other (describe) \_\_\_\_\_

### C. MONITORING POINT CONDITIONS

Condition commentary/field notes: Deer crossing point, ground churned up

Was monitoring point dry? No

Too little water to sample? No

Was water flowing? ☒ Yes ☐ No

If yes, estimate quantity 500 ml / 4 seconds

If yes, estimate depth ~ 1 ft

Was water discolored? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

Does water have odor? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

Was ground discolored? ☒ Yes ☒ No

If yes, describe \_\_\_\_\_

Litter present? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

### D. FIELD MEASUREMENT

Weather Conditions \_\_\_\_\_

#### Field Measurements (after stabilization):

Temperature 20.8 Units °C

Equipment Used YSI

pH 7.78 Equipment Used YSI

Specific Conductance 593  $\mu S/cm$  Units \_\_\_\_\_

Equipment Used YSI

Turbidity = 17.55

ORP = 131.2 mV

DO = 8.31  $\frac{mg}{L}$



## SURFACE WATER SAMPLING FORM

Site Name: Marshalltown E & W CL

Permit No.: \_\_\_\_\_

Surface Monitoring Point No.: SW-02

Date/Time: 9/17/25 9:17 AM

Sampler Name: Michael Morgan

### A. TYPE OF MONITORING POINT

☒ Stream

☐ Open Tile

☐ Road Ditch

☐ Tile with Riser

☐ Drainage Ditch

☐ Other (describe) \_\_\_\_\_

### B. PURPOSE OF MONITORING POINT

☐ Upstream

☒ Downstream

☐ Within Landfill

☐ Other (describe) \_\_\_\_\_

### C. MONITORING POINT CONDITIONS

Condition commentary/field notes: creek has slower flow, deeper & wider compared to SW-01 (upstream)  
Ground muddy from animal tracks

Was monitoring point dry? No

Too little water to sample? No

Was water flowing? ☒ Yes ☐ No

If yes, estimate quantity 20cm / 5 sec

If yes, estimate depth ~1-2 ft

Was water discolored? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

Does water have odor? ☒ Yes ☐ No

If yes, describe Smell like sweat after rain

Was ground discolored? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

Litter present? ☐ Yes ☒ No

If yes, describe \_\_\_\_\_

### D. FIELD MEASUREMENT

Weather Conditions Partly cloudy, 68°F, Wind E 5 mph

#### Field Measurements (after stabilization):

Temperature 18.9 Units °C

Equipment Used YSI

pH 7.75 Equipment Used YSI

Specific Conditions 642 Units  $\frac{\mu S}{cm}$

Equipment Used YSI

Turbidity = 4.91 NTU ORP = 143.8 mV DO = 7.99  $\frac{mg}{L}$



## SURFACE WATER SAMPLING FORM

Site Name: Marshalltown E&W CL

Permit No.: \_\_\_\_\_

Surface Monitoring Point No.: SW-03

Date/Time: 9/17/25 9:25 am

Sampler Name: Michael Morgan

### A. TYPE OF MONITORING POINT

☐ Stream

☐ Open Tile

☒ Road Ditch

☐ Tile with Riser

☐ Drainage Ditch

☐ Other (describe) \_\_\_\_\_

### B. PURPOSE OF MONITORING POINT

☐ Upstream

☐ Downstream

☐ Within Landfill

☒ Other (describe) Drainage Rd ditch that connects to drainage inside landfill

### C. MONITORING POINT CONDITIONS

Condition commentary/field notes: Thick grass, No staff gauge

Was monitoring point dry? Yes

Too little water to sample? \_\_\_\_\_

Was water flowing? ☐ Yes ☐ No

If yes, estimate quantity \_\_\_\_\_

If yes, estimate depth \_\_\_\_\_

Was water discolored? ☐ Yes ☐ No

If yes, describe \_\_\_\_\_

Does water have odor? ☐ Yes ☐ No

If yes, describe \_\_\_\_\_

Was ground discolored? ☐ Yes ☐ No

If yes, describe \_\_\_\_\_

Litter present? ☐ Yes ☐ No

If yes, describe \_\_\_\_\_

### D. FIELD MEASUREMENT

Weather Conditions cloudy, 70°F, wind E S mph

#### Field Measurements (after stabilization):

Temperature \_\_\_\_\_ Units \_\_\_\_\_

Equipment Used \_\_\_\_\_

pH \_\_\_\_\_ Equipment Used \_\_\_\_\_

Specific Conditions \_\_\_\_\_ Units \_\_\_\_\_

Equipment Used \_\_\_\_\_



## Appendix C

### Laboratory Analytical Report

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Michael Morgan  
SCS Engineers  
1690 All State Court  
Suite 100  
West Des Moines, Iowa 50265

Generated 10/6/2025 3:53:06 PM

## JOB DESCRIPTION

Marshalltown - 25224064

## JOB NUMBER

310-316198-1

# Eurofins Cedar Falls

## Job Notes

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## Authorization



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10/6/2025 3:53:06 PM

Authorized for release by  
Sandie Fredrick, Senior Project Manager  
[Sandra.Fredrick@et.eurofinsus.com](mailto:Sandra.Fredrick@et.eurofinsus.com)  
(920)261-1660



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# Case Narrative

Client: SCS Engineers  
Project: Marshalltown - 25224064

Job ID: 310-316198-1

**Job ID: 310-316198-1**

**Eurofins Cedar Falls**

## **Job Narrative 310-316198-1**

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

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

### **Receipt**

The samples were received on 9/19/2025 4:35 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.6°C, 4.4°C and 5.7°C.

### **HPLC/IC**

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

### **Metals**

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

### **General Chemistry**

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

### **Field Service / Mobile Lab**

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

Eurofins Cedar Falls

## Sample Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

| Lab Sample ID | Client Sample ID | Matrix | Collected      | Received       | Sample Origin |
|---------------|------------------|--------|----------------|----------------|---------------|
| 310-316198-1  | MW-3             | Water  | 09/17/25 11:10 | 09/19/25 16:35 | Iowa          |
| 310-316198-2  | MW-4             | Water  | 09/16/25 13:43 | 09/19/25 16:35 | Iowa          |
| 310-316198-3  | MW-5             | Water  | 09/16/25 14:20 | 09/19/25 16:35 | Iowa          |
| 310-316198-4  | MW-7             | Water  | 09/17/25 10:56 | 09/19/25 16:35 | Iowa          |
| 310-316198-5  | MW-8             | Water  | 09/17/25 13:11 | 09/19/25 16:35 | Iowa          |
| 310-316198-6  | MW-9             | Water  | 09/17/25 15:59 | 09/19/25 16:35 | Iowa          |
| 310-316198-7  | MW-10            | Water  | 09/18/25 14:39 | 09/19/25 16:35 | Iowa          |
| 310-316198-8  | MW-11AR          | Water  | 09/18/25 13:10 | 09/19/25 16:35 | Iowa          |
| 310-316198-9  | MW-13            | Water  | 09/17/25 12:16 | 09/19/25 16:35 | Iowa          |
| 310-316198-10 | MW-14            | Water  | 09/16/25 17:00 | 09/19/25 16:35 | Iowa          |
| 310-316198-11 | MW-18            | Water  | 09/17/25 16:30 | 09/19/25 16:35 | Iowa          |
| 310-316198-12 | MW-19            | Water  | 09/16/25 13:25 | 09/19/25 16:35 | Iowa          |
| 310-316198-13 | MW-20            | Water  | 09/17/25 13:59 | 09/19/25 16:35 | Iowa          |
| 310-316198-14 | MW-21            | Water  | 09/16/25 12:47 | 09/19/25 16:35 | Iowa          |
| 310-316198-15 | MW-22            | Water  | 09/18/25 17:00 | 09/19/25 16:35 | Iowa          |
| 310-316198-16 | MW-23            | Water  | 09/16/25 16:31 | 09/19/25 16:35 | Iowa          |
| 310-316198-17 | GWGCS            | Water  | 09/17/25 11:52 | 09/19/25 16:35 | Iowa          |
| 310-316198-18 | SW-1             | Water  | 09/16/25 18:23 | 09/19/25 16:35 | Iowa          |
| 310-316198-19 | SW-2             | Water  | 09/17/25 09:17 | 09/19/25 16:35 | Iowa          |
| 310-316198-20 | Field Blank      | Water  | 09/17/25 17:13 | 09/19/25 16:35 | Iowa          |

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-3

### Lab Sample ID: 310-316198-1

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 17     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 96     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.60   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 150    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 1500   |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 130    |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 22     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 20000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Molybdenum             | 8.1    |           | 2.0  | 1.3  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 7.5    |           | 5.0  | 1.4  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 1.4    | J         | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 450    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 870.03 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.80   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 772    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 16.4   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 4.83   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-4

### Lab Sample ID: 310-316198-2

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 13     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 92     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 5.1    |           | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 140    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 4100   |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 150    |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 0.35   | J         | 0.50 | 0.17 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 5000   |           | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 14     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 23000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 610    |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Molybdenum             | 29     |           | 2.0  | 1.3  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 12     |           | 3.8  | 2.6  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 560    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 873.16 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.79   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 921    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 15.1   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 5.51   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-5

### Lab Sample ID: 310-316198-3

| Analyte  | Result | Qualifier | RL   | MDL  | Unit | Dil Fac | D | Method | Prep Type |
|----------|--------|-----------|------|------|------|---------|---|--------|-----------|
| Chloride | 5.9    |           | 5.0  | 2.3  | mg/L | 5       |   | 9056A  | Total/NA  |
| Sulfate  | 37     |           | 5.0  | 2.1  | mg/L | 5       |   | 9056A  | Total/NA  |
| Arsenic  | 0.69   | J         | 2.0  | 0.53 | ug/L | 1       |   | 6020B  | Total/NA  |
| Barium   | 200    |           | 2.0  | 0.66 | ug/L | 1       |   | 6020B  | Total/NA  |
| Boron    | 730    |           | 100  | 82   | ug/L | 1       |   | 6020B  | Total/NA  |
| Calcium  | 81     |           | 0.50 | 0.19 | mg/L | 1       |   | 6020B  | Total/NA  |
| Cobalt   | 0.84   |           | 0.50 | 0.17 | ug/L | 1       |   | 6020B  | Total/NA  |
| Iron     | 60     | J         | 100  | 50   | ug/L | 1       |   | 6020B  | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

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

### Lab Sample ID: 310-316198-3

| Analyte                | Result | Qualifier | RL  | MDL | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|-----|-----|-----------|---------|---|----------------|-----------|
| Magnesium              | 22000  |           | 500 | 150 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 4.6    | J         | 10  | 3.6 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 18     |           | 5.0 | 1.4 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 1.9    |           | 1.9 | 1.3 | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 280    |           | 50  | 36  | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 876.56 |           |     |     | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.30   |           |     |     | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 553    |           |     |     | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 13.9   |           |     |     | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 9.95   |           |     |     | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-7

### Lab Sample ID: 310-316198-4

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 20     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 20     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.63   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 110    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 140    |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 94     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 0.18   | J         | 0.50 | 0.17 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 77     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 7.1    | J         | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 20000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 7.9    | J         | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 4.4    |           | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 370    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 876.82 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.05   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 630    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 12.0   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 12.71  |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-8

### Lab Sample ID: 310-316198-5

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 20     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 19     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.57   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 140    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 94     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 0.21   | J         | 0.50 | 0.17 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 93     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 6.2    | J         | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 22000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 11     |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 5.1    |           | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 340    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 880.79 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.93   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 674    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 19.6   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-8 (Continued)

Lab Sample ID: 310-316198-5

| Analyte         | Result | Qualifier | RL | MDL | Unit | Dil Fac | D | Method         | Prep Type |
|-----------------|--------|-----------|----|-----|------|---------|---|----------------|-----------|
| Field Turbidity | 12.48  |           |    |     | NTU  | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-9

Lab Sample ID: 310-316198-6

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 11     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 7.6    |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.76   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 180    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 89     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 1.3    |           | 0.50 | 0.17 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 1100   |           | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lead                   | 0.51   |           | 0.50 | 0.33 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 11     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 17000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 650    |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 15     |           | 3.8  | 2.6  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 310    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 910.72 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.09   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 593    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 15.1   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 38.34  |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-10

Lab Sample ID: 310-316198-7

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 2.3    | J         | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 8.6    |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Barium                 | 120    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 69     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 77     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 17     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 20000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 7.6    | J         | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Dissolved Solids | 260    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 929.62 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.15   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 475    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 12.7   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 6.79   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-11AR

Lab Sample ID: 310-316198-8

| Analyte  | Result | Qualifier | RL   | MDL  | Unit | Dil Fac | D | Method | Prep Type |
|----------|--------|-----------|------|------|------|---------|---|--------|-----------|
| Chloride | 16     |           | 5.0  | 2.3  | mg/L | 5       |   | 9056A  | Total/NA  |
| Sulfate  | 100    |           | 5.0  | 2.1  | mg/L | 5       |   | 9056A  | Total/NA  |
| Arsenic  | 1.0    | J         | 2.0  | 0.53 | ug/L | 1       |   | 6020B  | Total/NA  |
| Barium   | 41     |           | 2.0  | 0.66 | ug/L | 1       |   | 6020B  | Total/NA  |
| Boron    | 470    |           | 100  | 82   | ug/L | 1       |   | 6020B  | Total/NA  |
| Calcium  | 110    |           | 0.50 | 0.19 | mg/L | 1       |   | 6020B  | Total/NA  |
| Cobalt   | 1.3    |           | 0.50 | 0.17 | ug/L | 1       |   | 6020B  | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-11AR (Continued)

### Lab Sample ID: 310-316198-8

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil | Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|-----|-----|---|----------------|-----------|
| Iron                   | 850    |           | 100  | 50   | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Lead                   | 1.4    |           | 0.50 | 0.33 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Lithium                | 22     |           | 10   | 2.9  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Magnesium              | 40000  |           | 500  | 150  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Manganese              | 86     |           | 10   | 3.6  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Molybdenum             | 2.0    |           | 2.0  | 1.3  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Selenium               | 3.4    | J         | 5.0  | 1.4  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Total Suspended Solids | 49     |           | 3.8  | 2.6  | mg/L      | 1   |     |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 490    |           | 50   | 36   | mg/L      | 1   |     |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 874.68 |           |      |      | ft        | 1   |     |   | Field Sampling | Total/NA  |
| Field pH               | 7.35   |           |      |      | SU        | 1   |     |   | Field Sampling | Total/NA  |
| Field Conductivity     | 793    |           |      |      | umhos/cm  | 1   |     |   | Field Sampling | Total/NA  |
| Field Temperature      | 13.4   |           |      |      | Degrees C | 1   |     |   | Field Sampling | Total/NA  |
| Field Turbidity        | 59.49  |           |      |      | NTU       | 1   |     |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-13

### Lab Sample ID: 310-316198-9

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil | Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|-----|-----|---|----------------|-----------|
| Fluoride               | 3.0    |           | 1.0  | 0.38 | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Sulfate                | 120    |           | 5.0  | 2.1  | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Arsenic                | 0.69   | J         | 2.0  | 0.53 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Barium                 | 100    |           | 2.0  | 0.66 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Boron                  | 110    |           | 100  | 82   | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Calcium                | 130    |           | 0.50 | 0.19 | mg/L      | 1   |     |   | 6020B          | Total/NA  |
| Cobalt                 | 1.5    |           | 0.50 | 0.17 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Iron                   | 900    |           | 100  | 50   | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Lead                   | 0.90   |           | 0.50 | 0.33 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Lithium                | 20     |           | 10   | 2.9  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Magnesium              | 22000  |           | 500  | 150  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Manganese              | 120    |           | 10   | 3.6  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Total Suspended Solids | 56     |           | 3.8  | 2.6  | mg/L      | 1   |     |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 490    |           | 50   | 36   | mg/L      | 1   |     |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 910.75 |           |      |      | ft        | 1   |     |   | Field Sampling | Total/NA  |
| Field pH               | 6.91   |           |      |      | SU        | 1   |     |   | Field Sampling | Total/NA  |
| Field Conductivity     | 786    |           |      |      | umhos/cm  | 1   |     |   | Field Sampling | Total/NA  |
| Field Temperature      | 17.1   |           |      |      | Degrees C | 1   |     |   | Field Sampling | Total/NA  |
| Field Turbidity        | 98.85  |           |      |      | NTU       | 1   |     |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-14

### Lab Sample ID: 310-316198-10

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | Dil | Fac | D | Method | Prep Type |
|------------|--------|-----------|------|------|------|-----|-----|---|--------|-----------|
| Fluoride   | 0.56   | J         | 1.0  | 0.38 | mg/L | 5   |     |   | 9056A  | Total/NA  |
| Sulfate    | 25     |           | 5.0  | 2.1  | mg/L | 5   |     |   | 9056A  | Total/NA  |
| Barium     | 61     |           | 2.0  | 0.66 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Boron      | 460    |           | 100  | 82   | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Calcium    | 93     |           | 0.50 | 0.19 | mg/L | 1   |     |   | 6020B  | Total/NA  |
| Cobalt     | 0.17   | J         | 0.50 | 0.17 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Iron       | 94     | J         | 100  | 50   | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Lithium    | 28     |           | 10   | 2.9  | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Magnesium  | 23000  |           | 500  | 150  | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Manganese  | 80     |           | 10   | 3.6  | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Molybdenum | 1.9    | J         | 2.0  | 1.3  | ug/L | 1   |     |   | 6020B  | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-14 (Continued)

### Lab Sample ID: 310-316198-10

| Analyte                | Result | Qualifier | RL  | MDL | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|-----|-----|-----------|---------|---|----------------|-----------|
| Selenium               | 2.3    | J         | 5.0 | 1.4 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 17     |           | 1.9 | 1.3 | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 360    |           | 50  | 36  | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 918.12 |           |     |     | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.00   |           |     |     | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 602    |           |     |     | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 16.2   |           |     |     | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 38.04  |           |     |     | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-18

### Lab Sample ID: 310-316198-11

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Sulfate                | 16     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.63   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 160    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 110    |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 0.86   |           | 0.50 | 0.17 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 180    |           | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lead                   | 0.36   | J         | 0.50 | 0.33 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 14     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 15000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 55     |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 8.3    |           | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 360    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 904.33 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.82   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 623    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 14.7   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 4.57   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-19

### Lab Sample ID: 310-316198-12

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 19     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 22     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 0.56   | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 110    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 170    |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 91     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 7.8    | J         | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 21000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 2.4    | J         | 5.0  | 1.4  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Dissolved Solids | 360    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 876.49 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.05   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 618    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 13.6   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 3.30   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-20

### Lab Sample ID: 310-316198-13

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil | Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|-----|-----|---|----------------|-----------|
| Chloride               | 21     |           | 5.0  | 2.3  | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Sulfate                | 190    |           | 5.0  | 2.1  | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Arsenic                | 1.1    | J         | 2.0  | 0.53 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Barium                 | 93     |           | 2.0  | 0.66 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Boron                  | 5500   |           | 400  | 330  | ug/L      | 4   |     |   | 6020B          | Total/NA  |
| Calcium                | 120    |           | 0.50 | 0.19 | mg/L      | 1   |     |   | 6020B          | Total/NA  |
| Lithium                | 82     |           | 10   | 2.9  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Magnesium              | 22000  |           | 500  | 150  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Molybdenum             | 780    |           | 2.0  | 1.3  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Selenium               | 22     |           | 5.0  | 1.4  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Total Suspended Solids | 2.0    |           | 1.9  | 1.3  | mg/L      | 1   |     |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 570    |           | 50   | 36   | mg/L      | 1   |     |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 874.70 |           |      |      | ft        | 1   |     |   | Field Sampling | Total/NA  |
| Field pH               | 7.01   |           |      |      | SU        | 1   |     |   | Field Sampling | Total/NA  |
| Field Conductivity     | 919    |           |      |      | umhos/cm  | 1   |     |   | Field Sampling | Total/NA  |
| Field Temperature      | 14.1   |           |      |      | Degrees C | 1   |     |   | Field Sampling | Total/NA  |
| Field Turbidity        | 4.81   |           |      |      | NTU       | 1   |     |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-21

### Lab Sample ID: 310-316198-14

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil | Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|-----|-----|---|----------------|-----------|
| Chloride               | 17     |           | 5.0  | 2.3  | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Sulfate                | 110    |           | 5.0  | 2.1  | mg/L      | 5   |     |   | 9056A          | Total/NA  |
| Arsenic                | 0.66   | J         | 2.0  | 0.53 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Barium                 | 95     |           | 2.0  | 0.66 | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Boron                  | 2400   |           | 100  | 82   | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Calcium                | 110    |           | 0.50 | 0.19 | mg/L      | 1   |     |   | 6020B          | Total/NA  |
| Lithium                | 36     |           | 10   | 2.9  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Magnesium              | 21000  |           | 500  | 150  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Manganese              | 5.4    | J         | 10   | 3.6  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Molybdenum             | 290    |           | 2.0  | 1.3  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Selenium               | 7.7    |           | 5.0  | 1.4  | ug/L      | 1   |     |   | 6020B          | Total/NA  |
| Total Suspended Solids | 1.9    |           | 1.9  | 1.3  | mg/L      | 1   |     |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 470    |           | 50   | 36   | mg/L      | 1   |     |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 873.12 |           |      |      | ft        | 1   |     |   | Field Sampling | Total/NA  |
| Field pH               | 6.87   |           |      |      | SU        | 1   |     |   | Field Sampling | Total/NA  |
| Field Conductivity     | 772    |           |      |      | umhos/cm  | 1   |     |   | Field Sampling | Total/NA  |
| Field Temperature      | 13.7   |           |      |      | Degrees C | 1   |     |   | Field Sampling | Total/NA  |
| Field Turbidity        | 7.74   |           |      |      | NTU       | 1   |     |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-22

### Lab Sample ID: 310-316198-15

| Analyte | Result | Qualifier | RL   | MDL  | Unit | Dil | Fac | D | Method | Prep Type |
|---------|--------|-----------|------|------|------|-----|-----|---|--------|-----------|
| Sulfate | 250    |           | 5.0  | 2.1  | mg/L | 5   |     |   | 9056A  | Total/NA  |
| Arsenic | 8.3    |           | 2.0  | 0.53 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Barium  | 53     |           | 2.0  | 0.66 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Boron   | 1400   |           | 100  | 82   | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Calcium | 38     |           | 0.50 | 0.19 | mg/L | 1   |     |   | 6020B  | Total/NA  |
| Cobalt  | 1.4    |           | 0.50 | 0.17 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Iron    | 1300   |           | 100  | 50   | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Lead    | 3.4    |           | 0.50 | 0.33 | ug/L | 1   |     |   | 6020B  | Total/NA  |
| Lithium | 5.9    | J         | 10   | 2.9  | ug/L | 1   |     |   | 6020B  | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: MW-22 (Continued)

### Lab Sample ID: 310-316198-15

| Analyte                | Result | Qualifier | RL  | MDL | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|-----|-----|-----------|---------|---|----------------|-----------|
| Magnesium              | 7900   |           | 500 | 150 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 130    |           | 10  | 3.6 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Molybdenum             | 840    |           | 2.0 | 1.3 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 43     |           | 5.0 | 1.4 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 67     |           | 3.8 | 2.6 | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 450    |           | 50  | 36  | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 874.10 |           |     |     | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | --     |           |     |     | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | --     |           |     |     | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | --     |           |     |     | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | --     |           |     |     | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: MW-23

### Lab Sample ID: 310-316198-16

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Fluoride               | 0.41   | J         | 1.0  | 0.38 | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 94     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Barium                 | 95     |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 110    |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 110    |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 57     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 31     |           | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 21000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 58     |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Molybdenum             | 2.7    |           | 2.0  | 1.3  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 1.6    | J         | 5.0  | 1.4  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 1.8    | J         | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 430    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | 915.94 |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 6.90   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 718    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 17.3   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 23.98  |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: GWGCS

### Lab Sample ID: 310-316198-17

| Analyte                | Result | Qualifier | RL   | MDL  | Unit     | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|----------|---------|---|----------------|-----------|
| Sulfate                | 230    |           | 5.0  | 2.1  | mg/L     | 5       |   | 9056A          | Total/NA  |
| Barium                 | 44     |           | 2.0  | 0.66 | ug/L     | 1       |   | 6020B          | Total/NA  |
| Boron                  | 140    |           | 100  | 82   | ug/L     | 1       |   | 6020B          | Total/NA  |
| Calcium                | 190    |           | 0.50 | 0.19 | mg/L     | 1       |   | 6020B          | Total/NA  |
| Cobalt                 | 0.18   | J         | 0.50 | 0.17 | ug/L     | 1       |   | 6020B          | Total/NA  |
| Iron                   | 100    |           | 100  | 50   | ug/L     | 1       |   | 6020B          | Total/NA  |
| Lead                   | 0.39   | J         | 0.50 | 0.33 | ug/L     | 1       |   | 6020B          | Total/NA  |
| Lithium                | 28     |           | 10   | 2.9  | ug/L     | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 44000  |           | 500  | 150  | ug/L     | 1       |   | 6020B          | Total/NA  |
| Manganese              | 360    |           | 10   | 3.6  | ug/L     | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 6.6    |           | 1.9  | 1.3  | mg/L     | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 770    |           | 50   | 36   | mg/L     | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | --     |           |      |      | ft       | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.16   |           |      |      | SU       | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 1192   |           |      |      | umhos/cm | 1       |   | Field Sampling | Total/NA  |

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

## Detection Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Client Sample ID: GWGCS (Continued)

### Lab Sample ID: 310-316198-17

| Analyte           | Result | Qualifier | RL | MDL | Unit      | Dil Fac | D | Method         | Prep Type |
|-------------------|--------|-----------|----|-----|-----------|---------|---|----------------|-----------|
| Field Temperature | 19.0   |           |    |     | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity   | 5.40   |           |    |     | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: SW-1

### Lab Sample ID: 310-316198-18

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 22     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 18     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 1.1    | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 160    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 74     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 92     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 8.0    | J         | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 24000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 71     |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Selenium               | 1.7    | J         | 5.0  | 1.4  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 65     |           | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 340    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | --     |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.78   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 593    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 20.8   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 17.55  |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: SW-2

### Lab Sample ID: 310-316198-19

| Analyte                | Result | Qualifier | RL   | MDL  | Unit      | Dil Fac | D | Method         | Prep Type |
|------------------------|--------|-----------|------|------|-----------|---------|---|----------------|-----------|
| Chloride               | 21     |           | 5.0  | 2.3  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Sulfate                | 24     |           | 5.0  | 2.1  | mg/L      | 5       |   | 9056A          | Total/NA  |
| Arsenic                | 1.1    | J         | 2.0  | 0.53 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Barium                 | 150    |           | 2.0  | 0.66 | ug/L      | 1       |   | 6020B          | Total/NA  |
| Boron                  | 430    |           | 100  | 82   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Calcium                | 79     |           | 0.50 | 0.19 | mg/L      | 1       |   | 6020B          | Total/NA  |
| Iron                   | 93     | J         | 100  | 50   | ug/L      | 1       |   | 6020B          | Total/NA  |
| Lithium                | 9.4    | J         | 10   | 2.9  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Magnesium              | 24000  |           | 500  | 150  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Manganese              | 100    |           | 10   | 3.6  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Molybdenum             | 11     |           | 2.0  | 1.3  | ug/L      | 1       |   | 6020B          | Total/NA  |
| Total Suspended Solids | 3.9    |           | 1.9  | 1.3  | mg/L      | 1       |   | I-3765-85      | Total/NA  |
| Total Dissolved Solids | 340    |           | 50   | 36   | mg/L      | 1       |   | SM 2540C       | Total/NA  |
| Groundwater Elevation  | --     |           |      |      | ft        | 1       |   | Field Sampling | Total/NA  |
| Field pH               | 7.75   |           |      |      | SU        | 1       |   | Field Sampling | Total/NA  |
| Field Conductivity     | 642    |           |      |      | umhos/cm  | 1       |   | Field Sampling | Total/NA  |
| Field Temperature      | 18.8   |           |      |      | Degrees C | 1       |   | Field Sampling | Total/NA  |
| Field Turbidity        | 4.91   |           |      |      | NTU       | 1       |   | Field Sampling | Total/NA  |

### Client Sample ID: Field Blank

### Lab Sample ID: 310-316198-20

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-3

Lab Sample ID: 310-316198-1

Date Collected: 09/17/25 11:10

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 17     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 17:21 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 17:21 | 5       |
| Sulfate  | 96     |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 17:21 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.60   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Barium     | 150    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Boron      | 1500   |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Calcium    | 130    |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Iron       | <50    |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Lithium    | 22     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Magnesium  | 20000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Manganese  | <3.6   |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Molybdenum | 8.1    |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |
| Selenium   | 7.5    |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:30 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 1.4    | J         | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 450    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 870.03 |           |    |     | ft        |   |          | 09/17/25 11:10 | 1       |
| Field pH              | 6.80   |           |    |     | SU        |   |          | 09/17/25 11:10 | 1       |
| Field Conductivity    | 772    |           |    |     | umhos/cm  |   |          | 09/17/25 11:10 | 1       |
| Field Temperature     | 16.4   |           |    |     | Degrees C |   |          | 09/17/25 11:10 | 1       |
| Field Turbidity       | 4.83   |           |    |     | NTU       |   |          | 09/17/25 11:10 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-4

Lab Sample ID: 310-316198-2

Date Collected: 09/16/25 13:43

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 13     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 17:34 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 17:34 | 5       |
| Sulfate  | 92     |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 17:34 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 5.1    |           | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Barium     | 140    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Boron      | 4100   |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Calcium    | 150    |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Cobalt     | 0.35   | J         | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Iron       | 5000   |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Lithium    | 14     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Magnesium  | 23000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Manganese  | 610    |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Molybdenum | 29     |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:33 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 12     |           | 3.8 | 2.6 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 560    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 873.16 |           |    |     | ft        |   |          | 09/16/25 13:43 | 1       |
| Field pH              | 6.79   |           |    |     | SU        |   |          | 09/16/25 13:43 | 1       |
| Field Conductivity    | 921    |           |    |     | umhos/cm  |   |          | 09/16/25 13:43 | 1       |
| Field Temperature     | 15.1   |           |    |     | Degrees C |   |          | 09/16/25 13:43 | 1       |
| Field Turbidity       | 5.51   |           |    |     | NTU       |   |          | 09/16/25 13:43 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-5

Lab Sample ID: 310-316198-3

Date Collected: 09/16/25 14:20

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 5.9    |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 17:48 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 17:48 | 5       |
| Sulfate  | 37     |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 17:48 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.69   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Barium     | 200    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Boron      | 730    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Calcium    | 81     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Cobalt     | 0.84   |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Iron       | 60     | J         | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Lithium    | <2.9   |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Magnesium  | 22000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Manganese  | 4.6    | J         | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |
| Selenium   | 18     |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:40 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 1.9    |           | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 280    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 876.56 |           |    |     | ft        |   |          | 09/16/25 14:20 | 1       |
| Field pH              | 6.30   |           |    |     | SU        |   |          | 09/16/25 14:20 | 1       |
| Field Conductivity    | 553    |           |    |     | umhos/cm  |   |          | 09/16/25 14:20 | 1       |
| Field Temperature     | 13.9   |           |    |     | Degrees C |   |          | 09/16/25 14:20 | 1       |
| Field Turbidity       | 9.95   |           |    |     | NTU       |   |          | 09/16/25 14:20 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-7

Lab Sample ID: 310-316198-4

Date Collected: 09/17/25 10:56

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 20     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 18:02 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 18:02 | 5       |
| Sulfate  | 20     |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 18:02 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.63   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Barium     | 110    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Boron      | 140    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Calcium    | 94     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Cobalt     | 0.18   | J         | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Iron       | 77     | J         | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Lithium    | 7.1    | J         | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Magnesium  | 20000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Manganese  | 7.9    | J         | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:43 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 4.4    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 370    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 876.82 |           |    |     | ft        |   |          | 09/17/25 10:56 | 1       |
| Field pH              | 7.05   |           |    |     | SU        |   |          | 09/17/25 10:56 | 1       |
| Field Conductivity    | 630    |           |    |     | umhos/cm  |   |          | 09/17/25 10:56 | 1       |
| Field Temperature     | 12.0   |           |    |     | Degrees C |   |          | 09/17/25 10:56 | 1       |
| Field Turbidity       | 12.71  |           |    |     | NTU       |   |          | 09/17/25 10:56 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-8

Lab Sample ID: 310-316198-5

Date Collected: 09/17/25 13:11

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 20     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 18:15 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 18:15 | 5       |
| Sulfate  | 19     |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 18:15 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.57   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Barium     | 140    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Calcium    | 94     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Cobalt     | 0.21   | J         | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Iron       | 93     | J         | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Lithium    | 6.2    | J         | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Magnesium  | 22000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Manganese  | 11     |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:45 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 5.1    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 340    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 880.79 |           |    |     | ft        |   |          | 09/17/25 13:11 | 1       |
| Field pH              | 6.93   |           |    |     | SU        |   |          | 09/17/25 13:11 | 1       |
| Field Conductivity    | 674    |           |    |     | umhos/cm  |   |          | 09/17/25 13:11 | 1       |
| Field Temperature     | 19.6   |           |    |     | Degrees C |   |          | 09/17/25 13:11 | 1       |
| Field Turbidity       | 12.48  |           |    |     | NTU       |   |          | 09/17/25 13:11 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-9

Lab Sample ID: 310-316198-6

Date Collected: 09/17/25 15:59

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 11     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 18:56 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 18:56 | 5       |
| Sulfate  | 7.6    |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 18:56 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.76   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Barium     | 180    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Calcium    | 89     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Cobalt     | 1.3    |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Iron       | 1100   |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Lead       | 0.51   |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Lithium    | 11     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Magnesium  | 17000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Manganese  | 650    |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:48 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 15     |           | 3.8 | 2.6 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 310    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 910.72 |           |    |     | ft        |   |          | 09/17/25 15:59 | 1       |
| Field pH              | 7.09   |           |    |     | SU        |   |          | 09/17/25 15:59 | 1       |
| Field Conductivity    | 593    |           |    |     | umhos/cm  |   |          | 09/17/25 15:59 | 1       |
| Field Temperature     | 15.1   |           |    |     | Degrees C |   |          | 09/17/25 15:59 | 1       |
| Field Turbidity       | 38.34  |           |    |     | NTU       |   |          | 09/17/25 15:59 | 1       |

Eurofins Cedar Falls

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-10

Lab Sample ID: 310-316198-7

Date Collected: 09/18/25 14:39

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 2.3    | J         | 5.0 | 2.3  | mg/L |   |          | 09/25/25 19:10 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 19:10 | 5       |
| Sulfate  | 8.6    |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 19:10 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53  |           | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Barium     | 120    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Calcium    | 69     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Iron       | 77     | J         | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Lithium    | 17     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Magnesium  | 20000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Manganese  | 7.6    | J         | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:50 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | <1.3   |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 260    |           | 50  | 36  | mg/L |   |          | 09/24/25 13:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 929.62 |           |    |     | ft        |   |          | 09/18/25 14:39 | 1       |
| Field pH              | 7.15   |           |    |     | SU        |   |          | 09/18/25 14:39 | 1       |
| Field Conductivity    | 475    |           |    |     | umhos/cm  |   |          | 09/18/25 14:39 | 1       |
| Field Temperature     | 12.7   |           |    |     | Degrees C |   |          | 09/18/25 14:39 | 1       |
| Field Turbidity       | 6.79   |           |    |     | NTU       |   |          | 09/18/25 14:39 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-11AR

Lab Sample ID: 310-316198-8

Date Collected: 09/18/25 13:10

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 16     |           | 5.0 | 2.3  | mg/L |   |          | 09/25/25 19:23 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/25/25 19:23 | 5       |
| Sulfate  | 100    |           | 5.0 | 2.1  | mg/L |   |          | 09/25/25 19:23 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 1.0    | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Barium     | 41     |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Boron      | 470    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Calcium    | 110    |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Cobalt     | 1.3    |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Iron       | 850    |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Lead       | 1.4    |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Lithium    | 22     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Magnesium  | 40000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Manganese  | 86     |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Molybdenum | 2.0    |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |
| Selenium   | 3.4    | J         | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:56 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 49     |           | 3.8 | 2.6 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 490    |           | 50  | 36  | mg/L |   |          | 09/24/25 13:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 874.68 |           |    |     | ft        |   |          | 09/18/25 13:10 | 1       |
| Field pH              | 7.35   |           |    |     | SU        |   |          | 09/18/25 13:10 | 1       |
| Field Conductivity    | 793    |           |    |     | umhos/cm  |   |          | 09/18/25 13:10 | 1       |
| Field Temperature     | 13.4   |           |    |     | Degrees C |   |          | 09/18/25 13:10 | 1       |
| Field Turbidity       | 59.49  |           |    |     | NTU       |   |          | 09/18/25 13:10 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-13

Lab Sample ID: 310-316198-9

Date Collected: 09/17/25 12:16

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 11:12 | 5       |
| Fluoride | 3.0    |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 11:12 | 5       |
| Sulfate  | 120    |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 11:12 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.69   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Barium     | 100    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Boron      | 110    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Calcium    | 130    |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Cobalt     | 1.5    |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Iron       | 900    |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Lead       | 0.90   |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Lithium    | 20     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Magnesium  | 22000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Manganese  | 120    |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 21:58 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 56     |           | 3.8 | 2.6 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 490    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 910.75 |           |    |     | ft        |   |          | 09/17/25 12:16 | 1       |
| Field pH              | 6.91   |           |    |     | SU        |   |          | 09/17/25 12:16 | 1       |
| Field Conductivity    | 786    |           |    |     | umhos/cm  |   |          | 09/17/25 12:16 | 1       |
| Field Temperature     | 17.1   |           |    |     | Degrees C |   |          | 09/17/25 12:16 | 1       |
| Field Turbidity       | 98.85  |           |    |     | NTU       |   |          | 09/17/25 12:16 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-14

Lab Sample ID: 310-316198-10

Date Collected: 09/16/25 17:00

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 11:23 | 5       |
| Fluoride | 0.56   | J         | 1.0 | 0.38 | mg/L |   |          | 09/26/25 11:23 | 5       |
| Sulfate  | 25     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 11:23 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53  |           | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Barium     | 61     |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Boron      | 460    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Calcium    | 93     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Cobalt     | 0.17   | J         | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Iron       | 94     | J         | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Lithium    | 28     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Magnesium  | 23000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Manganese  | 80     |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Molybdenum | 1.9    | J         | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |
| Selenium   | 2.3    | J         | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:01 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 17     |           | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 360    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 918.12 |           |    |     | ft        |   |          | 09/16/25 17:00 | 1       |
| Field pH              | 7.00   |           |    |     | SU        |   |          | 09/16/25 17:00 | 1       |
| Field Conductivity    | 602    |           |    |     | umhos/cm  |   |          | 09/16/25 17:00 | 1       |
| Field Temperature     | 16.2   |           |    |     | Degrees C |   |          | 09/16/25 17:00 | 1       |
| Field Turbidity       | 38.04  |           |    |     | NTU       |   |          | 09/16/25 17:00 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-18

Lab Sample ID: 310-316198-11

Date Collected: 09/17/25 16:30

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 11:34 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 11:34 | 5       |
| Sulfate  | 16     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 11:34 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.63   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Barium     | 160    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Calcium    | 110    |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Cobalt     | 0.86   |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Iron       | 180    |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Lead       | 0.36   | J         | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Lithium    | 14     |           | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Magnesium  | 15000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Manganese  | 55     |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:03 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 8.3    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 360    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 904.33 |           |    |     | ft        |   |          | 09/17/25 16:30 | 1       |
| Field pH              | 6.82   |           |    |     | SU        |   |          | 09/17/25 16:30 | 1       |
| Field Conductivity    | 623    |           |    |     | umhos/cm  |   |          | 09/17/25 16:30 | 1       |
| Field Temperature     | 14.7   |           |    |     | Degrees C |   |          | 09/17/25 16:30 | 1       |
| Field Turbidity       | 4.57   |           |    |     | NTU       |   |          | 09/17/25 16:30 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-19

Lab Sample ID: 310-316198-12

Date Collected: 09/16/25 13:25

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 19     |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 11:45 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 11:45 | 5       |
| Sulfate  | 22     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 11:45 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.56   | J         | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Barium     | 110    |           | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Boron      | 170    |           | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Calcium    | 91     |           | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Iron       | <50    |           | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Lithium    | 7.8    | J         | 10   | 2.9  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Magnesium  | 21000  |           | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Manganese  | <3.6   |           | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |
| Selenium   | 2.4    | J         | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/28/25 22:11 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | <1.3   |           | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 360    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 876.49 |           |    |     | ft        |   |          | 09/16/25 13:25 | 1       |
| Field pH              | 7.05   |           |    |     | SU        |   |          | 09/16/25 13:25 | 1       |
| Field Conductivity    | 618    |           |    |     | umhos/cm  |   |          | 09/16/25 13:25 | 1       |
| Field Temperature     | 13.6   |           |    |     | Degrees C |   |          | 09/16/25 13:25 | 1       |
| Field Turbidity       | 3.30   |           |    |     | NTU       |   |          | 09/16/25 13:25 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-20

Lab Sample ID: 310-316198-13

Date Collected: 09/17/25 13:59

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 21     |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 11:56 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 11:56 | 5       |
| Sulfate  | 190    |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 11:56 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 1.1    | J         | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Barium     | 93     |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Boron      | 5500   |           | 400  | 330  | ug/L |   | 09/30/25 09:00 | 10/06/25 12:56 | 4       |
| Calcium    | 120    |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Iron       | <50    |           | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Lithium    | 82     |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Magnesium  | 22000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Manganese  | <3.6   |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Molybdenum | 780    |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |
| Selenium   | 22     |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:33 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 2.0    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 570    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 874.70 |           |    |     | ft        |   |          | 09/17/25 13:59 | 1       |
| Field pH              | 7.01   |           |    |     | SU        |   |          | 09/17/25 13:59 | 1       |
| Field Conductivity    | 919    |           |    |     | umhos/cm  |   |          | 09/17/25 13:59 | 1       |
| Field Temperature     | 14.1   |           |    |     | Degrees C |   |          | 09/17/25 13:59 | 1       |
| Field Turbidity       | 4.81   |           |    |     | NTU       |   |          | 09/17/25 13:59 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-21

Lab Sample ID: 310-316198-14

Date Collected: 09/16/25 12:47

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 17     |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 12:07 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 12:07 | 5       |
| Sulfate  | 110    |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 12:07 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 0.66   | J         | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Barium     | 95     |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Boron      | 2400   |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Calcium    | 110    |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Iron       | <50    |           | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Lithium    | 36     |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Magnesium  | 21000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Manganese  | 5.4    | J         | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Molybdenum | 290    |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |
| Selenium   | 7.7    |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:39 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 1.9    |           | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 470    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 873.12 |           |    |     | ft        |   |          | 09/16/25 12:47 | 1       |
| Field pH              | 6.87   |           |    |     | SU        |   |          | 09/16/25 12:47 | 1       |
| Field Conductivity    | 772    |           |    |     | umhos/cm  |   |          | 09/16/25 12:47 | 1       |
| Field Temperature     | 13.7   |           |    |     | Degrees C |   |          | 09/16/25 12:47 | 1       |
| Field Turbidity       | 7.74   |           |    |     | NTU       |   |          | 09/16/25 12:47 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-22

Lab Sample ID: 310-316198-15

Date Collected: 09/18/25 17:00

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 12:18 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 12:18 | 5       |
| Sulfate  | 250    |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 12:18 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 8.3    |           | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Barium     | 53     |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Boron      | 1400   |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Calcium    | 38     |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Cobalt     | 1.4    |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Iron       | 1300   |           | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Lead       | 3.4    |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Lithium    | 5.9 J  |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Magnesium  | 7900   |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Manganese  | 130    |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Molybdenum | 840    |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |
| Selenium   | 43     |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:42 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 67     |           | 3.8 | 2.6 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 450    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 874.10 |           |    |     | ft        |   |          | 09/18/25 17:00 | 1       |
| Field pH              | --     |           |    |     | SU        |   |          | 09/18/25 17:00 | 1       |
| Field Conductivity    | --     |           |    |     | umhos/cm  |   |          | 09/18/25 17:00 | 1       |
| Field Temperature     | --     |           |    |     | Degrees C |   |          | 09/18/25 17:00 | 1       |
| Field Turbidity       | --     |           |    |     | NTU       |   |          | 09/18/25 17:00 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: MW-23

Lab Sample ID: 310-316198-16

Date Collected: 09/16/25 16:31

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 12:29 | 5       |
| Fluoride | 0.41   | J         | 1.0 | 0.38 | mg/L |   |          | 09/26/25 12:29 | 5       |
| Sulfate  | 94     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 12:29 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53  |           | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Barium     | 95     |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Boron      | 110    |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Calcium    | 110    |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Iron       | 57     | J         | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Lithium    | 31     |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Magnesium  | 21000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Manganese  | 58     |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Molybdenum | 2.7    |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |
| Selenium   | 1.6    | J         | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:44 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 1.8    | J         | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 430    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | 915.94 |           |    |     | ft        |   |          | 09/16/25 16:31 | 1       |
| Field pH              | 6.90   |           |    |     | SU        |   |          | 09/16/25 16:31 | 1       |
| Field Conductivity    | 718    |           |    |     | umhos/cm  |   |          | 09/16/25 16:31 | 1       |
| Field Temperature     | 17.3   |           |    |     | Degrees C |   |          | 09/16/25 16:31 | 1       |
| Field Turbidity       | 23.98  |           |    |     | NTU       |   |          | 09/16/25 16:31 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: GWGCS

Lab Sample ID: 310-316198-17

Date Collected: 09/17/25 11:52

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | <2.3   |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 13:03 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 13:03 | 5       |
| Sulfate  | 230    |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 13:03 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53  |           | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Barium     | 44     |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Boron      | 140    |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Calcium    | 190    |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Cobalt     | 0.18   | J         | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Iron       | 100    |           | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Lead       | 0.39   | J         | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Lithium    | 28     |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Magnesium  | 44000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Manganese  | 360    |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:47 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 6.6    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 770    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | --     |           |    |     | ft        |   |          | 09/17/25 11:52 | 1       |
| Field pH              | 7.16   |           |    |     | SU        |   |          | 09/17/25 11:52 | 1       |
| Field Conductivity    | 1192   |           |    |     | umhos/cm  |   |          | 09/17/25 11:52 | 1       |
| Field Temperature     | 19.0   |           |    |     | Degrees C |   |          | 09/17/25 11:52 | 1       |
| Field Turbidity       | 5.40   |           |    |     | NTU       |   |          | 09/17/25 11:52 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: SW-1

Lab Sample ID: 310-316198-18

Date Collected: 09/16/25 18:23

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 22     |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 13:14 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 13:14 | 5       |
| Sulfate  | 18     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 13:14 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 1.1    | J         | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Barium     | 160    |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Calcium    | 74     |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Iron       | 92     | J         | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Lithium    | 8.0    | J         | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Magnesium  | 24000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Manganese  | 71     |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |
| Selenium   | 1.7    | J         | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:56 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 65     |           | 1.9 | 1.3 | mg/L |   |          | 09/22/25 13:13 | 1       |
| Total Dissolved Solids (SM 2540C)       | 340    |           | 50  | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | --     |           |    |     | ft        |   |          | 09/16/25 18:23 | 1       |
| Field pH              | 7.78   |           |    |     | SU        |   |          | 09/16/25 18:23 | 1       |
| Field Conductivity    | 593    |           |    |     | umhos/cm  |   |          | 09/16/25 18:23 | 1       |
| Field Temperature     | 20.8   |           |    |     | Degrees C |   |          | 09/16/25 18:23 | 1       |
| Field Turbidity       | 17.55  |           |    |     | NTU       |   |          | 09/16/25 18:23 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: SW-2

Lab Sample ID: 310-316198-19

Date Collected: 09/17/25 09:17

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL  | MDL  | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|-----|------|------|---|----------|----------------|---------|
| Chloride | 21     |           | 5.0 | 2.3  | mg/L |   |          | 09/26/25 13:25 | 5       |
| Fluoride | <0.38  |           | 1.0 | 0.38 | mg/L |   |          | 09/26/25 13:25 | 5       |
| Sulfate  | 24     |           | 5.0 | 2.1  | mg/L |   |          | 09/26/25 13:25 | 5       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | 1.1    | J         | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Barium     | 150    |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Boron      | 430    |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Calcium    | 79     |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Iron       | 93     | J         | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Lithium    | 9.4    | J         | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Magnesium  | 24000  |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Manganese  | 100    |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Molybdenum | 11     |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 17:59 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | 3.9    |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | 340    |           | 50  | 36  | mg/L |   |          | 09/23/25 13:51 | 1       |

## Method: EPA Field Sampling - Field Sampling

| Analyte               | Result | Qualifier | RL | MDL | Unit      | D | Prepared | Analyzed       | Dil Fac |
|-----------------------|--------|-----------|----|-----|-----------|---|----------|----------------|---------|
| Groundwater Elevation | --     |           |    |     | ft        |   |          | 09/17/25 09:17 | 1       |
| Field pH              | 7.75   |           |    |     | SU        |   |          | 09/17/25 09:17 | 1       |
| Field Conductivity    | 642    |           |    |     | umhos/cm  |   |          | 09/17/25 09:17 | 1       |
| Field Temperature     | 18.8   |           |    |     | Degrees C |   |          | 09/17/25 09:17 | 1       |
| Field Turbidity       | 4.91   |           |    |     | NTU       |   |          | 09/17/25 09:17 | 1       |

# Client Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Client Sample ID: Field Blank

Lab Sample ID: 310-316198-20

Date Collected: 09/17/25 17:13

Matrix: Water

Date Received: 09/19/25 16:35

## Method: SW846 9056A - Anions, Ion Chromatography

| Analyte  | Result | Qualifier | RL   | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|--------|-----------|------|-------|------|---|----------|----------------|---------|
| Chloride | <0.45  |           | 1.0  | 0.45  | mg/L |   |          | 09/26/25 13:36 | 1       |
| Fluoride | <0.075 |           | 0.20 | 0.075 | mg/L |   |          | 09/26/25 13:36 | 1       |
| Sulfate  | <0.42  |           | 1.0  | 0.42  | mg/L |   |          | 09/26/25 13:36 | 1       |

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

| Analyte    | Result | Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53  |           | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Barium     | <0.66  |           | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Beryllium  | <0.33  |           | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Boron      | <82    |           | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Calcium    | <0.19  |           | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Cobalt     | <0.17  |           | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Iron       | <50    |           | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Lead       | <0.33  |           | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Lithium    | <2.9   |           | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Magnesium  | <150   |           | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Manganese  | <3.6   |           | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Molybdenum | <1.3   |           | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |
| Selenium   | <1.4   |           | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 18:02 | 1       |

## General Chemistry

| Analyte                                 | Result | Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|-----------------------------------------|--------|-----------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids (USGS I-3765-85) | <1.3   |           | 1.9 | 1.3 | mg/L |   |          | 09/23/25 06:26 | 1       |
| Total Dissolved Solids (SM 2540C)       | <36    |           | 50  | 36  | mg/L |   |          | 09/23/25 13:51 | 1       |

## Definitions/Glossary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Qualifiers

#### HPLC/IC

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

#### Metals

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

#### General Chemistry

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

### Glossary

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

# QC Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

## Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-468089/3

Matrix: Water

Analysis Batch: 468089

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte  | MB Result | MB Qualifier | RL   | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|-----------|--------------|------|-------|------|---|----------|----------------|---------|
| Chloride | <0.45     |              | 1.0  | 0.45  | mg/L |   |          | 09/25/25 13:44 | 1       |
| Fluoride | <0.075    |              | 0.20 | 0.075 | mg/L |   |          | 09/25/25 13:44 | 1       |
| Sulfate  | <0.42     |              | 1.0  | 0.42  | mg/L |   |          | 09/25/25 13:44 | 1       |

Lab Sample ID: LCS 310-468089/4

Matrix: Water

Analysis Batch: 468089

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|----------|-------------|------------|---------------|------|---|------|-------------|
| Chloride | 10.0        | 9.96       |               | mg/L |   | 100  | 90 - 110    |
| Fluoride | 2.00        | 2.04       |               | mg/L |   | 102  | 90 - 110    |
| Sulfate  | 10.0        | 10.4       |               | mg/L |   | 104  | 90 - 110    |

Lab Sample ID: MB 310-468159/3

Matrix: Water

Analysis Batch: 468159

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte  | MB Result | MB Qualifier | RL   | MDL   | Unit | D | Prepared | Analyzed       | Dil Fac |
|----------|-----------|--------------|------|-------|------|---|----------|----------------|---------|
| Chloride | <0.45     |              | 1.0  | 0.45  | mg/L |   |          | 09/26/25 10:50 | 1       |
| Fluoride | <0.075    |              | 0.20 | 0.075 | mg/L |   |          | 09/26/25 10:50 | 1       |
| Sulfate  | <0.42     |              | 1.0  | 0.42  | mg/L |   |          | 09/26/25 10:50 | 1       |

Lab Sample ID: LCS 310-468159/4

Matrix: Water

Analysis Batch: 468159

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte  | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|----------|-------------|------------|---------------|------|---|------|-------------|
| Chloride | 10.0        | 9.38       |               | mg/L |   | 94   | 90 - 110    |
| Fluoride | 2.00        | 2.04       |               | mg/L |   | 102  | 90 - 110    |
| Sulfate  | 10.0        | 10.1       |               | mg/L |   | 101  | 90 - 110    |

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

Lab Sample ID: MB 310-467992/1-A

Matrix: Water

Analysis Batch: 468336

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 467992

| Analyte    | MB Result | MB Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|--------------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53     |              | 2.0  | 0.53 | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Barium     | <0.66     |              | 2.0  | 0.66 | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Beryllium  | <0.33     |              | 1.0  | 0.33 | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Boron      | <82       |              | 100  | 82   | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Calcium    | <0.19     |              | 0.50 | 0.19 | mg/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Cobalt     | <0.17     |              | 0.50 | 0.17 | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Iron       | <50       |              | 100  | 50   | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Lead       | <0.33     |              | 0.50 | 0.33 | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Magnesium  | <150      |              | 500  | 150  | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Manganese  | <3.6      |              | 10   | 3.6  | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Molybdenum | <1.3      |              | 2.0  | 1.3  | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |
| Selenium   | <1.4      |              | 5.0  | 1.4  | ug/L |   | 09/26/25 09:00 | 09/29/25 17:00 | 1       |

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# QC Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

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

Lab Sample ID: MB 310-467992/1-A  
Matrix: Water  
Analysis Batch: 468473

Client Sample ID: Method Blank  
Prep Type: Total/NA  
Prep Batch: 467992

| Analyte | MB<br>Result | MB<br>Qualifier | RL | MDL | Unit | D | Prepared       | Analyzed       | Dil Fac |
|---------|--------------|-----------------|----|-----|------|---|----------------|----------------|---------|
| Lithium | <2.9         |                 | 10 | 2.9 | ug/L |   | 09/26/25 09:00 | 09/30/25 17:54 | 1       |

Lab Sample ID: LCS 310-467992/2-A  
Matrix: Water  
Analysis Batch: 468336

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 467992

| Analyte    | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|------------|----------------|---------------|------------------|------|---|------|----------------|
| Arsenic    | 200            | 205           |                  | ug/L |   | 103  | 80 - 120       |
| Barium     | 100            | 100           |                  | ug/L |   | 100  | 80 - 120       |
| Beryllium  | 100            | 109           |                  | ug/L |   | 109  | 80 - 120       |
| Boron      | 200            | 225           |                  | ug/L |   | 112  | 80 - 120       |
| Calcium    | 2.00           | 2.16          |                  | mg/L |   | 108  | 80 - 120       |
| Cobalt     | 100            | 109           |                  | ug/L |   | 109  | 80 - 120       |
| Iron       | 200            | 218           |                  | ug/L |   | 109  | 80 - 120       |
| Lead       | 200            | 203           |                  | ug/L |   | 102  | 80 - 120       |
| Magnesium  | 2000           | 2190          |                  | ug/L |   | 110  | 80 - 120       |
| Manganese  | 100            | 100           |                  | ug/L |   | 100  | 80 - 120       |
| Molybdenum | 200            | 202           |                  | ug/L |   | 101  | 80 - 120       |
| Selenium   | 400            | 402           |                  | ug/L |   | 101  | 80 - 120       |

Lab Sample ID: LCS 310-467992/2-A  
Matrix: Water  
Analysis Batch: 468473

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 467992

| Analyte | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|---------|----------------|---------------|------------------|------|---|------|----------------|
| Lithium | 200            | 186           |                  | ug/L |   | 93   | 80 - 120       |

Lab Sample ID: 310-316198-7 DU  
Matrix: Water  
Analysis Batch: 468211

Client Sample ID: MW-10  
Prep Type: Total/NA  
Prep Batch: 467992

| Analyte    | Sample<br>Result | Sample<br>Qualifier | DU<br>Result | DU<br>Qualifier | Unit | D | RPD | Limit |
|------------|------------------|---------------------|--------------|-----------------|------|---|-----|-------|
| Arsenic    | <0.53            |                     | <0.53        |                 | ug/L |   | NC  | 20    |
| Barium     | 120              |                     | 117          |                 | ug/L |   | 0.6 | 20    |
| Beryllium  | <0.33            |                     | <0.33        |                 | ug/L |   | NC  | 20    |
| Boron      | <82              |                     | <82          |                 | ug/L |   | NC  | 20    |
| Calcium    | 69               |                     | 70.6         |                 | mg/L |   | 2   | 20    |
| Cobalt     | <0.17            |                     | <0.17        |                 | ug/L |   | NC  | 20    |
| Iron       | 77 J             |                     | 74.2 J       |                 | ug/L |   | 3   | 20    |
| Lead       | <0.33            |                     | <0.33        |                 | ug/L |   | NC  | 20    |
| Lithium    | 17               |                     | 16.2         |                 | ug/L |   | 3   | 20    |
| Magnesium  | 20000            |                     | 19600        |                 | ug/L |   | 0.4 | 20    |
| Manganese  | 7.6 J            |                     | 7.25 J       |                 | ug/L |   | 5   | 20    |
| Molybdenum | <1.3             |                     | <1.3         |                 | ug/L |   | NC  | 20    |
| Selenium   | <1.4             |                     | <1.4         |                 | ug/L |   | NC  | 20    |

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# QC Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

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

Lab Sample ID: MB 310-468303/1-A

Matrix: Water

Analysis Batch: 468963

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 468303

| Analyte    | MB Result | MB Qualifier | RL   | MDL  | Unit | D | Prepared       | Analyzed       | Dil Fac |
|------------|-----------|--------------|------|------|------|---|----------------|----------------|---------|
| Arsenic    | <0.53     |              | 2.0  | 0.53 | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Barium     | <0.66     |              | 2.0  | 0.66 | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Beryllium  | <0.33     |              | 1.0  | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Boron      | <82       |              | 100  | 82   | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Calcium    | <0.19     |              | 0.50 | 0.19 | mg/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Cobalt     | <0.17     |              | 0.50 | 0.17 | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Iron       | <50       |              | 100  | 50   | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Lead       | <0.33     |              | 0.50 | 0.33 | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Lithium    | <2.9      |              | 10   | 2.9  | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Magnesium  | <150      |              | 500  | 150  | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Manganese  | <3.6      |              | 10   | 3.6  | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Molybdenum | <1.3      |              | 2.0  | 1.3  | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |
| Selenium   | <1.4      |              | 5.0  | 1.4  | ug/L |   | 09/30/25 09:00 | 10/03/25 16:40 | 1       |

Lab Sample ID: LCS 310-468303/2-A

Matrix: Water

Analysis Batch: 468963

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 468303

| Analyte    | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|------------|-------------|------------|---------------|------|---|------|-------------|
| Arsenic    | 200         | 203        |               | ug/L |   | 102  | 80 - 120    |
| Barium     | 100         | 93.2       |               | ug/L |   | 93   | 80 - 120    |
| Beryllium  | 100         | 99.3       |               | ug/L |   | 99   | 80 - 120    |
| Boron      | 200         | 192        |               | ug/L |   | 96   | 80 - 120    |
| Calcium    | 2.00        | 2.09       |               | mg/L |   | 105  | 80 - 120    |
| Cobalt     | 100         | 95.9       |               | ug/L |   | 96   | 80 - 120    |
| Iron       | 200         | 196        |               | ug/L |   | 98   | 80 - 120    |
| Lead       | 200         | 191        |               | ug/L |   | 96   | 80 - 120    |
| Lithium    | 200         | 204        |               | ug/L |   | 102  | 80 - 120    |
| Magnesium  | 2000        | 1960       |               | ug/L |   | 98   | 80 - 120    |
| Manganese  | 100         | 100        |               | ug/L |   | 100  | 80 - 120    |
| Molybdenum | 200         | 211        |               | ug/L |   | 106  | 80 - 120    |
| Selenium   | 400         | 380        |               | ug/L |   | 95   | 80 - 120    |

Lab Sample ID: 310-316198-13 DU

Matrix: Water

Analysis Batch: 468963

Client Sample ID: MW-20

Prep Type: Total/NA

Prep Batch: 468303

| Analyte    | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|------------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Arsenic    | 1.1           | J                | 1.13      | J            | ug/L |   | 4   | 20    |
| Barium     | 93            |                  | 97.1      |              | ug/L |   | 4   | 20    |
| Beryllium  | <0.33         |                  | <0.33     |              | ug/L |   | NC  | 20    |
| Calcium    | 120           |                  | 118       |              | mg/L |   | 2   | 20    |
| Cobalt     | <0.17         |                  | <0.17     |              | ug/L |   | NC  | 20    |
| Iron       | <50           |                  | <50       |              | ug/L |   | NC  | 20    |
| Lead       | <0.33         |                  | <0.33     |              | ug/L |   | NC  | 20    |
| Lithium    | 82            |                  | 83.3      |              | ug/L |   | 1   | 20    |
| Magnesium  | 22000         |                  | 22600     |              | ug/L |   | 3   | 20    |
| Manganese  | <3.6          |                  | <3.6      |              | ug/L |   | NC  | 20    |
| Molybdenum | 780           |                  | 793       |              | ug/L |   | 2   | 20    |

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# QC Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

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

Lab Sample ID: 310-316198-13 DU

Matrix: Water

Analysis Batch: 468963

Client Sample ID: MW-20

Prep Type: Total/NA

Prep Batch: 468303

| Analyte  | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|----------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Selenium | 22            |                  | 24.1      |              | ug/L |   | 8   | 20    |

Lab Sample ID: 310-316198-13 DU

Matrix: Water

Analysis Batch: 469052

Client Sample ID: MW-20

Prep Type: Total/NA

Prep Batch: 468303

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|---------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Boron   | 5500          |                  | 5740      |              | ug/L |   | 5   | 20    |

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

Lab Sample ID: MB 310-467494/1

Matrix: Water

Analysis Batch: 467494

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                | MB Result | MB Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|-----------|--------------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | <3.5      |              | 5.0 | 3.5 | mg/L |   |          | 09/22/25 13:13 | 1       |

Lab Sample ID: LCS 310-467494/2

Matrix: Water

Analysis Batch: 467494

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|------------------------|-------------|------------|---------------|------|---|------|-------------|
| Total Suspended Solids | 100         | 90.0       |               | mg/L |   | 90   | 82 - 117    |

Lab Sample ID: MB 310-467543/1

Matrix: Water

Analysis Batch: 467543

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                | MB Result | MB Qualifier | RL  | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|-----------|--------------|-----|-----|------|---|----------|----------------|---------|
| Total Suspended Solids | <3.5      |              | 5.0 | 3.5 | mg/L |   |          | 09/23/25 06:26 | 1       |

Lab Sample ID: LCS 310-467543/2

Matrix: Water

Analysis Batch: 467543

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|------------------------|-------------|------------|---------------|------|---|------|-------------|
| Total Suspended Solids | 100         | 85.0       |               | mg/L |   | 85   | 82 - 117    |

Lab Sample ID: 310-316198-6 DU

Matrix: Water

Analysis Batch: 467543

Client Sample ID: MW-9

Prep Type: Total/NA

| Analyte                | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | Limit |
|------------------------|---------------|------------------|-----------|--------------|------|---|-----|-------|
| Total Suspended Solids | 15            |                  | 15.5      |              | mg/L |   | 3   | 35    |

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# QC Sample Results

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

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

Lab Sample ID: MB 310-467499/1

Matrix: Water

Analysis Batch: 467499

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                | MB<br>Result | MB<br>Qualifier | RL | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|--------------|-----------------|----|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | <36          |                 | 50 | 36  | mg/L |   |          | 09/22/25 14:08 | 1       |

Lab Sample ID: LCS 310-467499/2

Matrix: Water

Analysis Batch: 467499

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|------------------------|----------------|---------------|------------------|------|---|------|----------------|
| Total Dissolved Solids | 1000           | 988           |                  | mg/L |   | 99   | 89 - 110       |

Lab Sample ID: 310-316198-9 DU

Matrix: Water

Analysis Batch: 467499

Client Sample ID: MW-13

Prep Type: Total/NA

| Analyte                | Sample<br>Result | Sample<br>Qualifier | DU<br>Result | DU<br>Qualifier | Unit | D | RPD | RPD<br>Limit |
|------------------------|------------------|---------------------|--------------|-----------------|------|---|-----|--------------|
| Total Dissolved Solids | 490              |                     | 494          |                 | mg/L |   | 1   | 13           |

Lab Sample ID: MB 310-467653/1

Matrix: Water

Analysis Batch: 467653

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                | MB<br>Result | MB<br>Qualifier | RL | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|--------------|-----------------|----|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | <36          |                 | 50 | 36  | mg/L |   |          | 09/23/25 13:51 | 1       |

Lab Sample ID: LCS 310-467653/2

Matrix: Water

Analysis Batch: 467653

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|------------------------|----------------|---------------|------------------|------|---|------|----------------|
| Total Dissolved Solids | 1000           | 946           |                  | mg/L |   | 95   | 89 - 110       |

Lab Sample ID: MB 310-467795/1

Matrix: Water

Analysis Batch: 467795

Client Sample ID: Method Blank

Prep Type: Total/NA

| Analyte                | MB<br>Result | MB<br>Qualifier | RL | MDL | Unit | D | Prepared | Analyzed       | Dil Fac |
|------------------------|--------------|-----------------|----|-----|------|---|----------|----------------|---------|
| Total Dissolved Solids | <36          |                 | 50 | 36  | mg/L |   |          | 09/24/25 13:08 | 1       |

Lab Sample ID: LCS 310-467795/2

Matrix: Water

Analysis Batch: 467795

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

| Analyte                | Spike<br>Added | LCS<br>Result | LCS<br>Qualifier | Unit | D | %Rec | %Rec<br>Limits |
|------------------------|----------------|---------------|------------------|------|---|------|----------------|
| Total Dissolved Solids | 1000           | 994           |                  | mg/L |   | 99   | 89 - 110       |

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## QC Association Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### HPLC/IC

#### Analysis Batch: 468089

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-316198-1     | MW-3               | Total/NA  | Water  | 9056A  |            |
| 310-316198-2     | MW-4               | Total/NA  | Water  | 9056A  |            |
| 310-316198-3     | MW-5               | Total/NA  | Water  | 9056A  |            |
| 310-316198-4     | MW-7               | Total/NA  | Water  | 9056A  |            |
| 310-316198-5     | MW-8               | Total/NA  | Water  | 9056A  |            |
| 310-316198-6     | MW-9               | Total/NA  | Water  | 9056A  |            |
| 310-316198-7     | MW-10              | Total/NA  | Water  | 9056A  |            |
| 310-316198-8     | MW-11AR            | Total/NA  | Water  | 9056A  |            |
| MB 310-468089/3  | Method Blank       | Total/NA  | Water  | 9056A  |            |
| LCS 310-468089/4 | Lab Control Sample | Total/NA  | Water  | 9056A  |            |

#### Analysis Batch: 468159

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|------------------|--------------------|-----------|--------|--------|------------|
| 310-316198-9     | MW-13              | Total/NA  | Water  | 9056A  |            |
| 310-316198-10    | MW-14              | Total/NA  | Water  | 9056A  |            |
| 310-316198-11    | MW-18              | Total/NA  | Water  | 9056A  |            |
| 310-316198-12    | MW-19              | Total/NA  | Water  | 9056A  |            |
| 310-316198-13    | MW-20              | Total/NA  | Water  | 9056A  |            |
| 310-316198-14    | MW-21              | Total/NA  | Water  | 9056A  |            |
| 310-316198-15    | MW-22              | Total/NA  | Water  | 9056A  |            |
| 310-316198-16    | MW-23              | Total/NA  | Water  | 9056A  |            |
| 310-316198-17    | GWGCS              | Total/NA  | Water  | 9056A  |            |
| 310-316198-18    | SW-1               | Total/NA  | Water  | 9056A  |            |
| 310-316198-19    | SW-2               | Total/NA  | Water  | 9056A  |            |
| 310-316198-20    | Field Blank        | Total/NA  | Water  | 9056A  |            |
| MB 310-468159/3  | Method Blank       | Total/NA  | Water  | 9056A  |            |
| LCS 310-468159/4 | Lab Control Sample | Total/NA  | Water  | 9056A  |            |

### Metals

#### Prep Batch: 467992

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-316198-1       | MW-3               | Total/NA  | Water  | 3005A  |            |
| 310-316198-2       | MW-4               | Total/NA  | Water  | 3005A  |            |
| 310-316198-3       | MW-5               | Total/NA  | Water  | 3005A  |            |
| 310-316198-4       | MW-7               | Total/NA  | Water  | 3005A  |            |
| 310-316198-5       | MW-8               | Total/NA  | Water  | 3005A  |            |
| 310-316198-6       | MW-9               | Total/NA  | Water  | 3005A  |            |
| 310-316198-7       | MW-10              | Total/NA  | Water  | 3005A  |            |
| 310-316198-8       | MW-11AR            | Total/NA  | Water  | 3005A  |            |
| 310-316198-9       | MW-13              | Total/NA  | Water  | 3005A  |            |
| 310-316198-10      | MW-14              | Total/NA  | Water  | 3005A  |            |
| 310-316198-11      | MW-18              | Total/NA  | Water  | 3005A  |            |
| 310-316198-12      | MW-19              | Total/NA  | Water  | 3005A  |            |
| MB 310-467992/1-A  | Method Blank       | Total/NA  | Water  | 3005A  |            |
| LCS 310-467992/2-A | Lab Control Sample | Total/NA  | Water  | 3005A  |            |
| 310-316198-7 DU    | MW-10              | Total/NA  | Water  | 3005A  |            |

#### Analysis Batch: 468211

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------|------------------|-----------|--------|--------|------------|
| 310-316198-1  | MW-3             | Total/NA  | Water  | 6020B  | 467992     |

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## QC Association Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### Metals (Continued)

#### Analysis Batch: 468211 (Continued)

| Lab Sample ID   | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-----------------|------------------|-----------|--------|--------|------------|
| 310-316198-2    | MW-4             | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-3    | MW-5             | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-4    | MW-7             | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-5    | MW-8             | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-6    | MW-9             | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-7    | MW-10            | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-8    | MW-11AR          | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-9    | MW-13            | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-10   | MW-14            | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-11   | MW-18            | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-12   | MW-19            | Total/NA  | Water  | 6020B  | 467992     |
| 310-316198-7 DU | MW-10            | Total/NA  | Water  | 6020B  | 467992     |

#### Prep Batch: 468303

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-316198-13      | MW-20              | Total/NA  | Water  | 3005A  |            |
| 310-316198-14      | MW-21              | Total/NA  | Water  | 3005A  |            |
| 310-316198-15      | MW-22              | Total/NA  | Water  | 3005A  |            |
| 310-316198-16      | MW-23              | Total/NA  | Water  | 3005A  |            |
| 310-316198-17      | GWGCS              | Total/NA  | Water  | 3005A  |            |
| 310-316198-18      | SW-1               | Total/NA  | Water  | 3005A  |            |
| 310-316198-19      | SW-2               | Total/NA  | Water  | 3005A  |            |
| 310-316198-20      | Field Blank        | Total/NA  | Water  | 3005A  |            |
| MB 310-468303/1-A  | Method Blank       | Total/NA  | Water  | 3005A  |            |
| LCS 310-468303/2-A | Lab Control Sample | Total/NA  | Water  | 3005A  |            |
| 310-316198-13 DU   | MW-20              | Total/NA  | Water  | 3005A  |            |

#### Analysis Batch: 468336

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| MB 310-467992/1-A  | Method Blank       | Total/NA  | Water  | 6020B  | 467992     |
| LCS 310-467992/2-A | Lab Control Sample | Total/NA  | Water  | 6020B  | 467992     |

#### Analysis Batch: 468473

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| MB 310-467992/1-A  | Method Blank       | Total/NA  | Water  | 6020B  | 467992     |
| LCS 310-467992/2-A | Lab Control Sample | Total/NA  | Water  | 6020B  | 467992     |

#### Analysis Batch: 468963

| Lab Sample ID      | Client Sample ID   | Prep Type | Matrix | Method | Prep Batch |
|--------------------|--------------------|-----------|--------|--------|------------|
| 310-316198-13      | MW-20              | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-14      | MW-21              | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-15      | MW-22              | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-16      | MW-23              | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-17      | GWGCS              | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-18      | SW-1               | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-19      | SW-2               | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-20      | Field Blank        | Total/NA  | Water  | 6020B  | 468303     |
| MB 310-468303/1-A  | Method Blank       | Total/NA  | Water  | 6020B  | 468303     |
| LCS 310-468303/2-A | Lab Control Sample | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-13 DU   | MW-20              | Total/NA  | Water  | 6020B  | 468303     |

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# QC Association Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

## Metals

### Analysis Batch: 469052

| Lab Sample ID    | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|------------------|------------------|-----------|--------|--------|------------|
| 310-316198-13    | MW-20            | Total/NA  | Water  | 6020B  | 468303     |
| 310-316198-13 DU | MW-20            | Total/NA  | Water  | 6020B  | 468303     |

## General Chemistry

### Analysis Batch: 467494

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method    | Prep Batch |
|------------------|--------------------|-----------|--------|-----------|------------|
| 310-316198-2     | MW-4               | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-3     | MW-5               | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-10    | MW-14              | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-12    | MW-19              | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-14    | MW-21              | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-16    | MW-23              | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-18    | SW-1               | Total/NA  | Water  | I-3765-85 |            |
| MB 310-467494/1  | Method Blank       | Total/NA  | Water  | I-3765-85 |            |
| LCS 310-467494/2 | Lab Control Sample | Total/NA  | Water  | I-3765-85 |            |

### Analysis Batch: 467499

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-316198-1     | MW-3               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-2     | MW-4               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-3     | MW-5               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-4     | MW-7               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-5     | MW-8               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-6     | MW-9               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-9     | MW-13              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-10    | MW-14              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-11    | MW-18              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-12    | MW-19              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-13    | MW-20              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-14    | MW-21              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-15    | MW-22              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-16    | MW-23              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-17    | GWGCS              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-18    | SW-1               | Total/NA  | Water  | SM 2540C |            |
| MB 310-467499/1  | Method Blank       | Total/NA  | Water  | SM 2540C |            |
| LCS 310-467499/2 | Lab Control Sample | Total/NA  | Water  | SM 2540C |            |
| 310-316198-9 DU  | MW-13              | Total/NA  | Water  | SM 2540C |            |

### Analysis Batch: 467543

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method    | Prep Batch |
|---------------|------------------|-----------|--------|-----------|------------|
| 310-316198-1  | MW-3             | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-4  | MW-7             | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-5  | MW-8             | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-6  | MW-9             | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-7  | MW-10            | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-8  | MW-11AR          | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-9  | MW-13            | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-11 | MW-18            | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-13 | MW-20            | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-15 | MW-22            | Total/NA  | Water  | I-3765-85 |            |

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## QC Association Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

### General Chemistry (Continued)

#### Analysis Batch: 467543 (Continued)

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method    | Prep Batch |
|------------------|--------------------|-----------|--------|-----------|------------|
| 310-316198-17    | GWGCS              | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-19    | SW-2               | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-20    | Field Blank        | Total/NA  | Water  | I-3765-85 |            |
| MB 310-467543/1  | Method Blank       | Total/NA  | Water  | I-3765-85 |            |
| LCS 310-467543/2 | Lab Control Sample | Total/NA  | Water  | I-3765-85 |            |
| 310-316198-6 DU  | MW-9               | Total/NA  | Water  | I-3765-85 |            |

#### Analysis Batch: 467653

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-316198-19    | SW-2               | Total/NA  | Water  | SM 2540C |            |
| 310-316198-20    | Field Blank        | Total/NA  | Water  | SM 2540C |            |
| MB 310-467653/1  | Method Blank       | Total/NA  | Water  | SM 2540C |            |
| LCS 310-467653/2 | Lab Control Sample | Total/NA  | Water  | SM 2540C |            |

#### Analysis Batch: 467795

| Lab Sample ID    | Client Sample ID   | Prep Type | Matrix | Method   | Prep Batch |
|------------------|--------------------|-----------|--------|----------|------------|
| 310-316198-7     | MW-10              | Total/NA  | Water  | SM 2540C |            |
| 310-316198-8     | MW-11AR            | Total/NA  | Water  | SM 2540C |            |
| MB 310-467795/1  | Method Blank       | Total/NA  | Water  | SM 2540C |            |
| LCS 310-467795/2 | Lab Control Sample | Total/NA  | Water  | SM 2540C |            |

### Field Service / Mobile Lab

#### Analysis Batch: 467857

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method         | Prep Batch |
|---------------|------------------|-----------|--------|----------------|------------|
| 310-316198-1  | MW-3             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-2  | MW-4             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-3  | MW-5             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-4  | MW-7             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-5  | MW-8             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-6  | MW-9             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-7  | MW-10            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-8  | MW-11AR          | Total/NA  | Water  | Field Sampling |            |
| 310-316198-9  | MW-13            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-10 | MW-14            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-11 | MW-18            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-12 | MW-19            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-13 | MW-20            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-14 | MW-21            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-15 | MW-22            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-16 | MW-23            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-17 | GWGCS            | Total/NA  | Water  | Field Sampling |            |
| 310-316198-18 | SW-1             | Total/NA  | Water  | Field Sampling |            |
| 310-316198-19 | SW-2             | Total/NA  | Water  | Field Sampling |            |

# Lab Chronicle

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

## Client Sample ID: MW-3

Date Collected: 09/17/25 11:10

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-1

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 17:21       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:30       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 11:10       |

## Client Sample ID: MW-4

Date Collected: 09/16/25 13:43

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-2

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 17:34       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:33       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 13:43       |

## Client Sample ID: MW-5

Date Collected: 09/16/25 14:20

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-3

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 17:48       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:40       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 14:20       |

## Client Sample ID: MW-7

Date Collected: 09/17/25 10:56

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-4

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 18:02       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:43       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 10:56       |

Eurofins Cedar Falls

# Lab Chronicle

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

## Client Sample ID: MW-8

Date Collected: 09/17/25 13:11

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-5

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 18:15       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:45       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 13:11       |

## Client Sample ID: MW-9

Date Collected: 09/17/25 15:59

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-6

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 18:56       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:48       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 15:59       |

## Client Sample ID: MW-10

Date Collected: 09/18/25 14:39

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-7

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 19:10       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:50       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467795       | TGN5    | EET CF | 09/24/25 13:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/18/25 14:39       |

## Client Sample ID: MW-11AR

Date Collected: 09/18/25 13:10

Date Received: 09/19/25 16:35

## Lab Sample ID: 310-316198-8

Matrix: Water

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468089       | QTZ5    | EET CF | 09/25/25 19:23       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:56       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467795       | TGN5    | EET CF | 09/24/25 13:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/18/25 13:10       |

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## Lab Chronicle

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

**Client Sample ID: MW-13**

**Lab Sample ID: 310-316198-9**

**Date Collected: 09/17/25 12:16**

**Matrix: Water**

**Date Received: 09/19/25 16:35**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 11:12       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 21:58       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 12:16       |

**Client Sample ID: MW-14**

**Lab Sample ID: 310-316198-10**

**Date Collected: 09/16/25 17:00**

**Matrix: Water**

**Date Received: 09/19/25 16:35**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 11:23       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 22:01       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 17:00       |

**Client Sample ID: MW-18**

**Lab Sample ID: 310-316198-11**

**Date Collected: 09/17/25 16:30**

**Matrix: Water**

**Date Received: 09/19/25 16:35**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 11:34       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 22:03       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 16:30       |

**Client Sample ID: MW-19**

**Lab Sample ID: 310-316198-12**

**Date Collected: 09/16/25 13:25**

**Matrix: Water**

**Date Received: 09/19/25 16:35**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 11:45       |
| Total/NA  | Prep       | 3005A          |     |                 | 467992       | QTZ5    | EET CF | 09/26/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468211       | NFT2    | EET CF | 09/28/25 22:11       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 13:25       |

Eurofins Cedar Falls

## Lab Chronicle

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

**Client Sample ID: MW-20**

**Date Collected: 09/17/25 13:59**

**Date Received: 09/19/25 16:35**

**Lab Sample ID: 310-316198-13**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 11:56       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:33       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 4               | 469052       | NFT2    | EET CF | 10/06/25 12:56       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 13:59       |

**Client Sample ID: MW-21**

**Date Collected: 09/16/25 12:47**

**Date Received: 09/19/25 16:35**

**Lab Sample ID: 310-316198-14**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 12:07       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:39       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 12:47       |

**Client Sample ID: MW-22**

**Date Collected: 09/18/25 17:00**

**Date Received: 09/19/25 16:35**

**Lab Sample ID: 310-316198-15**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 12:18       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:42       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/18/25 17:00       |

**Client Sample ID: MW-23**

**Date Collected: 09/16/25 16:31**

**Date Received: 09/19/25 16:35**

**Lab Sample ID: 310-316198-16**

**Matrix: Water**

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 12:29       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:44       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 16:31       |

Eurofins Cedar Falls

# Lab Chronicle

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

## Client Sample ID: GWGCS

Lab Sample ID: 310-316198-17

Date Collected: 09/17/25 11:52

Matrix: Water

Date Received: 09/19/25 16:35

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 13:03       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:47       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 11:52       |

## Client Sample ID: SW-1

Lab Sample ID: 310-316198-18

Date Collected: 09/16/25 18:23

Matrix: Water

Date Received: 09/19/25 16:35

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 13:14       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:56       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467494       | DGU1    | EET CF | 09/22/25 13:13       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467499       | HE7K    | EET CF | 09/22/25 14:08       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/16/25 18:23       |

## Client Sample ID: SW-2

Lab Sample ID: 310-316198-19

Date Collected: 09/17/25 09:17

Matrix: Water

Date Received: 09/19/25 16:35

| Prep Type | Batch Type | Batch Method   | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|----------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A          |     | 5               | 468159       | QTZ5    | EET CF | 09/26/25 13:25       |
| Total/NA  | Prep       | 3005A          |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B          |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 17:59       |
| Total/NA  | Analysis   | I-3765-85      |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C       |     | 1               | 467653       | TGN5    | EET CF | 09/23/25 13:51       |
| Total/NA  | Analysis   | Field Sampling |     | 1               | 467857       | FQT6    | EET CF | 09/17/25 09:17       |

## Client Sample ID: Field Blank

Lab Sample ID: 310-316198-20

Date Collected: 09/17/25 17:13

Matrix: Water

Date Received: 09/19/25 16:35

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Analyst | Lab    | Prepared or Analyzed |
|-----------|------------|--------------|-----|-----------------|--------------|---------|--------|----------------------|
| Total/NA  | Analysis   | 9056A        |     | 1               | 468159       | QTZ5    | EET CF | 09/26/25 13:36       |
| Total/NA  | Prep       | 3005A        |     |                 | 468303       | QTZ5    | EET CF | 09/30/25 09:00       |
| Total/NA  | Analysis   | 6020B        |     | 1               | 468963       | NFT2    | EET CF | 10/03/25 18:02       |
| Total/NA  | Analysis   | I-3765-85    |     | 1               | 467543       | DGU1    | EET CF | 09/23/25 06:26       |
| Total/NA  | Analysis   | SM 2540C     |     | 1               | 467653       | TGN5    | EET CF | 09/23/25 13:51       |

### Laboratory References:

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

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

Laboratory: Eurofins Cedar Falls

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

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

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| 1  |
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| 10 |
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| 14 |
| 15 |

## Method Summary

Client: SCS Engineers  
Project/Site: Marshalltown - 25224064

Job ID: 310-316198-1

| Method         | Method Description            | Protocol | Laboratory |
|----------------|-------------------------------|----------|------------|
| 9056A          | Anions, Ion Chromatography    | SW846    | EET CF     |
| 6020B          | Metals (ICP/MS)               | SW846    | EET CF     |
| I-3765-85      | Residue, Non-filterable (TSS) | USGS     | EET CF     |
| SM 2540C       | Solids, Total Dissolved (TDS) | SM       | EET CF     |
| Field Sampling | Field Sampling                | EPA      | EET CF     |
| 3005A          | Preparation, Total Metals     | SW846    | EET CF     |

### Protocol References:

EPA = US Environmental Protection Agency

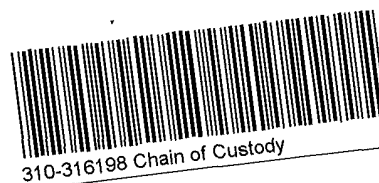
SM = "Standard Methods For The Examination Of Water And Wastewater"

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

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

### Laboratory References:

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



### Cooler/Sample Receipt and Temperature Log Form

|                                                                                                                                                                                                                                                                                                                                                                 |                     |                                                                                                                                                                   |                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>Client Information</b>                                                                                                                                                                                                                                                                                                                                       |                     |                                                                                                                                                                   |                       |
| Client <u>ScS Eng.</u>                                                                                                                                                                                                                                                                                                                                          |                     |                                                                                                                                                                   |                       |
| City/State                                                                                                                                                                                                                                                                                                                                                      | CITY                | STATE                                                                                                                                                             | Project               |
| <b>Receipt Information</b>                                                                                                                                                                                                                                                                                                                                      |                     |                                                                                                                                                                   |                       |
| Date/Time Received.                                                                                                                                                                                                                                                                                                                                             | DATE <u>9-19-25</u> | TIME <u>1635</u>                                                                                                                                                  | Received By <u>PH</u> |
| Delivery Type <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee<br><input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other _____ |                     |                                                                                                                                                                   |                       |
| <b>Condition of Cooler/Containers</b>                                                                                                                                                                                                                                                                                                                           |                     |                                                                                                                                                                   |                       |
| Sample(s) received in Cooler?                                                                                                                                                                                                                                                                                                                                   |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler ID _____                                                                       |                       |
| Multiple Coolers?                                                                                                                                                                                                                                                                                                                                               |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes: Cooler # <u>1</u> of <u>5</u>                                                         |                       |
| Cooler Custody Seals Present?                                                                                                                                                                                                                                                                                                                                   |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |                       |
| Sample Custody Seals Present?                                                                                                                                                                                                                                                                                                                                   |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |                       |
| Trip Blank Present?                                                                                                                                                                                                                                                                                                                                             |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes: Which VOA samples are in cooler? ↓                                                    |                       |
| <b>Temperature Record</b>                                                                                                                                                                                                                                                                                                                                       |                     |                                                                                                                                                                   |                       |
| Coolant <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE                                                                                                                                                                      |                     |                                                                                                                                                                   |                       |
| Thermometer ID <u>CC</u>                                                                                                                                                                                                                                                                                                                                        |                     | Correction Factor (°C): <u>0</u>                                                                                                                                  |                       |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature                                                                                                                                                                                                                                  |                     |                                                                                                                                                                   |                       |
| Uncorrected Temp (°C): <u>1.6</u>                                                                                                                                                                                                                                                                                                                               |                     | Corrected Temp (°C) <u>1.6</u>                                                                                                                                    |                       |
| • Sample Container Temperature                                                                                                                                                                                                                                                                                                                                  |                     |                                                                                                                                                                   |                       |
| Container(s) used                                                                                                                                                                                                                                                                                                                                               | CONTAINER 1         |                                                                                                                                                                   | CONTAINER 2           |
| Uncorrected Temp (°C):                                                                                                                                                                                                                                                                                                                                          |                     |                                                                                                                                                                   |                       |
| Corrected Temp (°C):                                                                                                                                                                                                                                                                                                                                            |                     |                                                                                                                                                                   |                       |
| <b>Exceptions Noted</b>                                                                                                                                                                                                                                                                                                                                         |                     |                                                                                                                                                                   |                       |
| 1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                             |                     |                                                                                                                                                                   |                       |
| 2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                |                     |                                                                                                                                                                   |                       |
| NOTE: If yes, contact PM before proceeding. If no, proceed with login.                                                                                                                                                                                                                                                                                          |                     |                                                                                                                                                                   |                       |
| <b>Additional Comments</b>                                                                                                                                                                                                                                                                                                                                      |                     |                                                                                                                                                                   |                       |
| <u>Didn't Receive SW-3, LW-04</u><br><u>Received MW-22</u>                                                                                                                                                                                                                                                                                                      |                     |                                                                                                                                                                   |                       |



Environment Testing  
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### Cooler/Sample Receipt and Temperature Log Form

|                                                                                                                                                                                                                                                                                                                                                                  |                     |                                                                     |                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Client Information</b>                                                                                                                                                                                                                                                                                                                                        |                     |                                                                     |                                                                                              |
| Client: <u>ScS Eng.</u>                                                                                                                                                                                                                                                                                                                                          |                     |                                                                     |                                                                                              |
| City/State                                                                                                                                                                                                                                                                                                                                                       | CITY                | STATE                                                               | Project                                                                                      |
| <b>Receipt Information</b>                                                                                                                                                                                                                                                                                                                                       |                     |                                                                     |                                                                                              |
| Date/Time Received                                                                                                                                                                                                                                                                                                                                               | DATE <u>9-19-25</u> | TIME <u>1630</u>                                                    | Received By <u>PH</u>                                                                        |
| Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee<br><input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other _____ |                     |                                                                     |                                                                                              |
| <b>Condition of Cooler/Containers</b>                                                                                                                                                                                                                                                                                                                            |                     |                                                                     |                                                                                              |
| Sample(s) received in Cooler?                                                                                                                                                                                                                                                                                                                                    |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes Cooler ID _____                                                                       |
| Multiple Coolers?                                                                                                                                                                                                                                                                                                                                                |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes Cooler # <u>2</u> of <u>3</u>                                                         |
| Cooler Custody Seals Present?                                                                                                                                                                                                                                                                                                                                    |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Sample Custody Seals Present?                                                                                                                                                                                                                                                                                                                                    |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Trip Blank Present?                                                                                                                                                                                                                                                                                                                                              |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes Which VOA samples are in cooler? ↓                                                    |
| <b>Temperature Record</b>                                                                                                                                                                                                                                                                                                                                        |                     |                                                                     |                                                                                              |
| Coolant <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other _____ <input type="checkbox"/> NONE                                                                                                                                                                        |                     |                                                                     |                                                                                              |
| Thermometer ID <u>CC</u>                                                                                                                                                                                                                                                                                                                                         |                     | Correction Factor (°C) <u>0</u>                                     |                                                                                              |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                              |
| Uncorrected Temp (°C) <u>4.4</u>                                                                                                                                                                                                                                                                                                                                 |                     | Corrected Temp (°C) <u>4.4</u>                                      |                                                                                              |
| • Sample Container Temperature                                                                                                                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                              |
| Container(s) used:                                                                                                                                                                                                                                                                                                                                               | <u>CONTAINER 1</u>  |                                                                     | <u>CONTAINER 2</u>                                                                           |
| Uncorrected Temp (°C):                                                                                                                                                                                                                                                                                                                                           |                     |                                                                     |                                                                                              |
| Corrected Temp (°C)                                                                                                                                                                                                                                                                                                                                              |                     |                                                                     |                                                                                              |
| <b>Exceptions Noted</b>                                                                                                                                                                                                                                                                                                                                          |                     |                                                                     |                                                                                              |
| 1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>a) If yes Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                               |                     |                                                                     |                                                                                              |
| 2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e g , bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                 |                     |                                                                     |                                                                                              |
| NOTE If yes, contact PM before proceeding If no, proceed with login                                                                                                                                                                                                                                                                                              |                     |                                                                     |                                                                                              |
| <b>Additional Comments</b>                                                                                                                                                                                                                                                                                                                                       |                     |                                                                     |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                  |                     |                                                                     |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                  |                     |                                                                     |                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                  |                     |                                                                     |                                                                                              |



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### Cooler/Sample Receipt and Temperature Log Form

|                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Client Information</b>                                                                                                                                                                                                                                                                                                                                         |                     |                                                                     |                                                                                               |
| Client <u>ScS Eng.</u>                                                                                                                                                                                                                                                                                                                                            |                     |                                                                     |                                                                                               |
| City/State:                                                                                                                                                                                                                                                                                                                                                       | CITY                | STATE                                                               | Project                                                                                       |
| <b>Receipt Information</b>                                                                                                                                                                                                                                                                                                                                        |                     |                                                                     |                                                                                               |
| Date/Time Received.                                                                                                                                                                                                                                                                                                                                               | DATE <u>9.19.25</u> | TIME <u>1635</u>                                                    | Received By: <u>PH</u>                                                                        |
| Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee<br><input checked="" type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other. _____ |                     |                                                                     |                                                                                               |
| <b>Condition of Cooler/Containers</b>                                                                                                                                                                                                                                                                                                                             |                     |                                                                     |                                                                                               |
| Sample(s) received in Cooler?                                                                                                                                                                                                                                                                                                                                     |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes: Cooler ID.                                                                            |
| Multiple Coolers?                                                                                                                                                                                                                                                                                                                                                 |                     | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | If yes: Cooler # <u>3</u> of <u>3</u>                                                         |
| Cooler Custody Seals Present?                                                                                                                                                                                                                                                                                                                                     |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes: Cooler custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Sample Custody Seals Present?                                                                                                                                                                                                                                                                                                                                     |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Trip Blank Present?                                                                                                                                                                                                                                                                                                                                               |                     | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | If yes: Which VOA samples are in cooler? ↓                                                    |
| <b>Temperature Record</b>                                                                                                                                                                                                                                                                                                                                         |                     |                                                                     |                                                                                               |
| Coolant <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE                                                                                                                                                                        |                     |                                                                     |                                                                                               |
| Thermometer ID: <u>CC</u>                                                                                                                                                                                                                                                                                                                                         |                     | Correction Factor (°C): <u>0</u>                                    |                                                                                               |
| • Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature                                                                                                                                                                                                                                    |                     |                                                                     |                                                                                               |
| Uncorrected Temp (°C): <u>5.7</u>                                                                                                                                                                                                                                                                                                                                 |                     | Corrected Temp (°C): <u>5.7</u>                                     |                                                                                               |
| • Sample Container Temperature                                                                                                                                                                                                                                                                                                                                    |                     |                                                                     |                                                                                               |
| Container(s) used:                                                                                                                                                                                                                                                                                                                                                | <u>CONTAINER 1</u>  |                                                                     | <u>CONTAINER 2</u>                                                                            |
| Uncorrected Temp (°C):                                                                                                                                                                                                                                                                                                                                            |                     |                                                                     |                                                                                               |
| Corrected Temp (°C):                                                                                                                                                                                                                                                                                                                                              |                     |                                                                     |                                                                                               |
| <b>Exceptions Noted</b>                                                                                                                                                                                                                                                                                                                                           |                     |                                                                     |                                                                                               |
| 1) If temperature exceeds criteria, was sample(s) received same day of sampling? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                               |                     |                                                                     |                                                                                               |
| 2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                  |                     |                                                                     |                                                                                               |
| NOTE: If yes, contact PM before proceeding. If no, proceed with login.                                                                                                                                                                                                                                                                                            |                     |                                                                     |                                                                                               |
| <b>Additional Comments</b>                                                                                                                                                                                                                                                                                                                                        |                     |                                                                     |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                               |
|                                                                                                                                                                                                                                                                                                                                                                   |                     |                                                                     |                                                                                               |

## Chain of Custody Record

EUROFINS  
DES MOINES SERVICE CENTER  
214

| Client Information                                                                                                                                                                                                     |  | Lab PM                                                                                                      |             | Carrier Tracking No(s)       |                                                                               | COC No                                      |                            |                     |                                               |                            |                            |                            |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------|-------------|------------------------------|-------------------------------------------------------------------------------|---------------------------------------------|----------------------------|---------------------|-----------------------------------------------|----------------------------|----------------------------|----------------------------|--|
| Client Contact:                                                                                                                                                                                                        |  | Fredrick, Sandie                                                                                            |             |                              |                                                                               | 310-110011-13815.1                          |                            |                     |                                               |                            |                            |                            |  |
| Michael Morgan                                                                                                                                                                                                         |  | E-Mail:                                                                                                     |             | State of Origin:             |                                                                               | Page: Page 1 of 3                           |                            |                     |                                               |                            |                            |                            |  |
| Company                                                                                                                                                                                                                |  | Sandra Fredrick@et.eurofins.com                                                                             |             |                              |                                                                               | Job #:                                      |                            |                     |                                               |                            |                            |                            |  |
| SCS Engineers                                                                                                                                                                                                          |  | PWSID:                                                                                                      |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Address:                                                                                                                                                                                                               |  | Due Date Requested:                                                                                         |             |                              |                                                                               | Preservation Codes:                         |                            |                     |                                               |                            |                            |                            |  |
| 1690 All State Court Suite 100                                                                                                                                                                                         |  | TAT Requested (days):                                                                                       |             |                              |                                                                               | D - HNO3                                    |                            |                     |                                               |                            |                            |                            |  |
| City:                                                                                                                                                                                                                  |  |                                                                                                             |             |                              |                                                                               | N - None                                    |                            |                     |                                               |                            |                            |                            |  |
| West Des Moines                                                                                                                                                                                                        |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| State, Zip                                                                                                                                                                                                             |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| IA, 50265                                                                                                                                                                                                              |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Phone:                                                                                                                                                                                                                 |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| 25224064                                                                                                                                                                                                               |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Email:                                                                                                                                                                                                                 |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| mmorgan@scsengineers.com                                                                                                                                                                                               |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Project Name:                                                                                                                                                                                                          |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Marshalltown - 25224064                                                                                                                                                                                                |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Site:                                                                                                                                                                                                                  |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
|                                                                                                                                                                                                                        |  |                                                                                                             |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Sample Identification                                                                                                                                                                                                  |  | Sample Date                                                                                                 | Sample Time | Sample Type (C=comp, G=grab) | Matrix (w=water, s=solid, o=wastewater, BT=Tissue, As=Air, DW=Drinking Water) | Field Filtered Sample (Yes or No)           | Perform MS/MSD (Yes or No) | 6020B - Metals (16) | 9066A, ORGFM, 28D - Chloride/Fluoride/Sulfate | 2540C - Caled, 1, 3765, 85 | Total Number of Containers | Special Instructions/Note: |  |
| MW-3                                                                                                                                                                                                                   |  | 9-17                                                                                                        | 11:10       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-4                                                                                                                                                                                                                   |  | 9-16                                                                                                        | 13:43       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-5                                                                                                                                                                                                                   |  | 9-16                                                                                                        | 14:20       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-7                                                                                                                                                                                                                   |  | 9-17                                                                                                        | 10:56       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-8                                                                                                                                                                                                                   |  | 9-17                                                                                                        | 13:11       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-9                                                                                                                                                                                                                   |  | 9-17                                                                                                        | 15:59       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-10                                                                                                                                                                                                                  |  | 9-18                                                                                                        | 14:39       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-11AR                                                                                                                                                                                                                |  | 9-18                                                                                                        | 13:10       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-13                                                                                                                                                                                                                  |  | 9-17                                                                                                        | 12:16       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-14                                                                                                                                                                                                                  |  | 9-16                                                                                                        | 17:00       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| MW-18                                                                                                                                                                                                                  |  | 9-17                                                                                                        | 16:30       |                              | Water                                                                         |                                             |                            |                     |                                               |                            |                            |                            |  |
| Possible Hazard Identification                                                                                                                                                                                         |  | Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)                         |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological |  | Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Deliverable Requested I, II, III, IV, Other (specify)                                                                                                                                                                  |  | Special Instructions/QC Requirements:                                                                       |             |                              |                                                                               |                                             |                            |                     |                                               |                            |                            |                            |  |
| Empty Kit Relinquished by:                                                                                                                                                                                             |  | Date:                                                                                                       |             | Time:                        |                                                                               | Method of Shipment:                         |                            |                     |                                               |                            |                            |                            |  |
| Relinquished by: Garrett Horvath                                                                                                                                                                                       |  | Date/Time: 9-14                                                                                             |             | Company: SCS                 |                                                                               | Received by:                                |                            | Date/Time: 9-19-25  |                                               | Company: 1635              |                            |                            |  |
| Relinquished by:                                                                                                                                                                                                       |  | Date/Time:                                                                                                  |             | Company:                     |                                                                               | Received by:                                |                            | Date/Time:          |                                               | Company:                   |                            |                            |  |
| Relinquished by:                                                                                                                                                                                                       |  | Date/Time:                                                                                                  |             | Company:                     |                                                                               | Received by:                                |                            | Date/Time:          |                                               | Company:                   |                            |                            |  |
| Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No                                                                                                                                         |  | Custody Seal No                                                                                             |             |                              |                                                                               | Cooler Temperature(s) °C and Other Remarks: |                            |                     |                                               |                            |                            |                            |  |





## Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-316198-1

**Login Number: 316198**

**List Source: Eurofins Cedar Falls**

**List Number: 1**

**Creator: Robison, Jessie**

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

**Groundwater Monitoring Results - Field Parameters**  
**Marshalltown Closed Landfill / SCS Engineers Project #25225064.00**  
**September 2025**

| Sample  | Sample Date | GW Elevation (feet amsl) | Temperature (Deg. C) | pH (Std. Units) | Specific Conductivity (µs/cm) | Turbidity (NTU) |
|---------|-------------|--------------------------|----------------------|-----------------|-------------------------------|-----------------|
| MW-3    | 9/17/2025   | 870.03                   | 16.4                 | 6.80            | 772                           | 4.83            |
| MW-4    | 9/16/2025   | 873.16                   | 15.1                 | 6.79            | 921                           | 5.51            |
| MW-5    | 9/16/2025   | 876.56                   | 13.9                 | 6.30            | 553                           | 9.95            |
| MW-7    | 9/17/2025   | 876.82                   | 12.0                 | 7.05            | 630                           | 12.71           |
| MW-8    | 9/17/2025   | 880.79                   | 19.6                 | 6.93            | 674                           | 12.48           |
| MW-9    | 9/17/2025   | 910.72                   | 15.1                 | 7.09            | 593                           | 38.34           |
| MW-10   | 9/17/2025   | 929.62                   | 12.7                 | 7.15            | 475                           | 6.79            |
| MW-11AR | 9/18/2025   | 874.68                   | 13.4                 | 7.35            | 793                           | 59.49           |
| MW-13   | 9/17/2025   | 910.75                   | 17.1                 | 6.91            | 786                           | 98.85           |
| MW-14   | 9/16/2025   | 918.12                   | 16.2                 | 7.00            | 602                           | 38.04           |
| MW-18   | 9/17/2025   | 904.33                   | 14.7                 | 6.82            | 623                           | 4.57            |
| MW-19   | 9/16/2025   | 876.49                   | 13.6                 | 7.05            | 618                           | 3.30            |
| MW-20   | 9/17/2025   | 874.70                   | 14.1                 | 7.01            | 919                           | 4.81            |
| MW-21   | 9/16/2025   | 873.12                   | 13.7                 | 6.87            | 772                           | 7.74            |
| MW-22   | 9/17/2025   | 874.10                   | --                   | --              | --                            | --              |
| MW-23   | 9/16/2025   | 915.94                   | 17.3                 | 6.90            | 718                           | 23.98           |
| GWGCS   | 9/17/2025   | --                       | 19.0                 | 7.16            | 1192                          | 5.40            |
| SW-1    | 9/16/2024   | --                       | 20.8                 | 7.78            | 593                           | 17.55           |
| SW-2    | 9/17/2024   | --                       | 18.8                 | 7.75            | 642                           | 4.91            |

Abbreviations:

mg/L = milligrams per liter

mV = millivolts

amsl = above mean sea level

-- = not measured

Notes:

None

Created by: NDK  
 Last revision by: KMV  
 Checked by: RM

Date: 10/6/2021  
 Date: 9/23/2025  
 Date: 9/23/2025

C:\Users\FQT6\AppData\Local\Microsoft\Windows\InetCache\Content.Outlook\YC7WU6TQ\[2509\_Marshalltown\_Field.xlsx]GW Field Parameters



## Appendix D

### Historical Summary of Groundwater Chemistry

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**ARSENIC**

**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11 AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|
| ARSENIC, DISSOLVED | 1993-Sep |       |       |       |       |       | <5    | <5    |          | <5    | <5    | <5    |       | <5    |
| ARSENIC, DISSOLVED | 1994-Feb | <5    | <5    | <5    | <5    | <5    | <5    | <5    |          | <5    | <5    | <5    | <5    | 11    |
| ARSENIC, DISSOLVED | 1994-Apr | <5    | <5    | <5    | <5    | <5    | <5    | <5    |          | <5    | <5    | <5    | <5    | <5    |
| ARSENIC, DISSOLVED | 1994-Jul | <5    | <5    | <5    | <5    | <5    | <5    | <5    |          | <5    | <5    | <5    | <5    | <5    |
| ARSENIC, DISSOLVED | 1994-Oct | <5    | <5    | <5    | <5    | <5    | <5    | <5    |          | <5    | <5    | <5    | <5    | <5    |
| ARSENIC, DISSOLVED | 1995-Apr |       |       |       |       |       |       |       |          |       |       |       |       | <5    |
| ARSENIC, DISSOLVED | 1996-Apr |       |       |       |       |       |       |       |          |       |       |       |       | 1.4   |
| ARSENIC, DISSOLVED | 1996-Oct |       |       |       |       |       |       |       |          |       |       |       |       | <5    |
| ARSENIC, DISSOLVED | 1997-Apr |       |       |       |       |       |       |       |          |       |       |       |       | 1     |
| ARSENIC, DISSOLVED | 1997-Oct |       |       |       |       |       |       |       |          |       |       |       |       | 1.9   |
| ARSENIC, DISSOLVED | 1998-Apr |       |       |       |       |       |       |       |          |       |       |       |       | <1    |
| ARSENIC, DISSOLVED | 1998-Oct |       |       |       |       |       |       |       |          |       |       |       |       | <1    |
| ARSENIC, DISSOLVED | 1999-Sep |       |       |       |       |       |       |       |          |       |       |       |       | <1    |
| ARSENIC, DISSOLVED | 2000-Sep | <1    | 4.2   | <1    | <1    | <1    | <1    | <1    |          | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2001-Sep | <1    | 3.6   | <1    | <1    | <1    | <1    | <1    |          | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2002-Sep | <1    | 3.1   | <1    | <1    | <1    | <1    | <1    |          | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2003-Sep | <1    | 2.9   | <1    | <1    | <1    | <1    | <1    |          | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2004-Sep | <1    | 3.5   | 2.2   | <1    | <1    | <1    | <1    |          | <1    | <1    | 1.7   | <1    | <1    |
| ARSENIC, DISSOLVED | 2005-Sep | <1    | 3     | <1    | <1    | <1    | <1    | <1    | <1       | 1.9   | 1.5   | <1    | 1.6   | <1    |
| ARSENIC, DISSOLVED | 2006-Sep | <1    | 2.12  | <1    | <1    | <1    | <1    | <1    | <1       | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2007-Sep | <1    | 2.99  | 3.24  | <1    | <1    | <1    | <1    | <1       | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2008-Sep | <1    | 3.15  | 4.29  | <1    | <1    | 1.41  | <1    | <1       | <1    | <1    | <1    | <1    | <1    |
| ARSENIC, DISSOLVED | 2009-Sep | <1    | 4.27  | 3.06  | <1    | <1    | 1.33  | <1    | <1       | <1    | <1    | 1.08  | <1    | <1    |
| ARSENIC, DISSOLVED | 2010-Sep | <1    | 2.32  | 1.35  | <1    | <1    | <1    | <1    | <1       | <1    | <1    | 1.87  | <1    | <1    |
| ARSENIC, DISSOLVED | 2011-Sep | <2    | 3.72  | <1    | <1    | <1    | <2    | <2    | <2       | <2    | <2    | <2    | <1    | <2    |
| ARSENIC, DISSOLVED | 2012-Sep | <2    | 1.44  | 1.33  | <2    | <1    | <2    | <2    | <1       | <2    | <2    | <2    | <2    | <1    |
| ARSENIC, DISSOLVED | 2013-Apr |       |       |       |       |       |       |       |          |       |       |       |       |       |
| ARSENIC, DISSOLVED | 2013-Sep | <1    | 2.6   | 1.2   | <1    | <1    | <1    | <1    | <1       | <1    | <1    | <1    | <1    | 2.9   |
| ARSENIC, DISSOLVED | 2014-Sep | <1    | 2.4   | 7.3   | <1    | <1    | <1    | <1    | <1       | <1    | <1    | <1    | <1    | 1.1   |
| ARSENIC, DISSOLVED | 2015-Sep | 1.3   | 3.1   | 2.7   | <1    | <1    | 1.1   | <1    | 1.1      | <1    | <1    | 1.3   | <1    | 5.3   |
| ARSENIC, DISSOLVED | 2016-Sep |       |       | 0.24  |       | 0.4   |       | 0.13  |          |       |       |       |       | 1     |
| ARSENIC            | 2013-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| ARSENIC            | 2014-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| ARSENIC            | 2015-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| ARSENIC            | 2016-Sep | 0.52  | 6     | 4.2   | 0.25  | 0.63  | 0.55  | 0.14  | 0.94     | 0.38  | 0.64  | 1.2   | 0.26  | 1.3   |
| ARSENIC            | 2017-Sep | 0.68  | 5.9   | 1.2   | 0.32  | 0.29  | 0.26  | 0.17  | <0.052   | 0.16  | 1.6   | 0.32  | 0.41  | 1.4   |
| ARSENIC            | 2018-Sep | 0.35  | 18.7  | 2.1   | 0.38  | 0.55  | 0.3   | 0.36  | 1.7      | 0.33  | 0.38  | 4.4   | 0.41  | 1.2   |

GW Standard:

MCL = 10

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**ARSENIC**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| ARSENIC, DISSOLVED | 1993-Sep |       | <5    | <5    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1994-Feb | 5     | 7     | <5    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1994-Apr | <5    | <5    | <5    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1994-Jul | <5    | <5    | <5    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1994-Oct | <5    | <5    | <5    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1995-Apr |       | <5    |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1996-Apr |       | <1    |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1996-Oct | <5    | <5    |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1997-Apr |       |       |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1997-Oct |       |       |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1998-Apr |       |       |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1998-Oct |       |       |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 1999-Sep | 1.1   | 1.2   |       |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2000-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2001-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2002-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2003-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2004-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2005-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2006-Sep | <1    | <1    | <2    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2007-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2008-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2009-Sep | <1    | <1    | <1    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2010-Sep | <1    | <1    | <2    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2011-Sep | <2    | <2    | <6    |       |       |       |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2012-Sep | <2    |       | <1    | <1    | 1.95  | <1    |       |       |       |       |       | 1.94          |
| ARSENIC, DISSOLVED | 2013-Apr |       |       |       | <1    |       |       |       |       |       |       | 39.3  | 5.48          |
| ARSENIC, DISSOLVED | 2013-Sep | <1    | 1     | <1    |       | 1     | <1    |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2014-Sep | <1    | <1    | <1    | <1    | <1    | <1    |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2015-Sep | 1.5   | 2     | <1    | 1.1   | 1.8   | 1.6   |       |       |       |       |       |               |
| ARSENIC, DISSOLVED | 2016-Sep |       |       |       |       |       |       |       |       |       |       |       |               |
| ARSENIC            | 2013-Sep |       |       |       | <1    |       |       |       |       |       |       |       | 4.9           |
| ARSENIC            | 2014-Sep |       |       |       |       |       |       |       | 3.2   |       |       |       | 2.6           |
| ARSENIC            | 2015-Sep |       |       |       |       |       |       |       | 5.4   |       |       |       | 2.2           |
| ARSENIC            | 2016-Sep | 0.8   | 0.41  | 0.32  |       | 0.57  | 0.76  |       | 45.2  |       |       |       | 8.9           |
| ARSENIC            | 2017-Sep | 0.58  | 0.58  | 0.29  | 0.22  | 1.4   | 3.2   |       | 6.8   |       |       |       | 52            |
| ARSENIC            | 2018-Sep | 0.57  | 0.49  | 0.25  | 0.27  | 0.76  | 0.86  |       | 2.6   |       |       |       | 72.7          |

GW Standard:  
MCL = 10

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**BARIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11 AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|
| BARIUM, DISSOLVED  | 1993-Sep |       |       |       |       |       | <500  | <500  |          | <500  | <500  | <500  |       | <500  |
| BARIUM, DISSOLVED  | 1994-Apr | <500  | <500  | <500  | <500  | <500  | <500  | <500  |          | <500  | <500  | <500  | <500  | <500  |
| BARIUM, DISSOLVED  | 1994-Feb | <500  | <500  | <500  | <500  | <500  | <500  | <500  |          | <500  | <500  | <500  | <500  | <500  |
| BARIUM, DISSOLVED  | 1994-Jul | 123   | 107   | 142   | 118   | 154   | 118   | 150   |          | 131   | 97    | 94    | 139   | 76    |
| BARIUM, DISSOLVED  | 1994-Oct | 106   | 104   | 116   | 121   | 160   | 106   | 152   |          | 128   | 96    | 87    | 140   | 74    |
| BARIUM, DISSOLVED  | 1999-Sep | 93    | 88    | 109   | 107   | 145   | 108   | 157   |          | 122   | 85    | 81    | 118   | 97    |
| BARIUM, DISSOLVED  | 2000-Sep | 89    | 79    | 68    | 102   | 128   | 128   | 150   |          | 110   | 56    | 99    | 117   | 80    |
| BARIUM, DISSOLVED  | 2001-Sep | 106   | 94    | 63    | 105   | 137   | 125   | 130   |          | 119   | 60    | 152   | 118   | 93    |
| BARIUM, DISSOLVED  | 2002-Sep | 98    | 84    | 74    | 110   | 126   | 136   | 154   |          | 104   | 70    | 157   | 121   | 79    |
| BARIUM, DISSOLVED  | 2003-Sep | 98    | 82    | 69    | 108   | 128   | 147   | 143   |          | 111   | 73    | 74    | 122   | 90    |
| BARIUM, DISSOLVED  | 2004-Sep | 115   | 96    | 78    | 105   | 129   | 146   | 129   |          | 106   | 72    | 265   | 116   | 95    |
| BARIUM, DISSOLVED  | 2005-Sep | 116   | 96    | 72    | 104   | 128   | 133   | 155   | 44       | 98    | 57    | 150   | 148   | 95    |
| BARIUM, DISSOLVED  | 2006-Sep | 110   | 93.1  | 86.2  | 116   | 126   | 164   | 169   | 26.8     | 72.6  | 67.5  | 81.5  | 117   | 91    |
| BARIUM, DISSOLVED  | 2007-Sep | 117   | 107   | 74.5  | 113   | 137   | 173   | 134   | 25.8     | 92.9  | 68.5  | 119   | 116   | 104   |
| BARIUM, DISSOLVED  | 2008-Sep | 114   | 112   | 104   | 113   | 167   | 176   | 143   | 28.4     | 94.5  | 70.7  | 167   | 118   | 109   |
| BARIUM, DISSOLVED  | 2009-Sep | 123   | 103   | 102   | 107   | 149   | 160   | 143   | 24.8     | 95.4  | 65.1  | 182   | 117   | 105   |
| BARIUM, DISSOLVED  | 2010-Sep | 124   | 92.6  | 113   | 108   | 150   | 170   | 136   | 22.4     | 72.1  | 63.7  | 173   | 110   | 92.2  |
| BARIUM, DISSOLVED  | 2011-Sep | 117   | 106   | 125   | 107   | 158   | 159   | 143   | 24.7     | 104   | 64.6  | 208   | 118   | 239   |
| BARIUM, DISSOLVED  | 2012-Sep | 124   | 95.1  | 161   | 119   | 154   | 168   | 171   | 31.4     | 100   | 70.2  | 117   | 135   | 96    |
| BARIUM, DISSOLVED  | 2013-Apr |       |       |       |       |       |       |       |          |       |       |       |       |       |
| BARIUM, DISSOLVED  | 2013-Sep | 147   | 100   | 113   | 109   | 150   | 201   | 135   | 31.5     | 89.4  | 58.8  | 171   | 121   | 114   |
| BARIUM, DISSOLVED  | 2014-Sep | 105   | 104   | 197   | 104   | 133   | 181   | 132   | 23.2     | 55.3  | 66.4  | <10   | 119   | 85.5  |
| BARIUM, DISSOLVED  | 2015-Sep | 113   | 110   | 110   | 116   | 126   | 174   | 121   | 28.6     | 78.7  | 59.5  | 154   | 118   | 117   |
| BARIUM, DISSOLVED  | 2016-Sep |       |       | 170   |       | 110   |       | 150   |          |       |       |       |       | 96    |
| BARIUM             | 2013-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| BARIUM             | 2014-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| BARIUM             | 2015-Sep |       |       |       |       |       |       |       |          |       |       |       |       |       |
| BARIUM             | 2016-Sep | 123   | 114   | 183   | 106   | 114   | 158   | 151   | 30.1     | 91.2  | 62.1  | 176   | 123   | 96.5  |
| BARIUM             | 2017-Sep | 112   | 102   | 118   | 110   | 135   | 138   | 149   | <0.095   | 101   | 108   | 200   | 124   | 99.1  |
| BARIUM             | 2018-Sep | 123   | 187   | 143   | 98.9  | 118   | 157   | 131   | 35.6     | 90.4  | 55.1  | 242   | 122   | 87.3  |

GW Standard:  
MCL = 2000

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**BARIUM**

**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| BARIUM, DISSOLVED  | 1993-Sep |       | <500  | <500  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 1994-Apr | <500  | <500  | <500  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 1994-Feb | <500  | <500  | <500  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 1994-Jul | 108   | 87    | <50   |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 1994-Oct | 108   | 61    | 20    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 1999-Sep | 89    | 46    | 17    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2000-Sep | 71    | 47    | 38    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2001-Sep | 80    | 39    | 26    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2002-Sep | 88    | 41    | 27    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2003-Sep | 87    | 36    | 26    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2004-Sep | 82    | 46    | 37    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2005-Sep | 77    | 47    | 28    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2006-Sep | 93.8  | 50    | 15.8  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2007-Sep | 97.1  | 55    | 57.3  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2008-Sep | 113   | 52.9  | 31.1  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2009-Sep | 104   | 52.2  | 77    |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2010-Sep | 86.8  | 66.2  | 55.1  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2011-Sep | 97.3  | 46.1  | 25.1  |       |       |       |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2012-Sep | 94.5  |       | 12.4  | 27.1  | 54.7  | 108   |       |       |       |       |       | 31.4          |
| BARIUM, DISSOLVED  | 2013-Apr |       |       |       | 54.2  |       |       |       |       |       |       | 13300 | 21.5          |
| BARIUM, DISSOLVED  | 2013-Sep | 91    | 41    | 77.6  |       | 139   | 148   |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2014-Sep | 81.5  | 80    | 51.4  | 55.8  | 183   | 163   |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2015-Sep | 103   | 60.8  | 91.8  | 52    | 178   | 157   |       |       |       |       |       |               |
| BARIUM, DISSOLVED  | 2016-Sep |       |       |       |       |       |       |       |       |       |       |       |               |
| BARIUM             | 2013-Sep |       |       |       | 43.1  |       |       |       |       |       |       |       | 30.2          |
| BARIUM             | 2014-Sep |       |       |       |       |       |       |       | 112   |       |       |       | 29.7          |
| BARIUM             | 2015-Sep |       |       |       |       |       |       |       | 143   |       |       |       | 42.4          |
| BARIUM             | 2016-Sep | 104   | 93.8  | 94.2  |       | 180   | 198   |       | 859   |       |       |       | 151           |
| BARIUM             | 2017-Sep | 91.3  | 40.9  | 57    | 38.4  | 116   | 441   |       | 181   |       |       |       | 951 M1        |
| BARIUM             | 2018-Sep | 89.8  | 79.6  | 60    | 55    | 174   | 180   |       | 134   |       |       |       | 952           |

GW Standard:

MCL = 2000

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**BERYLLIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER   | EVENT    | MW-03 | MW-04 | MW-05  | MW-07  | MW-08  | MW-09 | MW-10  | MW-11AR | MW-13  | MW-14 |
|----------------------|----------|-------|-------|--------|--------|--------|-------|--------|---------|--------|-------|
| BERYLLIUM, DISSOLVED | 1999-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2000-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2001-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2002-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2003-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2004-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    |         | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2005-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2006-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2007-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2008-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2009-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2010-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2011-Sep | <10   | <10   | <10    | <10    | <10    | <10   | <10    | <10     | <10    | <10   |
| BERYLLIUM, DISSOLVED | 2012-Sep | <1    | <1    | <1     | <1     | <1     | <1    | <1     | <1      | <1     | <1    |
| BERYLLIUM, DISSOLVED | 2013-Apr |       |       |        |        |        |       |        |         |        |       |
| BERYLLIUM, DISSOLVED | 2013-Sep | <0.4  | <0.4  | <0.4   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4    | <0.4   | <0.4  |
| BERYLLIUM, DISSOLVED | 2014-Sep | <0.4  | <0.4  | <0.4   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4    | <0.4   | <0.4  |
| BERYLLIUM, DISSOLVED | 2015-Sep | <0.4  | <0.4  | 0.48   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4    | <0.4   | <0.4  |
| BERYLLIUM, DISSOLVED | 2016-Sep |       |       | <0.08  |        | <0.08  |       | <0.08  |         |        |       |
| BERYLLIUM            | 2013-Sep |       |       |        |        |        |       |        |         |        |       |
| BERYLLIUM            | 2014-Sep |       |       |        |        |        |       |        |         |        |       |
| BERYLLIUM            | 2015-Sep |       |       |        |        |        |       |        |         |        |       |
| BERYLLIUM            | 2016-Sep | <0.08 | <0.08 | <0.08  | <0.08  | <0.08  | <0.08 | <0.08  | <0.08   | <0.08  | <0.08 |
| BERYLLIUM            | 2017-Sep | 0.018 | 0.012 | <0.012 | <0.012 | <0.012 | 0.02  | <0.012 | <0.012  | <0.012 | 0.15  |
| BERYLLIUM            | 2018-Sep | <0.12 | <0.12 | <0.12  | <0.12  | <0.12  | <0.12 | 0.17   | <0.12   | <0.12  | <0.12 |

GW Standard:  
MCL = 4

## IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**BERYLLIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER   | EVENT    | MW-18  | MW-19  | MW-20  | MW-21 | MW-22  | MW-23  | GWGCS  | SW-01 | SW-02 | SW-03 |
|----------------------|----------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|
| BERYLLIUM, DISSOLVED | 1999-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2000-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2001-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2002-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2003-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2004-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2005-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2006-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2007-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2008-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2009-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2010-Sep | <10    | <10    | <10    | <10   | <10    | 11.7   |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2011-Sep | <10    | <10    | <10    | <10   | <10    | <10    |        |       |       |       |
| BERYLLIUM, DISSOLVED | 2012-Sep | <1     | <1     | <1     | <1    |        | <1     | <1     | <1    | <1    |       |
| BERYLLIUM, DISSOLVED | 2013-Apr |        |        |        |       |        |        | <1     |       |       |       |
| BERYLLIUM, DISSOLVED | 2013-Sep | <0.4   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4   |        | <0.4  | <0.4  |       |
| BERYLLIUM, DISSOLVED | 2014-Sep | <0.4   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4   | <0.4   | <0.4  | <0.4  |       |
| BERYLLIUM, DISSOLVED | 2015-Sep | <0.4   | <0.4   | <0.4   | <0.4  | <0.4   | <0.4   | <0.4   | <0.4  | <0.4  |       |
| BERYLLIUM, DISSOLVED | 2016-Sep |        |        | <0.08  |       |        |        |        |       |       |       |
| BERYLLIUM            | 2013-Sep |        |        |        |       |        |        | <0.4   |       |       |       |
| BERYLLIUM            | 2014-Sep |        |        |        |       |        |        |        |       |       |       |
| BERYLLIUM            | 2015-Sep |        |        |        |       |        |        |        |       |       |       |
| BERYLLIUM            | 2016-Sep | <0.08  | <0.08  | <0.08  | <0.08 | <0.08  | <0.08  |        | <0.08 | <0.08 |       |
| BERYLLIUM            | 2017-Sep | <0.012 | <0.012 | <0.012 | 0.015 | <0.012 | <0.012 | <0.012 | 0.021 | 0.21  |       |
| BERYLLIUM            | 2018-Sep | 0.13   | <0.12  | <0.12  | <0.12 | <0.12  | <0.12  | <0.12  | <0.12 | <0.12 |       |

GW Standard:  
MCL = 4

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**BERYLLIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER   | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|----------------------|----------|-------|-------|-------|-------|---------------|
| BERYLLIUM, DISSOLVED | 1999-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2000-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2001-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2002-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2003-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2004-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2005-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2006-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2007-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2008-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2009-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2010-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2011-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2012-Sep |       |       |       |       | <1            |
| BERYLLIUM, DISSOLVED | 2013-Apr |       |       |       | <5    | <1            |
| BERYLLIUM, DISSOLVED | 2013-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2014-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2015-Sep |       |       |       |       |               |
| BERYLLIUM, DISSOLVED | 2016-Sep |       |       |       |       |               |
| BERYLLIUM            | 2013-Sep |       |       |       |       | <0.4          |
| BERYLLIUM            | 2014-Sep | <0.4  |       |       |       | <0.4          |
| BERYLLIUM            | 2015-Sep | <0.4  |       |       |       | <0.4          |
| BERYLLIUM            | 2016-Sep | 2.6   |       |       |       | 0.6           |
| BERYLLIUM            | 2017-Sep | 0.26  |       |       |       | 6.4 M1        |
| BERYLLIUM            | 2018-Sep | <0.12 |       |       |       | 5.6           |

GW Standard:  
MCL = 4

# **IPL Marshalltown East and West Closed Landfills Historic Monitoring Results**

**BORON**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| BORON, DISSOLVED   | 2009-Sep | 535   | 3980  | 717   | <100  | <100  | <100  | <100  | 493     | <100  | 400   |
| BORON, DISSOLVED   | 2010-Sep | 584   | 2940  | 858   | 120   | <100  | <100  | <100  | 1140    | 113   | 414   |
| BORON, DISSOLVED   | 2011-Sep | 432   | 4920  | 687   | <100  | <100  | <100  | <100  | 801     | <100  | 143   |
| BORON, DISSOLVED   | 2012-Sep | 539   | 4070  | 599   | <100  | <100  | <100  | <100  | 605     | <100  | 222   |
| BORON, DISSOLVED   | 2013-Apr |       |       |       |       |       |       |       |         |       |       |
| BORON, DISSOLVED   | 2013-Sep | 1020  | 3290  | 521   | <100  | <100  | <100  | <100  | 388     | <100  | 400   |
| BORON, DISSOLVED   | 2014-Sep | 505   | 3020  | 458   | 125   | <100  | <100  | <100  | 628     | 428   | 535   |
| BORON, DISSOLVED   | 2015-Sep | 687   | 3890  | 499   | <100  | <100  | <100  | <100  | 686     | <100  | 232   |
| BORON, DISSOLVED   | 2016-Sep |       |       | 460   |       | <50   |       | <50   |         |       |       |
| BORON              | 2013-Sep |       |       |       |       |       |       |       |         |       |       |
| BORON              | 2014-Sep |       |       |       |       |       |       |       |         |       |       |
| BORON              | 2015-Sep |       |       |       |       |       |       |       |         |       |       |
| BORON              | 2016-Sep | 740   | 3940  | 444   | 126   | <50   | <50   | <50   | 650     | 50.2  | 282   |
| BORON              | 2017-Sep | 700   | 4810  | 440   | 49    | 37.6  | 17.2  | 14.1  | 755     | 48.6  | 169   |
| BORON              | 2018-Sep | 616   | 3710  | 490   | 228   | <12.5 | <12.5 | <12.5 | 443     | 41.4  | 651   |

GW Standard:

None

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**BORON**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| BORON, DISSOLVED   | 2009-Sep | <100  | <100  | 5180  | 4640  | 2000  | <100  |       |       |       |       |
| BORON, DISSOLVED   | 2010-Sep | 118   | 225   | 5590  | 1840  | 1850  | <100  |       |       |       |       |
| BORON, DISSOLVED   | 2011-Sep | 121   | <100  | 4960  | 4060  | 1940  | <100  |       |       |       |       |
| BORON, DISSOLVED   | 2012-Sep | 539   | <100  | 3820  | 1000  |       | <100  | <100  | <100  | <100  |       |
| BORON, DISSOLVED   | 2013-Apr |       |       |       |       |       |       | 126   |       |       |       |
| BORON, DISSOLVED   | 2013-Sep | <100  | <100  | 4920  | 2630  | 1380  | <100  |       | <100  | <100  |       |
| BORON, DISSOLVED   | 2014-Sep | <100  | 566   | 3070  | 974   | 1230  | <100  | 128   | <100  | 549   |       |
| BORON, DISSOLVED   | 2015-Sep | <100  | 111   | 5020  | 3430  | 1720  | <100  | 119   | <100  | 373   |       |
| BORON, DISSOLVED   | 2016-Sep |       |       | 3900  |       |       |       |       |       |       |       |
| BORON              | 2013-Sep |       |       |       |       |       |       | <100  |       |       |       |
| BORON              | 2014-Sep |       |       |       |       |       |       |       |       |       |       |
| BORON              | 2015-Sep |       |       |       |       |       |       |       |       |       |       |
| BORON              | 2016-Sep | 53.8  | 226   | 3870  | 1870  | 2450  | 70.1  |       | <50   | 289   |       |
| BORON              | 2017-Sep | 57    | 44.7  | 4860  | 3580  | 1600  | 47    | 91.2  | 46.6  | 67.4  |       |
| BORON              | 2018-Sep | 21.6  | 645   | 3310  | 1270  | 1330  | 42.9  | 70.5  | <12.5 | <12.5 |       |

GW Standard:

None

# **IPL Marshalltown East and West Closed Landfills Historic Monitoring Results**

**BORON**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| BORON, DISSOLVED   | 2009-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2010-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2011-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2012-Sep |       |       |       |       | 378           |
| BORON, DISSOLVED   | 2013-Apr |       |       |       | 1360  | 393           |
| BORON, DISSOLVED   | 2013-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2014-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2015-Sep |       |       |       |       |               |
| BORON, DISSOLVED   | 2016-Sep |       |       |       |       |               |
| BORON              | 2013-Sep |       |       |       |       | 333           |
| BORON              | 2014-Sep | 1030  |       |       |       | 305           |
| BORON              | 2015-Sep | 272   |       |       |       | 272           |
| BORON              | 2016-Sep | 378   |       |       |       | 216           |
| BORON              | 2017-Sep | 309   |       |       |       | 266           |
| BORON              | 2018-Sep | 1390  |       |       |       | 295           |

GW Standard:  
None

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**COBALT**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04  | MW-05  | MW-07 | MW-08  | MW-09  | MW-10  | MW-11AR | MW-13  | MW-14  |
|--------------------|----------|-------|--------|--------|-------|--------|--------|--------|---------|--------|--------|
| COBALT, DISSOLVED  | 1999-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2000-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2001-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2002-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2003-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2004-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    |         | <20    | <20    |
| COBALT, DISSOLVED  | 2005-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    | <20     | <20    | <20    |
| COBALT, DISSOLVED  | 2006-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    | <20     | <20    | <20    |
| COBALT, DISSOLVED  | 2007-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    | <20     | <20    | <20    |
| COBALT, DISSOLVED  | 2008-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    | <20     | <20    | <20    |
| COBALT, DISSOLVED  | 2009-Sep | <20   | <20    | <20    | <20   | <20    | <20    | <20    | <20     | <20    | <20    |
| COBALT, DISSOLVED  | 2010-Sep | <1.55 | 6.25 J | 7.07 J | <1.55 | 3.62 J | 6.61 J | 4.44 J | 3.82 J  | 3.42 J | 3.56 J |
| COBALT, DISSOLVED  | 2011-Sep | <1.55 | <1.55  | <1.55  | <1.55 | <1.55  | <1.55  | <1.55  | 1.75 J  | <1.55  | <1.55  |
| COBALT, DISSOLVED  | 2012-Sep | <1.55 | <1.55  | 1.93 J | <1.55 | 3.63 J | <1.55  | <1.55  | <1.55   | <1.55  | <1.55  |
| COBALT, DISSOLVED  | 2013-Apr |       |        |        |       |        |        |        |         |        |        |
| COBALT, DISSOLVED  | 2013-Sep | <5    | <5     | <5     | <5    | <5     | <5     | <5     | <5      | <5     | <5     |
| COBALT, DISSOLVED  | 2014-Sep | <5    | <5     | 27.3   | <5    | <5     | <5     | <5     | <5      | <5     | <5     |
| COBALT, DISSOLVED  | 2015-Sep | <5    | <5     | <5     | <5    | <5     | <5     | <5     | <5      | <5     | <5     |
| COBALT, DISSOLVED  | 2016-Sep |       |        | <0.5   |       | <0.5   |        | <0.5   |         |        |        |
| COBALT             | 2013-Sep |       |        |        |       |        |        |        |         |        |        |
| COBALT             | 2014-Sep |       |        |        |       |        |        |        |         |        |        |
| COBALT             | 2015-Sep |       |        |        |       |        |        |        |         |        |        |
| COBALT             | 2016-Sep | <0.5  | <0.5   | 1      | <0.5  | <0.5   | 2      | <0.5   | 1.7     | 1.2    | 1.3    |
| COBALT             | 2017-Sep | 0.22  | 0.42   | 4.1    | 0.027 | 0.051  | 0.43   | 0.05   | <0.014  | 0.15   | 3      |
| COBALT             | 2018-Sep | <0.15 | 0.56   | 4.3    | <0.15 | 0.15   | 1.4    | 0.76   | 1       | 0.52   | 0.5    |

GW Standard:  
None

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**COBALT**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-18  | MW-19  | MW-20 | MW-21  | MW-22  | MW-23  | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|--------|--------|-------|--------|--------|--------|-------|-------|-------|-------|
| COBALT, DISSOLVED  | 1999-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2000-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2001-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2002-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2003-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2004-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2005-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2006-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2007-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2008-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2009-Sep | <20    | <20    | <20   | <20    | <20    | <20    |       |       |       |       |
| COBALT, DISSOLVED  | 2010-Sep | 4.67 J | 7.21 J | 4.6 J | 3.95 J | 2.41 J | <1.55  |       |       |       |       |
| COBALT, DISSOLVED  | 2011-Sep | 3.35 J | <1.55  | <1.55 | <1.55  | <1.55  | <1.55  |       |       |       |       |
| COBALT, DISSOLVED  | 2012-Sep | 1.97 J | <1.55  | <1.55 | <1.55  |        | 3.24 J | <1.55 | <1.55 | <1.55 |       |
| COBALT, DISSOLVED  | 2013-Apr |        |        |       |        |        |        | <7    |       |       |       |
| COBALT, DISSOLVED  | 2013-Sep | 5.3    | <5     | <5    | <5     | <5     | <5     |       | <5    | <5    |       |
| COBALT, DISSOLVED  | 2014-Sep | <5     | <5     | <5    | <5     | <5     | <5     | <5    | <5    | <5    |       |
| COBALT, DISSOLVED  | 2015-Sep | <5     | <5     | <5    | <5     | <5     | <5     | <5    | <5    | <5    |       |
| COBALT, DISSOLVED  | 2016-Sep |        |        | <0.5  |        |        |        |       |       |       |       |
| COBALT             | 2013-Sep |        |        |       |        |        |        | <5    |       |       |       |
| COBALT             | 2014-Sep |        |        |       |        |        |        |       |       |       |       |
| COBALT             | 2015-Sep |        |        |       |        |        |        |       |       |       |       |
| COBALT             | 2016-Sep | 3.1    | <0.5   | <0.5  | <0.5   | <0.5   | <0.5   |       | <0.5  | <0.5  |       |
| COBALT             | 2017-Sep | 1      | 0.22   | 0.09  | 0.16   | 0.19   | 0.036  | 0.1   | 0.45  | 3.4   |       |
| COBALT             | 2018-Sep | 20.4   | 0.21   | 0.16  | 0.21   | <0.15  | <0.15  | 0.16  | 0.49  | 0.4   |       |

GW Standard:  
None

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**COBALT**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| COBALT, DISSOLVED  | 1999-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2000-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2001-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2002-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2003-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2004-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2005-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2006-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2007-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2008-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2009-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2010-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2011-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2012-Sep |       |       |       |       | <1.55         |
| COBALT, DISSOLVED  | 2013-Apr |       |       |       | 164   | <7            |
| COBALT, DISSOLVED  | 2013-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2014-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2015-Sep |       |       |       |       |               |
| COBALT, DISSOLVED  | 2016-Sep |       |       |       |       |               |
| COBALT             | 2013-Sep |       |       |       |       | <5            |
| COBALT             | 2014-Sep | <5    |       |       |       | <5            |
| COBALT             | 2015-Sep | 12.1  |       |       |       | <5            |
| COBALT             | 2016-Sep | 140   |       |       |       | 5.8           |
| COBALT             | 2017-Sep | 13.3  |       |       |       | 71.2          |
| COBALT             | 2018-Sep | 6.3   |       |       |       | 54.5          |

GW Standard:  
None

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**COPPER**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| COPPER, DISSOLVED  | 1993-Sep |       |       |       |       |       | <50   | <50   |         | <50   | <50   |
| COPPER, DISSOLVED  | 1994-Feb | <50   | <50   | <50   | <50   | <50   | <50   | <50   |         | <50   | <50   |
| COPPER, DISSOLVED  | 1994-Apr | <50   | <50   | <50   | <50   | <50   | <50   | <50   |         | <50   | <50   |
| COPPER, DISSOLVED  | 1994-Jul | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <20   |
| COPPER, DISSOLVED  | 1994-Oct | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <20   |
| COPPER, DISSOLVED  | 1999-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER, DISSOLVED  | 2000-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER, DISSOLVED  | 2001-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER, DISSOLVED  | 2002-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER, DISSOLVED  | 2004-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <20   |
| COPPER, DISSOLVED  | 2005-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2006-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2007-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2008-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2009-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2010-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2011-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2012-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| COPPER, DISSOLVED  | 2013-Apr |       |       |       |       |       |       |       |         |       |       |
| COPPER, DISSOLVED  | 2013-Sep | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10     | <10   | <10   |
| COPPER, DISSOLVED  | 2014-Sep | <10   | <10   | 14.4  | <10   | <10   | <10   | <10   | <10     | <10   | <10   |
| COPPER, DISSOLVED  | 2015-Sep | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10     | <10   | <10   |
| COPPER, DISSOLVED  | 2016-Sep |       |       | 0.66  |       | 1.1   |       | 0.44  |         |       |       |
| COPPER             | 2013-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER             | 2014-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER             | 2015-Sep |       |       |       |       |       |       |       |         |       |       |
| COPPER             | 2016-Sep | 0.69  | 0.3   | 2.7   | 0.94  | 2     | 0.42  | 0.72  | 2.4     | 2.7   | 3.6   |
| COPPER             | 2017-Sep | 2.9   | 0.98  | 0.83  | 0.41  | 0.8   | 1.3   | 0.58  | <0.045  | 0.99  | 5.5   |
| COPPER             | 2018-Sep | <0.48 | 3.3   | 0.62  | 0.77  | 1.1   | 0.95  | 2.3   | 5.9     | 1.9   | 2.5   |

GW Standard:  
SMCL = 1000

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**COPPER**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| COPPER, DISSOLVED  | 1993-Sep | <50   |       | <50   |       | <50   | <50   |       |       |       |       |
| COPPER, DISSOLVED  | 1994-Feb | <50   | <50   | <50   | <50   | <50   | <50   |       |       |       |       |
| COPPER, DISSOLVED  | 1994-Apr | <50   | <50   | <50   | <50   | <50   | <50   |       |       |       |       |
| COPPER, DISSOLVED  | 1994-Jul | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 1994-Oct | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 1999-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER, DISSOLVED  | 2000-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER, DISSOLVED  | 2001-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER, DISSOLVED  | 2002-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER, DISSOLVED  | 2004-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2005-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2006-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2007-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2008-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2009-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2010-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2011-Sep | <20   | <20   | <20   | <20   | <20   | <20   |       |       |       |       |
| COPPER, DISSOLVED  | 2012-Sep | <20   | <20   | <20   | <20   |       | <20   | <20   | <20   | <20   |       |
| COPPER, DISSOLVED  | 2013-Apr |       |       |       |       |       |       | <20   |       |       |       |
| COPPER, DISSOLVED  | 2013-Sep | <10   | <10   | <10   | <10   | <10   | <10   |       | <10   | <10   |       |
| COPPER, DISSOLVED  | 2014-Sep | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10   |       |
| COPPER, DISSOLVED  | 2015-Sep | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10   | <10   |       |
| COPPER, DISSOLVED  | 2016-Sep |       |       | 1     |       |       |       |       |       |       |       |
| COPPER             | 2013-Sep |       |       |       |       |       |       | <10   |       |       |       |
| COPPER             | 2014-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER             | 2015-Sep |       |       |       |       |       |       |       |       |       |       |
| COPPER             | 2016-Sep | 1.3   | 0.34  | 2     | 1.4   | 1.1   | 1.9   |       | 0.86  | 1.1   |       |
| COPPER             | 2017-Sep | 1     | 0.46  | 1.5   | 0.74  | 2.6   | 1     | 0.78  | 0.85  | 5.6   |       |
| COPPER             | 2018-Sep | 13.3  | 0.59  | 1.1   | 0.77  | 0.59  | 1.2   | <0.48 | 1     | 0.79  |       |

GW Standard:  
SMCL = 1000

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**COPPER**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| COPPER, DISSOLVED  | 1993-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 1994-Feb |       |       |       |       |               |
| COPPER, DISSOLVED  | 1994-Apr |       |       |       |       |               |
| COPPER, DISSOLVED  | 1994-Jul |       |       |       |       |               |
| COPPER, DISSOLVED  | 1994-Oct |       |       |       |       |               |
| COPPER, DISSOLVED  | 1999-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2000-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2001-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2002-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2004-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2005-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2006-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2007-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2008-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2009-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2010-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2011-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2012-Sep |       |       |       |       | <20           |
| COPPER, DISSOLVED  | 2013-Apr |       |       |       | 884   | <20           |
| COPPER, DISSOLVED  | 2013-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2014-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2015-Sep |       |       |       |       |               |
| COPPER, DISSOLVED  | 2016-Sep |       |       |       |       |               |
| COPPER             | 2013-Sep |       |       |       |       | <10           |
| COPPER             | 2014-Sep | <10   |       |       |       | <10           |
| COPPER             | 2015-Sep | <10   |       |       |       | <10           |
| COPPER             | 2016-Sep | 72.4  |       |       |       | 22.4          |
| COPPER             | 2017-Sep | 9.6   |       |       |       | 174           |
| COPPER             | 2018-Sep | 4.3   |       |       |       | 128           |

GW Standard:  
SMCL = 1000

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**IRON**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 | MW-21 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|
| IRON, DISSOLVED    | 1993-Sep |       |       |       |       |       | 90    | <50   |         | 50    | 50    | 70    |       | <50   |       |
| IRON, DISSOLVED    | 1994-Feb | 60    | <50   | 6600  | 50    | 60    | 380   | 60    |         | 500   | 110   | 70    | <50   | 60    | 60    |
| IRON, DISSOLVED    | 1994-Apr | 80    | 6300  | 80    | 50    | 50    | 70    | 80    |         | 290   | 70    | 250   | 90    | 70    | 90    |
| IRON, DISSOLVED    | 1994-Jul | <100  | 4200  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1994-Oct | <100  | 4900  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1995-Apr | <100  | 6400  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1995-Oct | <100  | 3800  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1996-Apr | <30   | 4420  | <30   | <30   | <30   | <30   | 438   |         | <30   | <30   | <30   | <30   | 74    | <30   |
| IRON, DISSOLVED    | 1996-Oct | 54    | 5350  | 45    | <30   | <30   | <30   | <30   |         | <30   | <30   | <30   | <30   | <30   | <30   |
| IRON, DISSOLVED    | 1997-Apr | <100  | 5500  | 170   | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1997-Oct | <100  | 4900  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1998-Apr | <100  | 6300  | 250   | <100  | <100  | <100  | <100  |         | <100  | 130   | <100  | <100  | 120   | <100  |
| IRON, DISSOLVED    | 1998-Oct | 230   | 5500  | 1400  | 160   | <100  | <100  | 160   |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 1999-Sep | <100  | 5600  | 110   | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2000-Sep | <100  | 4700  | 590   | <100  | <100  | <100  | <100  |         | <100  | <100  | 100   | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2001-Sep | <100  | 5130  | <100  | <100  | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2002-Sep | 370   | 5000  | 540   | 110   | <100  | <100  | <100  |         | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2003-Sep | <100  | 3780  | 130   | <100  | <100  | 120   | <100  |         | <100  | 170   | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2004-Sep | 180   | 4200  | 700   | <100  | <100  | <100  | 520   |         | <100  | <100  | 1700  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2005-Sep | <100  | 4900  | 130   | <100  | <100  | <100  | 140   | <100    | <100  | <100  | 110   | 2700  | <100  | <100  |
| IRON, DISSOLVED    | 2006-Sep | <100  | 4650  | 701   | <100  | <100  | <100  | <100  | <100    | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2007-Sep | <100  | 2970  | 3840  | <100  | <100  | <100  | <100  | <100    | <100  | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2008-Sep | <100  | 5370  | 7310  | <100  | <100  | 365   | <100  | <100    | <100  | <100  | 1470  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2009-Sep | <100  | 5000  | 5570  | <100  | 165   | 251   | 108   | <100    | 314   | <100  | 511   | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2010-Sep | 437   | 3450  | 4310  | 115   | <100  | <100  | 115   | <100    | <100  | <100  | 863   | <100  | 118   | <100  |
| IRON, DISSOLVED    | 2011-Sep | <100  | 4200  | 1310  | <100  | <100  | 157   | <100  | 101     | 1160  | <100  | 423   | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2012-Sep | <100  | 2580  | 1620  | <100  | 413   | <100  | <100  | <100    | 432   | <100  | <100  | <100  | <100  | <100  |
| IRON, DISSOLVED    | 2013-Apr |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| IRON, DISSOLVED    | 2013-Sep | <50   | 2710  | <50   | <50   | <50   | <50   | <50   | <50     | <50   | <50   | 127   | <50   | <50   | <50   |
| IRON, DISSOLVED    | 2014-Sep | <50   | 3500  | 9870  | <50   | <50   | 179   | 302   | 78.8    | <50   | <50   | <50   | <50   | 176   | <50   |
| IRON, DISSOLVED    | 2015-Sep | <50   | 2460  | 1520  | <50   | <50   | <50   | <50   | <50     | <50   | <50   | 899   | <50   | <50   | <50   |
| IRON, DISSOLVED    | 2016-Sep |       |       | <13   |       | <13   |       | 34    |         |       |       |       |       | <13   |       |
| IRON               | 2013-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| IRON               | 2014-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| IRON               | 2015-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| IRON               | 2016-Sep | 362   | 4640  | 3530  | 51.9  | 820   | 55.7  | 126   | 1080    | 1240  | 1770  | 1170  | <12.8 | 140   | 1010  |
| IRON               | 2017-Sep | 475   | 4500  | 2850  | 11.9  | 18.7  | 357   | 93.1  | <9.6    | 162   | 4440  | 128   | 162   | 135   | 297   |
| IRON               | 2018-Sep | 42.2  | 12600 | 1100  | 41.7  | 45.2  | 624   | 344   | 993     | 289   | 267   | 6270  | 101   | 82.8  | 195   |

GW Standard:  
SMCL = 300

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**IRON**  
**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| IRON, DISSOLVED    | 1993-Sep | 120   | 90    |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1994-Feb | 1570  | <50   |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1994-Apr | <50   | 80    |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1994-Jul | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1994-Oct | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1995-Apr | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1995-Oct | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1996-Apr | <30   | <30   |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1996-Oct | 32    | <30   |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1997-Apr | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1997-Oct | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1998-Apr | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1998-Oct | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 1999-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2000-Sep | 120   | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2001-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2002-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2003-Sep | 200   | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2004-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2005-Sep | 100   | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2006-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2007-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2008-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2009-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2010-Sep | <100  | <100  |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2011-Sep | <100  | 178   |       |       |       |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2012-Sep |       | 893   | <100  | <100  | <100  |       |       |       |       |       | <100          |
| IRON, DISSOLVED    | 2013-Apr |       |       | <100  |       |       |       |       |       |       | 696   | 402           |
| IRON, DISSOLVED    | 2013-Sep | <50   | <50   |       | <50   | <50   |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2014-Sep | <50   | 77.8  | <50   | <50   | <50   |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2015-Sep | <50   | <50   | <50   | <50   | <50   |       |       |       |       |       |               |
| IRON, DISSOLVED    | 2016-Sep |       |       |       |       |       |       |       |       |       |       |               |
| IRON               | 2013-Sep |       |       | <50   |       |       |       |       |       |       |       | 143           |
| IRON               | 2014-Sep |       |       |       |       |       |       | 248   |       |       |       | <50           |
| IRON               | 2015-Sep |       |       |       |       |       |       | 1820  |       |       |       | <50           |
| IRON               | 2016-Sep | 54.6  | 518   |       | 471   | 578   |       | 46100 |       |       |       | 25400         |
| IRON               | 2017-Sep | 139   | 30.3  | 68.1  | 516   | 4500  |       | 3960  |       |       |       | 140000 M1     |
| IRON               | 2018-Sep | 23.9  | 34.3  | 23.5  | 295   | 213   |       | 819   |       |       |       | 224000        |

GW Standard:  
SMCL = 300

# IPL Marshalltown East and West Closed Landfills

## Historic Monitoring Results

**LEAD**

**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| LEAD, DISSOLVED    | 1993-Sep |       |       |       |       |       | <5    | <5    |         | <5    | <5    |
| LEAD, DISSOLVED    | 1994-Feb | <5    | <5    | <5    | <5    | <5    | <5    | <5    |         | <5    | <5    |
| LEAD, DISSOLVED    | 1994-Apr | <5    | <5    | <5    | <5    | <5    | <5    | <5    |         | <5    | <5    |
| LEAD, DISSOLVED    | 1994-Jul | <5    | <5    | <5    | <5    | <5    | <5    | <5    |         | <5    | <5    |
| LEAD, DISSOLVED    | 1994-Oct | <5    | <5    | <5    | <5    | <5    | <5    | <5    |         | <5    | <5    |
| LEAD, DISSOLVED    | 2004-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    |         | <4    | <4    |
| LEAD, DISSOLVED    | 2005-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2006-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2007-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2008-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2009-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2010-Sep | <4    | <4    | <4    | <4    | <4    | 11.4  | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2011-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2012-Sep | <4    | <4    | <4    | <4    | <4    | <4    | <4    | <4      | <4    | <4    |
| LEAD, DISSOLVED    | 2013-Apr |       |       |       |       |       |       |       |         |       |       |
| LEAD, DISSOLVED    | 2013-Sep | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1      | <1    | <1    |
| LEAD, DISSOLVED    | 2014-Sep | <1    | <1    | 13.8  | <1    | <1    | <1    | <1    | <1      | <1    | <1    |
| LEAD, DISSOLVED    | 2015-Sep | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1      | <1    | <1    |
| LEAD, DISSOLVED    | 2016-Sep |       |       | <0.19 |       | <0.19 |       | <0.19 |         |       |       |
| LEAD               | 2013-Sep |       |       |       |       |       |       |       |         |       |       |
| LEAD               | 2014-Sep |       |       |       |       |       |       |       |         |       |       |
| LEAD               | 2015-Sep |       |       |       |       |       |       |       |         |       |       |
| LEAD               | 2016-Sep | 0.24  | <0.19 | 1.9   | <0.19 | 0.42  | <0.19 | <0.19 | 1       | 0.71  | 0.98  |
| LEAD               | 2017-Sep | 0.36  | 0.18  | 0.08  | 0.056 | 0.053 | 0.25  | 0.12  | <0.033  | 0.13  | 1.9   |
| LEAD               | 2018-Sep | 0.4   | 1.9   | 0.38  | <0.12 | 0.14  | <0.12 | 0.55  | 0.64    | 0.39  | 0.42  |

GW Standard:

MCL = 15

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

LEAD

UNITS: UG/L

| CHEMICAL PARAMETER | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| LEAD, DISSOLVED    | 1993-Sep | <5    |       | <5    |       | 5     | <5    |       |       |       |       |
| LEAD, DISSOLVED    | 1994-Feb | <5    | <5    | <5    | <5    | <5    | <5    |       |       |       |       |
| LEAD, DISSOLVED    | 1994-Apr | <5    | <5    | <5    | <5    | <5    | <5    |       |       |       |       |
| LEAD, DISSOLVED    | 1994-Jul | <5    | <5    | <5    | <5    | <5    | <5    |       |       |       |       |
| LEAD, DISSOLVED    | 1994-Oct | <5    | <5    | <5    | <5    | <5    | <5    |       |       |       |       |
| LEAD, DISSOLVED    | 2004-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2005-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2006-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2007-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2008-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2009-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2010-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2011-Sep | <4    | <4    | <4    | <4    | <4    | <4    |       |       |       |       |
| LEAD, DISSOLVED    | 2012-Sep | <4    | <4    | <4    | <4    |       | <4    | <4    | <4    | <4    |       |
| LEAD, DISSOLVED    | 2013-Apr |       |       |       |       |       |       | <4    |       |       |       |
| LEAD, DISSOLVED    | 2013-Sep | <1    | <1    | <1    | <1    | <1    | <1    |       | <1    | <1    |       |
| LEAD, DISSOLVED    | 2014-Sep | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1    |       |
| LEAD, DISSOLVED    | 2015-Sep | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1    | <1    |       |
| LEAD, DISSOLVED    | 2016-Sep |       |       | <0.19 |       |       |       |       |       |       |       |
| LEAD               | 2013-Sep |       |       |       |       |       |       | <1    |       |       |       |
| LEAD               | 2014-Sep |       |       |       |       |       |       |       |       |       |       |
| LEAD               | 2015-Sep |       |       |       |       |       |       |       |       |       |       |
| LEAD               | 2016-Sep | 0.31  | <0.19 | <0.19 | 0.77  | 0.64  | 0.5   |       | 0.34  | 0.42  |       |
| LEAD               | 2017-Sep | 0.1   | 0.22  | 0.14  | 0.23  | 0.7   | 0.076 | 0.14  | 0.38  | 4.7   |       |
| LEAD               | 2018-Sep | 5.7   | 0.29  | 0.22  | 0.34  | <0.12 | <0.12 | <0.12 | 0.68  | 0.43  |       |

GW Standard:

MCL = 15

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**LEAD**

**UNITS: UG/L**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| LEAD, DISSOLVED    | 1993-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 1994-Feb |       |       |       |       |               |
| LEAD, DISSOLVED    | 1994-Apr |       |       |       |       |               |
| LEAD, DISSOLVED    | 1994-Jul |       |       |       |       |               |
| LEAD, DISSOLVED    | 1994-Oct |       |       |       |       |               |
| LEAD, DISSOLVED    | 2004-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2005-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2006-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2007-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2008-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2009-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2010-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2011-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2012-Sep |       |       |       |       | <4            |
| LEAD, DISSOLVED    | 2013-Apr |       |       |       | 23.5  | <4            |
| LEAD, DISSOLVED    | 2013-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2014-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2015-Sep |       |       |       |       |               |
| LEAD, DISSOLVED    | 2016-Sep |       |       |       |       |               |
| LEAD               | 2013-Sep |       |       |       |       | <1            |
| LEAD               | 2014-Sep | <1    |       |       |       | <1            |
| LEAD               | 2015-Sep | 1.9   |       |       |       | <1            |
| LEAD               | 2016-Sep | 61.9  |       |       |       | 8.3           |
| LEAD               | 2017-Sep | 6.3   |       |       |       | 63.8          |
| LEAD               | 2018-Sep | 0.97  |       |       |       | 74.4          |

GW Standard:

MCL = 15

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**MAGNESIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER   | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 | MW-21 |
|----------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|
| MAGNESIUM, DISSOLVED | 1993-Sep |       |       |       |       |       | 11000 | 26000 |         | 14000 | 31000 | 27000 |       | 27000 |       |
| MAGNESIUM, DISSOLVED | 1994-Feb | 18000 | 30000 | 32000 | 21000 | 25000 | 19000 | 32000 |         | 22000 | 29000 | 24000 | 24000 | 27000 | 27000 |
| MAGNESIUM, DISSOLVED | 1994-Apr | 24000 | 56000 | 38000 | 36000 | 42000 | 22000 | 30000 |         | 36000 | 37000 | 27000 | 32000 | 39000 | 27000 |
| MAGNESIUM, DISSOLVED | 1994-Jul | 20000 | 35000 | 36000 | 22000 | 25000 | 17000 | 30000 |         | 23000 | 26000 | 22000 | 23000 | 24000 | 24000 |
| MAGNESIUM, DISSOLVED | 1994-Oct | 17000 | 32000 | 20000 | 22000 | 24000 | 15000 | 29000 |         | 21000 | 24000 | 22000 | 24000 | 24000 | 27000 |
| MAGNESIUM, DISSOLVED | 1995-Apr |       | 36000 |       |       | 20000 |       |       |         |       |       |       |       |       |       |
| MAGNESIUM, DISSOLVED | 1995-Oct |       | 29000 |       |       |       |       |       |         |       |       |       |       |       |       |
| MAGNESIUM, DISSOLVED | 1996-Apr |       | 24000 |       |       |       |       |       |         |       |       |       |       |       | 23000 |
| MAGNESIUM, DISSOLVED | 1996-Oct |       | 27400 |       |       | 27100 |       |       |         |       |       |       |       |       |       |
| MAGNESIUM, DISSOLVED | 1997-Apr |       | 28000 |       |       | 23000 |       |       |         |       |       |       |       |       | 20000 |
| MAGNESIUM, DISSOLVED | 1997-Oct |       | 24000 |       |       | 26000 |       |       |         |       |       |       |       |       | 23000 |
| MAGNESIUM, DISSOLVED | 1998-Apr |       | 22000 |       |       | 18000 |       |       |         |       |       |       |       |       | 16000 |
| MAGNESIUM, DISSOLVED | 1998-Oct |       | 25000 |       |       | 25000 |       |       |         |       |       |       |       |       | 23000 |
| MAGNESIUM, DISSOLVED | 1999-Sep | 14000 | 24000 | 23000 | 19000 | 24000 | 14000 | 26000 |         | 22000 | 26000 | 18000 | 20000 | 24000 | 23000 |
| MAGNESIUM, DISSOLVED | 2000-Sep | 15000 | 23000 | 18000 | 20000 | 25000 | 17000 | 27000 |         | 21000 | 26000 | 20000 | 22000 | 23000 | 22000 |
| MAGNESIUM, DISSOLVED | 2001-Sep | 16400 | 23900 | 14600 | 19900 | 24700 | 14900 | 23600 |         | 22700 | 27600 | 28100 | 20500 | 21700 | 21700 |
| MAGNESIUM, DISSOLVED | 2002-Sep | 15000 | 22000 | 15000 | 20000 | 23000 | 17000 | 28000 |         | 23000 | 25000 | 31000 | 21000 | 22000 | 22000 |
| MAGNESIUM, DISSOLVED | 2003-Sep | 15600 | 22000 | 18300 | 20800 | 23500 | 16700 | 26500 |         | 23700 | 26900 | 36200 | 21800 | 22400 | 22100 |
| MAGNESIUM, DISSOLVED | 2004-Sep | 17000 | 23000 | 16000 | 20000 | 22000 | 19000 | 23000 |         | 22000 | 27000 | 31000 | 21000 | 23000 | 23000 |
| MAGNESIUM, DISSOLVED | 2005-Sep | 18000 | 23000 | 13000 | 20000 | 23000 | 16000 | 27000 | 43000   | 21000 | 28000 | 27000 | 22000 | 22000 | 23000 |
| MAGNESIUM, DISSOLVED | 2006-Sep | 17000 | 20500 | 16600 | 21700 | 21800 | 19900 | 29700 | 72900   | 12800 | 25800 | 31400 | 20200 | 22500 | 21800 |
| MAGNESIUM, DISSOLVED | 2007-Sep | 17300 | 22000 | 14700 | 19800 | 21300 | 19100 | 22900 | 64200   | 21500 | 25900 | 29800 | 20500 | 23900 | 24500 |
| MAGNESIUM, DISSOLVED | 2008-Sep | 17700 | 23700 | 18600 | 21000 | 25900 | 19900 | 24500 | 55200   | 22700 | 28300 | 19700 | 21500 | 26600 | 27400 |
| MAGNESIUM, DISSOLVED | 2009-Sep | 19000 | 22400 | 17400 | 20300 | 25000 | 19100 | 25900 | 49200   | 22100 | 27000 | 24200 | 21700 | 24600 | 25800 |
| MAGNESIUM, DISSOLVED | 2010-Sep | 17500 | 19300 | 19100 | 19400 | 23900 | 18500 | 24700 | 37700   | 15200 | 26600 | 17100 | 19600 | 25200 | 20300 |
| MAGNESIUM, DISSOLVED | 2011-Sep | 16900 | 21700 | 19000 | 20100 | 27700 | 18000 | 23500 | 41000   | 20700 | 25600 | 23400 | 21100 | 22400 | 24600 |
| MAGNESIUM, DISSOLVED | 2012-Sep | 16600 | 20800 | 22100 | 20700 | 24900 | 19700 | 27200 | 51000   | 22900 | 26300 | 26900 | 21600 | 21900 | 21700 |
| MAGNESIUM, DISSOLVED | 2013-Apr |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| MAGNESIUM, DISSOLVED | 2013-Sep | 19500 | 18900 | 16600 | 19000 | 21900 | 18700 | 20600 | 43800   | 19900 | 24400 | 27400 | 20500 | 21200 | 21800 |
| MAGNESIUM, DISSOLVED | 2014-Sep | 13500 | 17000 | 23200 | 16400 | 16400 | 18600 | 21100 | 31300   | 8420  | 21700 | <50   | 17700 | 18800 | 16100 |
| MAGNESIUM, DISSOLVED | 2015-Sep | 15100 | 20400 | 14600 | 19800 | 19800 | 19200 | 18400 | 36400   | 20200 | 25400 | 14800 | 19900 | 22600 | 22700 |
| MAGNESIUM, DISSOLVED | 2016-Sep |       |       | 27000 |       | 20200 |       | 23700 |         |       |       |       |       | 21400 |       |
| MAGNESIUM            | 2013-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| MAGNESIUM            | 2014-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| MAGNESIUM            | 2015-Sep |       |       |       |       |       |       |       |         |       |       |       |       |       |       |
| MAGNESIUM            | 2016-Sep | 15900 | 18900 | 26500 | 18400 | 19600 | 16000 | 23400 | 35200   | 19000 | 25000 | 16600 | 19900 | 21100 | 20100 |
| MAGNESIUM            | 2017-Sep | 14900 | 18800 | 13600 | 19000 | 22400 | 14600 | 23900 | 42900   | 17900 | 29800 | 20100 | 20000 | 22200 | 21700 |
| MAGNESIUM            | 2018-Sep | 15400 | 19700 | 27300 | 17400 | 17400 | 16000 | 21200 | 39300   | 17600 | 21600 | 16400 | 20200 | 21500 | 18100 |

GW Standard:  
None

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**MAGNESIUM**

**UNITS: UG/L**

| CHEMICAL PARAMETER   | EVENT    | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|----------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| MAGNESIUM, DISSOLVED | 1993-Sep | 33000 | 41000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1994-Feb | 82000 | 57000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1994-Apr | 64000 | 44000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1994-Jul | 26000 | 85000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1994-Oct | 33000 | 63000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1995-Apr | 26000 | 44000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1995-Oct |       |       |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1996-Apr | 34000 | 33000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1996-Oct | 35600 | 25900 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1997-Apr | 23000 | 19000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1997-Oct | 28000 | 36000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1998-Apr | 21000 | 7300  |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1998-Oct | 33000 | 36000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 1999-Sep | 35000 | 44000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2000-Sep | 37000 | 37000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2001-Sep | 33600 | 42300 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2002-Sep | 32000 | 30000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2003-Sep | 37900 | 34600 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2004-Sep | 31000 | 38000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2005-Sep | 32000 | 36000 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2006-Sep | 29100 | 33400 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2007-Sep | 31100 | 26800 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2008-Sep | 39900 | 40800 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2009-Sep | 35000 | 20300 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2010-Sep | 25800 | 29100 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2011-Sep | 33800 | 38100 |       |       |       |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2012-Sep |       | 56100 | 42500 | 20200 | 22900 |       |       |       |       |       | 20600         |
| MAGNESIUM, DISSOLVED | 2013-Apr |       |       | 421   |       |       |       |       |       |       | 14500 | 12200         |
| MAGNESIUM, DISSOLVED | 2013-Sep | 36900 | 25400 |       | 21800 | 21400 |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2014-Sep | 19900 | 13500 | 34200 | 24100 | 23500 |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2015-Sep | 23800 | 12100 | 39800 | 24600 | 24200 |       |       |       |       |       |               |
| MAGNESIUM, DISSOLVED | 2016-Sep |       |       |       |       |       |       |       |       |       |       |               |
| MAGNESIUM            | 2013-Sep |       |       | 34500 |       |       |       |       |       |       |       | 12600         |
| MAGNESIUM            | 2014-Sep |       |       |       |       |       |       | 28500 |       |       |       | 16600         |
| MAGNESIUM            | 2015-Sep |       |       |       |       |       |       | 29400 |       |       |       | 15700         |
| MAGNESIUM            | 2016-Sep | 24000 | 13000 |       | 24700 | 27300 |       | 37000 |       |       |       | 15600         |
| MAGNESIUM            | 2017-Sep | 31200 | 28900 | 37900 | 18000 | 20600 |       | 30100 |       |       |       | 46600         |
| MAGNESIUM            | 2018-Sep | 22500 | 7320  | 36600 | 25700 | 23500 |       | 22500 |       |       |       | 23000         |

GW Standard:

None

# IPL Marshalltown East and West Closed Landfills

## Historic Monitoring Results

### MANGANESE

UNITS: UG/L

| CHEMICAL PARAMETER   | EVENT    | MW-03 | MW-04 | MW-05  | MW-07  | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|----------------------|----------|-------|-------|--------|--------|-------|-------|-------|---------|-------|-------|
| MANGANESE, DISSOLVED | 1999-Sep | <10   | 850   | 215    | <10    | <10   | <10   | <10   |         | 357   | 54    |
| MANGANESE, DISSOLVED | 2000-Sep | <10   | 799   | 324    | <10    | <10   | 49    | 29    |         | 69    | 51    |
| MANGANESE, DISSOLVED | 2001-Sep | <10   | 875   | <10    | <10    | <10   | <10   | <10   |         | 380   | 42    |
| MANGANESE, DISSOLVED | 2002-Sep | <10   | 826   | 541    | <10    | <10   | 58    | 34    |         | 162   | 43    |
| MANGANESE, DISSOLVED | 2003-Sep | <10   | 1160  | 29     | <10    | <10   | 134   | 22    |         | 200   | 90    |
| MANGANESE, DISSOLVED | 2004-Sep | 15    | 839   | 1700   | <10    | <10   | 275   | 67    |         | 173   | 24    |
| MANGANESE, DISSOLVED | 2005-Sep | <10   | 832   | 809    | 10     | 14    | 45    | 32    | 85      | 73    | 47    |
| MANGANESE, DISSOLVED | 2006-Sep | 13.2  | 727   | 952    | 13     | 10.2  | 113   | 78    | 155     | 35.7  | 23    |
| MANGANESE, DISSOLVED | 2007-Sep | 10    | 696   | 1050   | <10    | <10   | 147   | <10   | 120     | 194   | 20.1  |
| MANGANESE, DISSOLVED | 2008-Sep | 20.9  | 618   | 1030   | <10    | 152   | 417   | 15.4  | 103     | 68.9  | 25.1  |
| MANGANESE, DISSOLVED | 2009-Sep | 14.8  | 745   | 502    | <10    | 551   | 199   | 13.1  | 99      | 160   | 78.3  |
| MANGANESE, DISSOLVED | 2010-Sep | 15.5  | 543   | 419    | <10    | 15.8  | 34.5  | 14.5  | 110     | 17.9  | 21.5  |
| MANGANESE, DISSOLVED | 2011-Sep | <10   | 642   | 209    | <10    | <10   | 27.1  | <10   | 128     | 335   | 37.5  |
| MANGANESE, DISSOLVED | 2012-Sep | <10   | 1320  | 171    | <10    | 583   | 13.1  | <10   | 93.4    | 279   | 161   |
| MANGANESE, DISSOLVED | 2013-Apr |       |       |        |        |       |       |       |         |       |       |
| MANGANESE, DISSOLVED | 2013-Sep | <5    | 858   | 52.3   | <5     | 125   | <5    | 60.5  | 60.9    | 75.9  | <5    |
| MANGANESE, DISSOLVED | 2014-Sep | <5    | 522   | 946    | <5     | <5    | 55.8  | 10.3  | 68.3    | <5    | <5    |
| MANGANESE, DISSOLVED | 2015-Sep | <5    | 701   | 230    | <5     | 52.5  | 96.3  | <5    | 60.1    | 52.4  | 24.3  |
| MANGANESE, DISSOLVED | 2016-Sep |       |       | 1      |        | 0.31  |       | 2.7   |         |       |       |
| MANGANESE            | 2013-Sep |       |       |        |        |       |       |       |         |       |       |
| MANGANESE            | 2014-Sep |       |       |        |        |       |       |       |         |       |       |
| MANGANESE            | 2015-Sep |       |       |        |        |       |       |       |         |       |       |
| MANGANESE            | 2016-Sep | 13.7  | 454   | 26.6   | 2.6    | 51.6  | 515   | 6.1   | 144     | 148   | 118   |
| MANGANESE            | 2017-Sep | 35.8  | 585   | 422    | 0.78 B | 4.3   | 49.8  | 3.2   | <0.07   | 14.6  | 407   |
| MANGANESE            | 2018-Sep | 5.2   | 602   | 466 M1 | 2.9    | 6.6   | 722   | 54.9  | 114     | 59.8  | 64.9  |

GW Standard:

SMCL = 50

# IPL Marshalltown East and West Closed Landfills

## Historic Monitoring Results

### MANGANESE

UNITS: UG/L

| CHEMICAL PARAMETER   | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|----------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| MANGANESE, DISSOLVED | 1999-Sep | 12    | <10   | <10   | <10   | 15    | 478   |       |       |       |       |
| MANGANESE, DISSOLVED | 2000-Sep | <10   | <10   | <10   | <10   | 25    | 370   |       |       |       |       |
| MANGANESE, DISSOLVED | 2001-Sep | 86    | <10   | <10   | <10   | <10   | 409   |       |       |       |       |
| MANGANESE, DISSOLVED | 2002-Sep | 688   | <10   | <10   | <10   | <10   | 340   |       |       |       |       |
| MANGANESE, DISSOLVED | 2003-Sep | 1150  | <10   | <10   | <10   | 118   | 497   |       |       |       |       |
| MANGANESE, DISSOLVED | 2004-Sep | 10000 | <10   | <10   | <10   | 30    | 432   |       |       |       |       |
| MANGANESE, DISSOLVED | 2005-Sep | 2500  | 192   | 13    | <10   | 89    | 433   |       |       |       |       |
| MANGANESE, DISSOLVED | 2006-Sep | 1240  | 10.8  | 11.4  | <10   | <10   | 359   |       |       |       |       |
| MANGANESE, DISSOLVED | 2007-Sep | 820   | <10   | <10   | <10   | 22.8  | 234   |       |       |       |       |
| MANGANESE, DISSOLVED | 2008-Sep | 2100  | 13.7  | <10   | <10   | <10   | 513   |       |       |       |       |
| MANGANESE, DISSOLVED | 2009-Sep | 2220  | 18.2  | 25.7  | 15.4  | 21.9  | 33.8  |       |       |       |       |
| MANGANESE, DISSOLVED | 2010-Sep | 1070  | 13    | 11.5  | <10   | <10   | 307   |       |       |       |       |
| MANGANESE, DISSOLVED | 2011-Sep | 1070  | <10   | <10   | <10   | 40.7  | 475   |       |       |       |       |
| MANGANESE, DISSOLVED | 2012-Sep | 327   | <10   | <10   | <10   |       | 1220  | <10   | 118   | 72.3  |       |
| MANGANESE, DISSOLVED | 2013-Apr |       |       |       |       |       |       | 74    |       |       |       |
| MANGANESE, DISSOLVED | 2013-Sep | 1240  | <5    | <5    | <5    | <5    | 84    |       | 103   | 173   |       |
| MANGANESE, DISSOLVED | 2014-Sep | <5    | <5    | <5    | <5    | <5    | 36.8  | 91.4  | 44.5  | 65.7  |       |
| MANGANESE, DISSOLVED | 2015-Sep | 379   | <5    | <5    | <5    | <5    | 9.9   | 21.6  | 98.3  | 262   |       |
| MANGANESE, DISSOLVED | 2016-Sep |       |       | 0.68  |       |       |       |       |       |       |       |
| MANGANESE            | 2013-Sep |       |       |       |       |       |       | 21.6  |       |       |       |
| MANGANESE            | 2014-Sep |       |       |       |       |       |       |       |       |       |       |
| MANGANESE            | 2015-Sep |       |       |       |       |       |       |       |       |       |       |
| MANGANESE            | 2016-Sep | 395   | 0.3   | 4.2   | 90.3  | 2.5   | 70    |       | 49    | 102   |       |
| MANGANESE            | 2017-Sep | 85.3  | 39.1  | 6.3   | 36.1  | 17.2  | 2.2   | 16.1  | 231   | 706   |       |
| MANGANESE            | 2018-Sep | 1120  | 40.9  | 15.7  | 53.6  | 2.9   | 2     | 166   | 114   | 106   |       |

GW Standard:

SMCL = 50

## IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

### MANGANESE

UNITS: UG/L

| CHEMICAL PARAMETER   | EVENT    | LW-01   | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|----------------------|----------|---------|-------|-------|-------|---------------|
| MANGANESE, DISSOLVED | 1999-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2000-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2001-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2002-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2003-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2004-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2005-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2006-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2007-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2008-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2009-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2010-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2011-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2012-Sep |         |       |       |       | <10           |
| MANGANESE, DISSOLVED | 2013-Apr |         |       |       | 123   | 18.5          |
| MANGANESE, DISSOLVED | 2013-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2014-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2015-Sep |         |       |       |       |               |
| MANGANESE, DISSOLVED | 2016-Sep |         |       |       |       |               |
| MANGANESE            | 2013-Sep |         |       |       |       | <5            |
| MANGANESE            | 2014-Sep | 1420    |       |       |       | <5            |
| MANGANESE            | 2015-Sep | 1840    |       |       |       | <5            |
| MANGANESE            | 2016-Sep | 8480    |       |       |       | 382           |
| MANGANESE            | 2017-Sep | 1180    |       |       |       | 17000 M1      |
| MANGANESE            | 2018-Sep | 1050 M1 |       |       |       | 4330          |

GW Standard:

SMCL = 50

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**SELENIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER  | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09  | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 | MW-21 |
|---------------------|----------|-------|-------|-------|-------|-------|--------|-------|---------|-------|-------|-------|-------|-------|-------|
| SELENIUM, DISSOLVED | 1993-Sep |       |       |       |       |       | <5     | <5    |         | <5    | <5    | <5    |       | 18    |       |
| SELENIUM, DISSOLVED | 1994-Feb | <5    | <5    | <5    | 7     | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 28    | 18    |
| SELENIUM, DISSOLVED | 1994-Apr | 15    | <5    | 15    | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 53    | 25    |
| SELENIUM, DISSOLVED | 1994-Jul | 5     | <5    | 5.4   | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 23.4  | 7.2   |
| SELENIUM, DISSOLVED | 1994-Oct | 5.4   | <5    | <5    | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 21.7  | 20.1  |
| SELENIUM, DISSOLVED | 1995-Apr | <5    |       | <5    |       |       |        |       |         |       |       |       |       | 13.9  | <5    |
| SELENIUM, DISSOLVED | 1995-Oct | <5    |       | 10.7  | <5    |       |        |       |         |       |       |       |       | 26.7  | 8.6   |
| SELENIUM, DISSOLVED | 1996-Apr | <5    |       | 7     | <5    |       |        |       |         |       |       |       |       | 11    | 6     |
| SELENIUM, DISSOLVED | 1996-Oct | 6     |       | 9     | <5    |       |        |       |         |       |       |       |       | 21    | 14    |
| SELENIUM, DISSOLVED | 1997-Apr |       |       |       |       |       |        |       |         |       |       |       |       | 17.5  | <5    |
| SELENIUM, DISSOLVED | 1997-Oct |       |       | 12.3  |       |       |        |       |         |       |       |       |       | 27    | <5    |
| SELENIUM, DISSOLVED | 1998-Apr |       |       | 20.5  |       |       |        |       |         |       |       |       |       | 11.4  | <5    |
| SELENIUM, DISSOLVED | 1998-Oct |       |       | <5    |       |       |        |       |         |       |       |       |       | 23    | 8.6   |
| SELENIUM, DISSOLVED | 1999-Sep | <5    |       | 9.3   |       |       |        |       |         |       |       |       |       | 37.6  | 10    |
| SELENIUM, DISSOLVED | 2000-Sep | <5    | <5    | 7.7   | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 14.8  | 5     |
| SELENIUM, DISSOLVED | 2001-Sep | <5    | <5    | 6.9   | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 22.5  | <5    |
| SELENIUM, DISSOLVED | 2002-Sep | <5    | <5    | 6     | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 13.2  | <5    |
| SELENIUM, DISSOLVED | 2003-Sep | 5.3   | <5    | 5.4   | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 16.3  | <5    |
| SELENIUM, DISSOLVED | 2004-Sep | <5    | <5    | <5    | <5    | <5    | <5     | <5    |         | <5    | <5    | <5    | <5    | 15.8  | <5    |
| SELENIUM, DISSOLVED | 2005-Sep | <5    | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 15.7  | <5    |
| SELENIUM, DISSOLVED | 2006-Sep | 6.5   | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 14.1  | <5    |
| SELENIUM, DISSOLVED | 2007-Sep | 5.29  | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 15    | 5.66  |
| SELENIUM, DISSOLVED | 2008-Sep | 7.24  | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 36.4  | 10.8  |
| SELENIUM, DISSOLVED | 2009-Sep | 5.37  | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 18.4  | 5.47  |
| SELENIUM, DISSOLVED | 2010-Sep | 5     | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 23.3  | <5    |
| SELENIUM, DISSOLVED | 2011-Sep | <5    | <5    | <5    | <5    | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 38.1  | 8.95  |
| SELENIUM, DISSOLVED | 2012-Sep | <5    | <5    | 23.8  | 12.9  | <5    | <5     | <5    | <5      | <5    | <5    | <5    | <5    | 27.9  | <5    |
| SELENIUM, DISSOLVED | 2013-Apr |       |       |       |       |       |        |       |         |       |       |       |       |       |       |
| SELENIUM, DISSOLVED | 2013-Sep | 7.5   | <1    | 30.9  | 1.8   | 1.1   | <1     | <1    | 2.2     | <1    | 2.3   | <1    | 2.5   | 40    | 7     |
| SELENIUM, DISSOLVED | 2014-Sep | 4.8   | <1    | 28.6  | <1    | <1    | <1     | <1    | 2.2     | <1    | 4.2   | <1    | 3.2   | 14    | 3.4   |
| SELENIUM, DISSOLVED | 2015-Sep | 4.8   | <1    | <1    | <1    | <1    | <1     | <1    | 1.7     | <1    | <1    | <1    | 1.5   | 36.4  | 6.6   |
| SELENIUM, DISSOLVED | 2016-Sep |       |       | 3     |       | 0.21  |        | 0.54  |         |       |       |       |       | 19    |       |
| SELENIUM            | 2013-Sep |       |       |       |       |       |        |       |         |       |       |       |       |       |       |
| SELENIUM            | 2014-Sep |       |       |       |       |       |        |       |         |       |       |       |       |       |       |
| SELENIUM            | 2015-Sep |       |       |       |       |       |        |       |         |       |       |       |       |       |       |
| SELENIUM            | 2016-Sep | 5.8   | 0.27  | 6.8   | 0.8   | 0.41  | <0.18  | 0.68  | 1.5     | 1.1   | 1.7   | 0.52  | 1.9   | 19.9  | 7.1   |
| SELENIUM            | 2017-Sep | 5.6   | 0.17  | 0.69  | 1.4   | 1     | <0.086 | 0.66  | <0.086  | 1     | 0.63  | 0.094 | 1.6   | 33.7  | 6.6   |
| SELENIUM            | 2018-Sep | 5.6   | 1.4   | 2.3   | 1.2   | 0.34  | <0.16  | 0.71  | 0.22    | 1.3   | 4     | 0.87  | 3.8   | 13.5  | 3.4   |

GW Standard:  
MCL = 50

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**SELENIUM**  
**UNITS: UG/L**

| CHEMICAL PARAMETER  | EVENT    | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|---------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| SELENIUM, DISSOLVED | 1993-Sep | <5    | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1994-Feb | <5    | 10    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1994-Apr | 26    | 53    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1994-Jul | 9.5   | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1994-Oct | 16.1  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1995-Apr | <5    | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1995-Oct | 13.4  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1996-Apr | 21    | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1996-Oct | 8     | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1997-Apr | 6.7   |       |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1997-Oct | 17.5  |       |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1998-Apr | <5    |       |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1998-Oct |       |       |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 1999-Sep | 17.3  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2000-Sep | 15.3  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2001-Sep | 13.4  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2002-Sep | 16.9  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2003-Sep | 12.1  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2004-Sep | 7.2   | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2005-Sep | 5.8   | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2006-Sep | 14.9  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2007-Sep | 5.98  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2008-Sep | 10.6  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2009-Sep | 6.65  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2010-Sep | <5    | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2011-Sep | 11.8  | <5    |       |       |       |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2012-Sep |       | <5    | <5    | <5    | <5    |       |       |       |       |       | 11.4          |
| SELENIUM, DISSOLVED | 2013-Apr |       |       | <5    |       |       |       |       |       |       | <5    | <5            |
| SELENIUM, DISSOLVED | 2013-Sep | 12.4  | 2.1   |       | 1.5   | 1.4   |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2014-Sep | 4.2   | 1.4   | <1    | 1.3   | 2     |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2015-Sep | 7.5   | <1    | <1    | 1.7   | 1.4   |       |       |       |       |       |               |
| SELENIUM, DISSOLVED | 2016-Sep |       |       |       |       |       |       |       |       |       |       |               |
| SELENIUM            | 2013-Sep |       |       | 1     |       |       |       |       |       |       |       | 8.3           |
| SELENIUM            | 2014-Sep |       |       |       |       |       |       | <1    |       |       |       | 12.8          |
| SELENIUM            | 2015-Sep |       |       |       |       |       |       | <1    |       |       |       | 6.3           |
| SELENIUM            | 2016-Sep | 8.2   | 0.36  |       | 0.83  | 1.2   |       | 4.8   |       |       |       | 7.6           |
| SELENIUM            | 2017-Sep | 9.2   | 6.1   | 0.21  | 1.4   | 1.4   |       | 0.54  |       |       |       | 13.2          |
| SELENIUM            | 2018-Sep | 3.6   | 0.47  | 1.3   | 1     | 1.3   |       | 1.3   |       |       |       | 28            |

GW Standard:  
MCL = 50

# IPL Marshalltown East and West Closed Landfills

## Historic Monitoring Results

### ZINC

UNITS: UG/L

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| ZINC, DISSOLVED    | 1993-Sep |       |       |       |       |       | <50   | <50   |         | <50   | <50   |
| ZINC, DISSOLVED    | 1994-Feb | <50   | <50   | <50   | <50   | <50   | <50   | <50   |         | <50   | <50   |
| ZINC, DISSOLVED    | 1994-Apr | <50   | <50   | <50   | <50   | <50   | <50   | <50   |         | <50   | <50   |
| ZINC, DISSOLVED    | 1994-Jul | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <72   |
| ZINC, DISSOLVED    | 1994-Oct | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <20   |
| ZINC, DISSOLVED    | 2004-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   |         | <20   | <20   |
| ZINC, DISSOLVED    | 2005-Sep | <20   | 23    | <20   | <20   | 20    | <20   | <20   | <20     | <20   | <20   |
| ZINC, DISSOLVED    | 2006-Sep | 25.9  | 35.6  | 20.4  | 28.6  | 31.5  | 24.4  | 20.4  | 21      | 43.8  | 49.7  |
| ZINC, DISSOLVED    | 2007-Sep | 38.4  | 48.3  | <20   | 29.1  | 29.2  | 42.9  | 25.2  | 46.9    | 38.3  | 32.8  |
| ZINC, DISSOLVED    | 2008-Sep | 22.6  | 25.8  | <20   | 21.2  | 21.2  | 23.6  | <20   | 27.2    | 27.7  | 22.8  |
| ZINC, DISSOLVED    | 2009-Sep | 44.2  | 53.4  | 23.8  | 35.4  | 42.1  | 37    | 28.9  | 36.8    | 45.4  | 37.1  |
| ZINC, DISSOLVED    | 2010-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| ZINC, DISSOLVED    | 2011-Sep | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20     | <20   | <20   |
| ZINC, DISSOLVED    | 2012-Sep | <20   | <20   | <20   | <20   | 20.7  | <20   | <20   | <20     | <20   | <20   |
| ZINC, DISSOLVED    | 2013-Apr |       |       |       |       |       |       |       |         |       |       |
| ZINC, DISSOLVED    | 2013-Sep | <50   | <50   | <50   | <50   | <50   | <50   | <50   | <50     | <50   | <50   |
| ZINC, DISSOLVED    | 2014-Sep | <50   | <50   | <50   | <50   | <50   | <50   | <50   | <50     | <50   | <50   |
| ZINC, DISSOLVED    | 2015-Sep | <50   | <50   | <50   | <50   | <50   | <50   | <50   | <50     | <50   | <50   |
| ZINC, DISSOLVED    | 2016-Sep |       |       | 1.5   |       | 1.6   |       | 1.5   |         |       |       |
| ZINC               | 2013-Sep |       |       |       |       |       |       |       |         |       |       |
| ZINC               | 2014-Sep |       |       |       |       |       |       |       |         |       |       |
| ZINC               | 2015-Sep |       |       |       |       |       |       |       |         |       |       |
| ZINC               | 2016-Sep | 2.7 B | 1.5 B | 10.3  | 3.5 B | 3 B   | 1.6 B | 1.8 B | 8.8 B   | 8.4 B | 6.9 B |
| ZINC               | 2017-Sep | 8.1   | 2.4 B | 2.4 B | 2.6 B | 4.9 B | 3.7 B | 2.1 B | <0.53   | 2.7 B | 14.5  |
| ZINC               | 2018-Sep | <3.7  | 5.9   | <3.7  | <3.7  | 4.4   | 4.7   | 5.4   | 9.6     | 4.8   | 7.2   |

GW Standard:

SMCL = 5000

# IPL Marshalltown East and West Closed Landfills

## Historic Monitoring Results

### ZINC

UNITS: UG/L

| CHEMICAL PARAMETER | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS       | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------------|-------|-------|-------|
| ZINC, DISSOLVED    | 1993-Sep | <50   |       | <50   |       | <50   | <50   |             |       |       |       |
| ZINC, DISSOLVED    | 1994-Feb | <50   | <50   | <50   | <50   | <50   | <50   |             |       |       |       |
| ZINC, DISSOLVED    | 1994-Apr | <50   | <50   | <50   | <50   | <50   | <50   |             |       |       |       |
| ZINC, DISSOLVED    | 1994-Jul | <20   | <20   | <20   | <20   | <20   | <20   |             |       |       |       |
| ZINC, DISSOLVED    | 1994-Oct | <20   | <20   | <20   | <20   | <20   | <20   |             |       |       |       |
| ZINC, DISSOLVED    | 2004-Sep | <20   | <20   | <20   | <20   | <20   | <20   |             |       |       |       |
| ZINC, DISSOLVED    | 2005-Sep | 22    | 22    | <20   | <20   | <20   | 27    |             |       |       |       |
| ZINC, DISSOLVED    | 2006-Sep | 36.5  | 26.4  | 31    | 24.1  | 24.4  | 37.9  |             |       |       |       |
| ZINC, DISSOLVED    | 2007-Sep | 59.6  | 25.9  | 32    | 34.5  | 43.7  | 63    |             |       |       |       |
| ZINC, DISSOLVED    | 2008-Sep | 32.5  | 20.8  | <20   | 24.5  | 31.6  | 52.7  |             |       |       |       |
| ZINC, DISSOLVED    | 2009-Sep | 65.1  | 34.2  | 48.6  | 44.1  | 43.7  | 46.3  |             |       |       |       |
| ZINC, DISSOLVED    | 2010-Sep | <20   | <20   | <20   | <20   | <20   | <20   |             |       |       |       |
| ZINC, DISSOLVED    | 2011-Sep | <20   | <20   | <20   | <20   | <20   | <20   |             |       |       |       |
| ZINC, DISSOLVED    | 2012-Sep | <20   | <20   | <20   | <20   |       | <20   | <20         | <20   | <20   |       |
| ZINC, DISSOLVED    | 2013-Apr |       |       |       |       |       |       | 79.1        |       |       |       |
| ZINC, DISSOLVED    | 2013-Sep | <50   | <50   | <50   | <50   | <50   | <50   |             | <50   | <50   |       |
| ZINC, DISSOLVED    | 2014-Sep | <50   | <50   | <50   | <50   | <50   | <50   | <50         | <50   | <50   |       |
| ZINC, DISSOLVED    | 2015-Sep | <50   | <50   | <50   | <50   | <50   | <50   | <50         | <50   | <50   |       |
| ZINC, DISSOLVED    | 2016-Sep |       |       | 4.7   |       |       |       |             |       |       |       |
| ZINC               | 2013-Sep |       |       |       |       |       |       | <50         |       |       |       |
| ZINC               | 2014-Sep |       |       |       |       |       |       |             |       |       |       |
| ZINC               | 2015-Sep |       |       |       |       |       |       |             |       |       |       |
| ZINC               | 2016-Sep | 22.3  | 1.3 B | 39.2  | 5.6 B | 23.5  | 4.9 B |             | 3.2   | 4.1   |       |
| ZINC               | 2017-Sep | 1.4 B | 2.6 B | 4.9 B | 3.7 B | 11.4  | 4.5 B | 2.1 B,M1,R1 | 2.7 B | 22.4  |       |
| ZINC               | 2018-Sep | 16.5  | 3.7   | 4.3   | 4.2   | <3.7  | 6.1   | <3.7        | 7.6   | 4.7   |       |

GW Standard:

SMCL = 5000

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

## ZINC

UNITS: UG/L

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| ZINC, DISSOLVED    | 1993-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 1994-Feb |       |       |       |       |               |
| ZINC, DISSOLVED    | 1994-Apr |       |       |       |       |               |
| ZINC, DISSOLVED    | 1994-Jul |       |       |       |       |               |
| ZINC, DISSOLVED    | 1994-Oct |       |       |       |       |               |
| ZINC, DISSOLVED    | 2004-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2005-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2006-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2007-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2008-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2009-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2010-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2011-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2012-Sep |       |       |       |       | <20           |
| ZINC, DISSOLVED    | 2013-Apr |       |       |       | 123   | <20           |
| ZINC, DISSOLVED    | 2013-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2014-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2015-Sep |       |       |       |       |               |
| ZINC, DISSOLVED    | 2016-Sep |       |       |       |       |               |
| ZINC               | 2013-Sep |       |       |       |       | <50           |
| ZINC               | 2014-Sep | <50   |       |       |       | <50           |
| ZINC               | 2015-Sep | <50   |       |       |       | <50           |
| ZINC               | 2016-Sep | 291   |       |       |       | 55.1          |
| ZINC               | 2017-Sep | 35.2  |       |       |       | 517           |
| ZINC               | 2018-Sep | 10.9  |       |       |       | 398           |

GW Standard:

SMCL = 5000

**IPL Marshalltown East and West Closed Landfills**  
**Historic Monitoring Results**

**CHLORIDE**  
**UNITS: MG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 | MW-20 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|-------|
| CHLORIDE           | 1993-Sep |       |       |       |       |       | 54    | 92    |         | 14    | 87    | 37    |       | 53    |
| CHLORIDE           | 1994-Feb | 15    | 2     | 25    | 17    | 54    | 7     | 11    |         | 2     | 2     | 3     | 11    | 33    |
| CHLORIDE           | 1994-Apr | 15    | 21    | 4     | 25    | 52    | 3     | 13    |         | 36    | 3     | 3     | 13    | 40    |
| CHLORIDE           | 1994-Jul | 13    | 18    | 5.4   | 23    | 47    | <5    | 12    |         | <5    | <5    | <5    | 16    | 33    |
| CHLORIDE           | 1994-Oct | 13    | 17    | <5    | 19    | 46    | <5    | 12    |         | <5    | <5    | 5     | 12    | 29    |
| CHLORIDE           | 1995-Apr | 14    | 12    | <5    | 26    | 46    | <5    | 11    |         | <5    | <5    | 5.6   | 28    | 36    |
| CHLORIDE           | 1995-Oct | 14    | 20    | <5    | 15    | 54    | <5    | 10    |         | <5    | <5    | <5    | 11    | 31    |
| CHLORIDE           | 1996-Apr | 15    | 11    | 3.6   | 19    | 56    | 3     | 10    |         | 4.9   | 4.8   | 7.1   | 10    | 32    |
| CHLORIDE           | 1996-Oct | 28    | 26    | 10    | 33    | 54    | 10    | 18    |         | 13    | 10    | 15    | 20    | 36    |
| CHLORIDE           | 1997-Apr | 15    | 9.4   | <5    | <5    | 47    | <5    | 7.8   |         | <5    | <5    | <5    | 18    | 37    |
| CHLORIDE           | 1997-Oct | 15    | 16    | <5    | 25    | 48    | <5    | 9.4   |         | <5    | <5    | 6.4   | 13    | 31    |
| CHLORIDE           | 1998-Apr | 12    | 22    | 5.1   | 33    | 46    | <5    | 9.4   |         | <5    | 5     | 6     | 31    | 38    |
| CHLORIDE           | 1998-Oct | 13    | 20    | <5    | 26    | 52    | <5    | 11    |         | <5    | <5    | 5.1   | 14    | 37    |
| CHLORIDE           | 1999-Sep | 14    | 21    | <5    | 25    | 46    | <5    | 12    |         | <5    | <5    | 5.5   | 14    | 31    |
| CHLORIDE           | 2000-Sep | 13.8  | 14.9  | <5    | 19.6  | 19.5  | <5    | 12    |         | <5    | <5    | 9     | 13.2  | 24.4  |
| CHLORIDE           | 2001-Sep | 13.3  | 16.3  | <5    | 18.4  | 18.3  | <5    | 13.8  |         | 5.9   | 5.9   | 15.3  | 14.5  | 20.5  |
| CHLORIDE           | 2002-Sep | 14.8  | 15.9  | <5    | 21.9  | 11.9  | <5    | 12.8  |         | <5    | <5    | 13.6  | 13.7  | 20.1  |
| CHLORIDE           | 2003-Sep | 16    | 14    | <5    | 23.5  | 14.5  | <5    | 14.8  |         | <5    | <5    | 14.5  | 15.2  | 19.8  |
| CHLORIDE           | 2004-Sep | 20.1  | 17.4  | <5    | 19.4  | 27.1  | <5    | 18.9  |         | <5    | <5    | 22    | 14.8  | 26.1  |
| CHLORIDE           | 2005-Sep | 22.9  | 15.3  | <5    | 19.1  | 18.5  | <5    | 18.7  | 35.6    | <5    | <5    | 13.6  | 15.3  | 22    |
| CHLORIDE           | 2006-Sep | 26.1  | 10.8  | <5    | 22.1  | 14.6  | <5    | 20.5  | 26.7    | <5    | <5    | 16.5  | 16.7  | 21.8  |
| CHLORIDE           | 2007-Sep | 26.3  | 15    | <5    | 20.3  | 40.6  | <5    | 16.4  | 21.1    | <5    | <5    | 16.4  | 17.1  | 33.6  |
| CHLORIDE           | 2008-Sep | 23    | 16.5  | <5    | 21.5  | 51.9  | <5    | 7.31  | 16.9    | <5    | <5    | 9.03  | 15.7  | 33.8  |
| CHLORIDE           | 2009-Sep | 21.9  | 15.6  | <5    | 20    | 43.4  | <5    | 8.21  | 18.8    | <5    | <5    | 11.1  | 15.2  | 33.4  |
| CHLORIDE           | 2010-Sep | 12.8  | 15.2  | 1.2   | 23.6  | 44.5  | 1.25  | 2.76  | 19.8    | <1    | <2    | 4.09  | 16.9  | 31    |
| CHLORIDE           | 2011-Sep | 11    | 15.5  | <2    | 17.8  | 30    | <2    | 3.81  | 20.7    | <2    | <2    | 7.37  | 13.1  | 26.1  |
| CHLORIDE           | 2012-Sep | 11.9  | 15.3  | <5    | 15.9  | 33    | <5    | <5    | 19.4    | <5    | <5    | 7.91  | 13.1  | 17.2  |
| CHLORIDE           | 2013-Apr |       |       |       |       |       |       |       |         |       |       |       |       |       |
| CHLORIDE           | 2013-Sep | 14.3  | 11.7  | 2     | 17.3  | 19.7  | 29.9  | 3.1   | 22.2    | 1.4   | 1.6   | 7.2   | 14.2  | 19.3  |
| CHLORIDE           | 2014-Sep | 8.1   | 12.4  | 5.7   | 28.5  | 41.3  | 46    | 2.5   | 23.3    | <1    | <1    | 1.8   | 26.1  | 33.3  |
| CHLORIDE           | 2015-Sep | 11.6  | 13.4  | 1.3   | 15.9  | 26.1  | 18.9  | 1.3   | 14.7    | 1.1   | <1    | 4.3   | 15.3  | 25.3  |
| CHLORIDE           | 2016-Sep | 11.8  | 10    | 8.8   | 21.5  | 30.1  | 2.6   | 1.9   | 18.6    | 2.8   | 1.3   | 3.2   | 17.9  | 24.3  |
| CHLORIDE           | 2017-Sep | 11.8  | 14.6  | 3     | 14.8  | 19.8  | 4     | 2.4   | 14.2    | 4     | 1.7   | 4.2   | 13.8  | 19.8  |
| CHLORIDE           | 2018-Sep | 9.5   | 10.3  | 11.8  | 18.6  | 27.4  | 3     | 1.5   | 21.5    | 3.2   | 2.2   | 1.8   | 19.9  | 24    |

GW Standard:  
SMCL = 250

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**CHLORIDE**  
**UNITS: MG/L**

| CHEMICAL PARAMETER | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE<br>TANK |
|--------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------------------|
| CHLORIDE           |       | 62    | 23    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 32    | 3     | 38    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 39    | 43    | 38    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 33    | 38    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 32    | 36    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 37    | 40    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 26    | 37    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 32    | 37    | 4.2   |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 38    | 51    | 13    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 41    | 43    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 22    | 41    | 5.3   |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 31    | 40    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 30    | 39    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 27    | 35    | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 22.2  | 34.1  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 18.8  | 30.6  | 5.5   |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 13.8  | 31.9  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 16.8  | 30.9  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 23    | 35.5  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 19.6  | 33.9  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 17.3  | 28.6  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 29    | 35.8  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 26.4  | 30.8  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 27.9  | 34.8  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 18.6  | 32.7  | <2    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 20.9  | 30.5  | <5    |       |       |       |       |       |       |       |       |                  |
| CHLORIDE           | 14.1  |       | <5    | <5    | 12.8  | 13.8  |       |       |       |       |       | <5               |
| CHLORIDE           |       |       |       | <5    |       |       |       |       |       |       | <100  | <5               |
| CHLORIDE           | 16.7  | 29.1  | 1.1   | 1.3   | 13.1  | 15.2  |       |       |       |       |       | <1               |
| CHLORIDE           | 18.3  | 34.9  | <1    | <1    | 19.7  | 20.1  |       | 1.6   |       |       |       | <1               |
| CHLORIDE           | 19.7  | 28.8  | 1.1   | 3.9   | 17.8  | 18    |       | 2.3   |       |       | 6.6   | 1.2              |
| CHLORIDE           | 17.7  | 26    | 6     |       | 16.5  | 16.7  |       | 2.4   |       |       |       | 1.2              |
| CHLORIDE           | 16.5  | 26.4  | 3.1   | 3.4   | 18.2  | 17    |       | 3.3   |       |       |       | 11.7             |
| CHLORIDE           | 13    | 25.6  | 4.5   | 3.1   | 16.6  | 16    |       | 1.9   |       |       |       | 9.9              |

GW Standard:

SMCL = 250

## IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**SULFATE**  
**UNITS: MG/L**

| CHEMICAL PARAMETER | EVENT    | MW-03   | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 |
|--------------------|----------|---------|-------|-------|-------|-------|-------|-------|---------|-------|-------|
| SULFATE            | 1999-Sep | 68      | 160   | 65    | 31    | 25    | 30    | 43    |         | 56    | 64    |
| SULFATE            | 2000-Sep | 78      | 120   | 43    | 36    | 33    | 35    | 28    |         | 110   | 48    |
| SULFATE            | 2001-Sep | 70      | 100   | 37    | 29    | 23    | 38    | 14    |         | 76    | 56    |
| SULFATE            | 2002-Sep | 78      | 47    | 62    | 30    | 21    | 36    | 19    |         | 110   | 60    |
| SULFATE            | 2003-Sep | 77      | 90    | 70    | 32    | 27    | 35    | 17    |         | 100   | 32    |
| SULFATE            | 2004-Sep | 84      | 110   | 57    | 34    | 29    | 39    | 31    |         | 100   | 64    |
| SULFATE            | 2005-Sep | 90      | 100   | 36    | 32    | 28    | 44    | 17    | 130     | 120   | 80    |
| SULFATE            | 2006-Sep | 79      | 52    | 63.6  | 29.9  | 22.4  | 42.7  | 14.7  | 372     | 60.5  | 81.2  |
| SULFATE            | 2007-Sep | 107     | 118   | 47.4  | 35    | 23.5  | 28.7  | 13.8  | 370     | 106   | 86.9  |
| SULFATE            | 2008-Sep | 81.8    | 109   | 41.7  | 25.4  | 10.9  | 35.2  | 8.48  | 219     | 86.5  | 60    |
| SULFATE            | 2009-Sep | 91.5    | 108   | 32.7  | 27.1  | 10.5  | 35.6  | 10.1  | 197     | 80.2  | 56.5  |
| SULFATE            | 2010-Sep | 84.5    | 80.3  | 32.2  | 17.1  | 5.7   | 25.6  | 7.17  | 121     | 69.2  | 54.5  |
| SULFATE            | 2011-Sep | 83.2    | 100   | 30.9  | 25.2  | 14.3  | 26    | 9.16  | 163     | 70.5  | 51.8  |
| SULFATE            | 2012-Sep | 88.3    | 90.1  | 78.2  | 30.8  | 22.5  | 27.5  | 11.6  | 220     | 72.6  | 54.2  |
| SULFATE            | 2013-Apr |         |       |       |       |       |       |       |         |       |       |
| SULFATE            | 2013-Sep | 94.5    | 73.1  | 50    | 27.7  | 26.5  | 19.7  | 11.1  | 158     | 69.3  | 50    |
| SULFATE            | 2014-Sep | 63.4    | 82.1  | 27.6  | 18.8  | 14    | 24.1  | 10.5  | 110     | 33.6  | 38.7  |
| SULFATE            | 2015-Sep | 74.5    | 96.7  | 18.8  | 21.1  | 11.1  | 27.2  | 6.2   | 116     | 68.9  | 49    |
| SULFATE            | 2016-Sep | 80.5 M1 | 69.8  | 31.3  | 14.1  | 9.9   | 6.3   | 7.8   | 99      | 59.7  | 40    |
| SULFATE            | 2017-Sep | 80      | 88.7  | 20.9  | 23.7  | 21.3  | 12    | 8.4   | 116     | 67.6  | 45.1  |
| SULFATE            | 2018-Sep | 74.5    | 63.6  | 29.2  | 18.6  | 13.6  | 9.1   | 7.8   | 127     | 51.6  | 30.7  |

GW Standard:  
SMCL = 250

# IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**SULFATE**  
**UNITS: MG/L**

| CHEMICAL PARAMETER | EVENT    | MW-18 | MW-19 | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SULFATE            | 1999-Sep | 40    | 33    | 240   | 110   | 180   | 360   |       |       |       |       |
| SULFATE            | 2000-Sep | 28    | 25    | 140   | 76    | 170   | 400   |       |       |       |       |
| SULFATE            | 2001-Sep | 55    | 30    | 150   | 59    | 130   | 410   |       |       |       |       |
| SULFATE            | 2002-Sep | 92    | 33    | 100   | 81    | 120   | 100   |       |       |       |       |
| SULFATE            | 2003-Sep | 180   | 34    | 110   | 44    | 140   | 390   |       |       |       |       |
| SULFATE            | 2004-Sep | 100   | 16    | 160   | 85    | 130   | 410   |       |       |       |       |
| SULFATE            | 2005-Sep | 90    | 34    | 160   | 79    | 140   | 360   |       |       |       |       |
| SULFATE            | 2006-Sep | 107   | 32.8  | 101   | 45.8  | 113   | 318   |       |       |       |       |
| SULFATE            | 2007-Sep | 67.1  | 36    | 149   | 153   | 120   | 324   |       |       |       |       |
| SULFATE            | 2008-Sep | 30.6  | 26.5  | 333   | 199   | 196   | 446   |       |       |       |       |
| SULFATE            | 2009-Sep | 42.4  | 25.5  | 241   | 169   | 175   | 95.7  |       |       |       |       |
| SULFATE            | 2010-Sep | 16.4  | 22.7  | 285   | 89.8  | 125   | 153   |       |       |       |       |
| SULFATE            | 2011-Sep | 29.8  | 23.2  | 241   | 127   | 160   | 462   |       |       |       |       |
| SULFATE            | 2012-Sep | 104   | 30    | 169   | 43.8  |       | 774   | 275   | 21.5  | 29.4  |       |
| SULFATE            | 2013-Apr |       |       |       |       |       |       | 357   |       |       |       |
| SULFATE            | 2013-Sep | 91    | 26.9  | 223   | 77.5  | 159   | 189   | 183   | 24.5  | 26    |       |
| SULFATE            | 2014-Sep | 22.6  | 32    | 118   | 53.4  | 80    | 73.4  | 188   | 15.2  | 24.7  |       |
| SULFATE            | 2015-Sep | 19.6  | 21.6  | 209   | 118   | 107   | 29.8  | 254   | 16.6  | 20.8  |       |
| SULFATE            | 2016-Sep | 19.8  | 21.1  | 132   | 86.9  | 123   | 31.8  |       | 11.2  | 16.1  |       |
| SULFATE            | 2017-Sep | 48.4  | 20.4  | 209   | 92.2  | 117   | 157   | 222   | 34.4  | 29    |       |
| SULFATE            | 2018-Sep | 24.3  | 32.2  | 123   | 55.2  | 77.4  | 13.5  | 218   | 10.9  | 12    |       |

GW Standard:  
SMCL = 250

## IPL Marshalltown East and West Closed Landfills Historic Monitoring Results

**SULFATE**  
**UNITS: MG/L**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| SULFATE            | 1999-Sep |       |       |       |       |               |
| SULFATE            | 2000-Sep |       |       |       |       |               |
| SULFATE            | 2001-Sep |       |       |       |       |               |
| SULFATE            | 2002-Sep |       |       |       |       |               |
| SULFATE            | 2003-Sep |       |       |       |       |               |
| SULFATE            | 2004-Sep |       |       |       |       |               |
| SULFATE            | 2005-Sep |       |       |       |       |               |
| SULFATE            | 2006-Sep |       |       |       |       |               |
| SULFATE            | 2007-Sep |       |       |       |       |               |
| SULFATE            | 2008-Sep |       |       |       |       |               |
| SULFATE            | 2009-Sep |       |       |       |       |               |
| SULFATE            | 2010-Sep |       |       |       |       |               |
| SULFATE            | 2011-Sep |       |       |       |       |               |
| SULFATE            | 2012-Sep |       |       |       |       | 277           |
| SULFATE            | 2013-Apr |       |       |       | 153   | 105           |
| SULFATE            | 2013-Sep |       |       |       |       | 131           |
| SULFATE            | 2014-Sep | 72.9  |       |       |       | 210           |
| SULFATE            | 2015-Sep | 58    |       |       | 74.9  | 196           |
| SULFATE            | 2016-Sep | 73.3  |       |       |       | 168           |
| SULFATE            | 2017-Sep | 80.5  |       |       |       | 178           |
| SULFATE            | 2018-Sep | 50.3  |       |       |       | 202           |

GW Standard:  
SMCL = 250

**IPL Marshalltown East and West Closed Landfills**  
**Historic Monitoring Results**

PH, FIELD  
 UNITS: SU

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|
| PH, FIELD          | 1993-Sep |       |       |       |       |       | 7.25  | 7.49  |         | 6.72  | 7.2   | 7.16  |       |
| PH, FIELD          | 1994-Feb | 7.74  | 7.14  | 6.95  | 6.51  | 7.47  | 7.23  | 7.58  |         | 7.49  | 7.69  | 7.3   | 7.15  |
| PH, FIELD          | 1994-Apr | 7.19  | 6.9   | 6.46  | 7.28  | 7.02  | 7.05  | 7.15  |         | 6.94  | 7.34  | 7.3   | 7.32  |
| PH, FIELD          | 1994-Jul | 7.2   | 6.93  | 6.88  | 7.11  | 6.98  | 6.86  | 7.24  |         | 6.82  | 7.29  | 7.06  | 7.07  |
| PH, FIELD          | 1994-Oct | 7.31  | 6.9   | 6.96  | 7.36  | 7.27  | 6.9   | 7.12  |         | 7.11  | 7.34  | 7.3   | 7.12  |
| PH, FIELD          | 1995-Apr | 7.23  | 6.88  | 6.44  | 7.08  | 7.34  | 7.11  | 7.23  |         | 6.77  | 7.12  | 7.51  | 7.13  |
| PH, FIELD          | 1995-Oct | 7.49  | 7.41  | 7.95  | 7.19  | 7.98  | 6.84  | 7.07  |         | 7.36  | 6.99  | 6.68  | 7.16  |
| PH, FIELD          | 1996-Apr | 7.9   | 7.7   | 7.2   | 7.7   | 8.4   | 8.2   | 7.9   |         | 7.7   | 8.5   | 7.9   | 7.9   |
| PH, FIELD          | 1996-Oct | 7.3   | 7.1   | 6.9   | 7.6   | 7.4   | 7.1   | 7.4   |         | 7.2   | 7.5   | 7.4   | 7.6   |
| PH, FIELD          | 1997-Apr | 7.5   | 7.1   | 6.4   | 7.4   | 7.4   | 7.2   | 7.3   |         | 7.5   | 7.3   | 7.4   | 7.4   |
| PH, FIELD          | 1997-Oct | 7.8   | 7.5   | 7     | 7.7   | 7.8   | 7.7   | 7.7   |         | 7.2   | 7.6   | 7.7   | 7.8   |
| PH, FIELD          | 1998-Apr | 7.22  | 7.06  | 6.14  | 6.85  | 7.17  | 7.12  | 7.07  |         | 6.27  | 6.97  | 7.04  | 7.11  |
| PH, FIELD          | 1998-Oct | 6.9   | 6.7   | 6.34  | 7     | 7     | 7.2   | 6.8   |         | 6.3   | 7     | 6.1   | 7.1   |
| PH, FIELD          | 1999-Sep | 6.7   | 6.6   | 5.6   | 6.5   | 6.5   | 6.6   | 6.6   |         | 6.9   | 6.9   | 5.8   | 6.8   |
| PH, FIELD          | 2000-Sep | 6.8   | 6.6   | 6.32  | 7.21  | 7.02  | 6.98  | 7.25  |         | 7.12  | 7.28  | 6.9   | 6.96  |
| PH, FIELD          | 2001-Sep | 6.9   | 6.86  | 6.7   | 7.4   | 7.13  | 7.2   | 7.3   |         | 6.45  | 7.33  | 6.82  | 9.4   |
| PH, FIELD          | 2002-Sep | 6.86  | 6.98  | 6.54  | 7.06  | 6.98  | 7.18  | 7.06  |         | 6.75  | 6.96  | 6.64  | 6.84  |
| PH, FIELD          | 2003-Sep | 7.45  | 7.13  | 6.33  | 6.88  | 7.06  | 7.13  | 7.16  |         | 7.04  | 7.15  | 7.27  | 6.42  |
| PH, FIELD          | 2004-Sep | 7.36  | 6.88  | 6.71  | 7.31  | 7.17  | 7.21  | 7.2   |         | 7.05  | 7.22  | 6.79  | 7.08  |
| PH, FIELD          | 2005-Sep | 7.3   | 6.46  | 5.71  | 6.47  | 6.59  | 6.67  | 6.83  | 6.68    | 6.73  | 6.91  | 6.77  | 6.58  |
| PH, FIELD          | 2006-Sep | 7.2   | 6.69  | 6.11  | 7.05  | 7.1   | 7.25  | 7.04  | 7.34    | 6.64  | 7.01  | 6.76  | 6.42  |
| PH, FIELD          | 2007-Sep | 7.13  | 6.88  | 5.76  | 6.82  | 6.9   | 7.22  | 7.21  | 7.32    | 6.96  | 6.95  | 6.83  | 6.53  |
| PH, FIELD          | 2008-Sep | 7.1   | 6.86  | 6.43  | 6.85  | 6.94  | 7.1   | 7.01  | 7.19    | 7.01  | 7.12  | 7.19  | 6.67  |
| PH, FIELD          | 2009-Sep | 7.41  | 6.18  | 6.89  | 7.35  | 7.16  | 7.45  | 7.16  | 7.2     | 7.18  | 7.35  | 6.94  | 7.18  |
| PH, FIELD          | 2010-Sep | 7.29  | 7.11  | 6.92  | 7.34  | 7.16  | 7.3   | 7.34  | 7.15    | 7.09  | 7.25  | 6.94  | 7.38  |
| PH, FIELD          | 2011-Sep | 7.82  | 7.5   | 7.68  | 7.58  | 7.03  | 7.5   | 7.24  | 6.89    | 7.58  | 7.7   | 6.7   | 7.55  |
| PH, FIELD          | 2012-Sep | 7.4   | 7.07  | 7.14  | 7.23  | 5.67  | 7.27  | 7.19  | 8.65    | 7.02  | 7.24  | 6.74  | 7.62  |
| PH, FIELD          | 2013-Sep | 7.36  | 7     | 6.57  | 7.3   | 7.15  | 7.08  | 7.25  | 7.29    | 7.13  | 7.23  | 6.87  | 7.1   |
| PH, FIELD          | 2014-Sep | 6.96  | 7.12  | 7.27  | 7.47  | 7.26  | 7.19  | 7.27  | 7.29    | 6.72  | 7.31  | 7.36  | 7.68  |
| PH, FIELD          | 2015-Sep | 6.81  | 6.67  | 7.24  | 6.79  | 6.76  | 6.71  | 6.57  | 7.51    | 7.26  | 7.27  | 7.23  | 7.23  |
| PH, FIELD          | 2016-Sep | 7.51  | 7.48  | 7.39  | 8.33  | 8.32  | 7.09  | 7.57  | 7.96    | 7.5   | 7.66  | 7.54  | 7.8   |
| PH, FIELD          | 2017-Sep | 7.5   | 6.86  | 6.35  | 7.12  | 7.29  | 8.12  | 7.05  | 6.64    | 7.08  | 7.39  | 5.55  | 7.34  |
| PH, FIELD          | 2018-Sep | 7.12  | 7.06  | 7.03  | 7.25  | 7.17  | 6.87  | 7.33  | 7.29    | 7.03  | 7.25  | 7.19  | 7.24  |

GW Standard:  
 SMCL = 8.5

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

PH, FIELD  
UNITS: SU

| CHEMICAL PARAMETER | EVENT    | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| PH, FIELD          | 1993-Sep | 7.15  |       | 8.29  | 7.47  |       |       |       |       |
| PH, FIELD          | 1994-Feb | 7.46  | 6.7   | 6.97  | 5.44  |       |       |       |       |
| PH, FIELD          | 1994-Apr | 7.39  | 7.29  | 7.44  | 7.54  |       |       |       |       |
| PH, FIELD          | 1994-Jul | 7.28  | 7.1   | 7.23  | 7.04  |       |       |       |       |
| PH, FIELD          | 1994-Oct | 7.33  | 7.42  | 7.75  | 7.04  |       |       |       |       |
| PH, FIELD          | 1995-Apr | 7.45  | 7.27  | 7.18  | 6.73  |       |       |       |       |
| PH, FIELD          | 1995-Oct | 7.07  | 7.13  | 6.54  | 8.15  |       |       |       |       |
| PH, FIELD          | 1996-Apr | 7.9   | 7.9   | 7.8   | 7.7   |       |       |       |       |
| PH, FIELD          | 1996-Oct | 7.8   | 7.3   | 7.6   | 7.4   |       |       |       |       |
| PH, FIELD          | 1997-Apr | 7.4   | 7.3   | 7.4   | 7.2   |       |       |       |       |
| PH, FIELD          | 1997-Oct | 7.8   | 7.7   | 8     | 7.4   |       |       |       |       |
| PH, FIELD          | 1998-Apr | 7.06  | 6.98  | 7.02  | 6.62  |       |       |       |       |
| PH, FIELD          | 1998-Oct | 6.5   | 6.7   | 6.6   | 6.6   |       |       |       |       |
| PH, FIELD          | 1999-Sep | 7     | 6.7   | 7     | 6.6   |       |       |       |       |
| PH, FIELD          | 2000-Sep | 7.15  | 6.7   | 7.38  | 6.99  |       |       |       |       |
| PH, FIELD          | 2001-Sep | 6.72  | 7.25  | 7.19  | 6.92  |       |       |       |       |
| PH, FIELD          | 2002-Sep | 6.83  | 7.2   | 7.33  | 7.19  |       |       |       |       |
| PH, FIELD          | 2003-Sep | 7.4   | 7.28  | 7.3   | 7.26  |       |       |       |       |
| PH, FIELD          | 2004-Sep | 7.26  | 7.22  | 7.24  | 6.98  |       |       |       |       |
| PH, FIELD          | 2005-Sep | 7.03  | 7.27  | 7.05  | 6.84  |       |       |       |       |
| PH, FIELD          | 2006-Sep | 7.1   | 6.89  | 7.39  | 7.07  |       |       |       |       |
| PH, FIELD          | 2007-Sep | 7.36  | 7.12  | 7.35  | 7.33  |       |       |       |       |
| PH, FIELD          | 2008-Sep | 7.18  | 7.07  | 7.28  | 7.07  |       |       |       |       |
| PH, FIELD          | 2009-Sep | 7.24  | 6.12  | 7.09  | 7.3   |       |       |       |       |
| PH, FIELD          | 2010-Sep | 7.23  | 7.15  | 7.15  | 7.3   |       |       |       |       |
| PH, FIELD          | 2011-Sep | 7.45  | 7.48  | 7.26  | 7.17  |       |       |       |       |
| PH, FIELD          | 2012-Sep | 7.18  | 7.29  |       | 7.15  | 7.62  | 7.66  | 7.97  |       |
| PH, FIELD          | 2013-Sep | 7.35  | 7.21  | 7.33  | 7.12  | 7.1   | 7.62  | 7.86  |       |
| PH, FIELD          | 2014-Sep | 7.17  | 7.45  | 6.95  | 6.26  | 7.27  | 7.96  | 7.95  |       |
| PH, FIELD          | 2015-Sep | 7.23  | 6.93  | 7.17  | 7.29  | 6.7   | 7.85  | 7.14  |       |
| PH, FIELD          | 2016-Sep | 8.2   | 7.52  | 7.66  | 8.02  |       | 8.67  | 8.53  |       |
| PH, FIELD          | 2017-Sep | 7.07  | 7.46  |       | 6.88  | 9.01  | 8.12  | 8.13  |       |
| PH, FIELD          | 2018-Sep | 7.26  | 7.05  | 7.75  | 6.7   | 7.01  | 7.69  | 7.9   |       |

GW Standard:  
SMCL = 8.5

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**PH, FIELD**  
**UNITS: SU**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| PH, FIELD          | 1993-Sep |       |       |       |       |               |
| PH, FIELD          | 1994-Feb |       |       |       |       |               |
| PH, FIELD          | 1994-Apr |       |       |       |       |               |
| PH, FIELD          | 1994-Jul |       |       |       |       |               |
| PH, FIELD          | 1994-Oct |       |       |       |       |               |
| PH, FIELD          | 1995-Apr |       |       |       |       |               |
| PH, FIELD          | 1995-Oct |       |       |       |       |               |
| PH, FIELD          | 1996-Apr |       |       |       |       |               |
| PH, FIELD          | 1996-Oct |       |       |       |       |               |
| PH, FIELD          | 1997-Apr |       |       |       |       |               |
| PH, FIELD          | 1997-Oct |       |       |       |       |               |
| PH, FIELD          | 1998-Apr |       |       |       |       |               |
| PH, FIELD          | 1998-Oct |       |       |       |       |               |
| PH, FIELD          | 1999-Sep |       |       |       |       |               |
| PH, FIELD          | 2000-Sep |       |       |       |       |               |
| PH, FIELD          | 2001-Sep |       |       |       |       |               |
| PH, FIELD          | 2002-Sep |       |       |       |       |               |
| PH, FIELD          | 2003-Sep |       |       |       |       |               |
| PH, FIELD          | 2004-Sep |       |       |       |       |               |
| PH, FIELD          | 2005-Sep |       |       |       |       |               |
| PH, FIELD          | 2006-Sep |       |       |       |       |               |
| PH, FIELD          | 2007-Sep |       |       |       |       |               |
| PH, FIELD          | 2008-Sep |       |       |       |       |               |
| PH, FIELD          | 2009-Sep |       |       |       |       |               |
| PH, FIELD          | 2010-Sep |       |       |       |       |               |
| PH, FIELD          | 2011-Sep |       |       |       |       |               |
| PH, FIELD          | 2012-Sep |       |       |       |       | 7.78          |
| PH, FIELD          | 2013-Sep |       |       |       |       | 7.83          |
| PH, FIELD          | 2014-Sep | 7.23  |       |       |       | 8.29          |
| PH, FIELD          | 2015-Sep | 7.16  |       |       |       | 7.02          |
| PH, FIELD          | 2016-Sep | 8.19  |       |       |       | 8.66          |
| PH, FIELD          | 2017-Sep | 9.06  |       |       |       | 7.98          |
| PH, FIELD          | 2018-Sep | 7.39  |       |       | 8.32  | 8             |

GW Standard:  
SMCL = 8.5

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**TEMPERATURE**  
**UNITS: DEG C**

| CHEMICAL PARAMETER | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|
| TEMPERATURE        | 1993-Sep |       |       |       |       |       | 16.3  | 14.1  |         | 16.1  | 15.6  | 12.8  |       |
| TEMPERATURE        | 1994-Feb | 10.1  | 10.1  | 10.1  | 11.6  | 9     | 8.6   | 9.8   |         | 11.1  | 10.2  | 9.5   | 10.6  |
| TEMPERATURE        | 1994-Apr | 9.8   | 9     | 9.4   | 13.2  | 13    | 11.7  | 13.3  |         | 11.3  | 13.7  | 14.3  | 10    |
| TEMPERATURE        | 1994-Jul | 14    | 13.6  | 13.9  | 14.8  | 17.3  | 13.8  | 16    |         | 17.9  | 15.2  | 15.8  | 14.8  |
| TEMPERATURE        | 1994-Oct | 16.3  | 16.8  | 15.5  | 14.2  | 15.5  | 16.5  | 15.1  |         | 15.2  | 15.6  | 16.5  | 13.8  |
| TEMPERATURE        | 1995-Apr | 24.4  | 23.9  | 23.5  | 24.1  | 20    | 20.8  | 22.7  |         | 23.9  | 22.3  | 22    | 22.9  |
| TEMPERATURE        | 1995-Oct | 12.5  | 11.4  | 12.1  | 9.8   | 12.2  | 9.6   | 9.4   |         | 11.7  | 10.5  | 10.6  | 11.3  |
| TEMPERATURE        | 1996-Apr | 8.6   | 7     | 8     | 9.5   | 11.5  | 6.5   | 11    |         | 7.5   | 8     | 10.5  | 9.8   |
| TEMPERATURE        | 1996-Oct | 10.6  | 11.7  | 11.1  | 8.9   | 11.7  | 12.2  | 11.7  |         | 11.1  | 10.6  | 12.2  | 9.4   |
| TEMPERATURE        | 1997-Apr | 7     | 6     | 6     | 6     | 5     | 5     | 6     |         | 11    | 7     | 9     | 7     |
| TEMPERATURE        | 1997-Oct | 11    | 12    | 11    | 10    | 16    | 13    | 11    |         | 13    | 12    | 12    | 10    |
| TEMPERATURE        | 1998-Apr | 10    | 12.5  | 9     | 12.5  | 10    | 10    | 10.5  |         | 10.5  | 11    | 13.5  | 10    |
| TEMPERATURE        | 1998-Oct | 14    | 14.5  | 14    | 12    | 16    | 15.5  | 13    |         | 13.9  | 13    | 11.4  | 13.5  |
| TEMPERATURE        | 1999-Sep | 15    | 14.2  | 15.6  | 13    | 13.3  | 15.3  | 14    |         | 15    | 18.6  | 10.6  | 12.7  |
| TEMPERATURE        | 2000-Sep | 19.2  | 20.7  | 12.4  | 11.8  | 13.7  | 17.6  | 12.1  |         | 15.5  | 14.4  | 13.1  | 11    |
| TEMPERATURE        | 2001-Sep | 15.9  | 18.5  | 15.1  | 14.1  | 15.6  | 14.2  | 14.9  |         | 16.1  | 13.5  | 13    | 14.1  |
| TEMPERATURE        | 2002-Sep | 14.2  | 14.4  | 15.3  | 13.1  | 14.5  | 13.6  | 14.9  |         | 15.9  | 14.5  | 13.6  | 13.7  |
| TEMPERATURE        | 2003-Sep | 13.9  | 16    | 14.5  | 11.8  | 15.9  | 14.3  | 13.1  |         | 15.8  | 13.2  | 12.7  | 11.7  |
| TEMPERATURE        | 2004-Sep | 13.6  | 11.9  | 11.9  | 11.2  | 13.3  | 13.8  | 12.6  |         | 13.5  | 12.3  | 12.3  | 11.1  |
| TEMPERATURE        | 2005-Sep | 15.6  | 14.6  | 13    | 10.8  | 12.4  | 14    | 12.6  | 12.7    | 14    | 13.3  | 12.3  | 11.7  |
| TEMPERATURE        | 2006-Sep | 17.2  | 13.5  | 12.2  | 12.3  | 14.7  | 15.7  | 13.7  | 15.2    | 16    | 14.7  | 12.8  | 11.6  |
| TEMPERATURE        | 2007-Sep | 14.4  | 13.6  | 12.6  | 10.9  | 14.3  | 15.8  | 13.8  | 15.3    | 15    | 12.7  | 14    | 11.4  |
| TEMPERATURE        | 2008-Sep | 12.4  | 14.2  | 11.7  | 10.6  | 13.7  | 13.7  | 12.1  | 11.1    | 17.7  | 16.1  | 12.1  | 11.3  |
| TEMPERATURE        | 2009-Sep | 13.4  | 12.6  | 12.2  | 10.9  | 14.9  | 16.1  | 12.6  | 11.5    | 15.6  | 13.5  | 11.5  | 12.2  |
| TEMPERATURE        | 2010-Sep | 13.1  | 14.5  | 14.6  | 11.1  | 18    | 15.8  | 12.8  | 16.7    | 15.4  | 15    | 14.9  | 12    |
| TEMPERATURE        | 2011-Sep | 12.9  | 13.1  | 12.4  | 11.1  | 10.8  | 14.1  | 12.5  | 9.5     | 12.9  | 12.5  | 9.3   | 12.3  |
| TEMPERATURE        | 2012-Sep | 14.17 | 15.05 | 13.88 | 12.19 | 11.03 | 15.3  | 13.47 | 10.45   | 11.99 | 13.91 | 10.66 | 13.9  |
| TEMPERATURE        | 2013-Sep | 14.2  | 14.3  | 13.5  | 11.6  | 11.4  |       | 12.7  | 10.7    | 17.7  | 12.8  | 11.1  | 11.5  |
| TEMPERATURE        | 2014-Sep | 18.52 | 16.85 | 18.69 | 18.44 | 20.7  | 18.71 | 17.8  | 20.22   | 20.22 | 17.38 | 22.37 | 13.48 |
| TEMPERATURE        | 2015-Sep | 13.01 | 14.83 | 14.29 | 11.36 | 17.96 | 14.33 | 17.05 | 13.45   | 14.99 | 15.46 | 13.45 | 13.21 |
| TEMPERATURE        | 2016-Sep | 12.5  | 14.6  | 12.5  | 11    | 13    | 14.2  | 13.7  | 11.6    | 16.6  | 17.6  | 14    | 11.7  |
| TEMPERATURE        | 2017-Sep | 13    | 12.9  | 15.2  | 10.7  | 15.1  | 13.4  | 13.1  | 13.6    | 16.1  | 11.9  | 13    | 13.5  |
| TEMPERATURE        | 2018-Sep | 12.2  | 13.7  | 11.7  | 10.9  | 16.8  | 16.3  | 14    | 13.8    | 15.9  | 14.3  | 12.7  | 12.9  |

GW Standard:  
None

**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**TEMPERATURE**  
**UNITS: DEG C**

| CHEMICAL PARAMETER | EVENT    | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 |
|--------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|
| TEMPERATURE        | 1993-Sep | 14.4  |       | 12.2  | 16.6  |       |       |       |       |
| TEMPERATURE        | 1994-Feb | 11.1  | 11.4  | 8.4   | 8.7   |       |       |       |       |
| TEMPERATURE        | 1994-Apr | 14.6  | 10.5  | 14.6  | 15.9  |       |       |       |       |
| TEMPERATURE        | 1994-Jul | 14.9  | 13.4  | 15.8  | 17.5  |       |       |       |       |
| TEMPERATURE        | 1994-Oct | 13.6  | 16.9  | 13.6  | 14.5  |       |       |       |       |
| TEMPERATURE        | 1995-Apr | 24.6  | 24.6  | 24.2  | 22.1  |       |       |       |       |
| TEMPERATURE        | 1995-Oct | 9.8   | 10.6  | 9.1   | 14    |       |       |       |       |
| TEMPERATURE        | 1996-Apr | 10    | 9.8   | 15    | 8.9   |       |       |       |       |
| TEMPERATURE        | 1996-Oct | 10.6  | 9.4   | 9.4   | 12.8  |       |       |       |       |
| TEMPERATURE        | 1997-Apr | 10    | 9     | 11    | 9     |       |       |       |       |
| TEMPERATURE        | 1997-Oct | 11    | 10    | 10    | 12    |       |       |       |       |
| TEMPERATURE        | 1998-Apr | 12    | 11    | 12    | 10.5  |       |       |       |       |
| TEMPERATURE        | 1998-Oct | 13.7  | 13.1  | 11    | 13    |       |       |       |       |
| TEMPERATURE        | 1999-Sep | 14    | 14.1  | 10    | 10.5  |       |       |       |       |
| TEMPERATURE        | 2000-Sep | 14.5  | 15.8  | 14.8  | 15.3  |       |       |       |       |
| TEMPERATURE        | 2001-Sep | 16    | 14.8  | 13.9  | 15.2  |       |       |       |       |
| TEMPERATURE        | 2002-Sep | 14.9  | 13.3  | 15.2  | 15.8  |       |       |       |       |
| TEMPERATURE        | 2003-Sep | 14.7  | 15.5  | 20.1  | 15.6  |       |       |       |       |
| TEMPERATURE        | 2004-Sep | 15.5  | 10.6  | 14.2  | 13.8  |       |       |       |       |
| TEMPERATURE        | 2005-Sep | 13.2  | 13.3  | 12.9  | 14.5  |       |       |       |       |
| TEMPERATURE        | 2006-Sep | 13    | 12.4  | 17.9  | 14.7  |       |       |       |       |
| TEMPERATURE        | 2007-Sep | 13.7  | 12.5  | 14    | 14.6  |       |       |       |       |
| TEMPERATURE        | 2008-Sep | 13.1  | 13.1  | 14.1  | 15.3  |       |       |       |       |
| TEMPERATURE        | 2009-Sep | 12.7  | 10.1  | 11.3  | 14    |       |       |       |       |
| TEMPERATURE        | 2010-Sep | 14.7  | 14.2  | 13    | 15.1  |       |       |       |       |
| TEMPERATURE        | 2011-Sep | 12.2  | 11.6  | 8.8   | 11    |       |       |       |       |
| TEMPERATURE        | 2012-Sep | 11.06 | 14.29 |       | 16.7  | 17.94 | 20.36 | 21.62 |       |
| TEMPERATURE        | 2013-Sep | 12.8  | 13.3  | 13.6  | 14.1  | 17.1  | 19.8  | 18.7  |       |
| TEMPERATURE        | 2014-Sep | 17.37 | 18.37 | 12.4  | 15.62 | 21.21 | 24.02 | 28.69 |       |
| TEMPERATURE        | 2015-Sep | 14.1  | 13.38 | 14.69 | 16.83 | 14.22 | 21.01 | 18.43 |       |
| TEMPERATURE        | 2016-Sep | 12.2  | 11.6  | 13.4  | 13.8  |       | 15.5  | 15.6  |       |
| TEMPERATURE        | 2017-Sep | 15.1  | 13.5  |       | 17.4  | 15.6  | 18.6  | 21.5  |       |
| TEMPERATURE        | 2018-Sep | 12.6  | 14.1  | 14.2  | 16.8  | 16.4  | 19.2  | 16.4  |       |

GW Standard:  
None

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**TEMPERATURE**  
**UNITS: DEG C**

| CHEMICAL PARAMETER | EVENT    | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|--------------------|----------|-------|-------|-------|-------|---------------|
| TEMPERATURE        | 1993-Sep |       |       |       |       |               |
| TEMPERATURE        | 1994-Feb |       |       |       |       |               |
| TEMPERATURE        | 1994-Apr |       |       |       |       |               |
| TEMPERATURE        | 1994-Jul |       |       |       |       |               |
| TEMPERATURE        | 1994-Oct |       |       |       |       |               |
| TEMPERATURE        | 1995-Apr |       |       |       |       |               |
| TEMPERATURE        | 1995-Oct |       |       |       |       |               |
| TEMPERATURE        | 1996-Apr |       |       |       |       |               |
| TEMPERATURE        | 1996-Oct |       |       |       |       |               |
| TEMPERATURE        | 1997-Apr |       |       |       |       |               |
| TEMPERATURE        | 1997-Oct |       |       |       |       |               |
| TEMPERATURE        | 1998-Apr |       |       |       |       |               |
| TEMPERATURE        | 1998-Oct |       |       |       |       |               |
| TEMPERATURE        | 1999-Sep |       |       |       |       |               |
| TEMPERATURE        | 2000-Sep |       |       |       |       |               |
| TEMPERATURE        | 2001-Sep |       |       |       |       |               |
| TEMPERATURE        | 2002-Sep |       |       |       |       |               |
| TEMPERATURE        | 2003-Sep |       |       |       |       |               |
| TEMPERATURE        | 2004-Sep |       |       |       |       |               |
| TEMPERATURE        | 2005-Sep |       |       |       |       |               |
| TEMPERATURE        | 2006-Sep |       |       |       |       |               |
| TEMPERATURE        | 2007-Sep |       |       |       |       |               |
| TEMPERATURE        | 2008-Sep |       |       |       |       |               |
| TEMPERATURE        | 2009-Sep |       |       |       |       |               |
| TEMPERATURE        | 2010-Sep |       |       |       |       |               |
| TEMPERATURE        | 2011-Sep |       |       |       |       |               |
| TEMPERATURE        | 2012-Sep |       |       |       |       | 16.9          |
| TEMPERATURE        | 2013-Sep |       |       |       |       | 14.4          |
| TEMPERATURE        | 2014-Sep | 17.93 |       |       |       | 21.95         |
| TEMPERATURE        | 2015-Sep | 14.7  |       |       |       | 14.79         |
| TEMPERATURE        | 2016-Sep | 13.4  |       |       |       | 14.6          |
| TEMPERATURE        | 2017-Sep | 13.9  |       |       |       | 15.8          |
| TEMPERATURE        | 2018-Sep | 17.6  |       |       | 17.2  | 17.2          |

GW Standard:  
None

# **IPL Marshalltown East and West Closed Landfills** **Historic Monitoring Results**

**CONDUCTANCE, SPECIFIC**  
**UNITS: UMHOS/CM**

| CHEMICAL PARAMETER    | EVENT    | MW-03 | MW-04 | MW-05 | MW-07 | MW-08 | MW-09 | MW-10 | MW-11AR | MW-13 | MW-14 | MW-18 | MW-19 |
|-----------------------|----------|-------|-------|-------|-------|-------|-------|-------|---------|-------|-------|-------|-------|
| CONDUCTANCE, SPECIFIC | 1993-Sep |       |       |       |       |       | 394   | 634   |         | 490   | 691   | 677   |       |
| CONDUCTANCE, SPECIFIC | 1994-Feb | 746   | 1100  | 679   | 701   | 762   | 651   | 742   |         | 716   | 785   | 713   | 658   |
| CONDUCTANCE, SPECIFIC | 1994-Apr | 740   | 1150  | 682   | 658   | 731   | 455   | 687   |         | 680   | 673   | 690   | 662   |
| CONDUCTANCE, SPECIFIC | 1994-Jul | 696   | 1190  | 904   | 670   | 627   | 476   | 610   |         | 720   | 675   | 580   | 636   |
| CONDUCTANCE, SPECIFIC | 1994-Oct | 785   | 1280  | 544   | 712   | 736   | 494   | 699   |         | 751   | 741   | 707   | 674   |
| CONDUCTANCE, SPECIFIC | 1995-Apr | 666   | 1203  | 491   | 641   | 561   | 444   | 608   |         | 497   | 659   | 567   | 585   |
| CONDUCTANCE, SPECIFIC | 1995-Oct | 1000  | 1545  | 864   | 967   | 1010  | 812   | 1080  |         | 1113  | 1123  | 886   | 954   |
| CONDUCTANCE, SPECIFIC | 1996-Apr | 720   | 1000  | 570   | 860   | 680   | 410   | 790   |         | 810   | 740   | 550   | 660   |
| CONDUCTANCE, SPECIFIC | 1996-Oct | 760   | 1370  | 640   | 760   | 860   | 470   | 560   |         | 900   | 880   | 600   | 760   |
| CONDUCTANCE, SPECIFIC | 1997-Apr | 760   | 1280  | 360   | 680   | 640   | 430   | 520   |         | 720   | 810   | 630   | 700   |
| CONDUCTANCE, SPECIFIC | 1997-Oct | 810   | 1310  | 770   | 720   | 930   | 540   | 630   |         | 620   | 560   | 680   | 690   |
| CONDUCTANCE, SPECIFIC | 1998-Apr | 540   | 850   | 640   | 490   | 490   | 430   | 540   |         | 370   | 610   | 510   | 530   |
| CONDUCTANCE, SPECIFIC | 1998-Oct | 520   | 940   | 550   | 540   | 660   | 510   | 510   |         | 630   | 550   | 490   | 510   |
| CONDUCTANCE, SPECIFIC | 1999-Sep | 610   | 940   | 520   | 620   | 640   | 580   | 620   |         | 740   | 630   | 550   | 590   |
| CONDUCTANCE, SPECIFIC | 2000-Sep | 643   | 952   | 419   | 629   | 697   | 392   | 643   |         | 831   | 686   | 616   | 628   |
| CONDUCTANCE, SPECIFIC | 2001-Sep | 640   | 930   | 370   | 610   | 698   | 510   | 562   |         | 793   | 675   | 901   | 600   |
| CONDUCTANCE, SPECIFIC | 2002-Sep | 667   | 871   | 377   | 621   | 645   | 467   | 627   |         | 819   | 695   | 989   | 595   |
| CONDUCTANCE, SPECIFIC | 2003-Sep | 677   | 861   | 463   | 656   | 671   | 606   | 627   |         | 804   | 692   | 1207  | 624   |
| CONDUCTANCE, SPECIFIC | 2004-Sep | 689   | 931   | 440   | 593   | 635   | 577   | 554   |         | 721   | 638   | 1018  | 575   |
| CONDUCTANCE, SPECIFIC | 2005-Sep | 704   | 889   | 370   | 630   | 678   | 502   | 647   | 732     | 758   | 677   | 959   | 611   |
| CONDUCTANCE, SPECIFIC | 2006-Sep | 719   | 823   | 375   | 689   | 668   | 633   | 695   | 1120    | 481   | 690   | 1070  | 632   |
| CONDUCTANCE, SPECIFIC | 2007-Sep | 723   | 907   | 403   | 644   | 677   | 625   | 593   | 1134    | 674   | 671   | 1031  | 624   |
| CONDUCTANCE, SPECIFIC | 2008-Sep | 719   | 879   | 449   | 623   | 699   | 599   | 560   | 970     | 744   | 678   | 767   | 604   |
| CONDUCTANCE, SPECIFIC | 2009-Sep | 723   | 892   | 421   | 620   | 681   | 602   | 587   | 903     | 720   | 678   | 934   | 602   |
| CONDUCTANCE, SPECIFIC | 2010-Sep | 661   | 741   | 449   | 581   | 620   | 586   | 555   | 857     | 687   | 665   | 644   | 579   |
| CONDUCTANCE, SPECIFIC | 2011-Sep | 663   | 861   | 430   | 610   | 735   | 597   | 567   | 918     | 737   | 682   | 808   | 555   |
| CONDUCTANCE, SPECIFIC | 2012-Sep | 690   | 803   | 536   | 605   | 774   | 339   | 611   | 955     | 712   | 688   | 937   | 739   |
| CONDUCTANCE, SPECIFIC | 2013-Sep | 727   | 740   | 450   | 596   | 653   | 693   | 516   | 872     | 732   | 666   | 935   | 585   |
| CONDUCTANCE, SPECIFIC | 2014-Sep | 611   | 782   | 583   | 571   | 572   | 754   | 528   | 784     | 383   | 606   | 504   | 600   |
| CONDUCTANCE, SPECIFIC | 2015-Sep | 675   | 780   | 353   | 692   | 549   | 655   | 513   | 723     | 625   | 596   | 579   | 554   |
| CONDUCTANCE, SPECIFIC | 2016-Sep | 1105  | 1352  | 1192  | 523.1 | 493.8 | 822   | 922   | 1329    | 1162  | 1099  | 1002  | 1011  |
| CONDUCTANCE, SPECIFIC | 2017-Sep | 585   | 802   | 339.7 | 562.3 | 695   | 493.8 | 527.7 | 763     | 660   | 715   | 721   | 554.2 |
| CONDUCTANCE, SPECIFIC | 2018-Sep | 631   | 809   | 685   | 589   | 534   | 526   | 484   | 828     | 667   | 588   | 571   | 611   |

GW Standard:

None

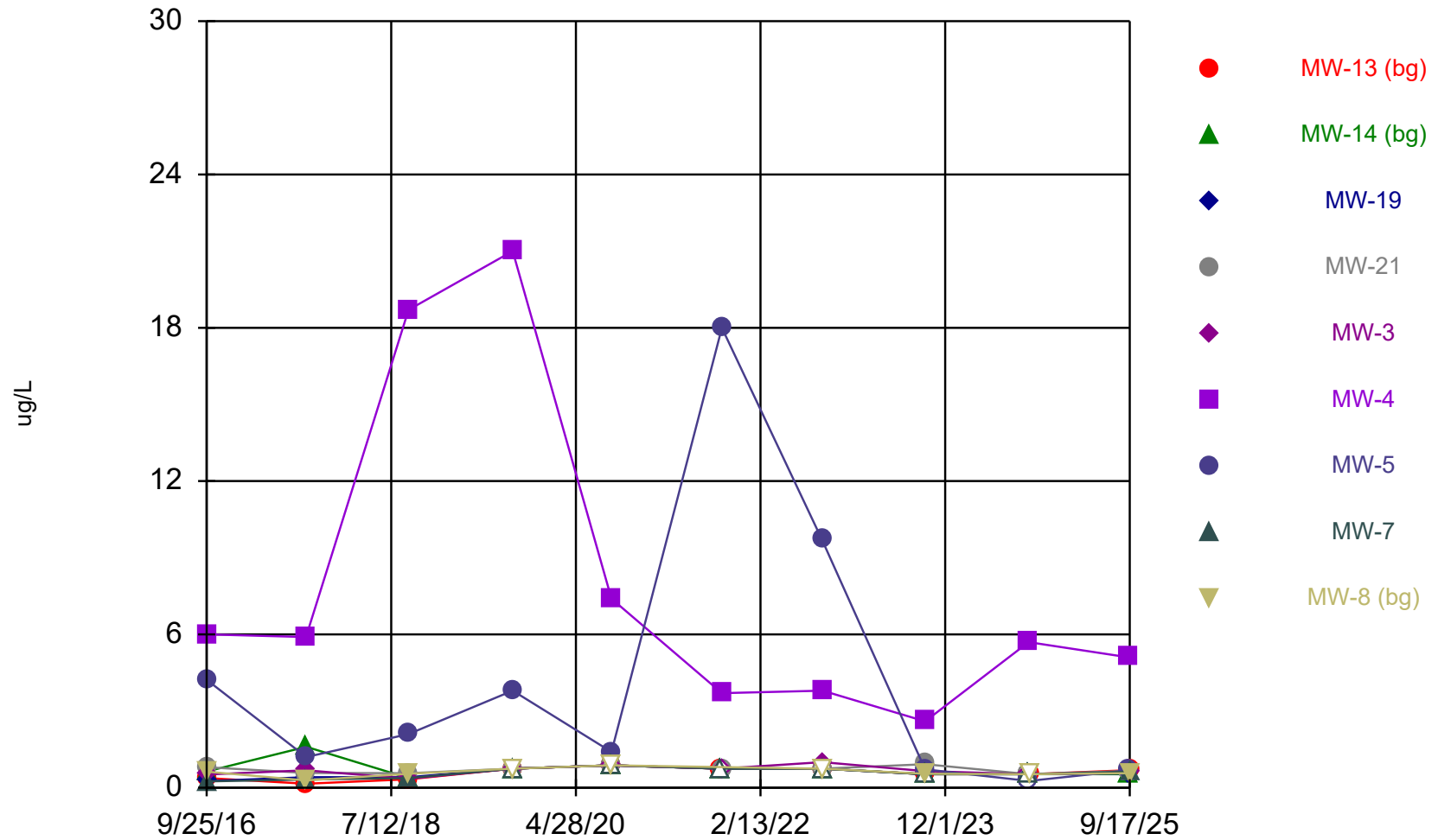
**IPL Marshalltown East and West Closed Landfills  
Historic Monitoring Results**

**CONDUCTANCE, SPECIFIC**  
**UNITS: UMHOS/CM**

| CHEMICAL PARAMETER    | MW-20 | MW-21 | MW-22 | MW-23 | GWGCS | SW-01 | SW-02 | SW-03 | LW-01 | LW-02 | LW-03 | LW-04 | LEACHATE TANK |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------|
| CONDUCTANCE, SPECIFIC | 964   |       | 814   | 1164  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1130  | 810   | 2050  | 200   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 990   | 927   | 860   | 1124  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 987   | 812   | 827   | 1520  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 860   | 890   | 924   | 1520  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 835   | 679   | 784   | 1190  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1488  | 1196  | 1190  | 2160  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1120  | 840   | 990   | 1800  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1070  | 1100  | 1150  | 960   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 960   | 860   | 940   | 1650  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1160  | 1050  | 1060  | 1800  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 800   | 590   | 730   | 2630  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 890   | 780   | 820   | 1100  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1650  | 760   | 770   | 1310  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 825   | 755   | 895   | 1167  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 850   | 700   | 850   | 1328  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 764   | 657   | 817   | 970   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 844   | 672   | 938   | 1152  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 873   | 759   | 755   | 1211  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 794   | 724   | 817   | 1127  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 776   | 689   | 804   | 1066  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 869   | 849   | 830   | 828   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1157  | 922   | 913   | 1252  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1038  | 919   | 903   | 671   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1058  | 695   | 768   | 952   |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 1015  | 812   | 849   | 1242  |       |       |       |       |       |       |       |       |               |
| CONDUCTANCE, SPECIFIC | 832   | 664   |       | 1668  | 842   | 437   | 547   |       |       |       |       |       | 736           |
| CONDUCTANCE, SPECIFIC | 928   | 712   | 848   | 824   | 991   | 530   | 531   |       |       |       |       |       | 514           |
| CONDUCTANCE, SPECIFIC | 789   | 627   | 717   | 455   | 991   | 581   | 592   |       | 876   |       |       |       | 624           |
| CONDUCTANCE, SPECIFIC | 856   | 706   | 687   | 431   | 991   | 525   | 539   |       | 788   |       |       |       | 538           |
| CONDUCTANCE, SPECIFIC | 1334  | 1184  | 1344  | 1193  |       | 998   | 1015  |       | 1425  |       |       |       | 884           |
| CONDUCTANCE, SPECIFIC | 887   | 707   |       | 1449  | 95.3  | 446.1 | 283.1 |       | 789   |       |       |       | 528.7         |
| CONDUCTANCE, SPECIFIC | 811   | 644   | 719   | 271.2 | 1044  | 576   | 576   |       | 771   |       |       | 1193  | 632           |

GW Standard:  
None

## Arsenic



Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

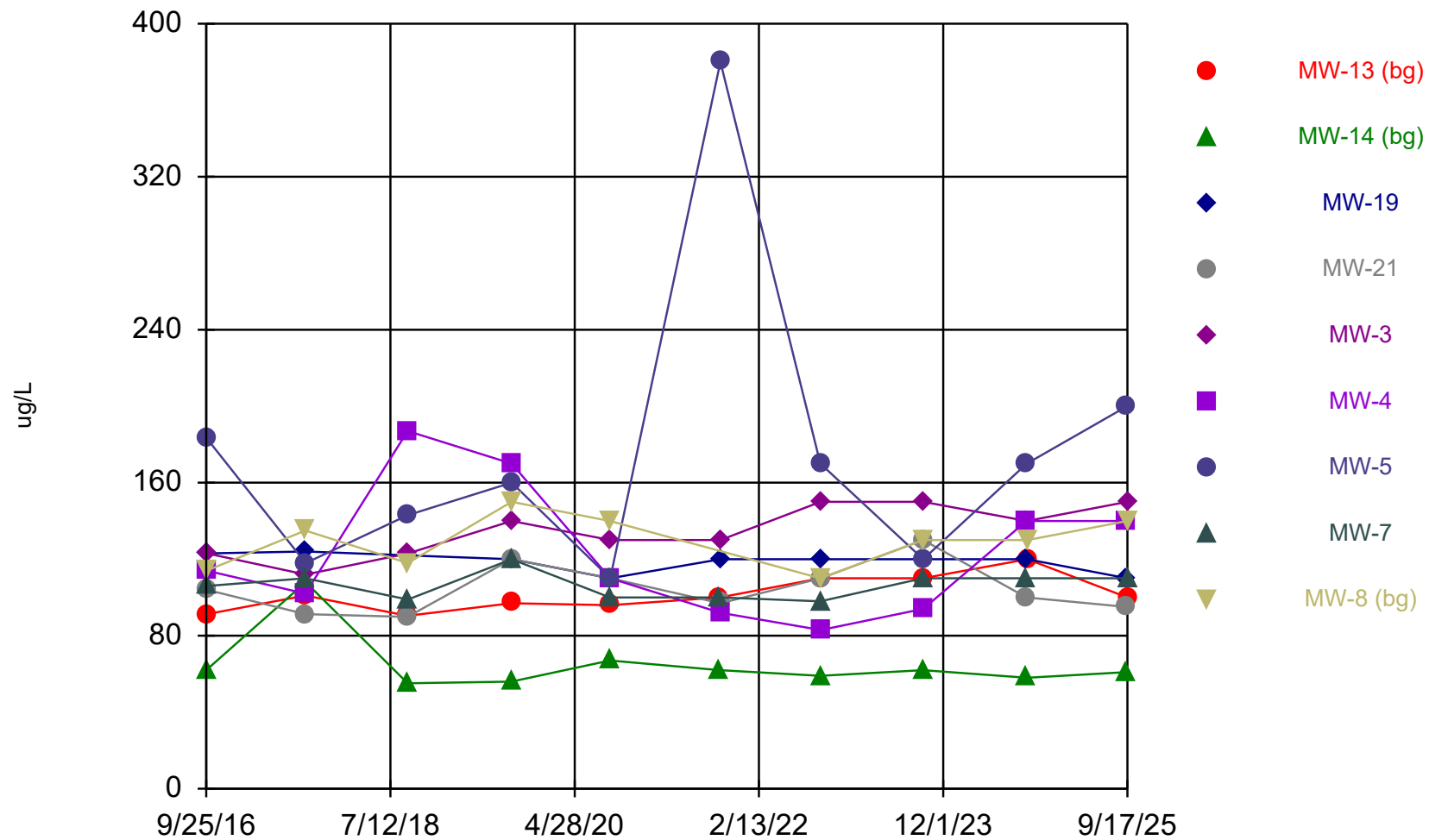
Time Series

Constituent: Arsenic (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4 | MW-5     | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|------|----------|-----------|-----------|
| 9/25/2016 | 0.38 (J)   |            |           |          |          |      |          |           |           |
| 9/26/2016 |            | 0.64 (J)   |           |          |          |      |          |           | 0.63 (J)  |
| 9/27/2016 |            |            | 0.26 (J)  |          |          | 6    |          | 0.25 (J)  |           |
| 9/28/2016 |            |            |           | 0.8 (J)  | 0.52 (J) |      | 4.2      |           |           |
| 9/13/2017 | 0.16 (J)   |            |           |          |          | 5.9  |          | 0.32 (J)  | 0.29 (J)  |
| 9/14/2017 |            | 1.6        | 0.41 (J)  | 0.58 (J) | 0.68 (J) |      | 1.2      |           |           |
| 9/11/2018 | 0.33 (J)   |            |           | 0.57 (J) |          |      |          |           |           |
| 9/12/2018 |            | 0.38 (J)   | 0.41 (J)  |          |          | 18.7 | 2.1      |           | 0.55 (J)  |
| 9/13/2018 |            |            |           |          | 0.35 (J) |      |          | 0.38 (J)  |           |
| 9/16/2019 | <0.75      | <0.75      |           |          |          |      |          |           |           |
| 9/17/2019 |            |            | <0.75     | 0.75 (J) | <0.75    | 21   | 3.8      | <0.75     | <0.75     |
| 9/1/2020  |            | <0.88      |           |          |          |      |          | <0.88     | <0.88     |
| 9/2/2020  | <0.88      |            | <0.88     | <0.88    | <0.88    | 7.4  | 1.4 (J)  |           |           |
| 9/27/2021 | <0.75      | <0.75      |           |          |          |      |          |           |           |
| 9/28/2021 |            |            |           |          |          |      |          | <0.75     |           |
| 9/29/2021 |            |            | <0.75     | <0.75    | <0.75    | 3.7  | 18       |           |           |
| 9/20/2022 |            | <0.75      | <0.75     |          |          |      | 9.7      | <0.75     | <0.75     |
| 9/21/2022 | <0.75      |            |           |          | 1 (J)    |      |          |           |           |
| 9/22/2022 |            |            |           | <0.75    |          | 3.8  |          |           |           |
| 9/20/2023 | <0.53 (U)  | <0.53 (U)  |           |          |          |      |          | <0.53 (U) |           |
| 9/21/2023 |            |            | <0.53 (U) | 0.92 (J) | 0.65 (J) | 2.6  | 0.72 (J) |           | 0.55 (J)  |
| 9/23/2024 |            |            |           | <0.53    |          | 5.7  |          |           |           |
| 9/24/2024 |            |            |           |          | <0.53    |      | <0.53    |           |           |
| 9/25/2024 |            | <0.53      | <0.53     |          |          |      |          | <0.53     |           |
| 9/26/2024 | <0.53      |            |           |          |          |      |          |           | <0.53     |
| 9/16/2025 |            | <0.53 (U)  | 0.56 (J)  | 0.66 (J) |          | 5.1  | 0.69 (J) |           |           |
| 9/17/2025 | 0.69 (J)   |            |           |          | 0.6 (J)  |      |          | 0.63 (J)  | 0.57 (J)  |

ND substitution: RL or RL/2 if <15% NDs.

## Barium



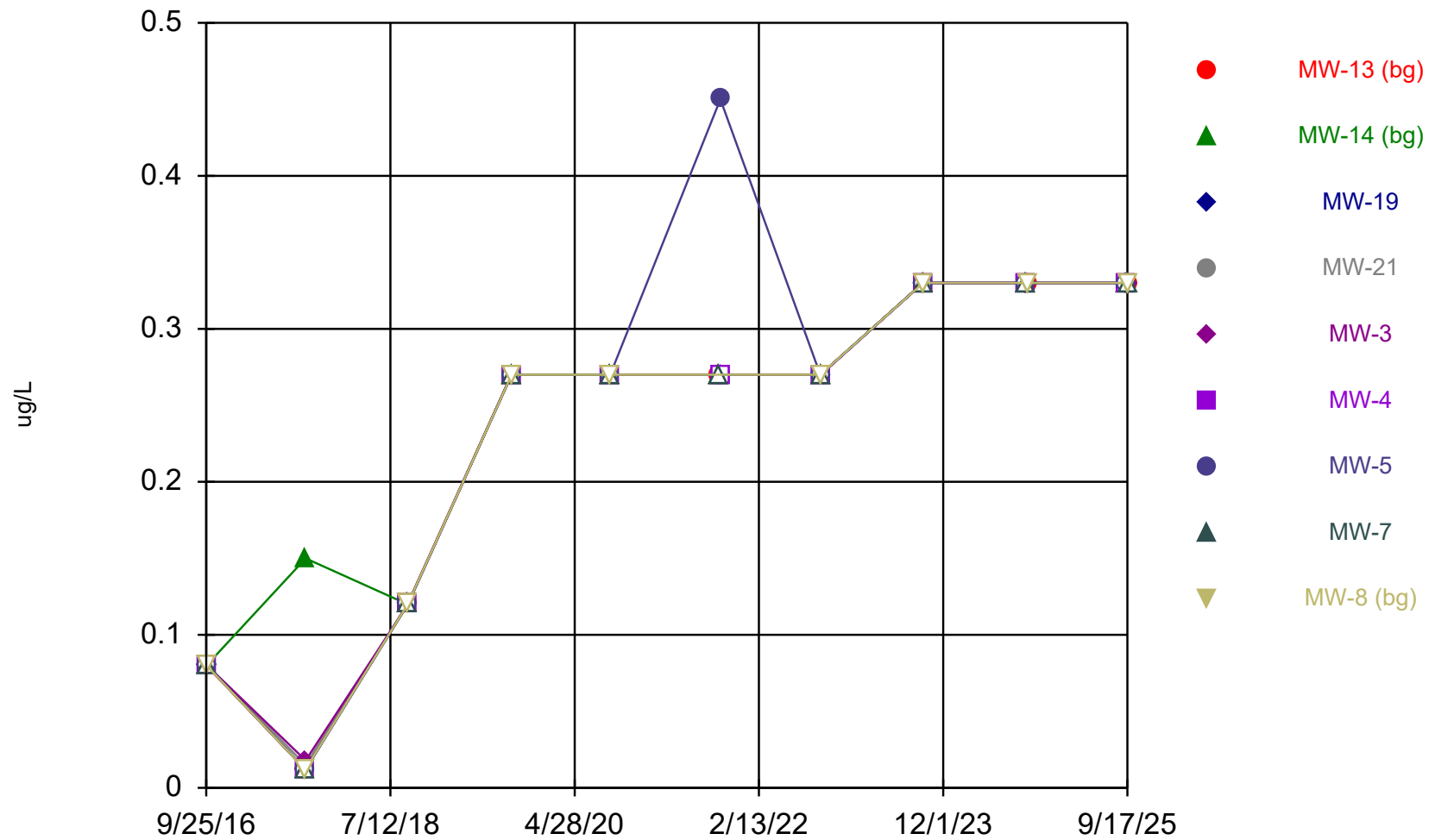
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Barium (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/25/2016 | 91.2       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 62.1       |       |       |      |      |      |      | 114       |
| 9/27/2016 |            |            | 123   |       |      | 114  |      | 106  |           |
| 9/28/2016 |            |            |       | 104   | 123  |      | 183  |      |           |
| 9/13/2017 | 101        |            |       |       |      | 102  |      | 110  | 135       |
| 9/14/2017 |            | 108        | 124   | 91.3  | 112  |      | 118  |      |           |
| 9/11/2018 | 90.4       |            |       | 89.8  |      |      |      |      |           |
| 9/12/2018 |            | 55.1       | 122   |       |      | 187  | 143  |      | 118       |
| 9/13/2018 |            |            |       |       | 123  |      |      | 98.9 |           |
| 9/16/2019 | 97         | 56         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 120   | 120   | 140  | 170  | 160  | 120  | 150       |
| 9/1/2020  |            | 67         |       |       |      |      |      | 100  | 140       |
| 9/2/2020  | 96         |            | 110   | 110   | 130  | 110  | 110  |      |           |
| 9/27/2021 | 100        | 62         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 100  |           |
| 9/29/2021 |            |            | 120   | 97    | 130  | 92   | 380  |      |           |
| 9/20/2022 |            | 59         | 120   |       |      |      | 170  | 98   | 110       |
| 9/21/2022 | 110        |            |       |       | 150  |      |      |      |           |
| 9/22/2022 |            |            |       | 110   |      | 83   |      |      |           |
| 9/20/2023 | 110        | 62         |       |       |      |      |      | 110  |           |
| 9/21/2023 |            |            | 120   | 130   | 150  | 94   | 120  |      | 130       |
| 9/23/2024 |            |            |       | 100   |      | 140  |      |      |           |
| 9/24/2024 |            |            |       |       | 140  |      | 170  |      |           |
| 9/25/2024 |            | 58         | 120   |       |      |      |      | 110  |           |
| 9/26/2024 | 120        |            |       |       |      |      |      |      | 130       |
| 9/16/2025 |            | 61         | 110   | 95    |      | 140  | 200  |      |           |
| 9/17/2025 | 100        |            |       |       | 150  |      |      | 110  | 140       |

## Beryllium



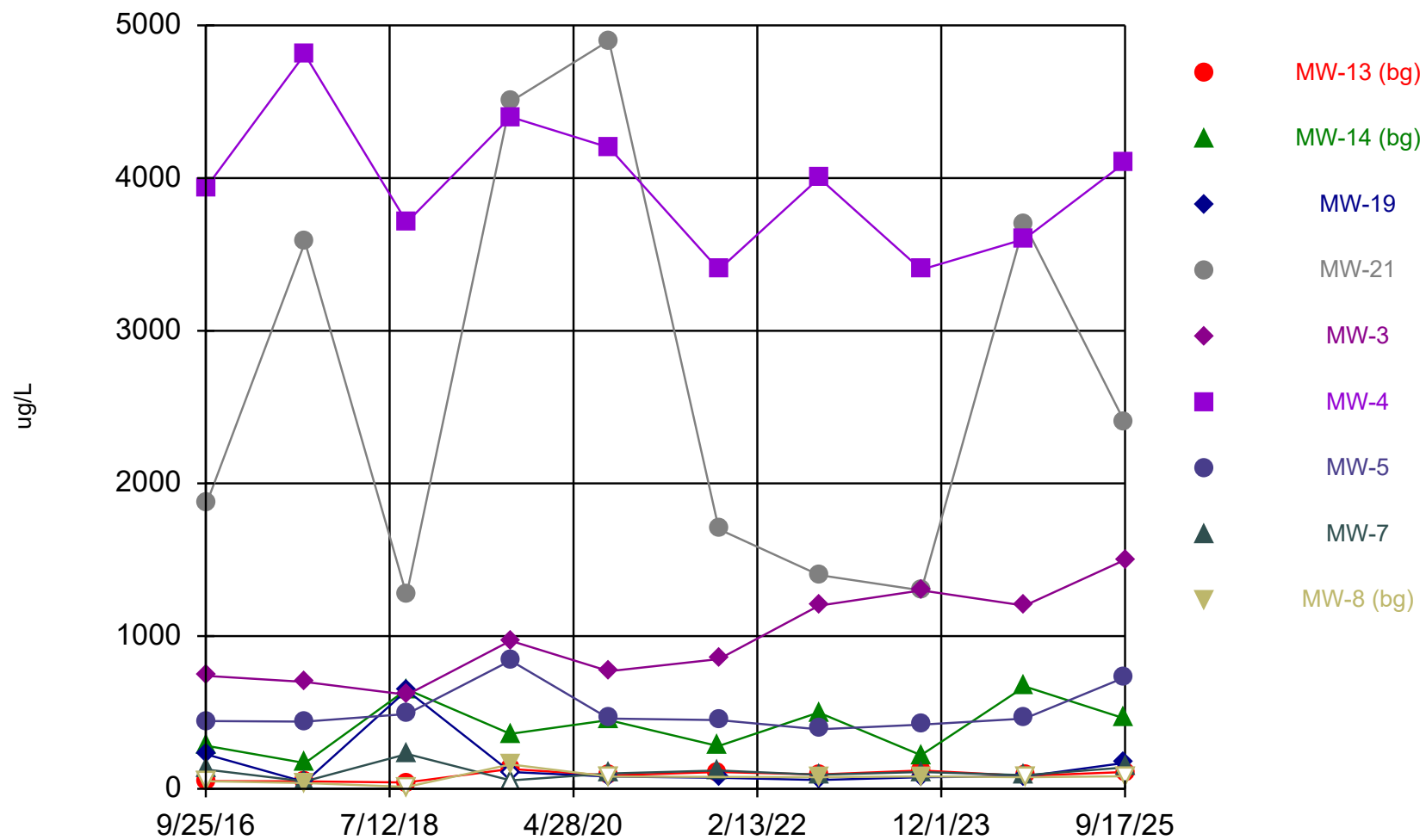
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Beryllium (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4      | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/25/2016 | <0.08      |            |           |           |           |           |           |           |           |
| 9/26/2016 |            | <0.08      |           |           |           |           |           |           | <0.08     |
| 9/27/2016 |            |            | <0.08     |           |           | <0.08     |           | <0.08     |           |
| 9/28/2016 |            |            |           | <0.08     | <0.08     |           | <0.08     |           |           |
| 9/13/2017 | <0.012     |            |           |           |           | 0.012 (J) |           | <0.012    | <0.012    |
| 9/14/2017 |            | 0.15 (J)   | <0.012    | 0.015 (J) | 0.018 (J) |           | <0.012    |           |           |
| 9/11/2018 | <0.12      |            |           | <0.12     |           |           |           |           |           |
| 9/12/2018 |            | <0.12      | <0.12     |           |           | <0.12     | <0.12     |           | <0.12     |
| 9/13/2018 |            |            |           |           | <0.12     |           |           | <0.12     |           |
| 9/16/2019 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/17/2019 |            |            | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     |
| 9/1/2020  |            | <0.27      |           |           |           |           |           | <0.27     | <0.27     |
| 9/2/2020  | <0.27      |            | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     |           |           |
| 9/27/2021 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/28/2021 |            |            |           |           |           |           |           | <0.27     |           |
| 9/29/2021 |            |            | <0.27     | <0.27     | <0.27     | <0.27     | 0.45 (J)  |           |           |
| 9/20/2022 |            | <0.27      | <0.27     |           |           |           | <0.27     | <0.27     | <0.27     |
| 9/21/2022 | <0.27      |            |           |           | <0.27     |           |           |           |           |
| 9/22/2022 |            |            |           | <0.27     |           | <0.27     |           |           |           |
| 9/20/2023 | <0.33 (U)  | <0.33 (U)  |           |           |           |           |           | <0.33 (U) |           |
| 9/21/2023 |            |            | <0.33 (U) | <0.33 (U) | <0.33 (U) | <0.33 (U) | <0.33 (U) |           | <0.33 (U) |
| 9/23/2024 |            |            |           | <0.33     |           | <0.33     |           |           |           |
| 9/24/2024 |            |            |           |           | <0.33     |           | <0.33     |           |           |
| 9/25/2024 |            | <0.33      | <0.33     |           |           |           |           | <0.33     |           |
| 9/26/2024 | <0.33      |            |           |           |           |           |           |           | <0.33     |
| 9/16/2025 |            | <0.33 (U)  | <0.33 (U) | <0.33 (U) |           | <0.33 (U) | <0.33 (U) |           |           |
| 9/17/2025 | <0.33 (U)  |            |           |           | <0.33 (U) |           |           | <0.33 (U) | <0.33 (U) |

## Boron



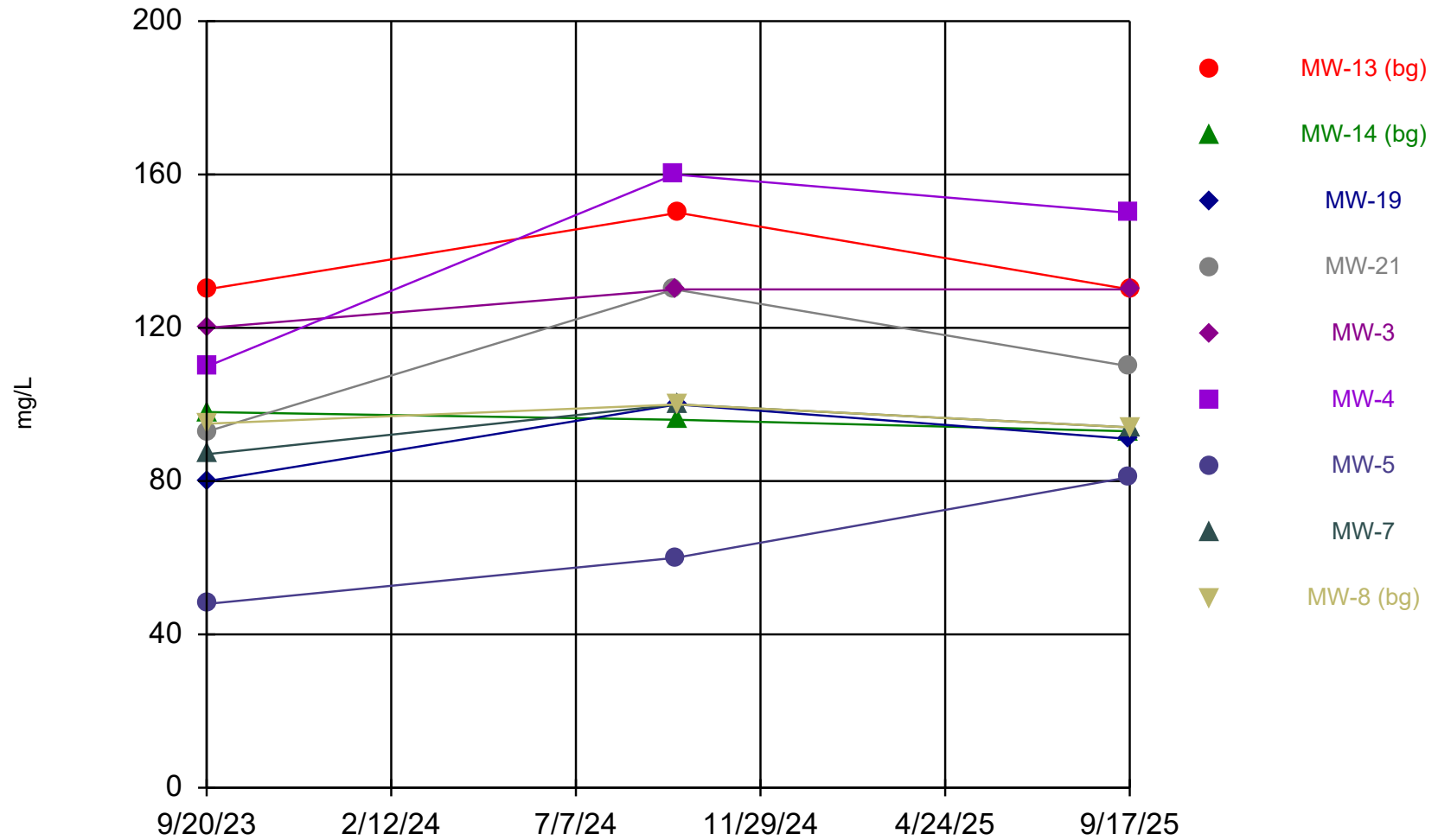
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Boron (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19    | MW-21 | MW-3 | MW-4 | MW-5 | MW-7   | MW-8 (bg) |
|-----------|------------|------------|----------|-------|------|------|------|--------|-----------|
| 9/25/2016 | 50.2 (J)   |            |          |       |      |      |      |        |           |
| 9/26/2016 |            | 282        |          |       |      |      |      |        | <50       |
| 9/27/2016 |            |            | 226      |       |      | 3940 |      | 126    |           |
| 9/28/2016 |            |            |          | 1870  | 740  |      | 444  |        |           |
| 9/13/2017 | 48.6 (J)   |            |          |       |      | 4810 |      | 49 (J) | 37.6 (J)  |
| 9/14/2017 |            | 169        | 44.7 (J) | 3580  | 700  |      | 440  |        |           |
| 9/11/2018 | 41.4 (J)   |            |          | 1270  |      |      |      |        |           |
| 9/12/2018 |            | 651        | 645      |       |      | 3710 | 490  |        | <12.5     |
| 9/13/2018 |            |            |          |       | 616  |      |      | 228    |           |
| 9/16/2019 | 130 (J)    | 360        |          |       |      |      |      |        |           |
| 9/17/2019 |            |            | <110     | 4500  | 970  | 4400 | 840  | <110   | 160 (J)   |
| 9/1/2020  |            | 450        |          |       |      |      |      | 100    | <80       |
| 9/2/2020  | 88 (J)     |            | <80      | 4900  | 770  | 4200 | 460  |        |           |
| 9/27/2021 | 110        | 280        |          |       |      |      |      |        |           |
| 9/28/2021 |            |            |          |       |      |      |      | 120    |           |
| 9/29/2021 |            |            | 72 (J)   | 1700  | 850  | 3400 | 450  |        |           |
| 9/20/2022 |            | 500        | <58      |       |      |      | 390  | 92 (J) | 76 (J)    |
| 9/21/2022 | 94 (J)     |            |          |       | 1200 |      |      |        |           |
| 9/22/2022 |            |            |          | 1400  |      | 4000 |      |        |           |
| 9/20/2023 | 120        | 220        |          |       |      |      |      | 110    |           |
| 9/21/2023 |            |            | <76 (U)  | 1300  | 1300 | 3400 | 420  |        | 81 (J)    |
| 9/23/2024 |            |            |          | 3700  |      | 3600 |      |        |           |
| 9/24/2024 |            |            |          |       | 1200 |      | 460  |        |           |
| 9/25/2024 |            | 670        | 81 (J)   |       |      |      |      | 89 (J) |           |
| 9/26/2024 | 85 (J)     |            |          |       |      |      |      |        | <76       |
| 9/16/2025 |            | 460        | 170      | 2400  |      | 4100 | 730  |        |           |
| 9/17/2025 | 110        |            |          |       | 1500 |      |      | 140    | <82 (U)   |

## Calcium



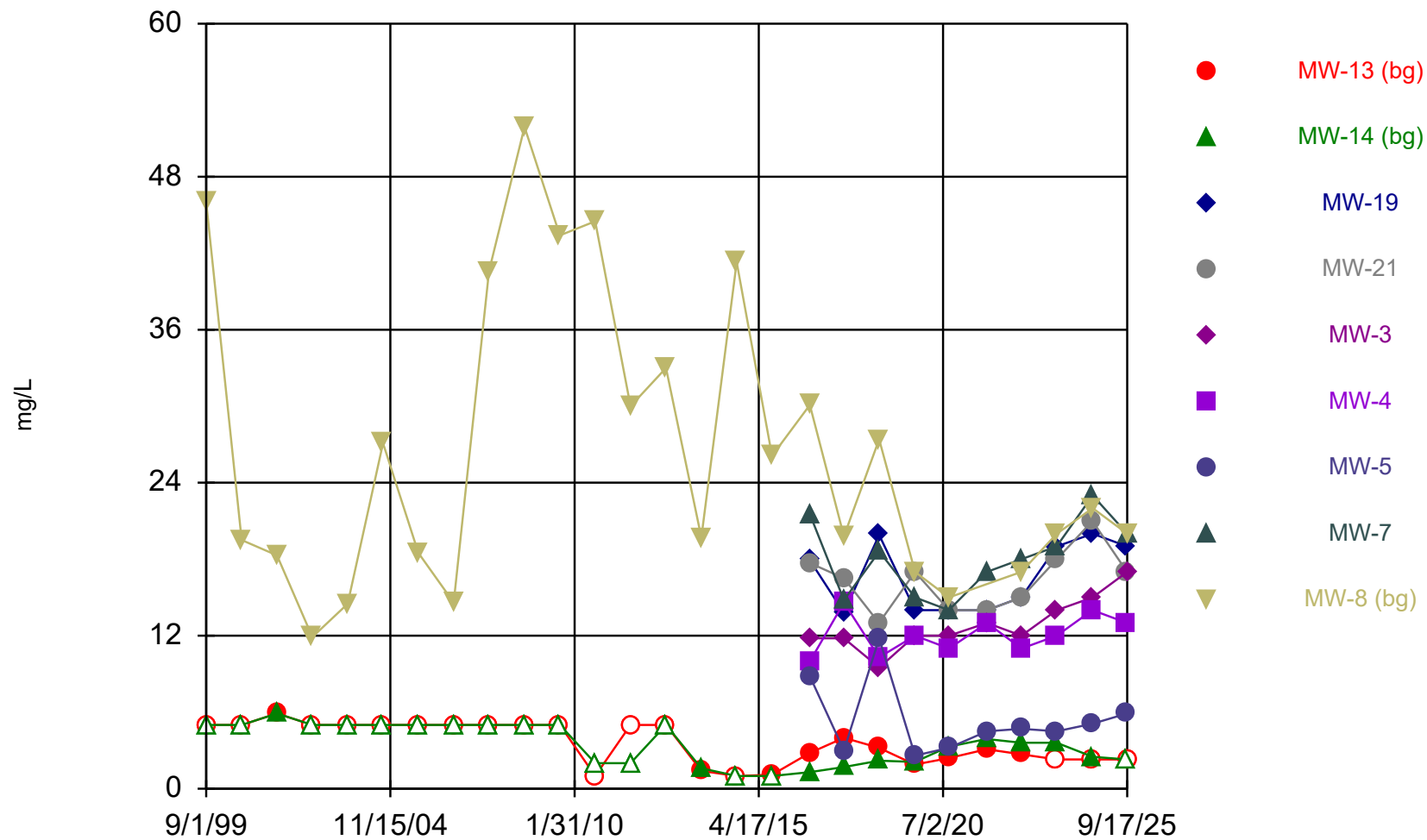
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

## Time Series

Constituent: Calcium (mg/L) Analysis Run 10/21/2025 12:48 PM View: West Closed LFs  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/20/2023 | 130        | 98         |       |       |      |      |      | 87   |           |
| 9/21/2023 |            |            | 80    | 93    | 120  | 110  | 48   |      | 95        |
| 9/23/2024 |            |            |       | 130   |      | 160  |      |      |           |
| 9/24/2024 |            |            |       |       | 130  |      | 60   |      |           |
| 9/25/2024 |            | 96         | 100   |       |      |      |      | 100  |           |
| 9/26/2024 | 150        |            |       |       |      |      |      |      | 100       |
| 9/16/2025 |            | 93         | 91    | 110   |      | 150  | 81   |      |           |
| 9/17/2025 | 130        |            |       |       | 130  |      |      | 94   | 94        |

## Chloride



Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

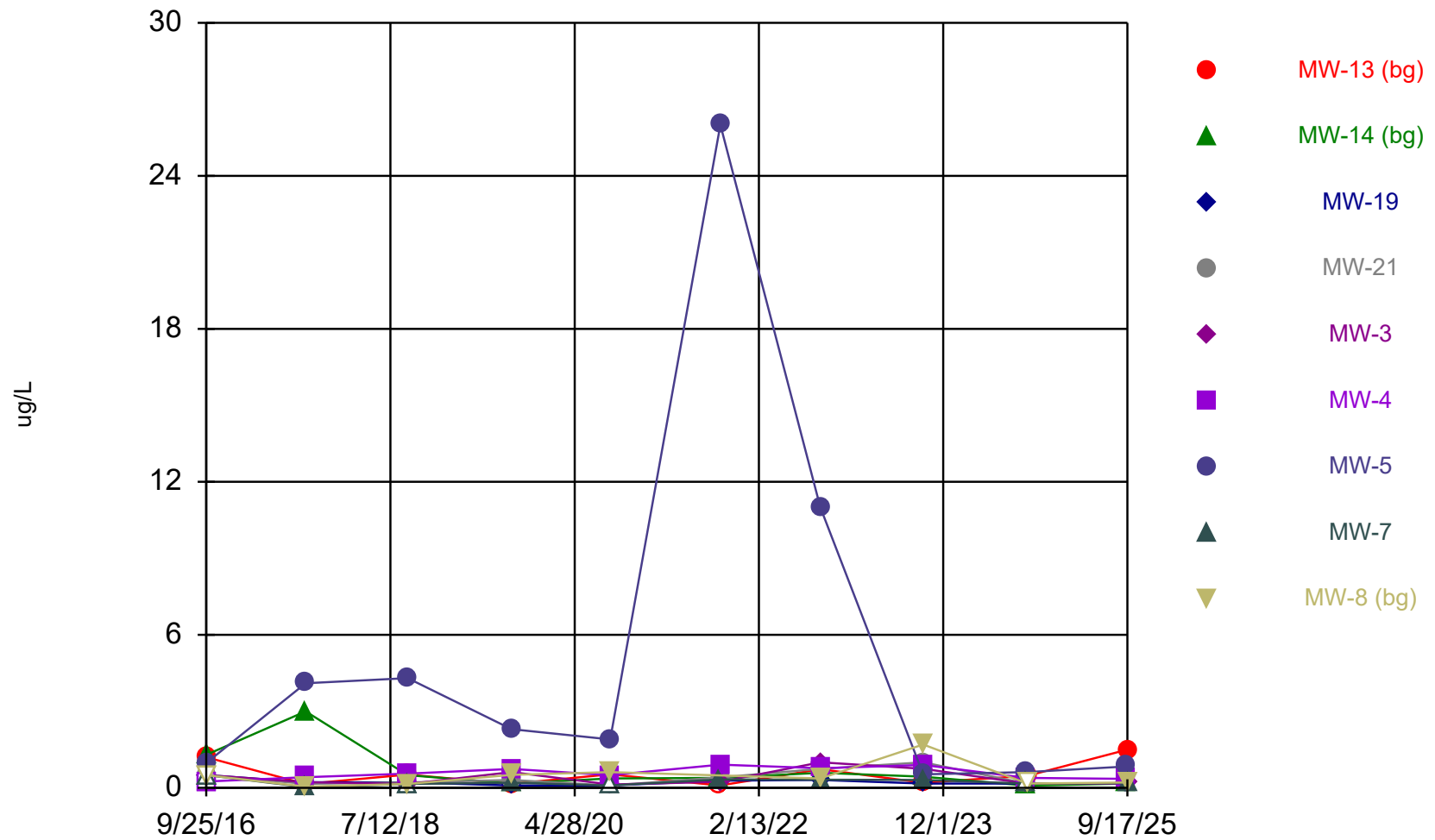
Time Series

Constituent: Chloride (mg/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19  | MW-21  | MW-3   | MW-4   | MW-5      | MW-7   | MW-8 (bg) |
|-----------|------------|------------|--------|--------|--------|--------|-----------|--------|-----------|
| 9/1/1999  | <5         | <5         |        |        |        |        |           |        | 46        |
| 9/1/2000  | <5         | <5         |        |        |        |        |           |        | 19.5      |
| 9/1/2001  | 5.9        | 5.9        |        |        |        |        |           |        | 18.3      |
| 9/1/2002  | <5         | <5         |        |        |        |        |           |        | 11.9      |
| 9/1/2003  | <5         | <5         |        |        |        |        |           |        | 14.5      |
| 9/1/2004  | <5         | <5         |        |        |        |        |           |        | 27.1      |
| 9/1/2005  | <5         | <5         |        |        |        |        |           |        | 18.5      |
| 9/1/2006  | <5         | <5         |        |        |        |        |           |        | 14.6      |
| 9/1/2007  | <5         | <5         |        |        |        |        |           |        | 40.6      |
| 9/1/2008  | <5         | <5         |        |        |        |        |           |        | 51.9      |
| 9/1/2009  | <5         | <5         |        |        |        |        |           |        | 43.4      |
| 9/1/2010  | <1         | <2         |        |        |        |        |           |        | 44.5      |
| 9/1/2011  | <5         | <2         |        |        |        |        |           |        | 30        |
| 9/1/2012  | <5         | <5         |        |        |        |        |           |        | 33        |
| 9/1/2013  | 1.4        | 1.6        |        |        |        |        |           |        | 19.7      |
| 9/1/2014  | <1         | <1         |        |        |        |        |           |        | 41.3      |
| 9/1/2015  | 1.1        | <1         |        |        |        |        |           |        | 26.1      |
| 9/25/2016 | 2.8        |            |        |        |        |        |           |        |           |
| 9/26/2016 |            | 1.3        |        |        |        |        |           |        | 30.1      |
| 9/27/2016 |            |            | 17.9   |        |        | 10     |           | 21.5   |           |
| 9/28/2016 |            |            |        | 17.7   | 11.8   |        | 8.8       |        |           |
| 9/13/2017 | 4          |            |        |        |        | 14.6   |           | 14.8   | 19.8      |
| 9/14/2017 |            | 1.7        | 13.8   | 16.5   | 11.8   |        | 3         |        |           |
| 9/11/2018 | 3.2        |            |        | 13     |        |        |           |        |           |
| 9/12/2018 |            | 2.2        | 19.9   |        |        | 10.3   | 11.8      |        | 27.4      |
| 9/13/2018 |            |            |        |        | 9.5    |        |           | 18.6   |           |
| 9/16/2019 | 1.9 (J,B)  | 2.1 (J,B)  |        |        |        |        |           |        |           |
| 9/17/2019 |            |            | 14 (B) | 17 (B) | 12 (B) | 12 (B) | 2.6 (J,B) | 15 (B) | 17 (B)    |
| 9/1/2020  |            | 3.3 (J,B)  |        |        |        |        |           | 14 (B) | 15 (B)    |
| 9/2/2020  | 2.4 (J,B)  |            | 14 (B) | 14 (B) | 12 (B) | 11 (B) | 3.2 (J,B) |        |           |
| 9/27/2021 | 3.1 (J)    | 3.9 (J)    |        |        |        |        |           |        |           |
| 9/28/2021 |            |            |        |        |        |        |           | 17     |           |
| 9/29/2021 |            |            | 14     | 14     | 13     | 13     | 4.5 (J)   |        |           |
| 9/20/2022 |            | 3.6 (J)    | 15     |        |        |        | 4.7 (J)   | 18     | 17        |
| 9/21/2022 | 2.7 (J)    |            |        |        | 12     |        |           |        |           |
| 9/22/2022 |            |            |        | 15     |        | 11     |           |        |           |
| 9/20/2023 | <2.3 (U)   | 3.6 (J)    |        |        |        |        |           | 19     |           |
| 9/21/2023 |            |            | 19     | 18     | 14     | 12     | 4.5 (J)   |        | 20        |
| 9/23/2024 |            |            |        | 21     |        | 14     |           |        |           |
| 9/24/2024 |            |            |        |        | 15     |        | 5.1       |        |           |
| 9/25/2024 |            | 2.5 (J)    | 20     |        |        |        |           | 23     |           |
| 9/26/2024 | <2.3       |            |        |        |        |        |           |        | 22        |
| 9/16/2025 |            | <2.3 (U)   | 19     | 17     |        | 13     | 5.9       |        |           |
| 9/17/2025 | <2.3 (U)   |            |        |        | 17     |        |           | 20     | 20        |

ND substitution: RL or RL/2 if <15% NDs.

## Cobalt



Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

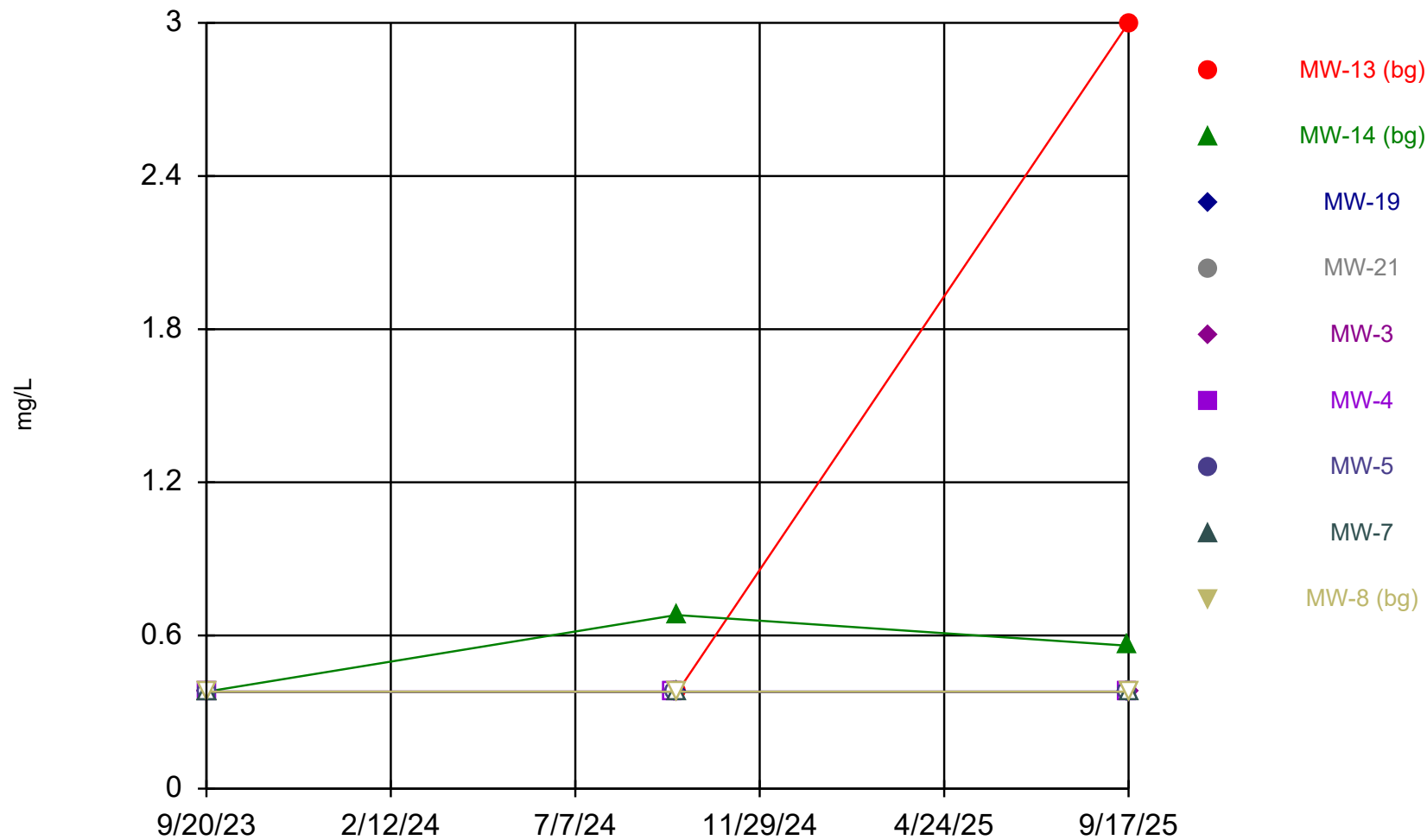
Time Series

Constituent: Cobalt (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4     | MW-5 | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|----------|------|-----------|-----------|
| 9/25/2016 | 1.2        |            |           |           |           |          |      |           |           |
| 9/26/2016 |            | 1.3        |           |           |           |          |      |           | <0.5      |
| 9/27/2016 |            |            | <0.5      |           |           | <0.5     |      | <0.5      |           |
| 9/28/2016 |            |            |           | <0.5      | <0.5      |          | 1    |           |           |
| 9/13/2017 | 0.15 (J)   |            |           |           |           | 0.42 (J) |      | 0.027 (J) | 0.051 (J) |
| 9/14/2017 |            | 3          | 0.22 (J)  | 0.16 (J)  | 0.22 (J)  |          | 4.1  |           |           |
| 9/11/2018 | 0.52 (J)   |            |           | 0.21 (J)  |           |          |      |           |           |
| 9/12/2018 |            | 0.5 (J)    | 0.21 (J)  |           |           | 0.56 (J) | 4.3  |           | 0.15 (J)  |
| 9/13/2018 |            |            |           |           | <0.15     |          |      | <0.15     |           |
| 9/16/2019 | 0.16 (J)   | 0.17 (J)   |           |           |           |          |      |           |           |
| 9/17/2019 |            |            | <0.091    | 0.31 (J)  | 0.62      | 0.74     | 2.3  | 0.2 (J)   | 0.51      |
| 9/1/2020  |            | 0.37 (J)   |           |           |           |          |      | <0.091    | 0.62      |
| 9/2/2020  | 0.53       |            | 0.094 (J) | <0.091    | 0.13 (J)  | 0.5      | 1.9  |           |           |
| 9/27/2021 | <0.19      | 0.39 (J)   |           |           |           |          |      |           |           |
| 9/28/2021 |            |            |           |           |           |          |      | 0.33 (J)  |           |
| 9/29/2021 |            |            | 0.28 (J)  | 0.41 (J)  | 0.24 (J)  | 0.91     | 26   |           |           |
| 9/20/2022 |            | 0.59       | 0.31 (J)  |           |           |          | 11   | 0.32 (J)  | 0.37 (J)  |
| 9/21/2022 | 0.73       |            |           |           | 1         |          |      |           |           |
| 9/22/2022 |            |            |           | 0.75      |           | 0.77     |      |           |           |
| 9/20/2023 | 0.2 (J)    | 0.44 (J)   |           |           |           |          |      | 0.31 (J)  |           |
| 9/21/2023 |            |            | <0.17 (U) | 1         | 0.75      | 0.9      | 0.53 |           | 1.7       |
| 9/23/2024 |            |            |           | <0.17     |           | 0.39 (J) |      |           |           |
| 9/24/2024 |            |            |           |           | <0.17     |          | 0.62 |           |           |
| 9/25/2024 |            | <0.17      | <0.17     |           |           |          |      | <0.17     |           |
| 9/26/2024 | 0.47 (J)   |            |           |           |           |          |      |           | <0.17     |
| 9/16/2025 |            | 0.17 (J)   | <0.17 (U) | <0.17 (U) |           | 0.35 (J) | 0.84 |           |           |
| 9/17/2025 | 1.5        |            |           |           | <0.17 (U) |          |      | 0.18 (J)  | 0.21 (J)  |

ND substitution: RL or RL/2 if <15% NDs.

Fluoride



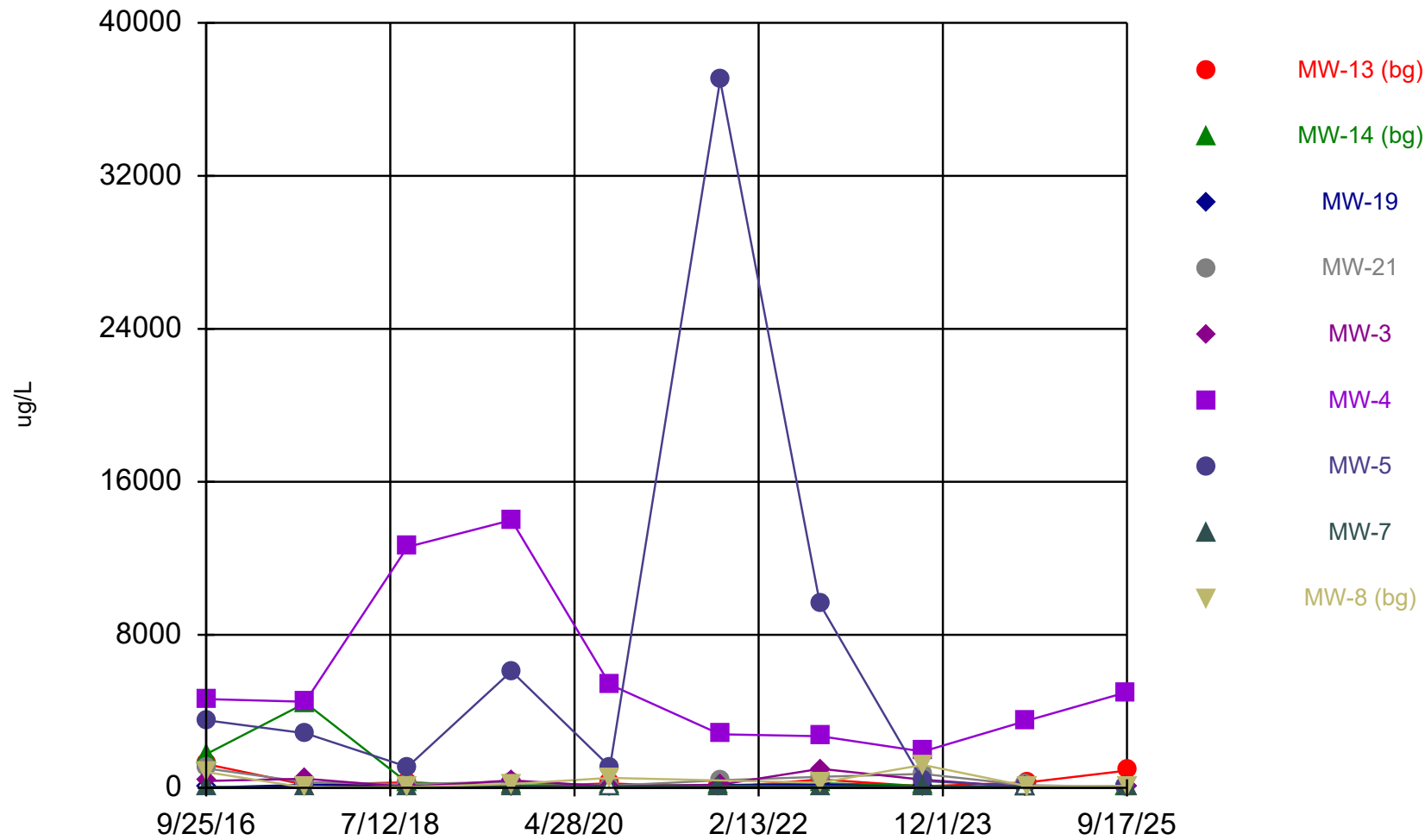
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Fluoride (mg/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4      | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/20/2023 | <0.38 (U)  | <0.38 (U)  |           |           |           |           |           | <0.38 (U) |           |
| 9/21/2023 |            |            | <0.38 (U) | <0.38 (U) | <0.38 (U) | <0.38 (U) | <0.38 (U) |           | <0.38 (U) |
| 9/23/2024 |            |            |           | <0.38     |           | <0.38     |           |           |           |
| 9/24/2024 |            |            |           |           | <0.38     |           | <0.38     |           |           |
| 9/25/2024 |            | 0.68 (J)   | <0.38     |           |           |           |           | <0.38     |           |
| 9/26/2024 | 0.38 (J)   |            |           |           |           |           |           |           | <0.38     |
| 9/16/2025 |            | 0.56 (J)   | <0.38 (U) | <0.38 (U) |           | <0.38 (U) | <0.38 (U) |           |           |
| 9/17/2025 | 3          |            |           |           | <0.38 (U) |           |           | <0.38 (U) | <0.38 (U) |

Iron

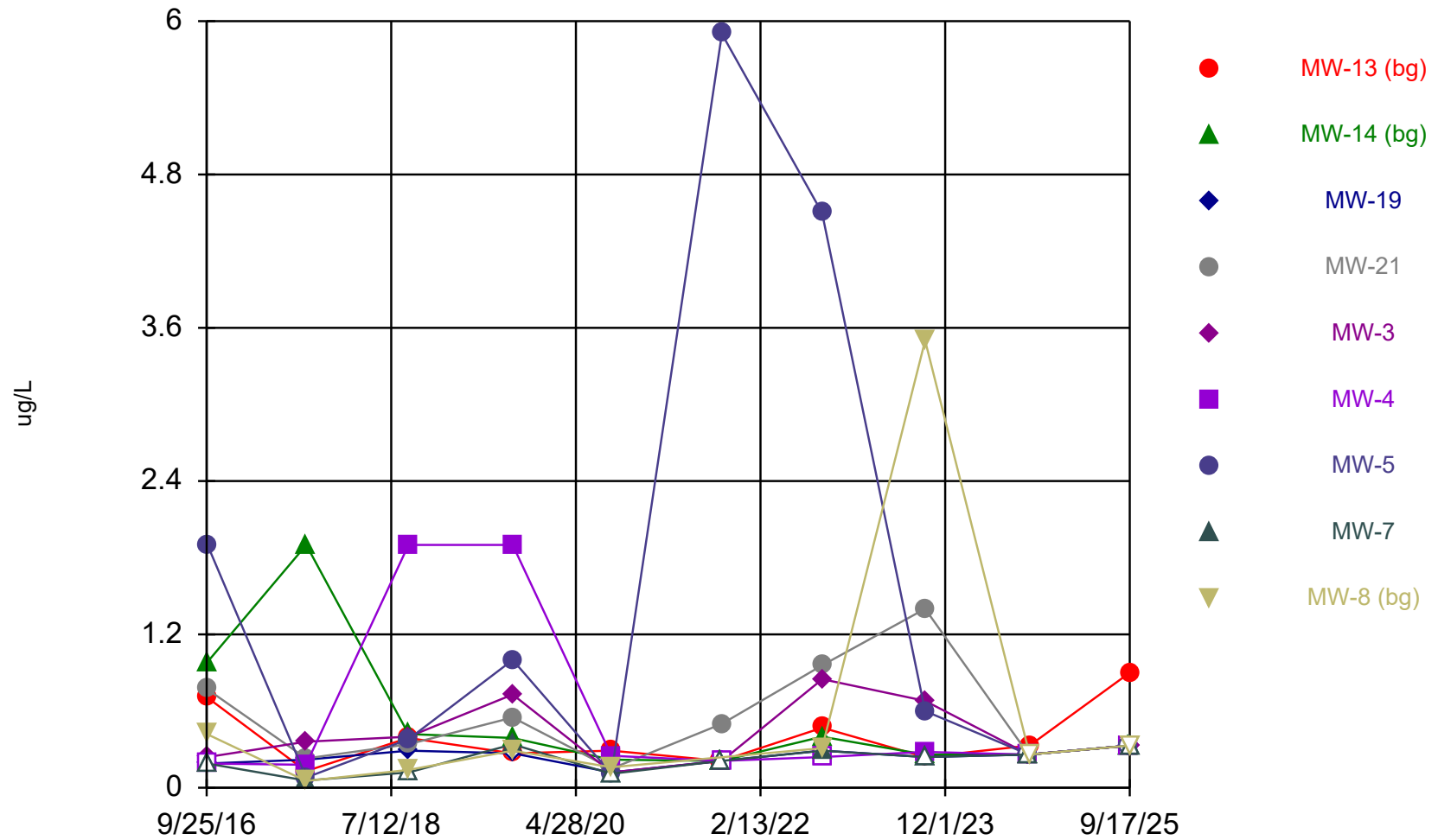


Time Series

Constituent: Iron (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21   | MW-3     | MW-4  | MW-5   | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|---------|----------|-------|--------|----------|-----------|
| 9/25/2016 | 1240       |            |         |         |          |       |        |          |           |
| 9/26/2016 |            | 1770       |         |         |          |       |        |          | 820       |
| 9/27/2016 |            |            | <12.8   |         |          | 4640  |        | 51.9     |           |
| 9/28/2016 |            |            |         | 1010    | 362      |       | 3530   |          |           |
| 9/13/2017 | 162        |            |         |         |          | 4500  |        | 11.9 (J) | 18.7 (J)  |
| 9/14/2017 |            | 4440       | 162     | 297     | 475      |       | 2850   |          |           |
| 9/11/2018 | 289        |            |         | 195     |          |       |        |          |           |
| 9/12/2018 |            | 267        | 101     |         |          | 12600 | 1100   |          | 45.2 (J)  |
| 9/13/2018 |            |            |         |         | 42.2 (J) |       |        | 41.7 (J) |           |
| 9/16/2019 | 76 (J)     | 130        |         |         |          |       |        |          |           |
| 9/17/2019 |            |            | <66     | 320     | 390      | 14000 | 6100   | 95 (J)   | 200       |
| 9/1/2020  |            | 130        |         |         |          |       |        | <50      | 520       |
| 9/2/2020  | 230        |            | <50     | 110     | 72 (J)   | 5400  | 1100   |          |           |
| 9/27/2021 | <36        | 140        |         |         |          |       |        |          |           |
| 9/28/2021 |            |            |         |         |          |       |        | 110      |           |
| 9/29/2021 |            |            | 130     | 400     | 170      | 2800  | 37000  |          |           |
| 9/20/2022 |            | 240        | 170     |         |          |       | 9600   | 90 (J)   | 270       |
| 9/21/2022 | 440        |            |         |         | 1000     |       |        |          |           |
| 9/22/2022 |            |            |         | 580     |          | 2700  |        |          |           |
| 9/20/2023 | 78 (J)     | 120        |         |         |          |       |        | 54 (J)   |           |
| 9/21/2023 |            |            | <36 (U) | 730     | 430      | 1900  | 360    |          | 1200      |
| 9/23/2024 |            |            |         | <140    |          | 3500  |        |          |           |
| 9/24/2024 |            |            |         |         | 40 (J)   |       | 76 (J) |          |           |
| 9/25/2024 |            | <36        | <36     |         |          |       |        | <36      |           |
| 9/26/2024 | 280        |            |         |         |          |       |        |          | 86 (J)    |
| 9/16/2025 |            | 94 (J)     | <50 (U) | <50 (U) |          | 5000  | 60 (J) |          |           |
| 9/17/2025 | 900        |            |         |         | <50 (U)  |       |        | 77 (J)   | 93 (J)    |

## Lead



Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

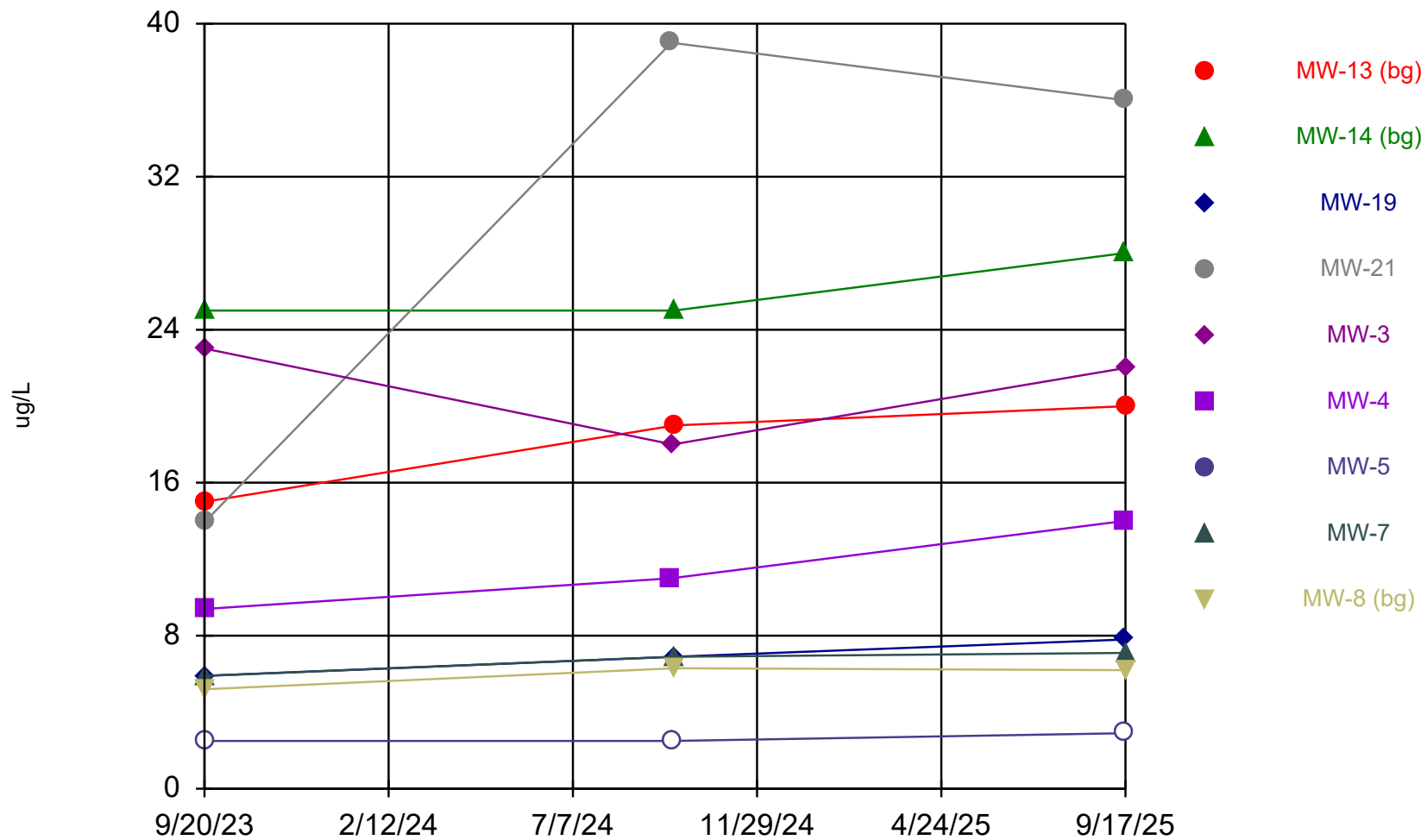
Time Series

Constituent: Lead (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4      | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/25/2016 | 0.71 (J)   |            |           |           |           |           |           |           |           |
| 9/26/2016 |            | 0.98 (J)   |           |           |           |           |           |           | 0.42 (J)  |
| 9/27/2016 |            |            | <0.19     |           |           | <0.19     |           | <0.19     |           |
| 9/28/2016 |            |            |           | 0.77 (J)  | 0.24 (J)  |           | 1.9       |           |           |
| 9/13/2017 | 0.13 (J)   |            |           |           |           | 0.18 (J)  |           | 0.056 (J) | 0.053 (J) |
| 9/14/2017 |            | 1.9        | 0.22 (J)  | 0.23 (J)  | 0.36 (J)  |           | 0.08 (J)  |           |           |
| 9/11/2018 | 0.39 (J)   |            |           | 0.34 (J)  |           |           |           |           |           |
| 9/12/2018 |            | 0.42 (J)   | 0.29 (J)  |           |           | 1.9       | 0.38 (J)  |           | 0.14 (J)  |
| 9/13/2018 |            |            |           |           | 0.4 (J)   |           |           | <0.12     |           |
| 9/16/2019 | <0.27      | 0.39 (J)   |           |           |           |           |           |           |           |
| 9/17/2019 |            |            | <0.27     | 0.55      | 0.73      | 1.9       | 1         | 0.34 (J)  | 0.29 (J)  |
| 9/1/2020  |            | 0.22 (J)   |           |           |           |           |           | <0.11     | 0.16 (J)  |
| 9/2/2020  | 0.29 (J)   |            | 0.12 (J)  | 0.15 (J)  | 0.12 (J)  | 0.25 (J)  | 0.11 (J)  |           |           |
| 9/27/2021 | <0.21      | <0.21      |           |           |           |           |           |           |           |
| 9/28/2021 |            |            |           |           |           |           |           | <0.21     |           |
| 9/29/2021 |            |            | <0.21     | 0.5       | <0.21     | <0.21     | 5.9       |           |           |
| 9/20/2022 |            | 0.4 (J)    | 0.29 (J)  |           |           |           | 4.5       | 0.29 (J)  | 0.31 (J)  |
| 9/21/2022 | 0.47 (J)   |            |           |           | 0.85      |           |           |           |           |
| 9/22/2022 |            |            |           | 0.96      |           | <0.24     |           |           |           |
| 9/20/2023 | <0.24 (U)  | 0.26 (J)   |           |           |           |           |           | <0.24 (U) |           |
| 9/21/2023 |            |            | <0.24 (U) | 1.4       | 0.68      | 0.28 (J)  | 0.6       |           | 3.5       |
| 9/23/2024 |            |            |           | <0.26     |           | <0.26     |           |           |           |
| 9/24/2024 |            |            |           |           | <0.26     |           | <0.26     |           |           |
| 9/25/2024 |            | <0.26      | <0.26     |           |           |           |           | <0.26     |           |
| 9/26/2024 | 0.33 (J)   |            |           |           |           |           |           |           | <0.26     |
| 9/16/2025 |            | <0.33 (U)  | <0.33 (U) | <0.33 (U) |           | <0.33 (U) | <0.33 (U) |           |           |
| 9/17/2025 | 0.9        |            |           |           | <0.33 (U) |           |           | <0.33 (U) | <0.33 (U) |

ND substitution: RL or RL/2 if <15% NDs.

## Lithium



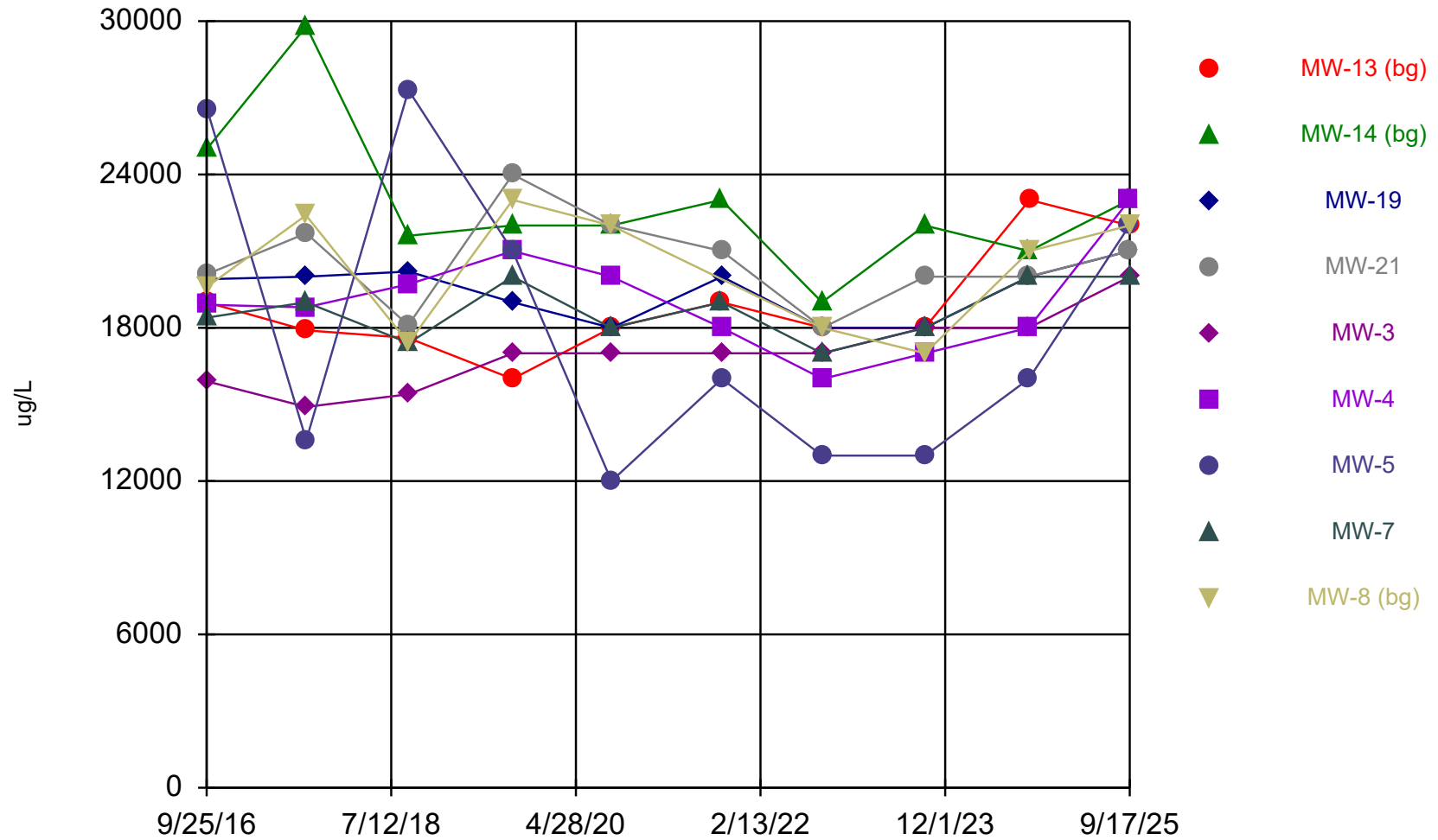
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Lithium (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3 | MW-4    | MW-5     | MW-7    | MW-8 (bg) |
|-----------|------------|------------|---------|-------|------|---------|----------|---------|-----------|
| 9/20/2023 | 15         | 25         |         |       |      |         |          | 5.9 (J) |           |
| 9/21/2023 |            |            | 5.9 (J) | 14    | 23   | 9.4 (J) | <2.5 (U) |         | 5.2 (J)   |
| 9/23/2024 |            |            |         | 39    |      | 11      |          |         |           |
| 9/24/2024 |            |            |         |       | 18   |         | <2.5     |         |           |
| 9/25/2024 |            | 25         | 6.9 (J) |       |      |         |          | 6.9 (J) |           |
| 9/26/2024 | 19         |            |         |       |      |         |          |         | 6.3 (J)   |
| 9/16/2025 |            | 28         | 7.8 (J) | 36    |      | 14      | <2.9 (U) |         |           |
| 9/17/2025 | 20         |            |         |       | 22   |         |          | 7.1 (J) | 6.2 (J)   |

## Magnesium



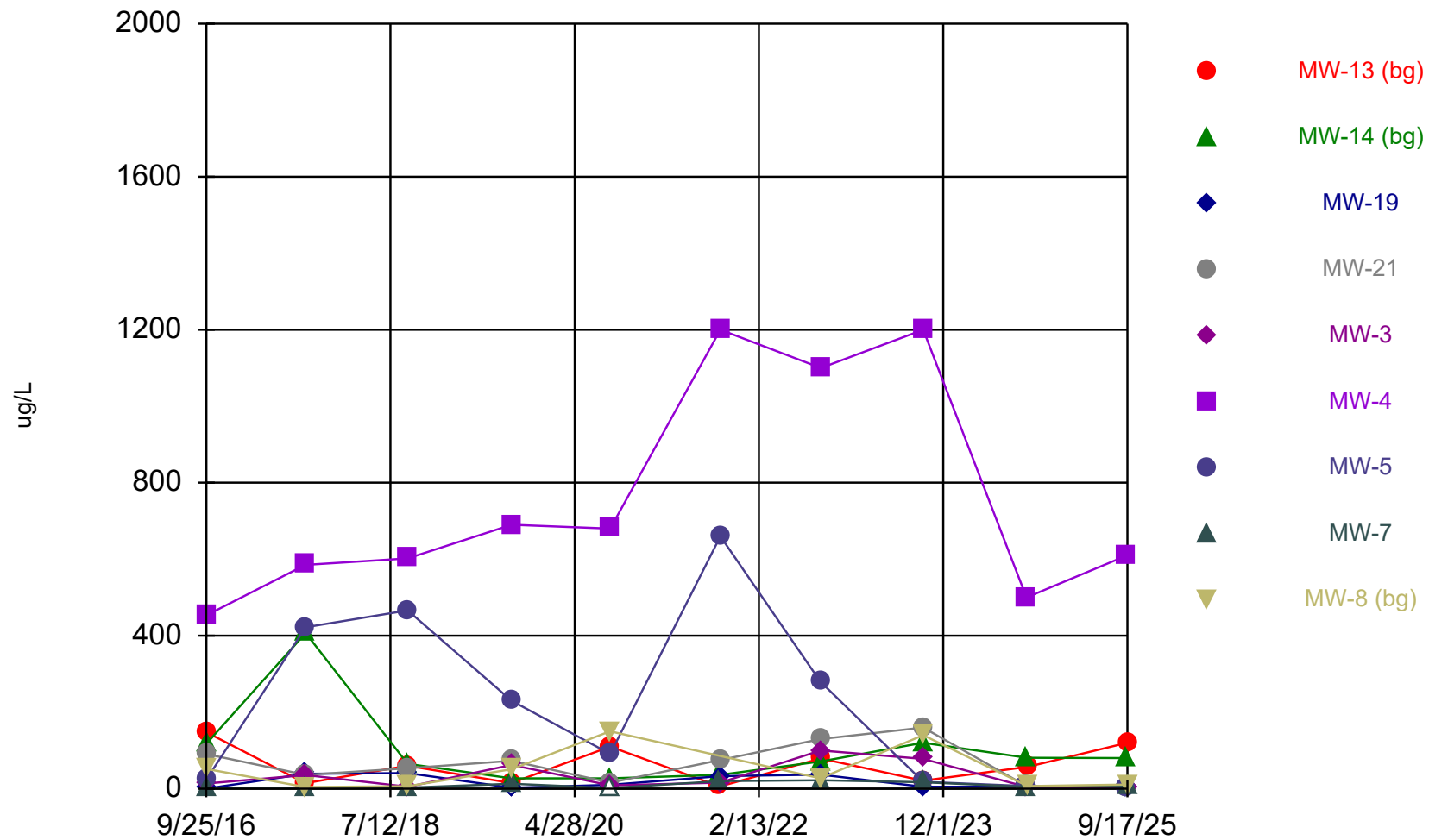
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Magnesium (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3  | MW-4  | MW-5  | MW-7  | MW-8 (bg) |
|-----------|------------|------------|-------|-------|-------|-------|-------|-------|-----------|
| 9/25/2016 | 19000      |            |       |       |       |       |       |       |           |
| 9/26/2016 |            | 25000      |       |       |       |       |       |       | 19600     |
| 9/27/2016 |            |            | 19900 |       |       | 18900 |       | 18400 |           |
| 9/28/2016 |            |            |       | 20100 | 15900 |       | 26500 |       |           |
| 9/13/2017 | 17900      |            |       |       |       | 18800 |       | 19000 | 22400     |
| 9/14/2017 |            | 29800      | 20000 | 21700 | 14900 |       | 13600 |       |           |
| 9/11/2018 | 17600      |            |       | 18100 |       |       |       |       |           |
| 9/12/2018 |            | 21600      | 20200 |       |       | 19700 | 27300 |       | 17400     |
| 9/13/2018 |            |            |       |       | 15400 |       |       | 17400 |           |
| 9/16/2019 | 16000      | 22000      |       |       |       |       |       |       |           |
| 9/17/2019 |            |            | 19000 | 24000 | 17000 | 21000 | 21000 | 20000 | 23000     |
| 9/1/2020  |            | 22000      |       |       |       |       |       | 18000 | 22000     |
| 9/2/2020  | 18000      |            | 18000 | 22000 | 17000 | 20000 | 12000 |       |           |
| 9/27/2021 | 19000      | 23000      |       |       |       |       |       |       |           |
| 9/28/2021 |            |            |       |       |       |       |       | 19000 |           |
| 9/29/2021 |            |            | 20000 | 21000 | 17000 | 18000 | 16000 |       |           |
| 9/20/2022 |            | 19000      | 18000 |       |       |       | 13000 | 17000 | 18000     |
| 9/21/2022 | 18000      |            |       |       | 17000 |       |       |       |           |
| 9/22/2022 |            |            |       | 18000 |       | 16000 |       |       |           |
| 9/20/2023 | 18000      | 22000      |       |       |       |       |       | 18000 |           |
| 9/21/2023 |            |            | 18000 | 20000 | 18000 | 17000 | 13000 |       | 17000     |
| 9/23/2024 |            |            |       | 20000 |       | 18000 |       |       |           |
| 9/24/2024 |            |            |       |       | 18000 |       | 16000 |       |           |
| 9/25/2024 |            | 21000      | 20000 |       |       |       |       | 20000 |           |
| 9/26/2024 | 23000      |            |       |       |       |       |       |       | 21000     |
| 9/16/2025 |            | 23000      | 21000 | 21000 |       | 23000 | 22000 |       |           |
| 9/17/2025 | 22000      |            |       |       | 20000 |       |       | 20000 | 22000     |

## Manganese



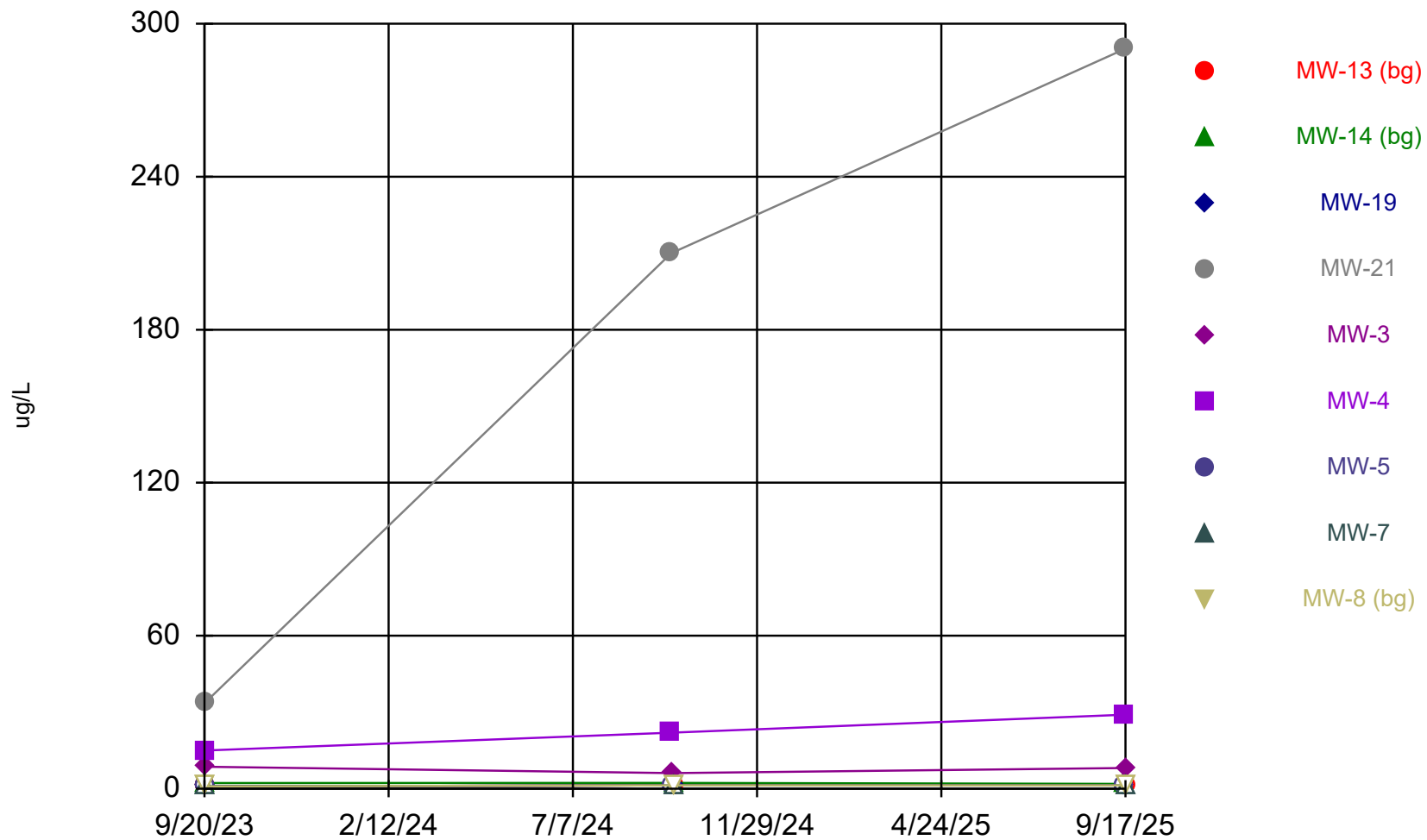
Time Series Analysis Run 10/21/2025 12:46 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Manganese (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19    | MW-21   | MW-3     | MW-4 | MW-5    | MW-7     | MW-8 (bg) |
|-----------|------------|------------|----------|---------|----------|------|---------|----------|-----------|
| 9/25/2016 | 148        |            |          |         |          |      |         |          |           |
| 9/26/2016 |            | 118        |          |         |          |      |         |          | 51.6      |
| 9/27/2016 |            |            | 0.3 (J)  |         |          | 454  |         | 2.6      |           |
| 9/28/2016 |            |            |          | 90.3    | 13.7     |      | 26.6    |          |           |
| 9/13/2017 | 14.6       |            |          |         |          | 585  |         | 0.78 (J) | 4.3       |
| 9/14/2017 |            | 407        | 39.1     | 36.1    | 35.8     |      | 422     |          |           |
| 9/11/2018 | 59.8       |            |          | 53.6    |          |      |         |          |           |
| 9/12/2018 |            | 64.9       | 40.9     |         |          | 602  | 466     |          | 6.6       |
| 9/13/2018 |            |            |          |         | 5.2      |      |         | 2.9      |           |
| 9/16/2019 | 15         | 27         |          |         |          |      |         |          |           |
| 9/17/2019 |            |            | <2.5     | 73      | 62       | 690  | 230     | 13       | 51        |
| 9/1/2020  |            | 27         |          |         |          |      |         | <4       | 150       |
| 9/2/2020  | 110        |            | 10       | 16      | 8.6 (J)  | 680  | 91      |          |           |
| 9/27/2021 | 5.7 (J)    | 36         |          |         |          |      |         |          |           |
| 9/28/2021 |            |            |          |         |          |      |         | 20       |           |
| 9/29/2021 |            |            | 33       | 75      | 16       | 1200 | 660     |          |           |
| 9/20/2022 |            | 71         | 37       |         |          |      | 280     | 22       | 27        |
| 9/21/2022 | 79         |            |          |         | 100      |      |         |          |           |
| 9/22/2022 |            |            |          | 130     |          | 1100 |         |          |           |
| 9/20/2023 | 21         | 120        |          |         |          |      |         | 17       |           |
| 9/21/2023 |            |            | 5 (J)    | 160     | 78       | 1200 | 18      |          | 140       |
| 9/23/2024 |            |            |          | <14     |          | 500  |         |          |           |
| 9/24/2024 |            |            |          |         | 4.5 (J)  |      | 6.8 (J) |          |           |
| 9/25/2024 |            | 81         | 5.6 (J)  |         |          |      |         | 4.8 (J)  |           |
| 9/26/2024 | 57         |            |          |         |          |      |         |          | 7 (J)     |
| 9/16/2025 |            | 80         | <3.6 (U) | 5.4 (J) |          | 610  | 4.6 (J) |          |           |
| 9/17/2025 | 120        |            |          |         | <3.6 (U) |      |         | 7.9 (J)  | 11        |

## Molybdenum



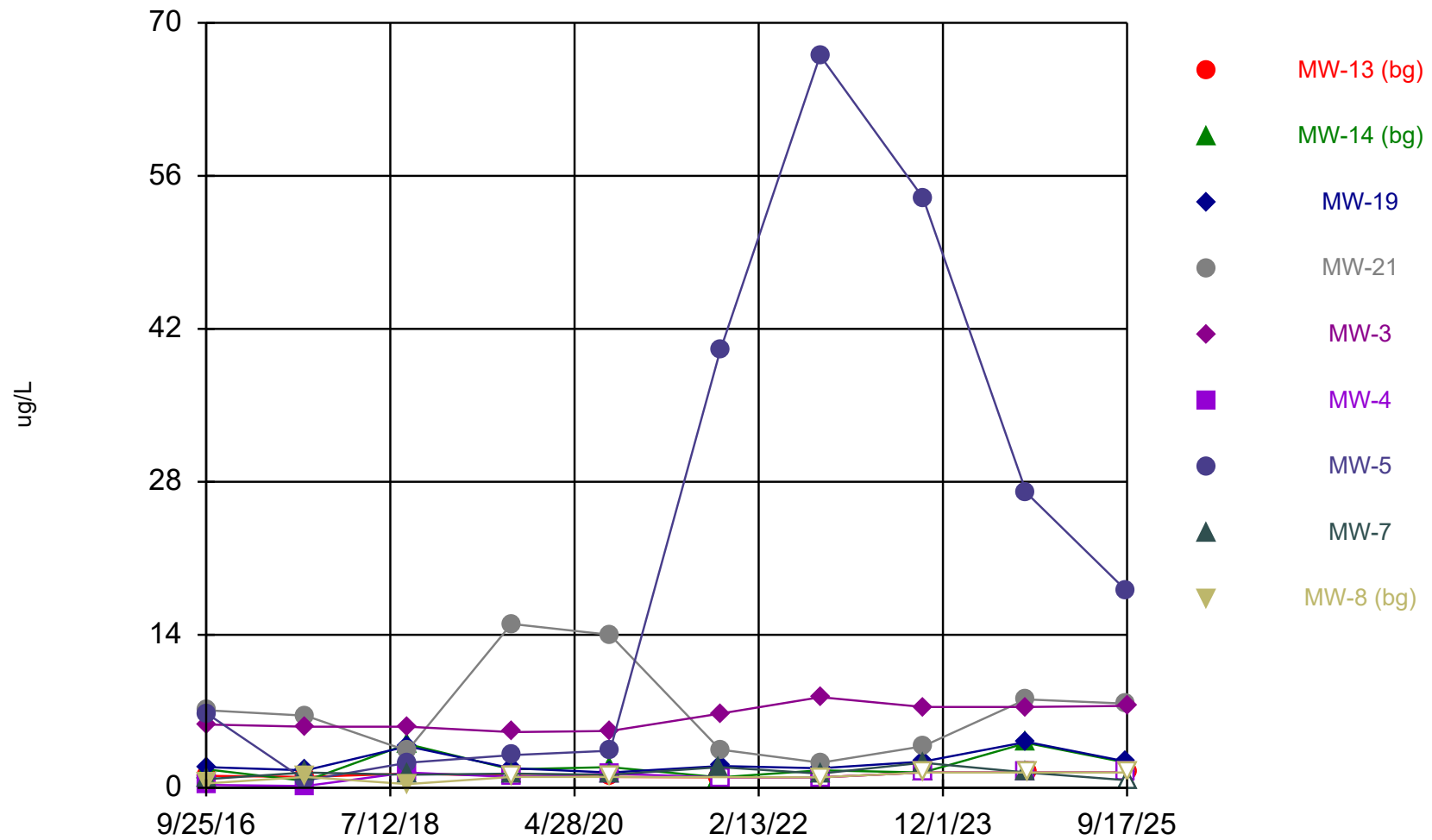
Time Series Analysis Run 10/21/2025 12:47 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Molybdenum (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21 | MW-3 | MW-4 | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-------|------|------|-----------|-----------|-----------|
| 9/20/2023 | <0.91 (U)  | 2.2        |           |       |      |      |           | <0.91 (U) |           |
| 9/21/2023 |            |            | <0.91 (U) | 34    | 8.6  | 15   | <0.91 (U) |           | <0.91 (U) |
| 9/23/2024 |            |            |           | 210   |      | 22   |           |           |           |
| 9/24/2024 |            |            |           |       | 6.1  |      | <1.3      |           |           |
| 9/25/2024 |            | 2.3        | <1.3      |       |      |      |           | <1.3      |           |
| 9/26/2024 | <1.3       |            |           |       |      |      |           |           | <1.3      |
| 9/16/2025 |            | 1.9 (J)    | <1.3 (U)  | 290   |      | 29   | <1.3 (U)  |           |           |
| 9/17/2025 | <1.3 (U)   |            |           |       | 8.1  |      |           | <1.3 (U)  | <1.3 (U)  |

## Selenium



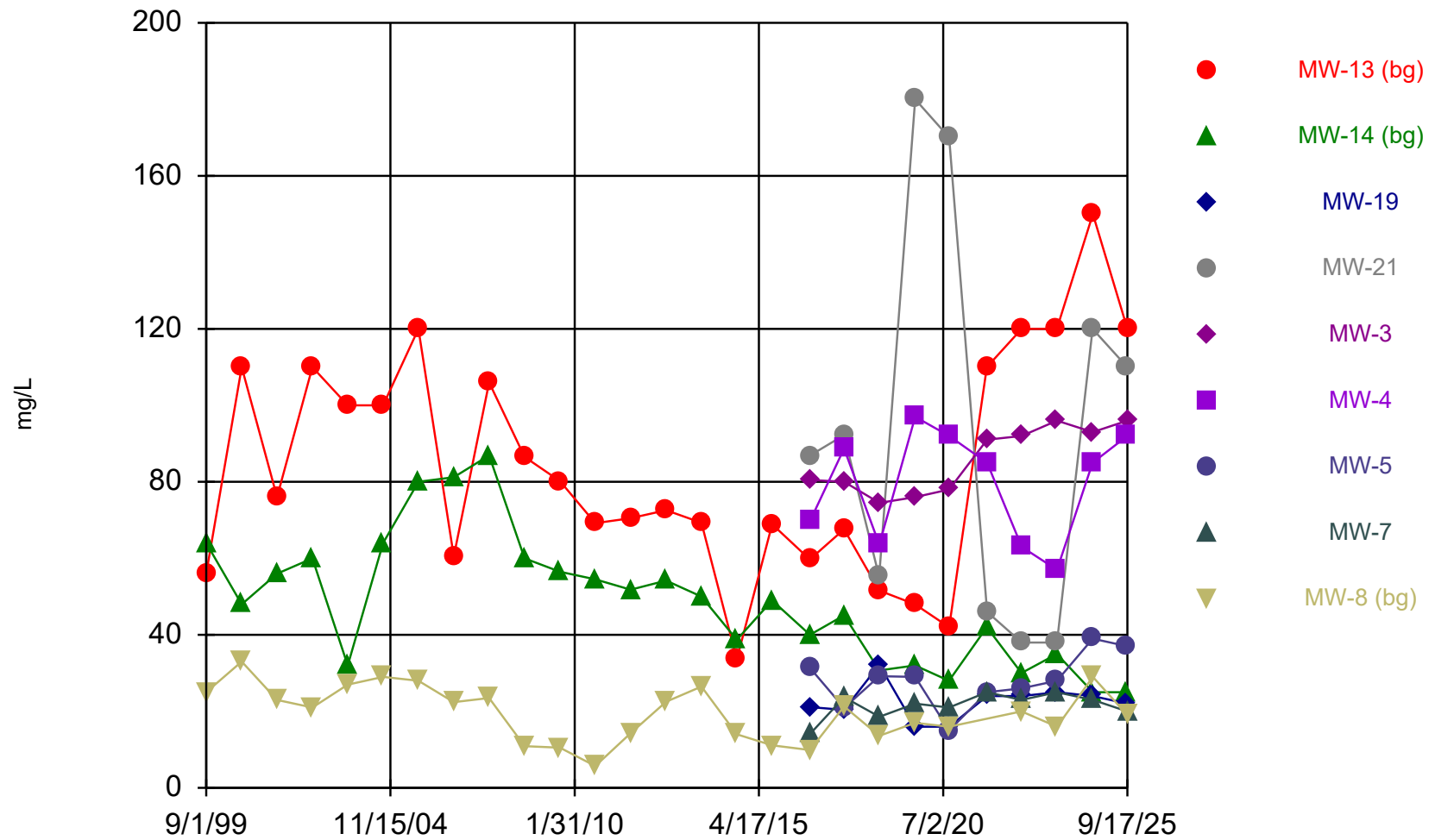
Time Series Analysis Run 10/21/2025 12:47 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Selenium (ug/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21   | MW-3 | MW-4     | MW-5     | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|---------|------|----------|----------|----------|-----------|
| 9/25/2016 | 1.1        |            |         |         |      |          |          |          |           |
| 9/26/2016 |            | 1.7        |         |         |      |          |          |          | 0.41 (J)  |
| 9/27/2016 |            |            | 1.9     |         |      | 0.27 (J) |          | 0.8 (J)  |           |
| 9/28/2016 |            |            |         | 7.1     | 5.8  |          | 6.8      |          |           |
| 9/13/2017 | 1          |            |         |         |      | 0.17 (J) |          | 1.4      | 1         |
| 9/14/2017 |            | 0.63 (J)   | 1.6     | 6.6     | 5.6  |          | 0.69 (J) |          |           |
| 9/11/2018 | 1.3        |            |         | 3.4     |      |          |          |          |           |
| 9/12/2018 |            | 4          | 3.8     |         |      | 1.4      | 2.3      |          | 0.34 (J)  |
| 9/13/2018 |            |            |         |         | 5.6  |          |          | 1.2      |           |
| 9/16/2019 | 1.1 (J)    | 1.7 (J)    |         |         |      |          |          |          |           |
| 9/17/2019 |            |            | 1.8 (J) | 15      | 5.1  | <1       | 3 (J)    | 1.3 (J)  | <1        |
| 9/1/2020  |            | 1.9 (J)    |         |         |      |          |          | 1.2 (J)  | <1        |
| 9/2/2020  | <1         |            | 1.4 (J) | 14      | 5.2  | 1.3 (J)  | 3.4 (J)  |          |           |
| 9/27/2021 | <0.96      | <0.96      |         |         |      |          |          |          |           |
| 9/28/2021 |            |            |         |         |      |          |          | 1.9 (J)  |           |
| 9/29/2021 |            |            | 2 (J)   | 3.5 (J) | 6.8  | <0.96    | 40       |          |           |
| 9/20/2022 |            | 1.6 (J)    | 1.8 (J) |         |      |          | 67       | 1.3 (J)  | <0.96     |
| 9/21/2022 | <0.96      |            |         |         | 8.3  |          |          |          |           |
| 9/22/2022 |            |            |         | 2.3 (J) |      | <0.96    |          |          |           |
| 9/20/2023 | <1.4 (U)   | <1.4 (U)   |         |         |      |          |          | 2.3 (J)  |           |
| 9/21/2023 |            |            | 2.4 (J) | 3.8 (J) | 7.4  | <1.4 (U) | 54       |          | <1.4 (U)  |
| 9/23/2024 |            |            |         | 8.1     |      | <1.4     |          |          |           |
| 9/24/2024 |            |            |         |         | 7.4  |          | 27       |          |           |
| 9/25/2024 |            | 4.1 (J)    | 4.2 (J) |         |      |          |          | 1.4 (J)  |           |
| 9/26/2024 | <1.4       |            |         |         |      |          |          |          | <1.4      |
| 9/16/2025 |            | 2.3 (J)    | 2.4 (J) | 7.7     |      | <1.4 (U) | 18       |          |           |
| 9/17/2025 | <1.4 (U)   |            |         |         | 7.5  |          |          | <1.4 (U) | <1.4 (U)  |

## Sulfate



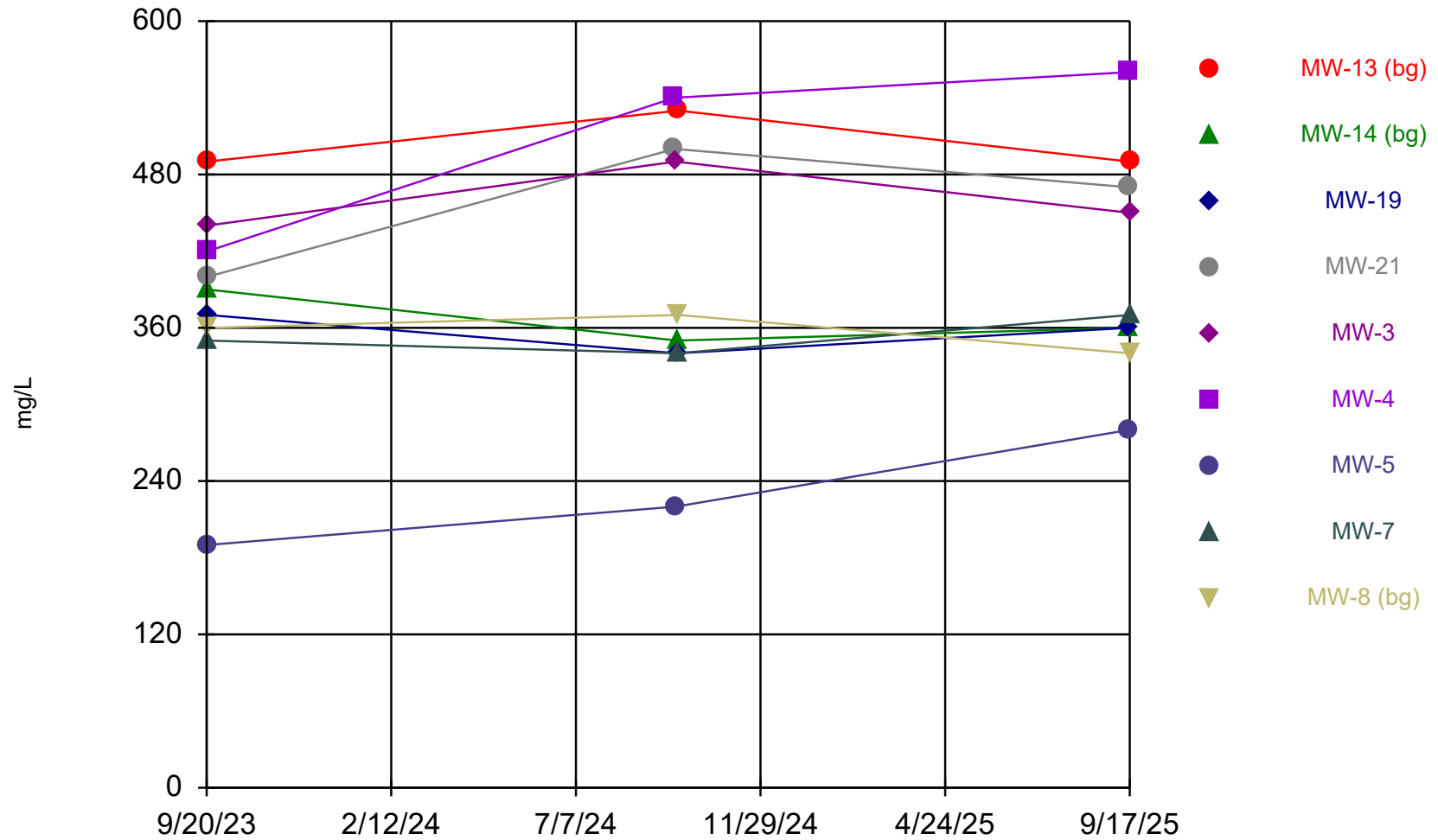
Time Series Analysis Run 10/21/2025 12:47 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

# Time Series

Constituent: Sulfate (mg/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/1/1999  | 56         | 64         |       |       |      |      |      |      | 25        |
| 9/1/2000  | 110        | 48         |       |       |      |      |      |      | 33        |
| 9/1/2001  | 76         | 56         |       |       |      |      |      |      | 23        |
| 9/1/2002  | 110        | 60         |       |       |      |      |      |      | 21        |
| 9/1/2003  | 100        | 32         |       |       |      |      |      |      | 27        |
| 9/1/2004  | 100        | 64         |       |       |      |      |      |      | 29        |
| 9/1/2005  | 120        | 80         |       |       |      |      |      |      | 28        |
| 9/1/2006  | 60.5       | 81.2       |       |       |      |      |      |      | 22.4      |
| 9/1/2007  | 106        | 86.9       |       |       |      |      |      |      | 23.5      |
| 9/1/2008  | 86.5       | 60         |       |       |      |      |      |      | 10.9      |
| 9/1/2009  | 80.2       | 56.5       |       |       |      |      |      |      | 10.5      |
| 9/1/2010  | 69.2       | 54.5       |       |       |      |      |      |      | 5.7       |
| 9/1/2011  | 70.5       | 51.8       |       |       |      |      |      |      | 14.3      |
| 9/1/2012  | 72.6       | 54.2       |       |       |      |      |      |      | 22.5      |
| 9/1/2013  | 69.3       | 50         |       |       |      |      |      |      | 26.5      |
| 9/1/2014  | 33.6       | 38.7       |       |       |      |      |      |      | 14        |
| 9/1/2015  | 68.9       | 49         |       |       |      |      |      |      | 11.1      |
| 9/25/2016 | 59.7       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 40         |       |       |      |      |      |      | 9.9       |
| 9/27/2016 |            |            | 21.1  |       |      | 69.8 |      | 14.1 |           |
| 9/28/2016 |            |            |       | 86.9  | 80.5 |      | 31.3 |      |           |
| 9/13/2017 | 67.6       |            |       |       |      | 88.7 |      | 23.7 | 21.3      |
| 9/14/2017 |            | 45.1       | 20.4  | 92.2  | 80   |      | 20.9 |      |           |
| 9/11/2018 | 51.6       |            |       | 55.2  |      |      |      |      |           |
| 9/12/2018 |            | 30.7       | 32.2  |       |      | 63.6 | 29.2 |      | 13.6      |
| 9/13/2018 |            |            |       |       | 74.5 |      |      | 18.6 |           |
| 9/16/2019 | 48         | 32         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 16    | 180   | 76   | 97   | 29   | 22   | 17        |
| 9/1/2020  |            | 28         |       |       |      |      |      | 21   | 16        |
| 9/2/2020  | 42         |            | 16    | 170   | 78   | 92   | 15   |      |           |
| 9/27/2021 | 110        | 42         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 25   |           |
| 9/29/2021 |            |            | 24    | 46    | 91   | 85   | 25   |      |           |
| 9/20/2022 |            | 30         | 24    |       |      |      | 26   | 23   | 20        |
| 9/21/2022 | 120        |            |       |       | 92   |      |      |      |           |
| 9/22/2022 |            |            |       | 38    |      | 63   |      |      |           |
| 9/20/2023 | 120        | 35         |       |       |      |      |      | 25   |           |
| 9/21/2023 |            |            | 25    | 38    | 96   | 57   | 28   |      | 16        |
| 9/23/2024 |            |            |       | 120   |      | 85   |      |      |           |
| 9/24/2024 |            |            |       |       | 93   |      | 39   |      |           |
| 9/25/2024 |            | 25         | 24    |       |      |      |      | 23   |           |
| 9/26/2024 | 150        |            |       |       |      |      |      |      | 29        |
| 9/16/2025 |            | 25         | 22    | 110   |      | 92   | 37   |      |           |
| 9/17/2025 | 120        |            |       |       | 96   |      |      | 20   | 19        |

## Total Dissolved Solids



Time Series Analysis Run 10/21/2025 12:47 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

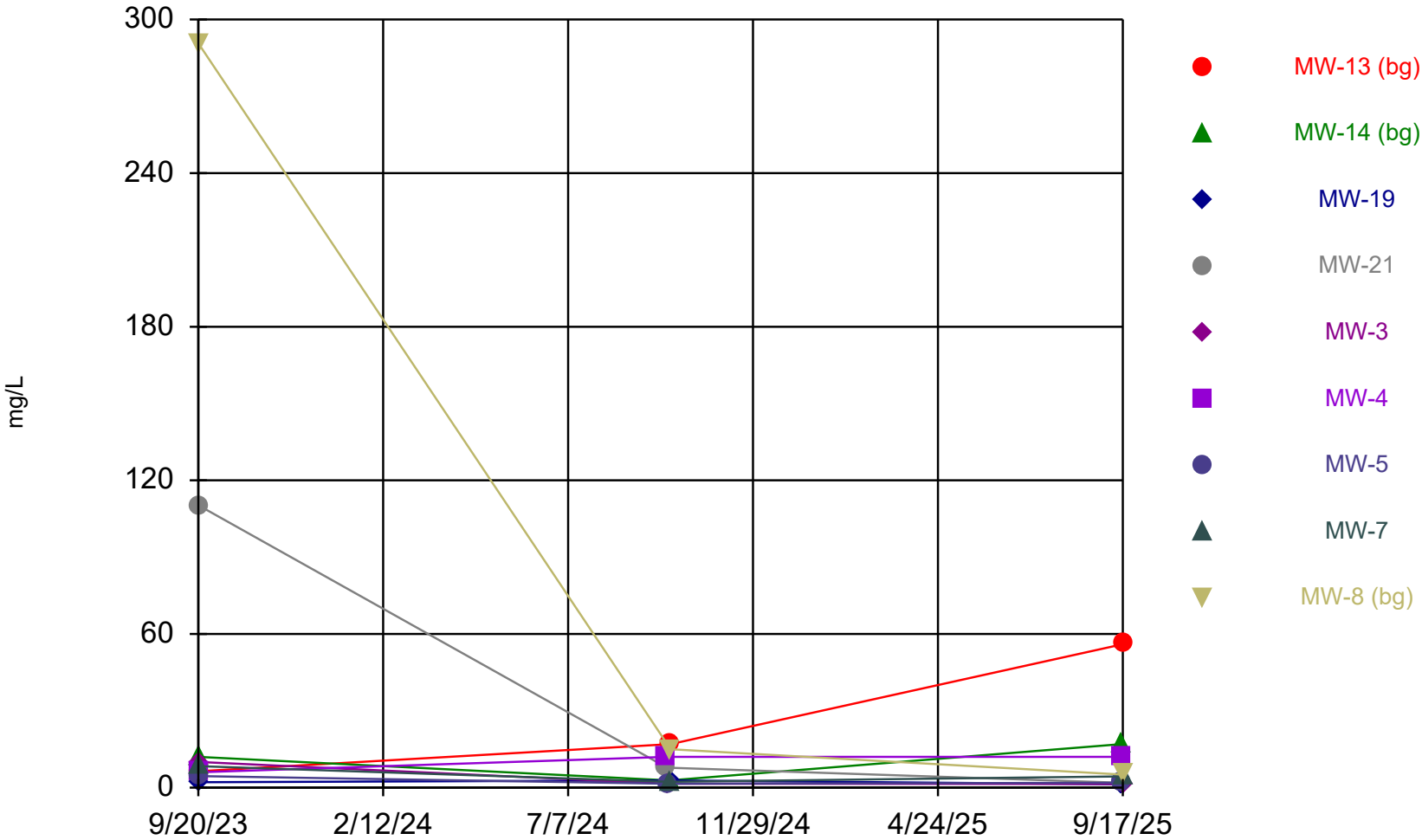
## Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/21/2025 12:48 PM View: West Closed LF

Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/20/2023 | 490        | 390        |       |       |      |      |      | 350  |           |
| 9/21/2023 |            |            | 370   | 400   | 440  | 420  | 190  |      | 360       |
| 9/23/2024 |            |            |       | 500   |      | 540  |      |      |           |
| 9/24/2024 |            |            |       |       | 490  |      | 220  |      |           |
| 9/25/2024 |            | 350        | 340   |       |      |      |      | 340  |           |
| 9/26/2024 | 530        |            |       |       |      |      |      |      | 370       |
| 9/16/2025 |            | 360        | 360   | 470   |      | 560  | 280  |      |           |
| 9/17/2025 | 490        |            |       |       | 450  |      |      | 370  | 340       |

Total Suspended Solids



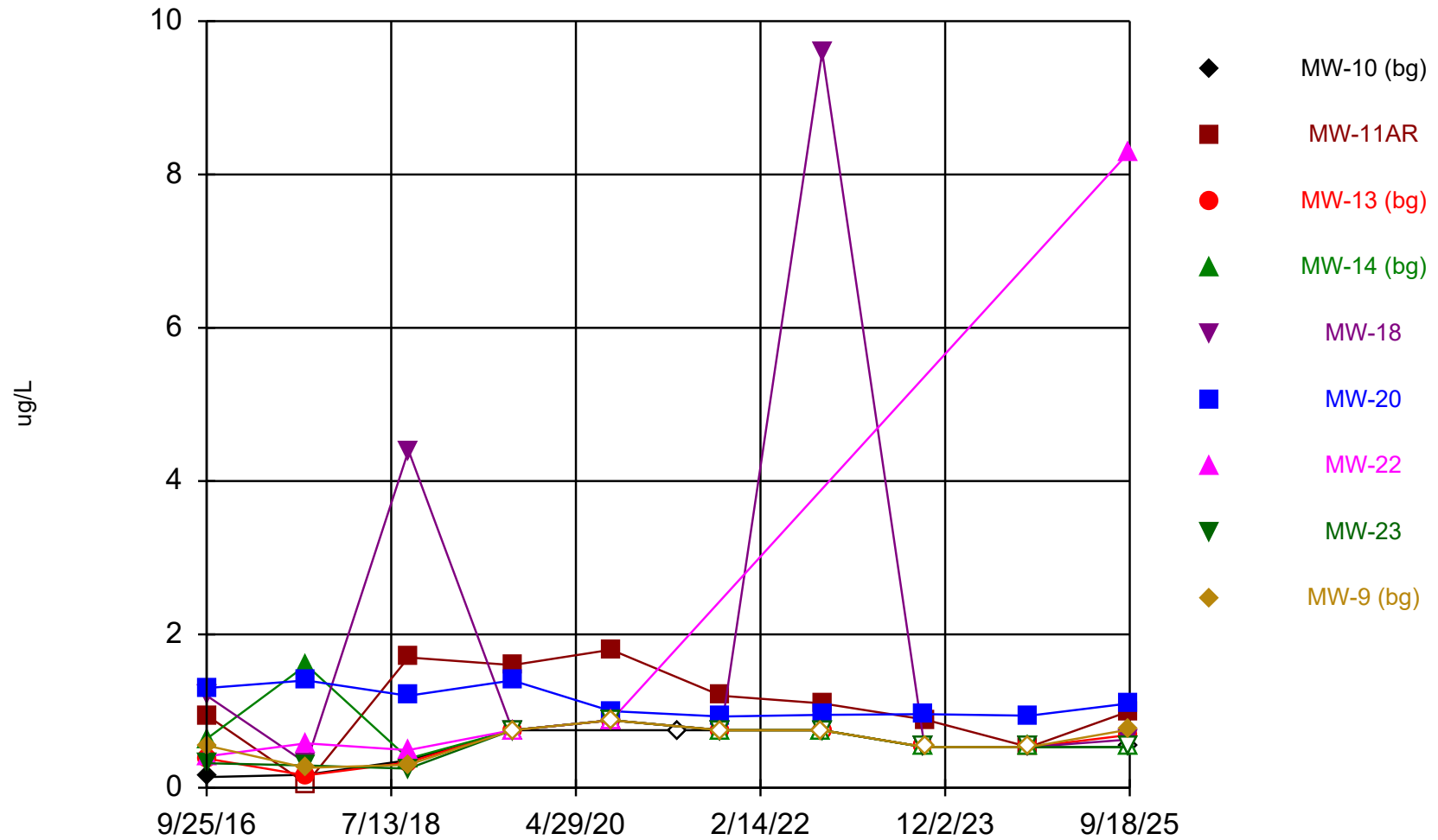
Time Series Analysis Run 10/21/2025 12:47 PM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

# Time Series

Constituent: Total Suspended Solids (mg/L)    Analysis Run 10/21/2025 12:48 PM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-13 (bg) | MW-14 (bg) | MW-19    | MW-21 | MW-3    | MW-4 | MW-5    | MW-7 | MW-8 (bg) |
|-----------|------------|------------|----------|-------|---------|------|---------|------|-----------|
| 9/20/2023 | 6.4        | 12         |          |       |         |      |         | 8.4  |           |
| 9/21/2023 |            |            | 2.1      | 110   | 10      | 6    | 4.5     |      | 290       |
| 9/23/2024 |            |            |          | 7.8   |         | 12   |         |      |           |
| 9/24/2024 |            |            |          |       | 1.5 (J) |      | 1.5 (J) |      |           |
| 9/25/2024 |            | 2.8        | 2.8      |       |         |      |         | 2.3  |           |
| 9/26/2024 | 17         |            |          |       |         |      |         |      | 15        |
| 9/16/2025 |            | 17         | <1.3 (U) | 1.9   |         | 12   | 1.9     |      |           |
| 9/17/2025 | 56         |            |          |       | 1.4 (J) |      |         | 4.4  | 5.1       |

## Arsenic



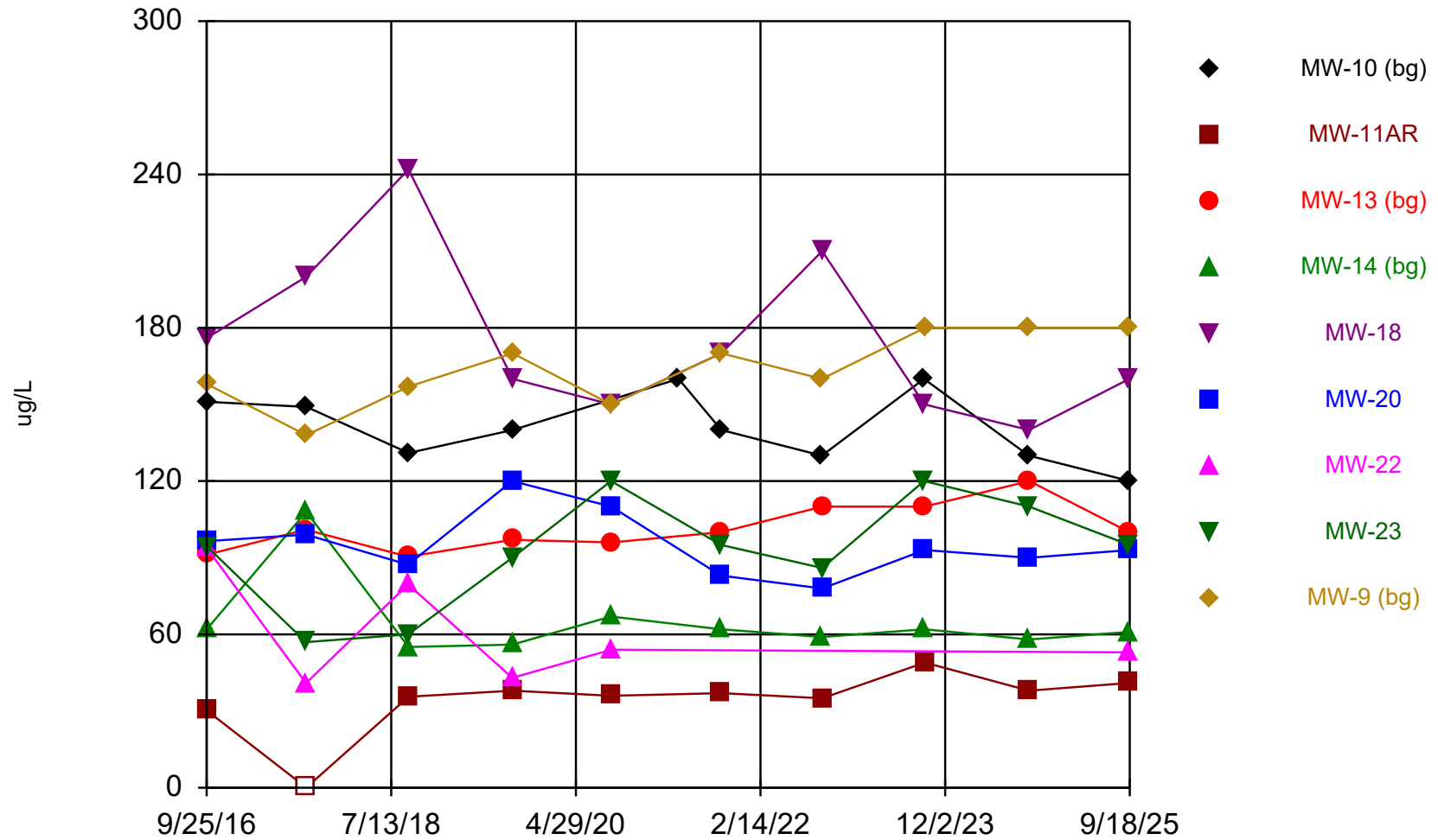
Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Arsenic (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20    | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|----------|----------|-----------|-----------|
| 9/25/2016 |            |          | 0.38 (J)   |            |           |          |          |           | 0.55 (J)  |
| 9/26/2016 |            |          |            | 0.64 (J)   | 1.2       | 1.3      | 0.41 (J) |           |           |
| 9/27/2016 | 0.14 (J)   | 0.94 (J) |            |            |           |          |          |           |           |
| 9/28/2016 |            |          |            |            |           |          |          | 0.32 (J)  |           |
| 9/13/2017 |            |          | 0.16 (J)   |            |           | 1.4      | 0.58 (J) | 0.29 (J)  |           |
| 9/14/2017 |            | <0.052   |            | 1.6        | 0.32 (J)  |          |          |           | 0.26 (J)  |
| 9/15/2017 | 0.17 (J)   |          |            |            |           |          |          |           |           |
| 9/11/2018 |            |          | 0.33 (J)   |            |           | 1.2      | 0.49 (J) | 0.25 (J)  |           |
| 9/12/2018 | 0.36 (J)   | 1.7      |            | 0.38 (J)   | 4.4       |          |          |           | 0.3 (J)   |
| 9/16/2019 |            |          | <0.75      | <0.75      |           | 1.4 (J)  | <0.75    | <0.75     |           |
| 9/17/2019 | <0.75      | 1.6 (J)  |            |            | <0.75     |          |          |           | <0.75     |
| 9/1/2020  |            | 1.8 (J)  |            | <0.88      | <0.88     |          |          | <0.88     | <0.88     |
| 9/2/2020  |            |          | <0.88      |            |           | 1 (J)    | <0.88    |           |           |
| 4/29/2021 | <0.75      |          |            |            |           |          |          |           |           |
| 9/27/2021 |            |          | <0.75      | <0.75      |           | 0.93 (J) |          | <0.75     |           |
| 9/28/2021 | <0.75      | 1.2 (J)  |            |            | <0.75     |          |          |           | <0.75     |
| 9/20/2022 | <0.75      |          |            | <0.75      |           |          |          |           | <0.75     |
| 9/21/2022 |            | 1.1 (J)  | <0.75      |            | 9.6       | 0.95 (J) |          | <0.75     |           |
| 9/18/2023 | <0.53 (U)  |          |            |            |           |          |          | <0.53 (U) |           |
| 9/20/2023 |            |          | <0.53 (U)  | <0.53 (U)  | <0.53 (U) | 0.96 (J) |          |           |           |
| 9/21/2023 |            | 0.89 (J) |            |            |           |          |          |           | <0.53 (U) |
| 9/24/2024 | <0.53      |          |            |            |           |          |          |           | <0.53     |
| 9/25/2024 |            | <0.53    |            | <0.53      | <0.53     |          |          |           |           |
| 9/26/2024 |            |          | <0.53      |            |           | 0.94 (J) |          | <0.53     |           |
| 9/16/2025 |            |          |            | <0.53 (U)  |           |          |          | <0.53 (U) |           |
| 9/17/2025 |            |          | 0.69 (J)   |            | 0.63 (J)  | 1.1 (J)  |          |           | 0.76 (J)  |
| 9/18/2025 | <0.53 (U)  | 1 (J)    |            |            |           |          | 8.3      |           |           |

## Barium



Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

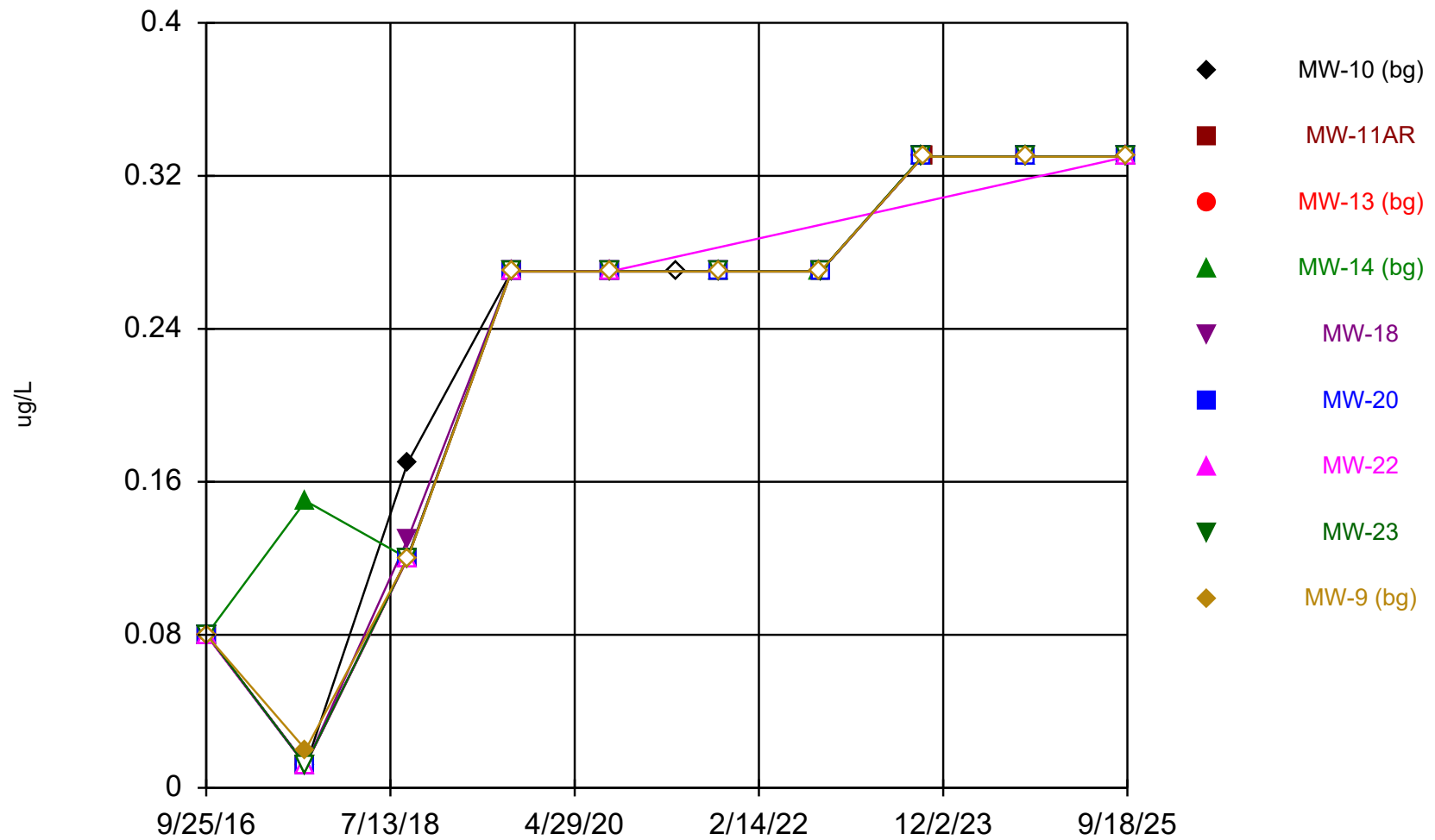
Time Series

Constituent: Barium (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 91.2       |            |       |       |       |       | 158       |
| 9/26/2016 |            |         |            | 62.1       | 176   | 96.5  | 93.8  |       |           |
| 9/27/2016 | 151        | 30.1    |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 94.2  |           |
| 9/13/2017 |            |         | 101        |            |       | 99.1  | 40.9  | 57    |           |
| 9/14/2017 |            | <0.095  |            | 108        | 200   |       |       |       | 138       |
| 9/15/2017 | 149        |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 90.4       |            |       | 87.3  | 79.6  | 60    |           |
| 9/12/2018 | 131        | 35.6    |            | 55.1       | 242   |       |       |       | 157       |
| 9/16/2019 |            |         | 97         | 56         |       | 120   | 43    | 90    |           |
| 9/17/2019 | 140        | 38      |            |            | 160   |       |       |       | 170       |
| 9/1/2020  |            | 36      |            | 67         | 150   |       |       | 120   | 150       |
| 9/2/2020  |            |         | 96         |            |       | 110   | 54    |       |           |
| 4/29/2021 | 160        |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 100        | 62         |       | 83    |       | 95    |           |
| 9/28/2021 | 140        | 37      |            |            | 170   |       |       |       | 170       |
| 9/20/2022 | 130        |         |            | 59         |       |       |       |       | 160       |
| 9/21/2022 |            | 35      | 110        |            | 210   | 78    |       | 86    |           |
| 9/18/2023 | 160        |         |            |            |       |       |       | 120   |           |
| 9/20/2023 |            |         | 110        | 62         | 150   | 93    |       |       |           |
| 9/21/2023 |            | 49      |            |            |       |       |       |       | 180       |
| 9/24/2024 | 130        |         |            |            |       |       |       |       | 180       |
| 9/25/2024 |            | 38      |            | 58         | 140   |       |       |       |           |
| 9/26/2024 |            |         | 120        |            |       | 90    |       | 110   |           |
| 9/16/2025 |            |         |            | 61         |       |       |       | 95    |           |
| 9/17/2025 |            |         | 100        |            | 160   | 93    |       |       | 180       |
| 9/18/2025 | 120        | 41      |            |            |       |       | 53    |       |           |

ND substitution: RL or RL/2 if <15% NDs.

## Beryllium



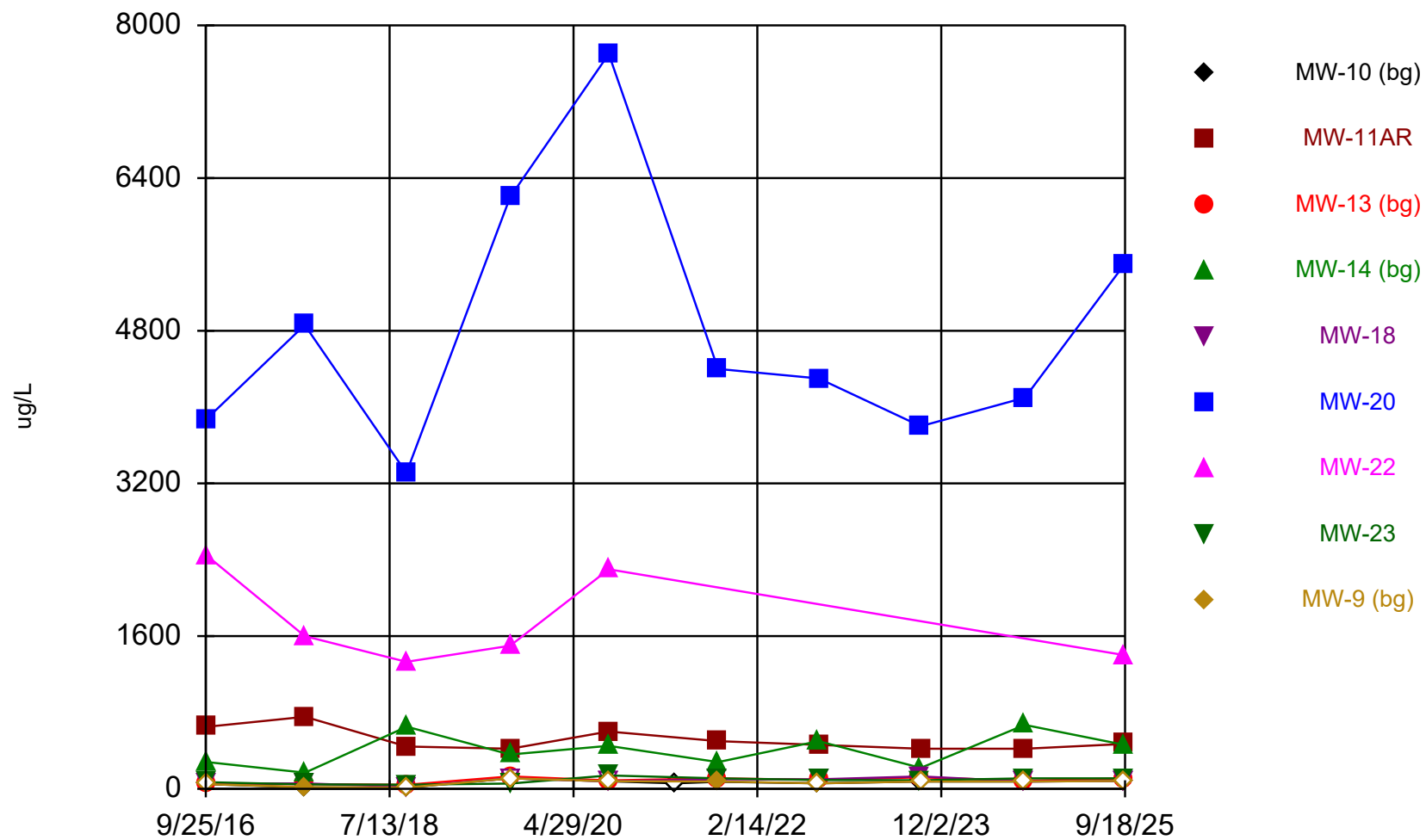
Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Beryllium (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR   | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22     | MW-23     | MW-9 (bg) |
|-----------|------------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| 9/25/2016 |            |           | <0.08      |            |           |           |           |           | <0.08     |
| 9/26/2016 |            |           |            | <0.08      | <0.08     | <0.08     | <0.08     |           |           |
| 9/27/2016 | <0.08      | <0.08     |            |            |           |           |           |           |           |
| 9/28/2016 |            |           |            |            |           |           |           | <0.08     |           |
| 9/13/2017 |            |           | <0.012     |            |           | <0.012    | <0.012    | <0.012    |           |
| 9/14/2017 |            | <0.012    |            | 0.15 (J)   | <0.012    |           |           |           | 0.02 (J)  |
| 9/15/2017 | <0.012     |           |            |            |           |           |           |           |           |
| 9/11/2018 |            |           | <0.12      |            |           | <0.12     | <0.12     | <0.12     |           |
| 9/12/2018 | 0.17 (J)   | <0.12     |            | <0.12      | 0.13 (J)  |           |           |           | <0.12     |
| 9/16/2019 |            |           | <0.27      | <0.27      |           | <0.27     | <0.27     | <0.27     |           |
| 9/17/2019 | <0.27      | <0.27     |            |            | <0.27     |           |           |           | <0.27     |
| 9/1/2020  |            | <0.27     |            | <0.27      | <0.27     |           |           | <0.27     | <0.27     |
| 9/2/2020  |            |           | <0.27      |            |           | <0.27     | <0.27     |           |           |
| 4/29/2021 | <0.27      |           |            |            |           |           |           |           |           |
| 9/27/2021 |            |           | <0.27      | <0.27      |           | <0.27     |           | <0.27     |           |
| 9/28/2021 | <0.27      | <0.27     |            |            | <0.27     |           |           |           | <0.27     |
| 9/20/2022 | <0.27      |           |            | <0.27      |           |           |           |           | <0.27     |
| 9/21/2022 |            | <0.27     | <0.27      |            | <0.27     | <0.27     |           | <0.27     |           |
| 9/18/2023 | <0.33 (U)  |           |            |            |           |           |           | <0.33 (U) |           |
| 9/20/2023 |            |           | <0.33 (U)  | <0.33 (U)  | <0.33 (U) | <0.33 (U) |           |           |           |
| 9/21/2023 |            | <0.33 (U) |            |            |           |           |           |           | <0.33 (U) |
| 9/24/2024 | <0.33      |           |            |            |           |           |           |           | <0.33     |
| 9/25/2024 |            | <0.33     |            | <0.33      | <0.33     |           |           |           |           |
| 9/26/2024 |            |           | <0.33      |            |           | <0.33     |           | <0.33     |           |
| 9/16/2025 |            |           |            | <0.33 (U)  |           |           |           | <0.33 (U) |           |
| 9/17/2025 |            |           | <0.33 (U)  |            | <0.33 (U) | <0.33 (U) |           |           | <0.33 (U) |
| 9/18/2025 | <0.33 (U)  | <0.33 (U) |            |            |           |           | <0.33 (U) |           |           |

## Boron



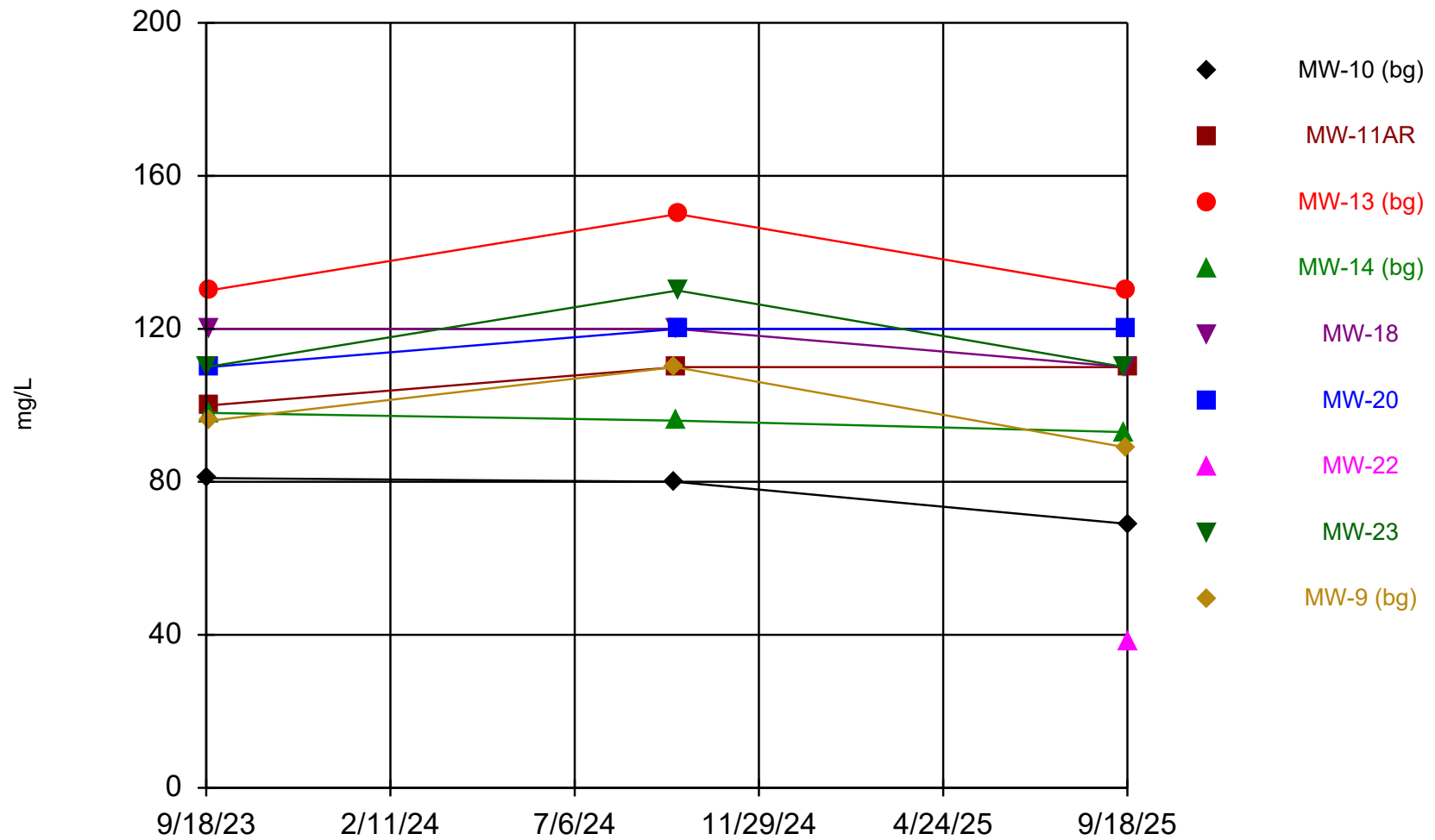
Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Boron (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18    | MW-20 | MW-22 | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|----------|-------|-------|----------|-----------|
| 9/25/2016 |            |         | 50.2 (J)   |            |          |       |       |          | <50       |
| 9/26/2016 |            |         |            | 282        | 53.8 (J) | 3870  | 2450  |          |           |
| 9/27/2016 | <50        | 650     |            |            |          |       |       |          |           |
| 9/28/2016 |            |         |            |            |          |       |       | 70.1 (J) |           |
| 9/13/2017 |            |         | 48.6 (J)   |            |          | 4860  | 1600  | 47 (J)   |           |
| 9/14/2017 |            | 755     |            | 169        | 57 (J)   |       |       |          | 17.2 (J)  |
| 9/15/2017 | 14.1 (J)   |         |            |            |          |       |       |          |           |
| 9/11/2018 |            |         | 41.4 (J)   |            |          | 3310  | 1330  | 42.9 (J) |           |
| 9/12/2018 | <12.5      | 443     |            | 651        | 21.6 (J) |       |       |          | <12.5     |
| 9/16/2019 |            |         | 130 (J)    | 360        |          | 6200  | 1500  | <110     |           |
| 9/17/2019 | <110       | 420     |            |            | <110     |       |       |          | <110      |
| 9/1/2020  |            | 600     |            | 450        | <80      |       |       | 140      | <80       |
| 9/2/2020  |            |         | 88 (J)     |            |          | 7700  | 2300  |          |           |
| 4/29/2021 | <58        |         |            |            |          |       |       |          |           |
| 9/27/2021 |            |         | 110        | 280        |          | 4400  |       | 110      |           |
| 9/28/2021 | 74 (J)     | 500     |            |            | 100      |       |       |          | 77 (J)    |
| 9/20/2022 | <58        |         |            | 500        |          |       |       |          | <58       |
| 9/21/2022 |            | 460     | 94 (J)     |            | 100      | 4300  |       | 92 (J)   |           |
| 9/18/2023 | <76 (U)    |         |            |            |          |       |       | 89 (J)   |           |
| 9/20/2023 |            |         | 120        | 220        | 130      | 3800  |       |          |           |
| 9/21/2023 |            | 420     |            |            |          |       |       |          | <76 (U)   |
| 9/24/2024 | <76        |         |            |            |          |       |       |          | <76       |
| 9/25/2024 |            | 420     |            | 670        | <76      |       |       |          |           |
| 9/26/2024 |            |         | 85 (J)     |            |          | 4100  |       | 110      |           |
| 9/16/2025 |            |         |            | 460        |          |       |       | 110      |           |
| 9/17/2025 |            |         | 110        |            | <82 (U)  | 5500  |       |          | <82 (U)   |
| 9/18/2025 | <82 (U)    | 470     |            |            |          |       | 1400  |          |           |

## Calcium



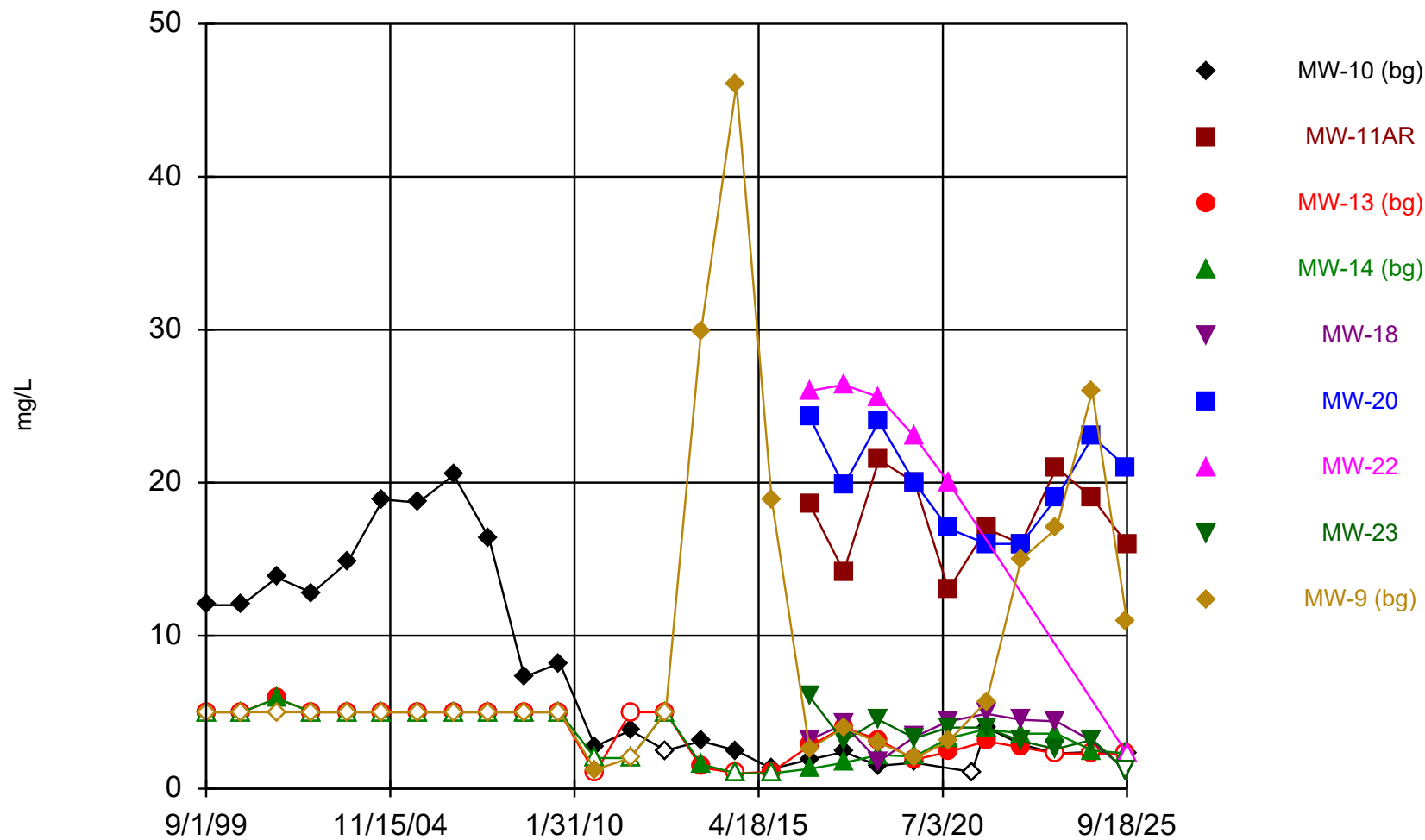
Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Calcium (mg/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/18/2023 | 81         |         |            |            |       |       |       | 110   |           |
| 9/20/2023 |            |         | 130        | 98         | 120   | 110   |       |       |           |
| 9/21/2023 |            | 100     |            |            |       |       |       |       | 96        |
| 9/24/2024 | 80         |         |            |            |       |       |       |       | 110       |
| 9/25/2024 |            | 110     |            | 96         | 120   |       |       |       |           |
| 9/26/2024 |            |         | 150        |            |       | 120   |       | 130   |           |
| 9/16/2025 |            |         |            | 93         |       |       |       | 110   |           |
| 9/17/2025 |            |         | 130        |            | 110   | 120   |       |       | 89        |
| 9/18/2025 | 69         | 110     |            |            |       |       | 38    |       |           |

Chloride



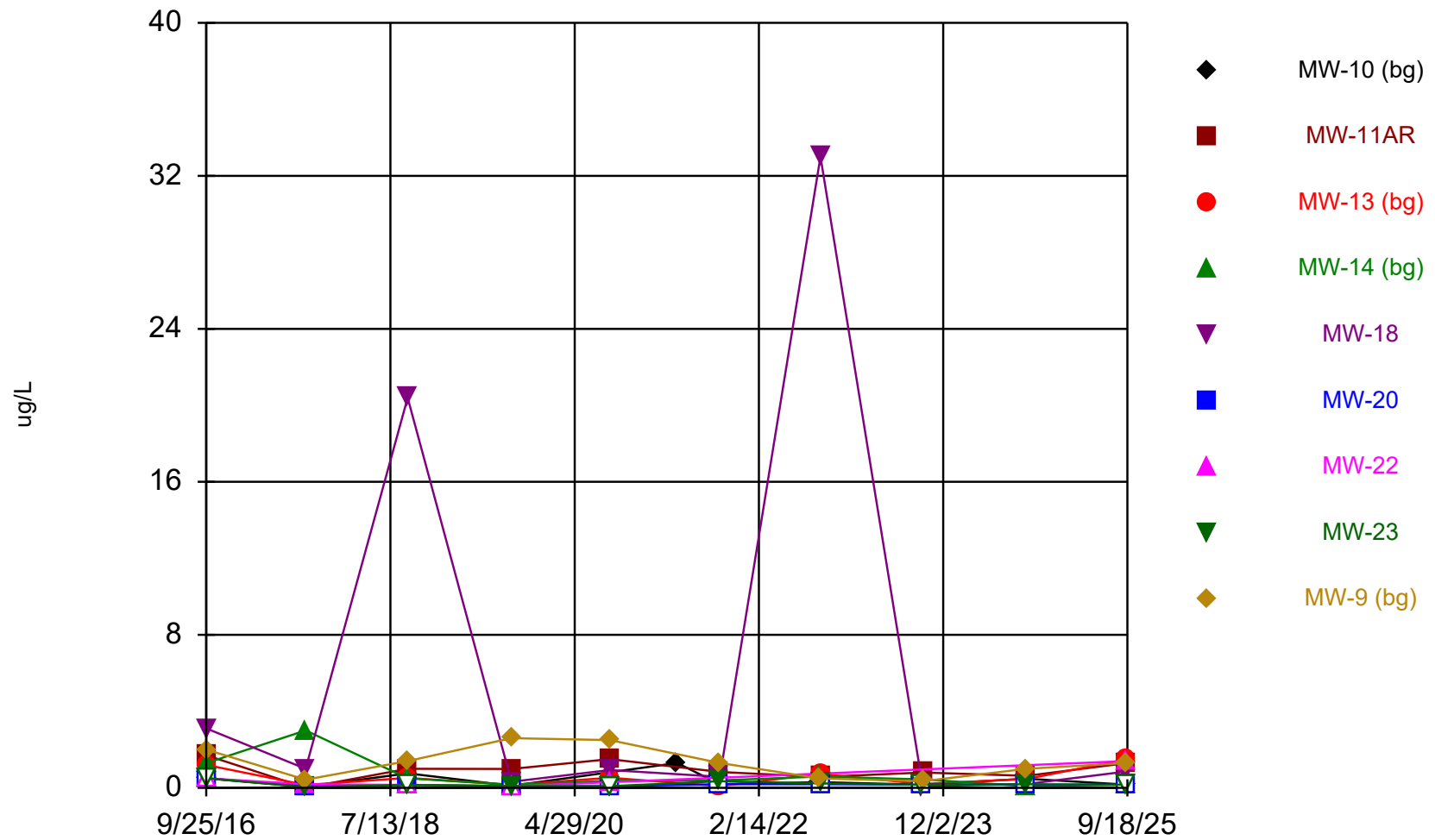
# Time Series

Constituent: Chloride (mg/L)   Analysis Run 10/21/2025 12:51 PM   View: East Closed LF

Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20  | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|--------|----------|-----------|-----------|
| 9/1/1999  | 12         |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2000  | 12         |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2001  | 13.8       |         | 5.9        | 5.9        |           |        |          |           | <5        |
| 9/1/2002  | 12.8       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2003  | 14.8       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2004  | 18.9       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2005  | 18.7       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2006  | 20.5       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2007  | 16.4       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2008  | 7.31       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2009  | 8.21       |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2010  | 2.76       |         | <1         | <2         |           |        |          |           | 1.25      |
| 9/1/2011  | 3.81       |         | <5         | <2         |           |        |          |           | <2        |
| 9/1/2012  | <5         |         | <5         | <5         |           |        |          |           | <5        |
| 9/1/2013  | 3.1        |         | 1.4        | 1.6        |           |        |          |           | 29.9      |
| 9/1/2014  | 2.5        |         | <1         | <1         |           |        |          |           | 46        |
| 9/1/2015  | 1.3        |         | 1.1        | <1         |           |        |          |           | 18.9      |
| 9/25/2016 |            |         | 2.8        |            |           |        |          |           | 2.6       |
| 9/26/2016 |            |         |            | 1.3        | 3.2       | 24.3   | 26       |           |           |
| 9/27/2016 | 1.9        | 18.6    |            |            |           |        |          |           |           |
| 9/28/2016 |            |         |            |            |           |        |          | 6         |           |
| 9/13/2017 |            |         | 4          |            |           | 19.8   | 26.4     | 3.1       |           |
| 9/14/2017 |            | 14.2    |            | 1.7        | 4.2       |        |          |           | 4         |
| 9/15/2017 | 2.4        |         |            |            |           |        |          |           |           |
| 9/11/2018 |            |         | 3.2        |            |           | 24     | 25.6     | 4.5       |           |
| 9/12/2018 | 1.5        | 21.5    |            | 2.2        | 1.8       |        |          |           | 3         |
| 9/16/2019 |            |         | 1.9 (J,B)  | 2.1 (J,B)  |           | 20 (B) | 23 (B)   | 3.3 (J,B) |           |
| 9/17/2019 | 1.7 (J,B)  | 20 (B)  |            |            | 3.4 (J,B) |        |          |           | 2 (J,B)   |
| 9/1/2020  |            | 13 (B)  |            | 3.3 (J,B)  | 4.4 (J,B) |        |          | 4 (J,B)   | 3.1 (J,B) |
| 9/2/2020  |            |         | 2.4 (J,B)  |            |           | 17 (B) | 20 (B)   |           |           |
| 4/29/2021 | <2.2       |         |            |            |           |        |          |           |           |
| 9/27/2021 |            |         | 3.1 (J)    | 3.9 (J)    |           | 16     |          | 4 (J)     |           |
| 9/28/2021 | 4 (J)      | 17      |            |            | 4.9 (J)   |        |          |           | 5.7       |
| 9/20/2022 | 2.9 (J)    |         |            | 3.6 (J)    |           |        |          |           | 15        |
| 9/21/2022 |            | 16      | 2.7 (J)    |            | 4.5 (J)   | 16     |          | 3.1 (J)   |           |
| 9/18/2023 | 2.3 (J)    |         |            |            |           |        |          | 2.6 (J)   |           |
| 9/20/2023 |            |         | <2.3 (U)   | 3.6 (J)    | 4.4 (J)   | 19     |          |           |           |
| 9/21/2023 |            | 21      |            |            |           |        |          |           | 17        |
| 9/24/2024 | 2.4 (J)    |         |            |            |           |        |          |           | 26        |
| 9/25/2024 |            | 19      |            | 2.5 (J)    | 3.1 (J)   |        |          |           |           |
| 9/26/2024 |            |         | <2.3       |            |           | 23     |          | 3.2 (J)   |           |
| 9/16/2025 |            |         |            | <2.3 (U)   |           |        |          | <2.3 (U)  |           |
| 9/17/2025 |            |         | <2.3 (U)   |            | <2.3 (U)  | 21     |          |           | 11        |
| 9/18/2025 | 2.3 (J)    | 16      |            |            |           |        | <2.3 (U) |           |           |

## Cobalt



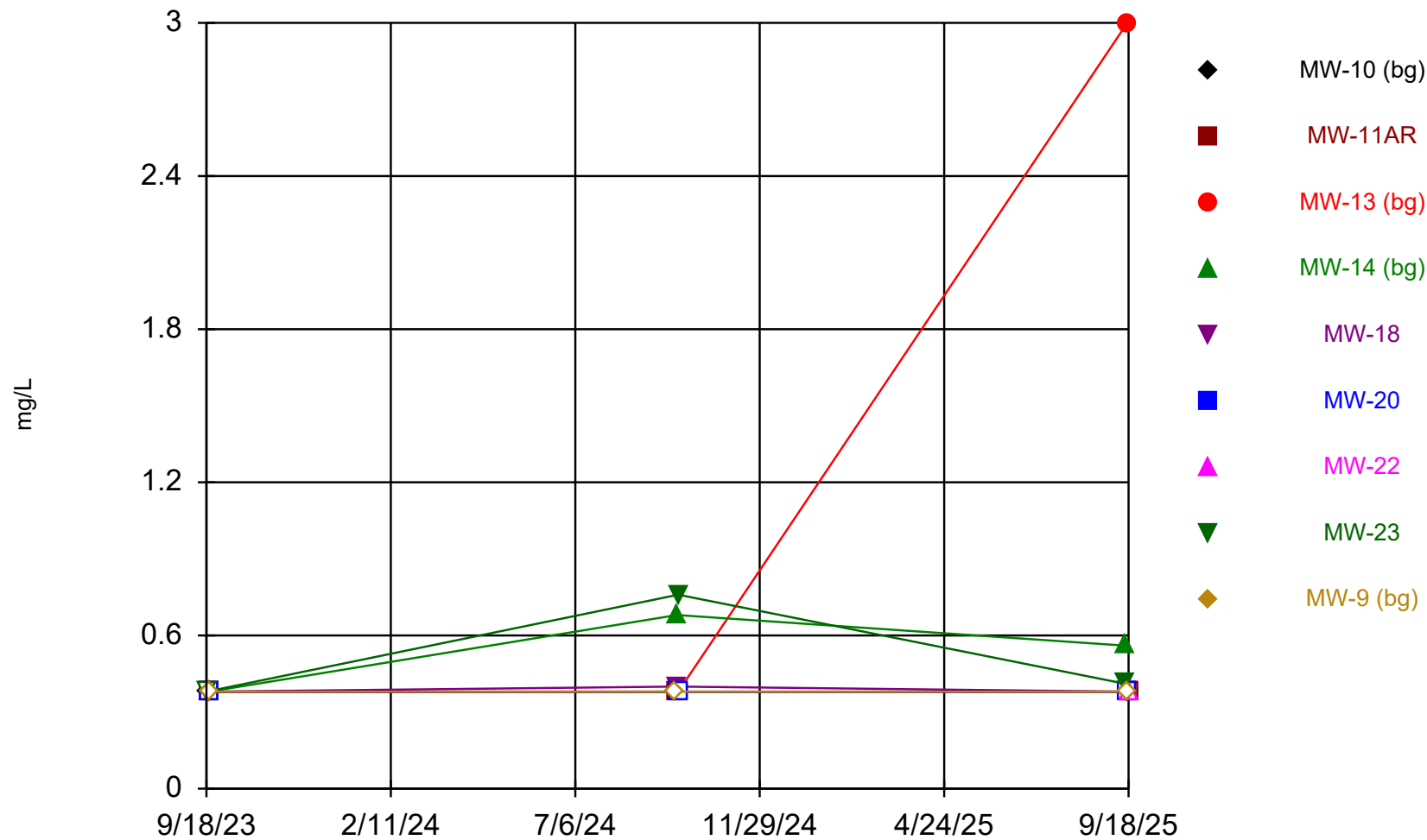
Time Series Analysis Run 10/21/2025 12:49 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Cobalt (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|-----------|----------|-----------|-----------|
| 9/25/2016 |            |         | 1.2        |            |           |           |          |           | 2         |
| 9/26/2016 |            |         |            | 1.3        | 3.1       | <0.5      | <0.5     |           |           |
| 9/27/2016 | <0.5       | 1.7     |            |            |           |           |          |           |           |
| 9/28/2016 |            |         |            |            |           |           |          | <0.5      |           |
| 9/13/2017 |            |         | 0.15 (J)   |            |           | 0.09 (J)  | 0.19 (J) | 0.036 (J) |           |
| 9/14/2017 |            | <0.014  |            | 3          | 1         |           |          |           | 0.43 (J)  |
| 9/15/2017 | 0.05 (J)   |         |            |            |           |           |          |           |           |
| 9/11/2018 |            |         | 0.52 (J)   |            |           | 0.16 (J)  | <0.15    | <0.15     |           |
| 9/12/2018 | 0.76 (J)   | 1       |            | 0.5 (J)    | 20.4      |           |          |           | 1.4       |
| 9/16/2019 |            |         | 0.16 (J)   | 0.17 (J)   |           | <0.091    | <0.091   | 0.094 (J) |           |
| 9/17/2019 | 0.11 (J)   | 0.99    |            |            | 0.32 (J)  |           |          |           | 2.6       |
| 9/1/2020  |            | 1.5     |            | 0.37 (J)   | 0.93      |           |          | <0.091    | 2.5       |
| 9/2/2020  |            |         | 0.53       |            |           | <0.091    | 0.3 (J)  |           |           |
| 4/29/2021 | 1.3        |         |            |            |           |           |          |           |           |
| 9/27/2021 |            |         | <0.19      | 0.39 (J)   |           | <0.19     |          | 0.35 (J)  |           |
| 9/28/2021 | <0.19      | 0.83    |            |            | 0.58      |           |          |           | 1.3       |
| 9/20/2022 | 0.3 (J)    |         |            | 0.59       |           |           |          |           | 0.49 (J)  |
| 9/21/2022 |            | 0.57    | 0.73       |            | 33        | <0.19     |          | 0.23 (J)  |           |
| 9/18/2023 | <0.17 (U)  |         |            |            |           |           |          | <0.17 (U) |           |
| 9/20/2023 |            |         | 0.2 (J)    | 0.44 (J)   | <0.17 (U) | <0.17 (U) |          |           |           |
| 9/21/2023 |            | 0.8     |            |            |           |           |          |           | 0.35 (J)  |
| 9/24/2024 | 0.48 (J)   |         |            |            |           |           |          |           | 1         |
| 9/25/2024 |            | 0.63    |            | <0.17      | 0.2 (J)   |           |          |           |           |
| 9/26/2024 |            |         | 0.47 (J)   |            |           | <0.17     |          | 0.19 (J)  |           |
| 9/16/2025 |            |         |            | 0.17 (J)   |           |           |          | <0.17 (U) |           |
| 9/17/2025 |            |         | 1.5        |            | 0.86      | <0.17 (U) |          |           | 1.3       |
| 9/18/2025 | <0.17 (U)  | 1.3     |            |            |           |           | 1.4      |           |           |

Fluoride

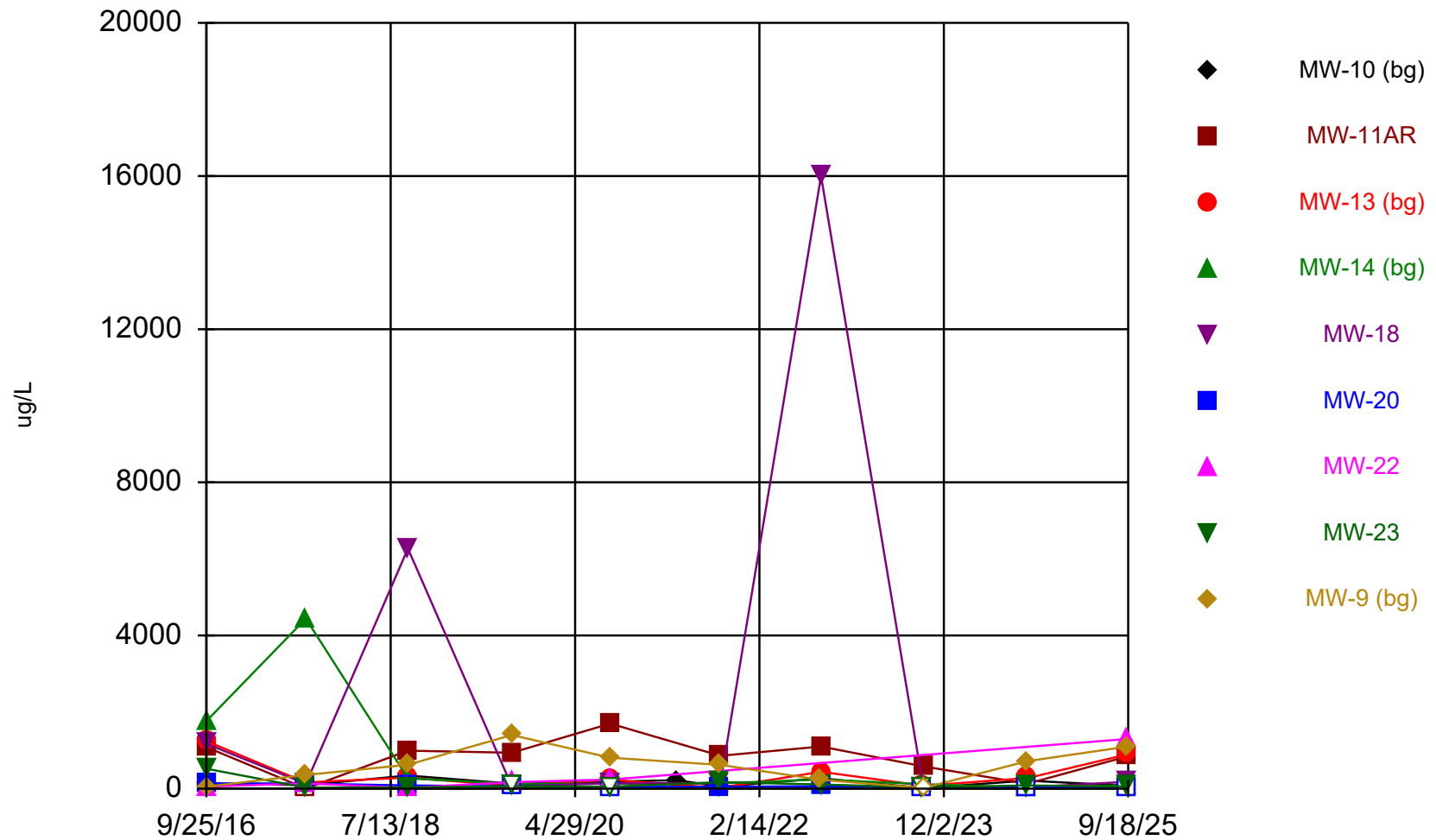


Time Series

Constituent: Fluoride (mg/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR   | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22     | MW-23     | MW-9 (bg) |
|-----------|------------|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| 9/18/2023 | <0.38 (U)  |           |            |            |           |           |           | <0.38 (U) |           |
| 9/20/2023 |            |           | <0.38 (U)  | <0.38 (U)  | <0.38 (U) | <0.38 (U) |           |           |           |
| 9/21/2023 |            | <0.38 (U) |            |            |           |           |           |           | <0.38 (U) |
| 9/24/2024 | <0.38      |           |            |            |           |           |           |           | <0.38     |
| 9/25/2024 |            | <0.38     |            | 0.68 (J)   | 0.4 (J)   |           |           |           |           |
| 9/26/2024 |            |           | 0.38 (J)   |            |           | <0.38     |           | 0.76 (J)  |           |
| 9/16/2025 |            |           |            | 0.56 (J)   |           |           |           | 0.41 (J)  |           |
| 9/17/2025 |            |           | 3          |            | <0.38 (U) | <0.38 (U) |           |           | <0.38 (U) |
| 9/18/2025 | <0.38 (U)  | <0.38 (U) |            |            |           |           | <0.38 (U) |           |           |

## Iron



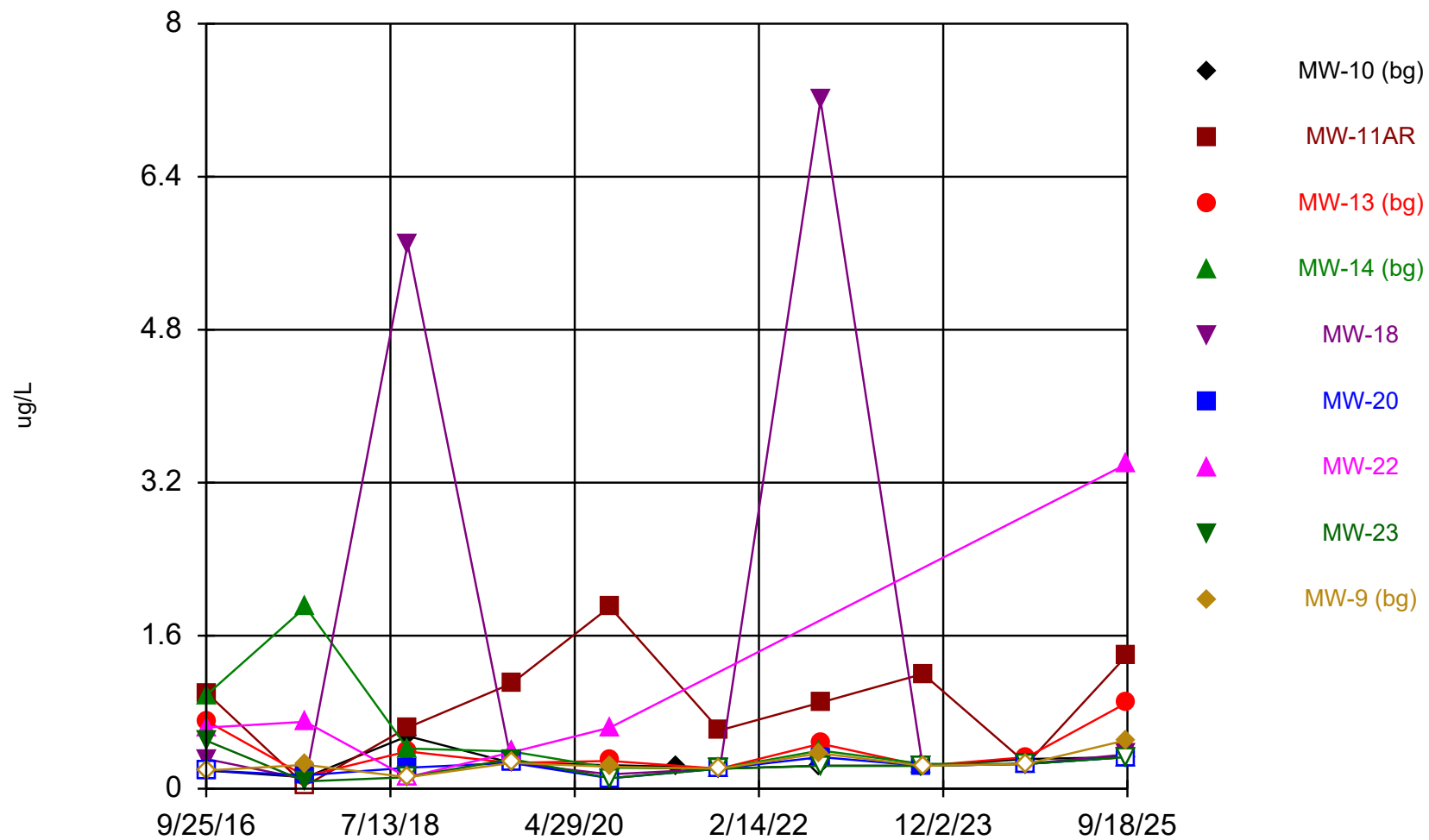
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Iron (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20   | MW-22    | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|---------|----------|----------|-----------|
| 9/25/2016 |            |         | 1240       |            |         |         |          |          | 55.7      |
| 9/26/2016 |            |         |            | 1770       | 1170    | 140     | 54.6     |          |           |
| 9/27/2016 | 126        | 1080    |            |            |         |         |          |          |           |
| 9/28/2016 |            |         |            |            |         |         |          | 518      |           |
| 9/13/2017 |            |         | 162        |            |         | 135     | 139      | 30.3 (J) |           |
| 9/14/2017 |            | <9.6    |            | 4440       | 128     |         |          |          | 357       |
| 9/15/2017 | 93.1       |         |            |            |         |         |          |          |           |
| 9/11/2018 |            |         | 289        |            |         | 82.8    | 23.9 (J) | 34.3 (J) |           |
| 9/12/2018 | 344        | 993     |            | 267        | 6270    |         |          |          | 624       |
| 9/16/2019 |            |         | 76 (J)     | 130        |         | <66     | 170      | <66      |           |
| 9/17/2019 | 130        | 940     |            |            | <66     |         |          |          | 1400      |
| 9/1/2020  |            | 1700    |            | 130        | 140     |         |          | <50      | 810       |
| 9/2/2020  |            |         | 230        |            |         | <50     | 240      |          |           |
| 4/29/2021 | 220        |         |            |            |         |         |          |          |           |
| 9/27/2021 |            |         | <36        | 140        |         | 49 (J)  |          | 170      |           |
| 9/28/2021 | 52 (J)     | 860     |            |            | 140     |         |          |          | 620       |
| 9/20/2022 | 270        |         |            | 240        |         |         |          |          | 230       |
| 9/21/2022 |            | 1100    | 440        |            | 16000   | 67 (J)  |          | 110      |           |
| 9/18/2023 | <36 (U)    |         |            |            |         |         |          | <36 (U)  |           |
| 9/20/2023 |            |         | 78 (J)     | 120        | <36 (U) | <36 (U) |          |          |           |
| 9/21/2023 |            | 580     |            |            |         |         |          |          | <36 (U)   |
| 9/24/2024 | 210        |         |            |            |         |         |          |          | 720       |
| 9/25/2024 |            | 130     |            | <36        | <36     |         |          |          |           |
| 9/26/2024 |            |         | 280        |            |         | <36     |          | 84 (J)   |           |
| 9/16/2025 |            |         |            | 94 (J)     |         |         |          | 57 (J)   |           |
| 9/17/2025 |            |         | 900        |            | 180     | <50 (U) |          |          | 1100      |
| 9/18/2025 | 77 (J)     | 850     |            |            |         |         | 1300     |          |           |

## Lead



Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

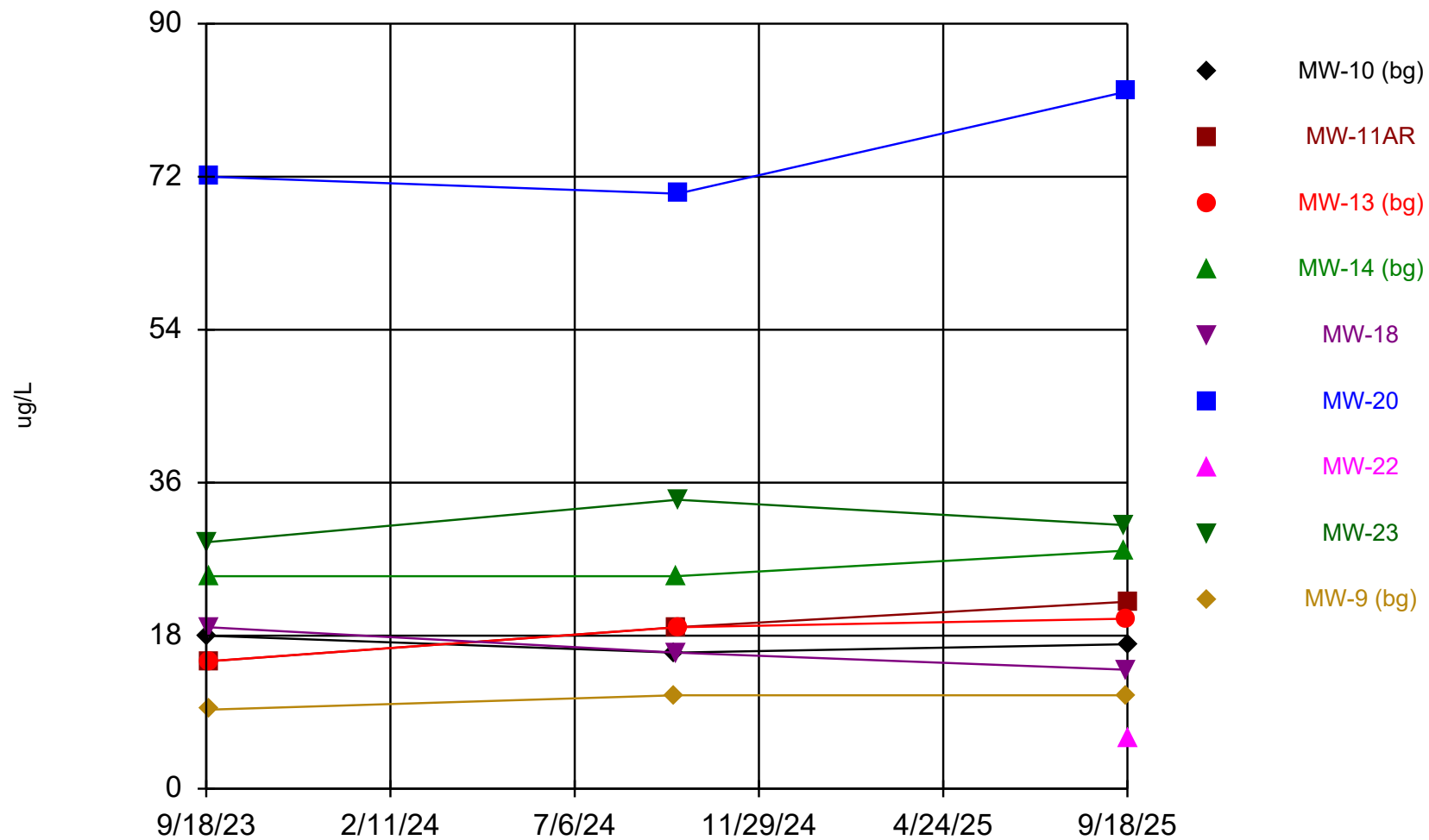
Time Series

Constituent: Lead (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|-----------|----------|-----------|-----------|
| 9/25/2016 |            |          | 0.71 (J)   |            |           |           |          |           | <0.19     |
| 9/26/2016 |            |          |            | 0.98 (J)   | 0.31 (J)  | <0.19     | 0.64 (J) |           |           |
| 9/27/2016 | <0.19      | 1        |            |            |           |           |          |           |           |
| 9/28/2016 |            |          |            |            |           |           |          | 0.5 (J)   |           |
| 9/13/2017 |            |          | 0.13 (J)   |            |           | 0.14 (J)  | 0.7 (J)  | 0.076 (J) |           |
| 9/14/2017 |            | <0.033   |            | 1.9        | 0.1 (J)   |           |          |           | 0.25 (J)  |
| 9/15/2017 | 0.12 (J)   |          |            |            |           |           |          |           |           |
| 9/11/2018 |            |          | 0.39 (J)   |            |           | 0.22 (J)  | <0.12    | <0.12     |           |
| 9/12/2018 | 0.55 (J)   | 0.64 (J) |            | 0.42 (J)   | 5.7       |           |          |           | <0.12     |
| 9/16/2019 |            |          | <0.27      | 0.39 (J)   |           | <0.27     | 0.38 (J) | 0.31 (J)  |           |
| 9/17/2019 | <0.27      | 1.1      |            |            | <0.27     |           |          |           | <0.27     |
| 9/1/2020  |            | 1.9      |            | 0.22 (J)   | 0.15 (J)  |           |          | <0.11     | 0.23 (J)  |
| 9/2/2020  |            |          | 0.29 (J)   |            |           | <0.11     | 0.64     |           |           |
| 4/29/2021 | 0.23 (J)   |          |            |            |           |           |          |           |           |
| 9/27/2021 |            |          | <0.21      | <0.21      |           | <0.21     |          | <0.21     |           |
| 9/28/2021 | <0.21      | 0.61     |            |            | <0.21     |           |          |           | <0.21     |
| 9/20/2022 | <0.24      |          |            | 0.4 (J)    |           |           |          |           | 0.37 (J)  |
| 9/21/2022 |            | 0.9      | 0.47 (J)   |            | 7.2       | 0.33 (J)  |          | <0.24     |           |
| 9/18/2023 | <0.24 (U)  |          |            |            |           |           |          | <0.24 (U) |           |
| 9/20/2023 |            |          | <0.24 (U)  | 0.26 (J)   | <0.24 (U) | 0.24 (J)  |          |           |           |
| 9/21/2023 |            | 1.2      |            |            |           |           |          |           | <0.24 (U) |
| 9/24/2024 | 0.31 (J)   |          |            |            |           |           |          |           | <0.26     |
| 9/25/2024 |            | <0.26    |            | <0.26      | <0.26     |           |          |           |           |
| 9/26/2024 |            |          | 0.33 (J)   |            |           | <0.26     |          | <0.26     |           |
| 9/16/2025 |            |          |            | <0.33 (U)  |           |           |          | <0.33 (U) |           |
| 9/17/2025 |            |          | 0.9        |            | 0.36 (J)  | <0.33 (U) |          |           | 0.51      |
| 9/18/2025 | <0.33 (U)  | 1.4      |            |            |           |           | 3.4      |           |           |

ND substitution: RL or RL/2 if <15% NDs.

## Lithium



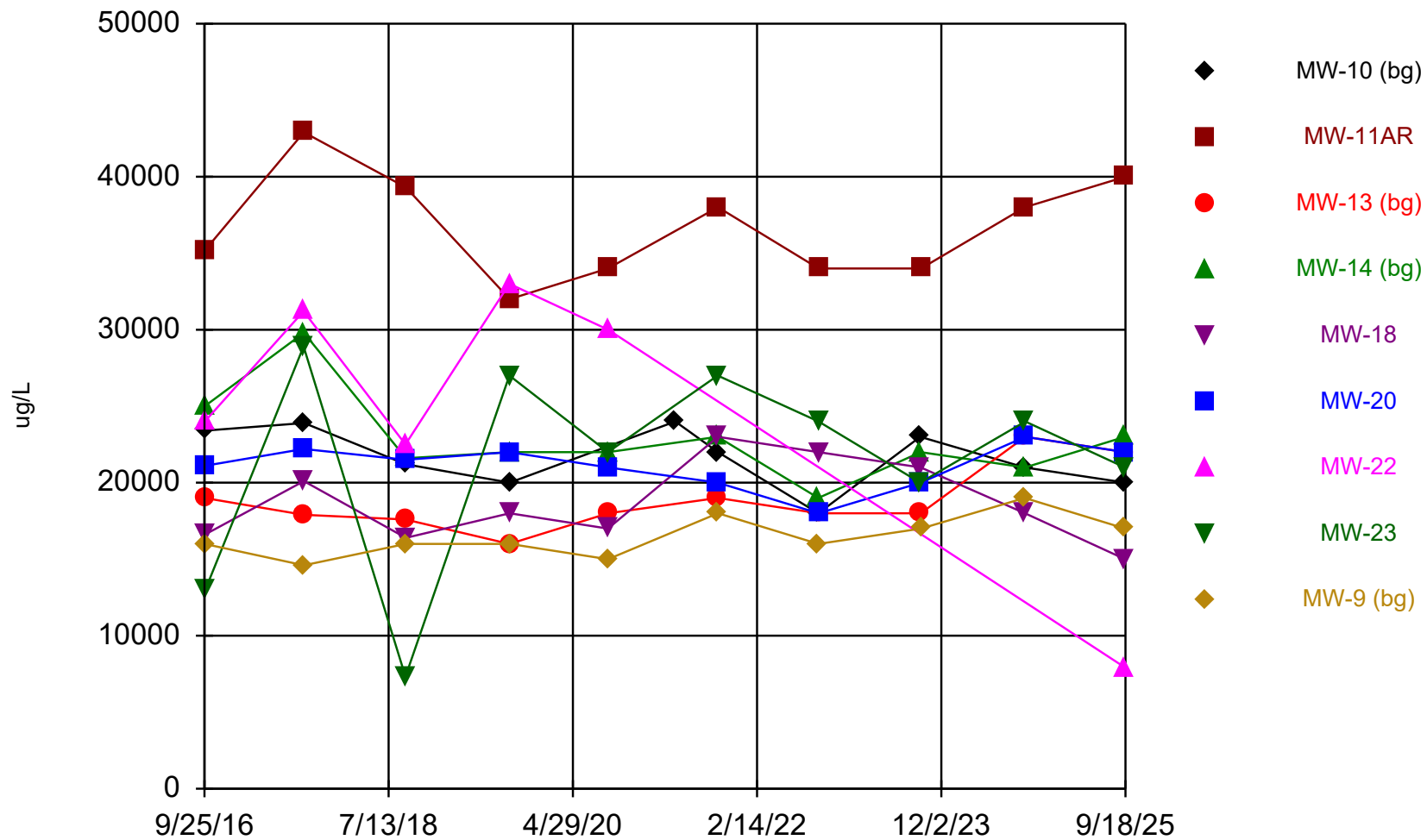
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Lithium (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22   | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|---------|-------|-----------|
| 9/18/2023 | 18         |         |            |            |       |       |         | 29    |           |
| 9/20/2023 |            |         | 15         | 25         | 19    | 72    |         |       |           |
| 9/21/2023 |            | 15      |            |            |       |       |         |       | 9.3 (J)   |
| 9/24/2024 | 16         |         |            |            |       |       |         |       | 11        |
| 9/25/2024 |            | 19      |            | 25         | 16    |       |         |       |           |
| 9/26/2024 |            |         | 19         |            |       | 70    |         | 34    |           |
| 9/16/2025 |            |         |            | 28         |       |       |         | 31    |           |
| 9/17/2025 |            |         | 20         |            | 14    | 82    |         |       | 11        |
| 9/18/2025 | 17         | 22      |            |            |       |       | 5.9 (J) |       |           |

# Magnesium



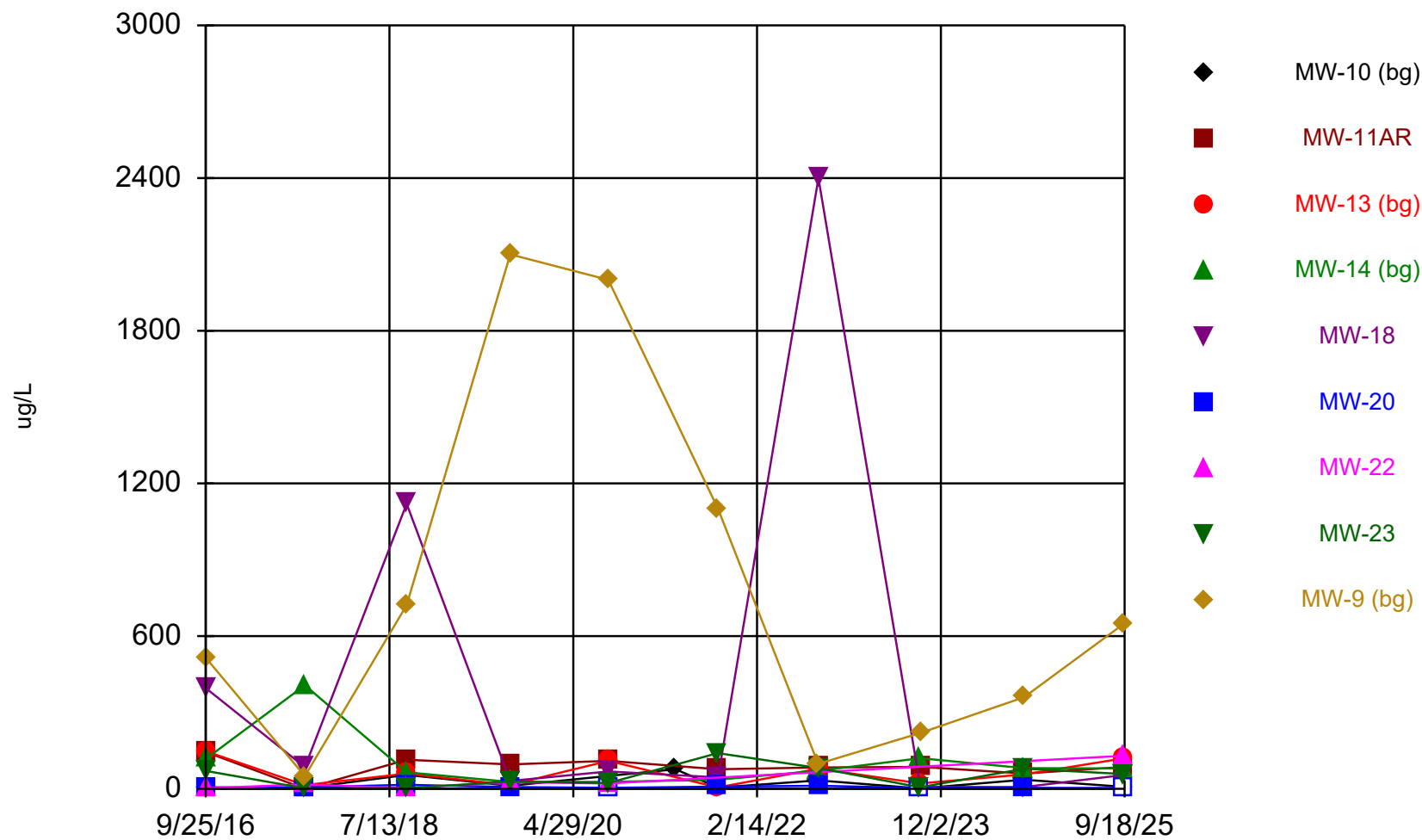
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
 Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Magnesium (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 19000      |            |       |       |       |       | 16000     |
| 9/26/2016 |            |         |            | 25000      | 16600 | 21100 | 24000 |       |           |
| 9/27/2016 | 23400      | 35200   |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 13000 |           |
| 9/13/2017 |            |         | 17900      |            |       | 22200 | 31200 | 28900 |           |
| 9/14/2017 |            | 42900   |            | 29800      | 20100 |       |       |       | 14600     |
| 9/15/2017 | 23900      |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 17600      |            |       | 21500 | 22500 | 7320  |           |
| 9/12/2018 | 21200      | 39300   |            | 21600      | 16400 |       |       |       | 16000     |
| 9/16/2019 |            |         | 16000      | 22000      |       | 22000 | 33000 | 27000 |           |
| 9/17/2019 | 20000      | 32000   |            |            | 18000 |       |       |       | 16000     |
| 9/1/2020  |            | 34000   |            | 22000      | 17000 |       |       | 22000 | 15000     |
| 9/2/2020  |            |         | 18000      |            |       | 21000 | 30000 |       |           |
| 4/29/2021 | 24000      |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 19000      | 23000      |       | 20000 |       | 27000 |           |
| 9/28/2021 | 22000      | 38000   |            |            | 23000 |       |       |       | 18000     |
| 9/20/2022 | 18000      |         |            | 19000      |       |       |       |       | 16000     |
| 9/21/2022 |            | 34000   | 18000      |            | 22000 | 18000 |       | 24000 |           |
| 9/18/2023 | 23000      |         |            |            |       |       |       | 20000 |           |
| 9/20/2023 |            |         | 18000      | 22000      | 21000 | 20000 |       |       |           |
| 9/21/2023 |            | 34000   |            |            |       |       |       |       | 17000     |
| 9/24/2024 | 21000      |         |            |            |       |       |       |       | 19000     |
| 9/25/2024 |            | 38000   |            | 21000      | 18000 |       |       |       |           |
| 9/26/2024 |            |         | 23000      |            |       | 23000 |       | 24000 |           |
| 9/16/2025 |            |         |            | 23000      |       |       |       | 21000 |           |
| 9/17/2025 |            |         | 22000      |            | 15000 | 22000 |       |       | 17000     |
| 9/18/2025 | 20000      | 40000   |            |            |       |       | 7900  |       |           |

# Manganese



Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

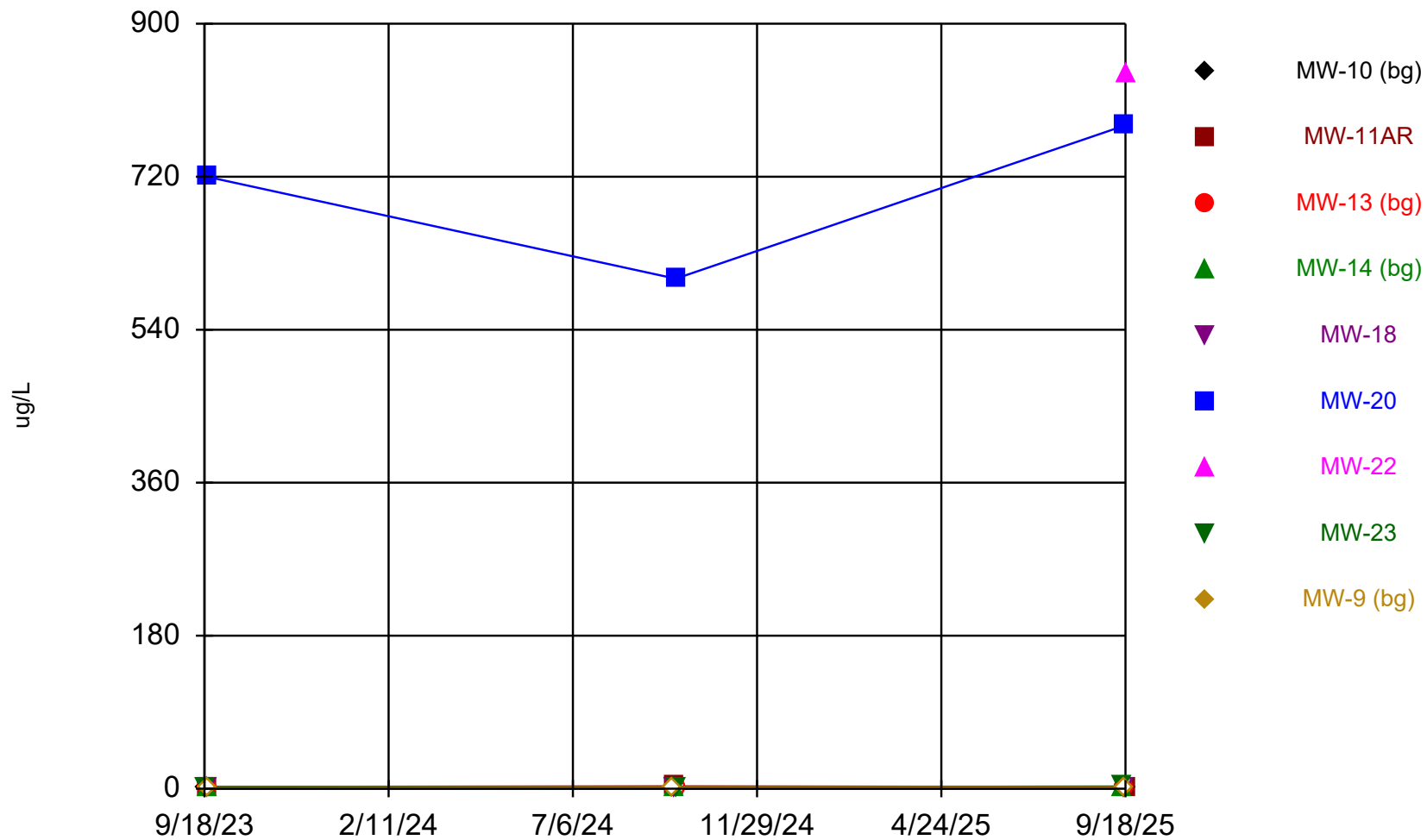
Time Series

Constituent: Manganese (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20    | MW-22 | MW-23   | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|----------|-------|---------|-----------|
| 9/25/2016 |            |         | 148        |            |         |          |       |         | 515       |
| 9/26/2016 |            |         |            | 118        | 395     | 4.2      | 2.5   |         |           |
| 9/27/2016 | 6.1        | 144     |            |            |         |          |       |         |           |
| 9/28/2016 |            |         |            |            |         |          |       | 70      |           |
| 9/13/2017 |            |         | 14.6       |            |         | 6.3      | 17.2  | 2.2     |           |
| 9/14/2017 |            | <0.07   |            | 407        | 85.3    |          |       |         | 49.8      |
| 9/15/2017 | 3.2        |         |            |            |         |          |       |         |           |
| 9/11/2018 |            |         | 59.8       |            |         | 15.7     | 2.9   | 2       |           |
| 9/12/2018 | 54.9       | 114     |            | 64.9       | 1120    |          |       |         | 722       |
| 9/16/2019 |            |         | 15         | 27         |         | 7.3 (J)  | 26    | 29      |           |
| 9/17/2019 | 12         | 96      |            |            | 31      |          |       |         | 2100      |
| 9/1/2020  |            | 110     |            | 27         | 68      |          |       | 23      | 2000      |
| 9/2/2020  |            |         | 110        |            |         | <4       | 21    |         |           |
| 4/29/2021 | 77         |         |            |            |         |          |       |         |           |
| 9/27/2021 |            |         | 5.7 (J)    | 36         |         | 8.8 (J)  |       | 140     |           |
| 9/28/2021 | 4.9 (J)    | 77      |            |            | 45      |          |       |         | 1100      |
| 9/20/2022 | 33         |         |            | 71         |         |          |       |         | 98        |
| 9/21/2022 |            | 84      | 79         |            | 2400    | 12       |       | 82      |           |
| 9/18/2023 | <3.6 (U)   |         |            |            |         |          |       | 5.8 (J) |           |
| 9/20/2023 |            |         | 21         | 120        | 7.5 (J) | <3.6 (U) |       |         |           |
| 9/21/2023 |            | 86      |            |            |         |          |       |         | 220       |
| 9/24/2024 | 36         |         |            |            |         |          |       |         | 360       |
| 9/25/2024 |            | 60      |            | 81         | 7.2 (J) |          |       |         |           |
| 9/26/2024 |            |         | 57         |            |         | 3.8 (J)  |       | 79      |           |
| 9/16/2025 |            |         |            | 80         |         |          |       | 58      |           |
| 9/17/2025 |            |         | 120        |            | 55      | <3.6 (U) |       |         | 650       |
| 9/18/2025 | 7.6 (J)    | 86      |            |            |         |          | 130   |         |           |

ND substitution: RL or RL/2 if <15% NDs.

## Molybdenum



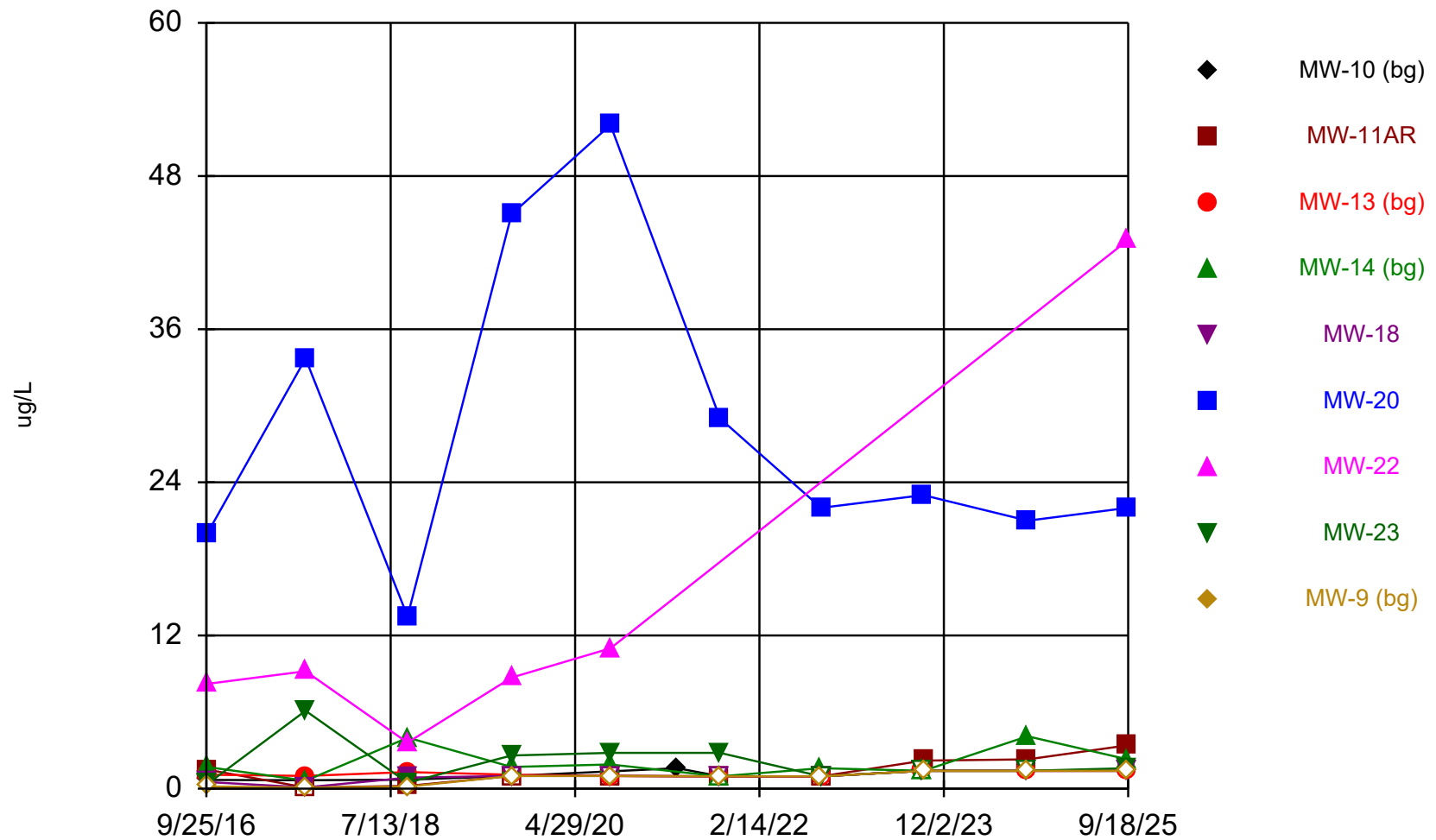
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Molybdenum (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18    | MW-20 | MW-22 | MW-23   | MW-9 (bg) |
|-----------|------------|---------|------------|------------|----------|-------|-------|---------|-----------|
| 9/18/2023 | 1 (J)      |         |            |            |          |       |       | 1.5 (J) |           |
| 9/20/2023 |            |         | <0.91 (U)  | 2.2        | 0.99 (J) | 720   |       |         |           |
| 9/21/2023 |            | 2.2     |            |            |          |       |       |         | <0.91 (U) |
| 9/24/2024 | <1.3       |         |            |            |          |       |       |         | <1.3      |
| 9/25/2024 |            | 2.8     |            | 2.3        | <1.3     |       |       |         |           |
| 9/26/2024 |            |         | <1.3       |            |          | 600   |       | 1.7 (J) |           |
| 9/16/2025 |            |         |            | 1.9 (J)    |          |       |       | 2.7     |           |
| 9/17/2025 |            |         | <1.3 (U)   |            | <1.3 (U) | 780   |       |         | <1.3 (U)  |
| 9/18/2025 | <1.3 (U)   | 2       |            |            |          |       | 840   |         |           |

## Selenium



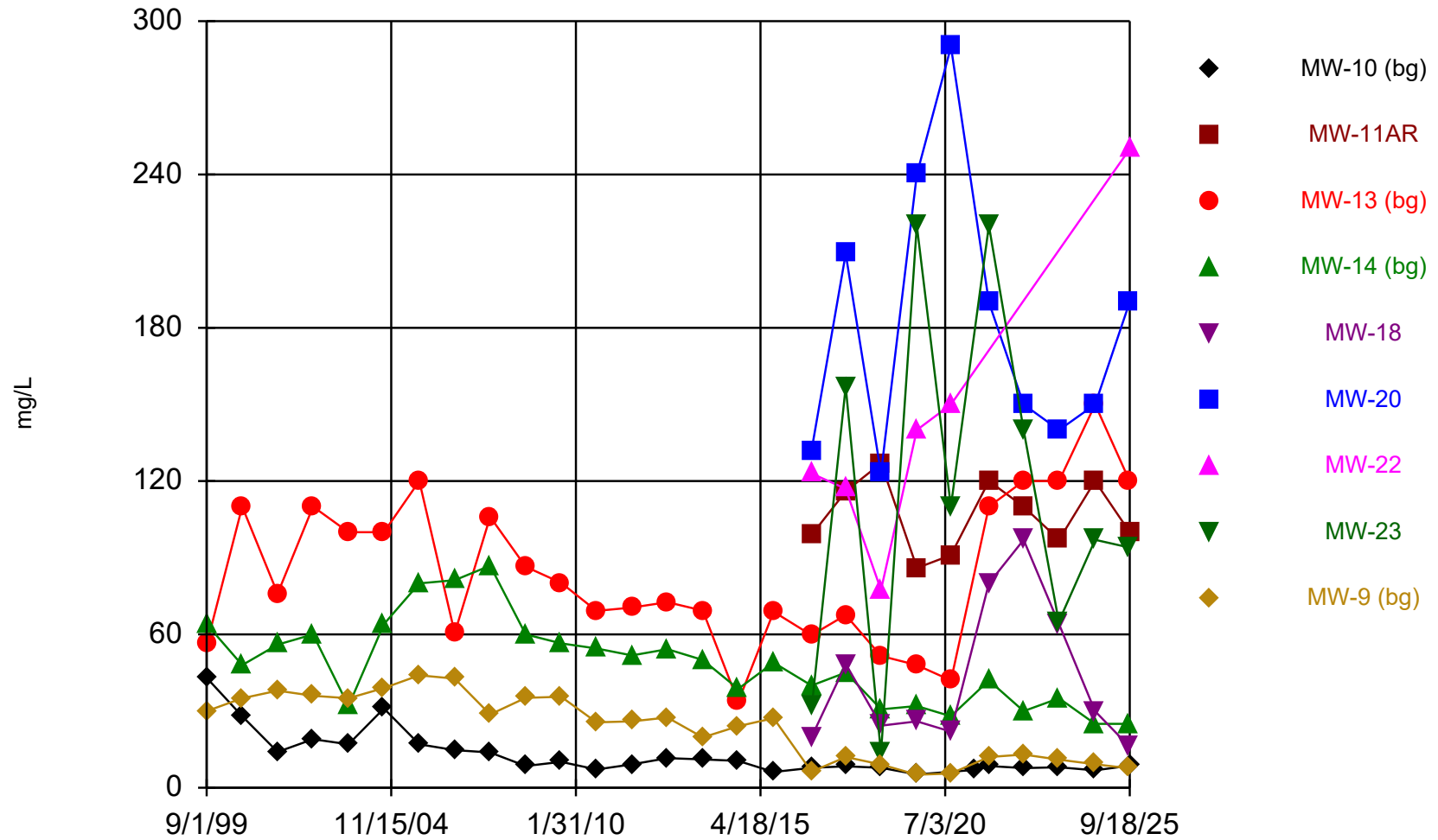
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Selenium (ug/L)    Analysis Run 10/21/2025 12:51 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20 | MW-22 | MW-23    | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|-------|-------|----------|-----------|
| 9/25/2016 |            |          | 1.1        |            |           |       |       |          | <0.18     |
| 9/26/2016 |            |          |            | 1.7        | 0.52 (J)  | 19.9  | 8.2   |          |           |
| 9/27/2016 | 0.68 (J)   | 1.5      |            |            |           |       |       |          |           |
| 9/28/2016 |            |          |            |            |           |       |       | 0.36 (J) |           |
| 9/13/2017 |            |          | 1          |            |           | 33.7  | 9.2   | 6.1      |           |
| 9/14/2017 |            | <0.086   |            | 0.63 (J)   | 0.094 (J) |       |       |          | <0.086    |
| 9/15/2017 | 0.66 (J)   |          |            |            |           |       |       |          |           |
| 9/11/2018 |            |          | 1.3        |            |           | 13.5  | 3.6   | 0.47 (J) |           |
| 9/12/2018 | 0.71 (J)   | 0.22 (J) |            | 4          | 0.87 (J)  |       |       |          | <0.16     |
| 9/16/2019 |            |          | 1.1 (J)    | 1.7 (J)    |           | 45    | 8.7   | 2.6 (J)  |           |
| 9/17/2019 | <1         | <1       |            |            | <1        |       |       |          | <1        |
| 9/1/2020  |            | <1       |            | 1.9 (J)    | <1        |       |       | 2.8 (J)  | <1        |
| 9/2/2020  |            |          | <1         |            |           | 52    | 11    |          |           |
| 4/29/2021 | 1.6 (J)    |          |            |            |           |       |       |          |           |
| 9/27/2021 |            |          | <0.96      | <0.96      |           | 29    |       | 2.8 (J)  |           |
| 9/28/2021 | <0.96      | <0.96    |            |            | <0.96     |       |       |          | <0.96     |
| 9/20/2022 | <0.96      |          |            | 1.6 (J)    |           |       |       |          | <0.96     |
| 9/21/2022 |            | <0.96    | <0.96      |            | <0.96     | 22    |       | <0.96    |           |
| 9/18/2023 | <1.4 (U)   |          |            |            |           |       |       | <1.4 (U) |           |
| 9/20/2023 |            |          | <1.4 (U)   | <1.4 (U)   | <1.4 (U)  | 23    |       |          |           |
| 9/21/2023 |            | 2.2 (J)  |            |            |           |       |       |          | <1.4 (U)  |
| 9/24/2024 | <1.4       |          |            |            |           |       |       |          | <1.4      |
| 9/25/2024 |            | 2.3 (J)  |            | 4.1 (J)    | <1.4      |       |       |          |           |
| 9/26/2024 |            |          | <1.4       |            |           | 21    |       | <1.4     |           |
| 9/16/2025 |            |          |            | 2.3 (J)    |           |       |       | 1.6 (J)  |           |
| 9/17/2025 |            |          | <1.4 (U)   |            | <1.4 (U)  | 22    |       |          | <1.4 (U)  |
| 9/18/2025 | <1.4 (U)   | 3.4 (J)  |            |            |           |       | 43    |          |           |

## Sulfate



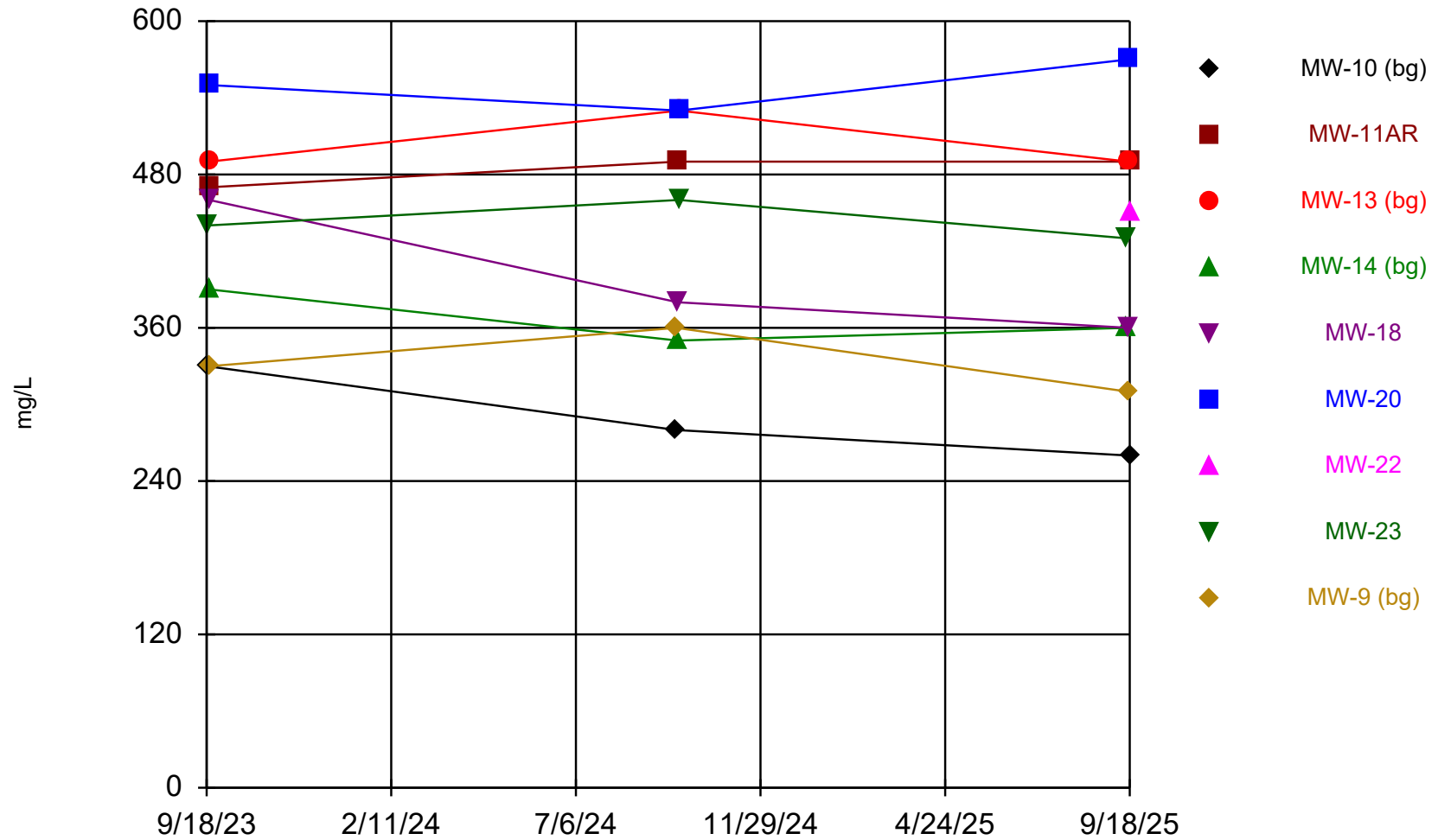
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Sulfate (mg/L)    Analysis Run 10/21/2025 12:52 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/1/1999  | 43         |         | 56         | 64         |       |       |       |       | 30        |
| 9/1/2000  | 28         |         | 110        | 48         |       |       |       |       | 35        |
| 9/1/2001  | 14         |         | 76         | 56         |       |       |       |       | 38        |
| 9/1/2002  | 19         |         | 110        | 60         |       |       |       |       | 36        |
| 9/1/2003  | 17         |         | 100        | 32         |       |       |       |       | 35        |
| 9/1/2004  | 31         |         | 100        | 64         |       |       |       |       | 39        |
| 9/1/2005  | 17         |         | 120        | 80         |       |       |       |       | 44        |
| 9/1/2006  | 14.7       |         | 60.5       | 81.2       |       |       |       |       | 42.7      |
| 9/1/2007  | 13.8       |         | 106        | 86.9       |       |       |       |       | 28.7      |
| 9/1/2008  | 8.48       |         | 86.5       | 60         |       |       |       |       | 35.2      |
| 9/1/2009  | 10.1       |         | 80.2       | 56.5       |       |       |       |       | 35.6      |
| 9/1/2010  | 7.17       |         | 69.2       | 54.5       |       |       |       |       | 25.6      |
| 9/1/2011  | 9.16       |         | 70.5       | 51.8       |       |       |       |       | 26        |
| 9/1/2012  | 11.6       |         | 72.6       | 54.2       |       |       |       |       | 27.5      |
| 9/1/2013  | 11.1       |         | 69.3       | 50         |       |       |       |       | 19.7      |
| 9/1/2014  | 10.5       |         | 33.6       | 38.7       |       |       |       |       | 24.1      |
| 9/1/2015  | 6.2        |         | 68.9       | 49         |       |       |       |       | 27.2      |
| 9/25/2016 |            |         | 59.7       |            |       |       |       |       | 6.3       |
| 9/26/2016 |            |         |            | 40         | 19.8  | 132   | 123   |       |           |
| 9/27/2016 | 7.8        | 99      |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 31.8  |           |
| 9/13/2017 |            |         | 67.6       |            |       | 209   | 117   | 157   |           |
| 9/14/2017 |            | 116     |            | 45.1       | 48.4  |       |       |       | 12        |
| 9/15/2017 | 8.4        |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 51.6       |            |       | 123   | 77.4  | 13.5  |           |
| 9/12/2018 | 7.8        | 127     |            | 30.7       | 24.3  |       |       |       | 9.1       |
| 9/16/2019 |            |         | 48         | 32         |       | 240   | 140   | 220   |           |
| 9/17/2019 | 5.2        | 86      |            |            | 26    |       |       |       | 5.1       |
| 9/1/2020  |            | 91      |            | 28         | 22    |       |       | 110   | 5.6       |
| 9/2/2020  |            |         | 42         |            |       | 290   | 150   |       |           |
| 4/29/2021 | 7          |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 110        | 42         |       | 190   |       | 220   |           |
| 9/28/2021 | 8.5        | 120     |            |            | 80    |       |       |       | 12        |
| 9/20/2022 | 7.7        |         |            | 30         |       |       |       |       | 13        |
| 9/21/2022 |            | 110     | 120        |            | 97    | 150   |       | 140   |           |
| 9/18/2023 | 8          |         |            |            |       |       |       | 65    |           |
| 9/20/2023 |            |         | 120        | 35         | 64    | 140   |       |       |           |
| 9/21/2023 |            | 97      |            |            |       |       |       |       | 11        |
| 9/24/2024 | 6.8        |         |            |            |       |       |       |       | 9.2       |
| 9/25/2024 |            | 120     |            | 25         | 30    |       |       |       |           |
| 9/26/2024 |            |         | 150        |            |       | 150   |       | 97    |           |
| 9/16/2025 |            |         |            | 25         |       |       |       | 94    |           |
| 9/17/2025 |            |         | 120        |            | 16    | 190   |       |       | 7.6       |
| 9/18/2025 | 8.6        | 100     |            |            |       |       | 250   |       |           |

## Total Dissolved Solids



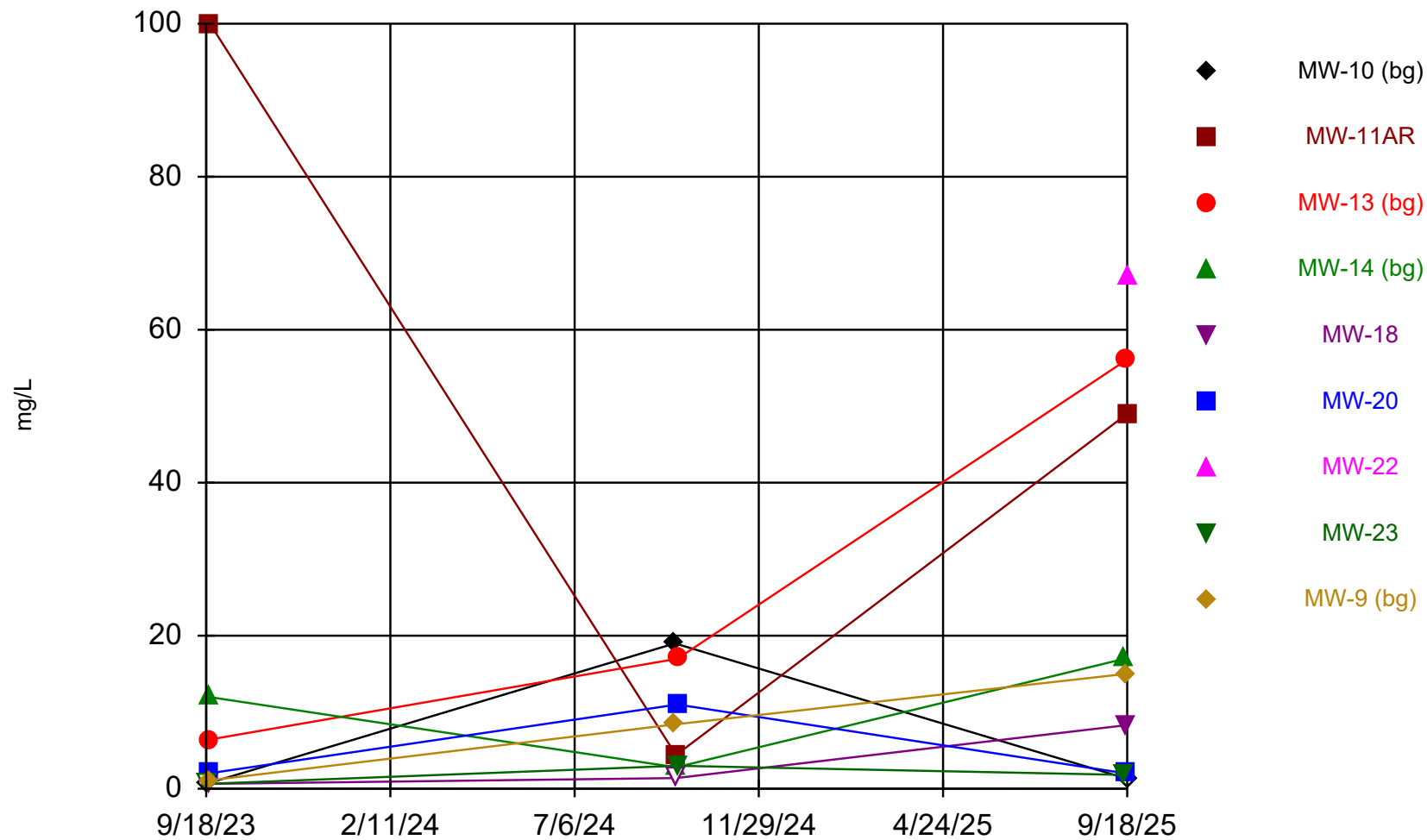
Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Total Dissolved Solids (mg/L)    Analysis Run 10/21/2025 12:52 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/18/2023 | 330        |         |            |            |       |       |       | 440   |           |
| 9/20/2023 |            |         | 490        | 390        | 460   | 550   |       |       |           |
| 9/21/2023 |            | 470     |            |            |       |       |       |       | 330       |
| 9/24/2024 | 280        |         |            |            |       |       |       |       | 360       |
| 9/25/2024 |            | 490     |            | 350        | 380   |       |       |       |           |
| 9/26/2024 |            |         | 530        |            |       | 530   |       | 460   |           |
| 9/16/2025 |            |         |            | 360        |       |       |       | 430   |           |
| 9/17/2025 |            |         | 490        |            | 360   | 570   |       |       | 310       |
| 9/18/2025 | 260        | 490     |            |            |       |       | 450   |       |           |

## Total Suspended Solids



Time Series Analysis Run 10/21/2025 12:50 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshalltown

Time Series

Constituent: Total Suspended Solids (mg/L)    Analysis Run 10/21/2025 12:52 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshalltown

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20 | MW-22 | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|-------|-------|-----------|-----------|
| 9/18/2023 | <0.64 (U)  |         |            |            |           |       |       | <0.64 (U) |           |
| 9/20/2023 |            |         | 6.4        | 12         | <0.64 (U) | 2     |       |           |           |
| 9/21/2023 |            | 100     |            |            |           |       |       |           | 1.1 (J)   |
| 9/24/2024 | 19         |         |            |            |           |       |       |           | 8.4       |
| 9/25/2024 |            | 4.4     |            | 2.8        | <1.4      |       |       |           |           |
| 9/26/2024 |            |         | 17         |            |           | 11    |       | 3         |           |
| 9/16/2025 |            |         |            | 17         |           |       |       | 1.8 (J)   |           |
| 9/17/2025 |            |         | 56         |            | 8.3       | 2     |       |           | 15        |
| 9/18/2025 | <1.3 (U)   | 49      |            |            |           |       | 67    |           |           |

ND substitution: RL or RL/2 if <15% NDs.



Appendix E

2023 Statistical Summary Report

November 30, 2023  
File No. 25223064.00

## TECHNICAL MEMORANDUM

**SUBJECT:** Statistical Evaluation of Groundwater Monitoring Results  
Marshalltown East and West Closed CCR Landfills, September 2023 Sampling Event

**PREPARED BY:** Ryan Matzuk

**CHECKED BY:** Charles Hostetler

## STATISTICAL METHOD

The statistical analysis uses a prediction interval approach, as recommended for detection monitoring in the March 2009 U.S. Environmental Protection Agency (U.S. EPA) Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities. For the prediction interval evaluation, interwell testing was selected based on the considerations outlined in Chapter 6 of the Unified Guidance. The statistical program used to calculate the interwell prediction interval is Sanitas™ (Version 9.6.37).

The Marshalltown monitoring data are evaluated in two well groups, representing the East and West Landfills. For the East Landfill, monitoring wells MW-9 and MW-10 are used as the background wells. For the West Landfill, monitoring wells MW-8, MW-13, and MW-14 are used as the background wells. For each group, the background data are pooled for calculation of the prediction limits.

## TIME SERIES PLOTS

Time series plots are prepared for the required monitoring parameters to show the concentration variations over time. Time series graphs are included in **Attachments E1** (West) and **E2** (East). For metals, the time series plots only show monitoring results since 2016, when the monitoring program transitioned from dissolved metals to total metals analysis. For chloride and sulfate, which are not typically affected by filtering, older historical results for the background wells are included in the time series plots and are used in the determination of background for the statistical evaluation.

## OUTLIER ANALYSIS

An outlier analysis is performed for background monitoring results at the upgradient wells. A statistical outlier is a value that is extremely different from the other values in the data set. The Sanitas outlier tests identify data points that do not appear to fit the distribution of the rest of the data set and determine if they differ significantly from the rest of the data. The outlier analysis was performed for each background well individually, rather than for the pooled background data.



The outlier analysis performed in Sanitas includes the following steps:

- 1) Run normality test (Shapiro Wilk/Francia).
- 2) If normally distributed, run U.S. EPA's 1989 Outlier Test to identify suspected outliers.
  - a) If number of background samples is less than or equal to 22, run Dixon's test for suspected outliers.
  - b) If number of background samples is more than 22, run Rosner's test for suspected outliers.
- 3) If not normally distributed, run Tukey's test for outliers.
- 4) Review data flagged as possible outliers to evaluate whether they should be removed from the background data set. Also review time series plots for possible outliers that were not picked up in the statistical evaluation (e.g., outlier test may not identify outliers when two values are similar to each other, but very different from all other data).

Results identified as statistical outliers are checked for possible lab instrument failure, field collection problems, or data entry errors; however, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error can be identified, the outlier should not be removed.

For the September 2023 sampling event, the following background values were identified as potential outliers and handled as described:

*West Landfill*

- **Barium (MW-14).** One high result from the September 2017 event was flagged by Sanitas as a statistical outlier. This result was kept in the dataset because there was no known explanation for the higher result, and it appeared to be within the range of potential natural variation relative to the other observed barium concentrations (approximately 2 times the typical values at MW-14, similar to levels at other background wells).
- **Iron (MW-14).** One high result from the September 2017 event was flagged by Sanitas as a statistical outlier. This result was kept in the dataset because there was no known explanation for the higher result, and it appeared to be within the range of potential natural variation relative to the other observed iron concentrations.

*East Landfill*

- **Chloride (MW-9).** Four high results from the September 2013, September 2014, September 2015, and September 2022 events were flagged by Sanitas as statistical outliers. These results were kept in the dataset because there was no known explanation for the higher results, and the higher chloride levels persisted for at least 2 years, so it did not appear to reflect a sampling or laboratory error.

Outlier analysis results are included in **Attachments E3** (West) and **E4** (East).

## INTERWELL PREDICTION LIMITS

Interwell upper prediction limits (UPLs) are calculated for the shallow and deep groundwater systems using data from the background wells for each monitored constituent, with outliers removed as noted above. The prediction limit analysis performed in Sanitas includes the following steps:

- 1) If 50 percent or more of results are non-detect, apply a non-parametric UPL. For small background sample sizes, the non-parametric UPL is the highest background value. For a parameter with 100 percent non-detects in the background values, the Double Quantification rule applies, which says that a statistically significant increase (SSI) occurs when two results exceeding the quantification limit are reported for a compliance well.
- 2) If fewer than 50 percent of the results are non-detect, run normality test (Shapiro Wilk/Francia) to assess whether the data fit a normal distribution or can be transformed to fit a normal distribution (e.g., lognormal).
- 3) If normal or transformed normal, calculate parametric UPL.
- 4) If not normal or transformed normal, calculate non-parametric UPL.

For evaluation of parameters with less than 100 percent non-detects in the background sampling, the non-detects were replaced with the detection limit, unless the non-detects represented less than 15 percent of the total samples, in which case one-half of the detection limit was used.

Consistent with the Unified Guidance, parametric prediction limits are calculated based on a 1-of-2 retesting protocol and a target 10 percent annual site-wide false positive rate. Sanitas establishes the per-test significance level based on user inputs of the number of events per year, number of constituents being evaluated, and number of compliance wells. For the 2023 event, the following values were used:

| Parameter             | Value | Comments                                                                                                                                                                                                                                                                                          |
|-----------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evaluations per year  | 1     | September event                                                                                                                                                                                                                                                                                   |
| Constituents analyzed | 12    | Total of 18 constituents analyzed. Calcium, fluoride, lithium, molybdenum, total dissolved solids (TDS), and total suspended solids (TSS) not included because they were added to the program in 2023 and do not meet the minimum sample number requirements needed to produce prediction limits. |
| Compliance wells      | 13    | 6 West, 7 East                                                                                                                                                                                                                                                                                    |

Non-parametric prediction limits are also based on a 1-of-2 retesting protocol. The non-parametric limit is the highest value in the background dataset. Due to the small sample size, the false positive rate for the non-parametric tests is higher than for the parametric tests, but will go down as more background data are obtained.

Although the limits are based on a 1-of-2 retesting approach, retesting is not required. Because the site is closed and has been monitored for many years, retesting will typically not be performed unless

TECHNICAL MEMORANDUM

November 30, 2023

Page 4

a new potential SSI is identified. If retesting is not performed, a result above the UPL is presumed to represent an SSI above the interwell background level. Only results that exceed the laboratory's limit of quantitation or reporting limit are compared to the UPL; therefore, a J-flagged value above the UPL is not an SSI.

Interwell prediction limit analysis results for 2023 are included in **Attachments E5** (West) and **E6** (East).

RM/lmh/CJH

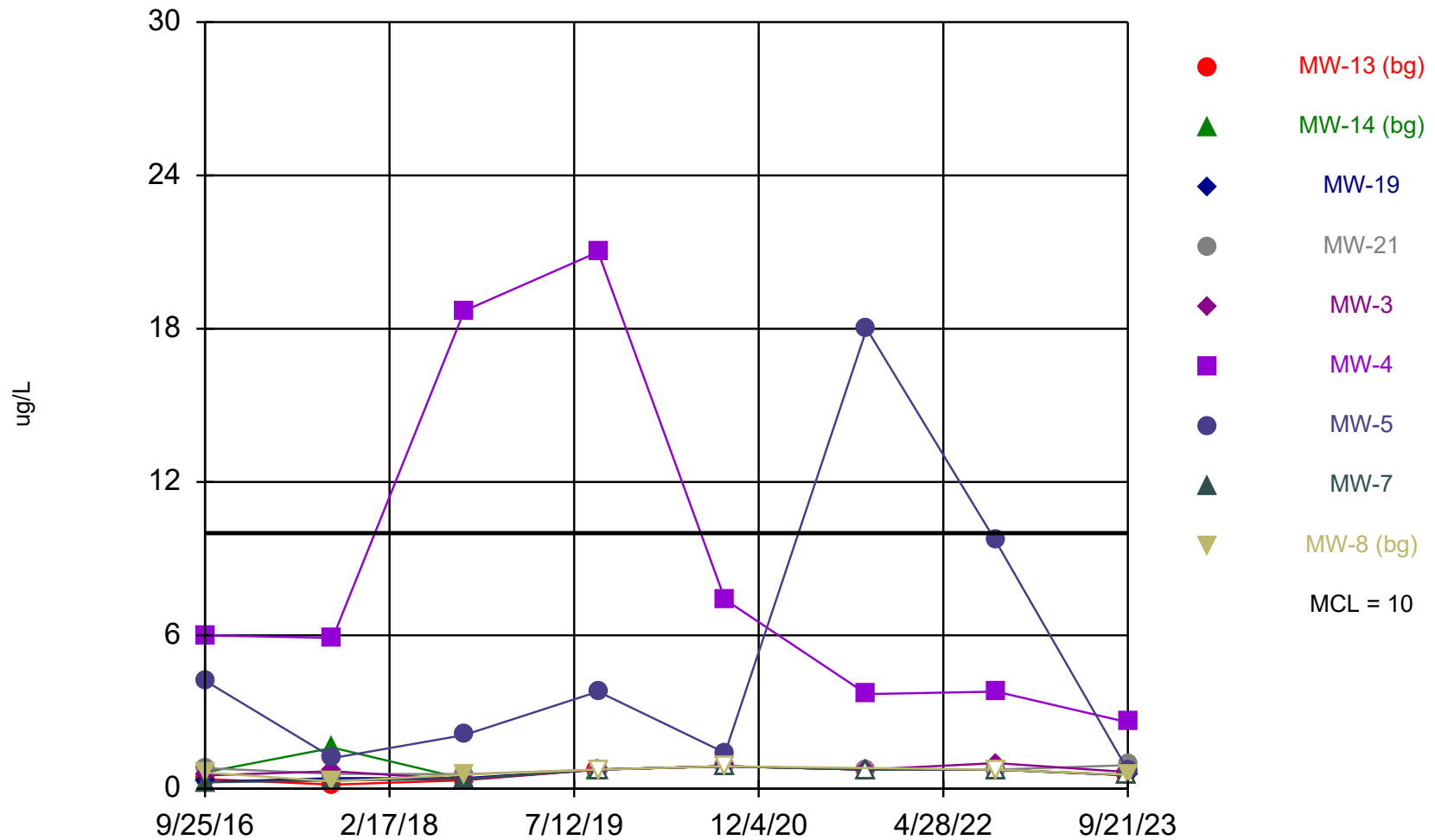
I:\25223064.00\Deliverables\2023 AWQR\Appendix E - Stats\Appendix E\_Stats Memo\_MT\_2023.docx



## Attachment E1

### Times Series Graphs – West

## Arsenic



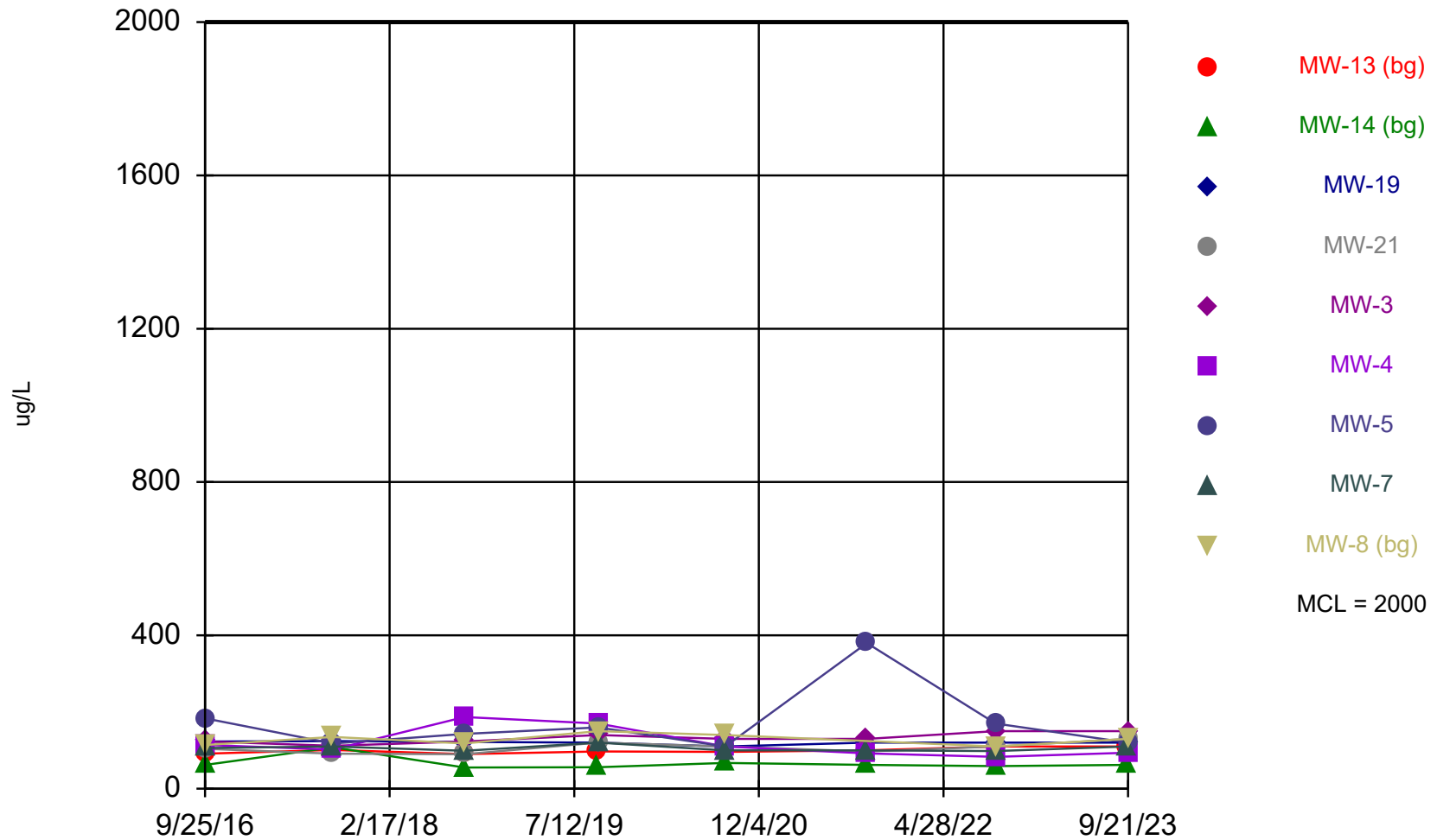
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Arsenic (ug/L)   Analysis Run 10/30/2023 11:17 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4 | MW-5     | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|------|----------|-----------|-----------|
| 9/25/2016 | 0.38 (J)   |            |           |          |          |      |          |           |           |
| 9/26/2016 |            | 0.64 (J)   |           |          |          |      |          |           | 0.63 (J)  |
| 9/27/2016 |            |            | 0.26 (J)  |          |          | 6    |          | 0.25 (J)  |           |
| 9/28/2016 |            |            |           | 0.8 (J)  | 0.52 (J) |      | 4.2      |           |           |
| 9/13/2017 | 0.16 (J)   |            |           |          |          | 5.9  |          | 0.32 (J)  | 0.29 (J)  |
| 9/14/2017 |            | 1.6        | 0.41 (J)  | 0.58 (J) | 0.68 (J) |      | 1.2      |           |           |
| 9/11/2018 | 0.33 (J)   |            |           | 0.57 (J) |          |      |          |           |           |
| 9/12/2018 |            | 0.38 (J)   | 0.41 (J)  |          |          | 18.7 | 2.1      |           | 0.55 (J)  |
| 9/13/2018 |            |            |           |          | 0.35 (J) |      |          | 0.38 (J)  |           |
| 9/16/2019 | <0.75      | <0.75      |           |          |          |      |          |           |           |
| 9/17/2019 |            |            | <0.75     | 0.75 (J) | <0.75    | 21   | 3.8      | <0.75     | <0.75     |
| 9/1/2020  |            | <0.88      |           |          |          |      |          | <0.88     | <0.88     |
| 9/2/2020  | <0.88      |            | <0.88     | <0.88    | <0.88    | 7.4  | 1.4 (J)  |           |           |
| 9/27/2021 | <0.75      | <0.75      |           |          |          |      |          |           |           |
| 9/28/2021 |            |            |           |          |          |      |          | <0.75     |           |
| 9/29/2021 |            |            | <0.75     | <0.75    | <0.75    | 3.7  | 18       |           |           |
| 9/20/2022 |            | <0.75      | <0.75     |          |          |      | 9.7      | <0.75     | <0.75     |
| 9/21/2022 | <0.75      |            |           |          | 1 (J)    |      |          |           |           |
| 9/22/2022 |            |            |           | <0.75    |          | 3.8  |          |           |           |
| 9/20/2023 | <0.53 (U)  | <0.53 (U)  |           |          |          |      |          | <0.53 (U) |           |
| 9/21/2023 |            |            | <0.53 (U) | 0.92 (J) | 0.65 (J) | 2.6  | 0.72 (J) |           | 0.55 (J)  |

## Barium



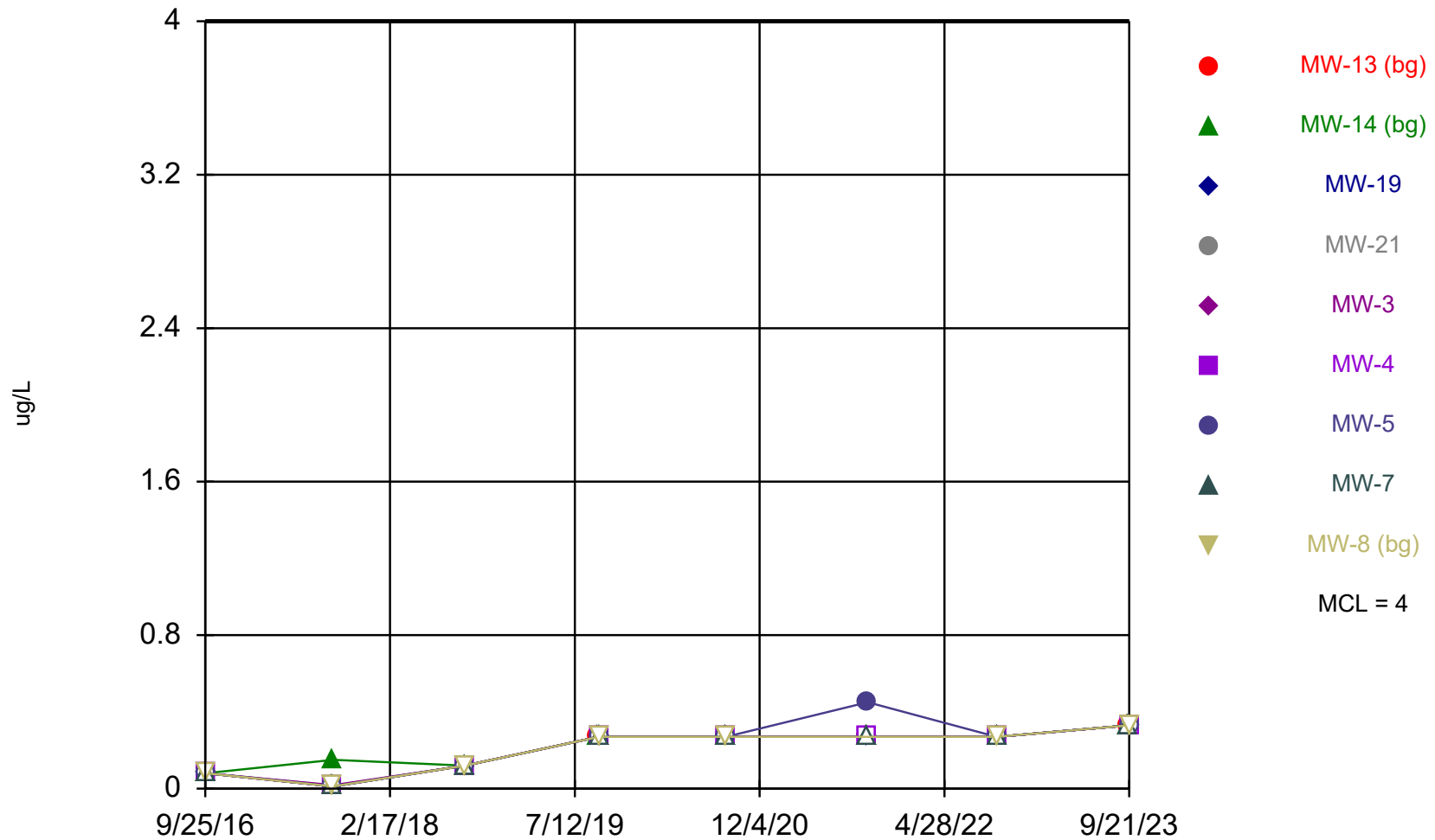
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Barium (ug/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/25/2016 | 91.2       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 62.1       |       |       |      |      |      |      | 114       |
| 9/27/2016 |            |            | 123   |       |      | 114  |      | 106  |           |
| 9/28/2016 |            |            |       | 104   | 123  |      | 183  |      |           |
| 9/13/2017 | 101        |            |       |       |      | 102  |      | 110  | 135       |
| 9/14/2017 |            | 108        | 124   | 91.3  | 112  |      | 118  |      |           |
| 9/11/2018 | 90.4       |            |       | 89.8  |      |      |      |      |           |
| 9/12/2018 |            | 55.1       | 122   |       |      | 187  | 143  |      | 118       |
| 9/13/2018 |            |            |       |       | 123  |      |      | 98.9 |           |
| 9/16/2019 | 97         | 56         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 120   | 120   | 140  | 170  | 160  | 120  | 150       |
| 9/1/2020  |            | 67         |       |       |      |      |      | 100  | 140       |
| 9/2/2020  | 96         |            | 110   | 110   | 130  | 110  | 110  |      |           |
| 9/27/2021 | 100        | 62         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 100  |           |
| 9/29/2021 |            |            | 120   | 97    | 130  | 92   | 380  |      |           |
| 9/20/2022 |            | 59         | 120   |       |      |      | 170  | 98   | 110       |
| 9/21/2022 | 110        |            |       |       | 150  |      |      |      |           |
| 9/22/2022 |            |            |       | 110   |      | 83   |      |      |           |
| 9/20/2023 | 110        | 62         |       |       |      |      |      | 110  |           |
| 9/21/2023 |            |            | 120   | 130   | 150  | 94   | 120  |      | 130       |

## Beryllium



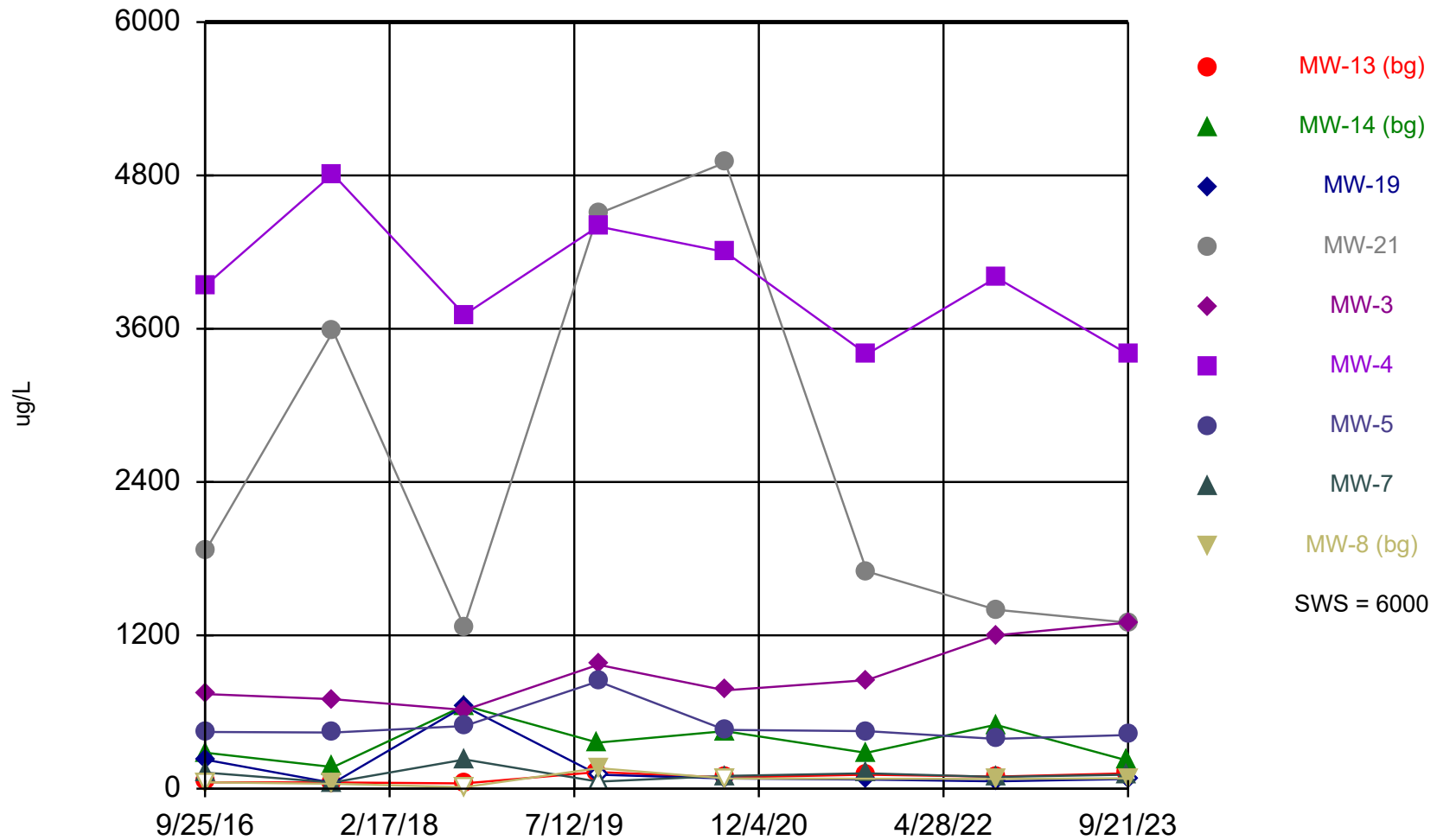
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Beryllium (ug/L)   Analysis Run 10/30/2023 11:17 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4      | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/25/2016 | <0.08      |            |           |           |           |           |           |           |           |
| 9/26/2016 |            | <0.08      |           |           |           |           |           |           | <0.08     |
| 9/27/2016 |            |            | <0.08     |           |           | <0.08     |           | <0.08     |           |
| 9/28/2016 |            |            |           | <0.08     | <0.08     |           | <0.08     |           |           |
| 9/13/2017 | <0.012     |            |           |           |           | 0.012 (J) |           | <0.012    | <0.012    |
| 9/14/2017 |            | 0.15 (J)   | <0.012    | 0.015 (J) | 0.018 (J) |           | <0.012    |           |           |
| 9/11/2018 | <0.12      |            |           | <0.12     |           |           |           |           |           |
| 9/12/2018 |            | <0.12      | <0.12     |           |           | <0.12     | <0.12     |           | <0.12     |
| 9/13/2018 |            |            |           |           | <0.12     |           |           | <0.12     |           |
| 9/16/2019 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/17/2019 |            |            | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     |
| 9/1/2020  |            | <0.27      |           |           |           |           |           | <0.27     | <0.27     |
| 9/2/2020  | <0.27      |            | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     |           |           |
| 9/27/2021 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/28/2021 |            |            |           |           |           |           |           | <0.27     |           |
| 9/29/2021 |            |            | <0.27     | <0.27     | <0.27     | <0.27     | 0.45 (J)  |           |           |
| 9/20/2022 |            | <0.27      | <0.27     |           |           |           | <0.27     | <0.27     | <0.27     |
| 9/21/2022 | <0.27      |            |           |           | <0.27     |           |           |           |           |
| 9/22/2022 |            |            |           | <0.27     |           | <0.27     |           |           |           |
| 9/20/2023 | <0.33 (U)  | <0.33 (U)  |           |           |           |           |           | <0.33 (U) |           |
| 9/21/2023 |            |            | <0.33 (U) | <0.33 (U) | <0.33 (U) | <0.33 (U) | <0.33 (U) |           | <0.33 (U) |

## Boron



Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

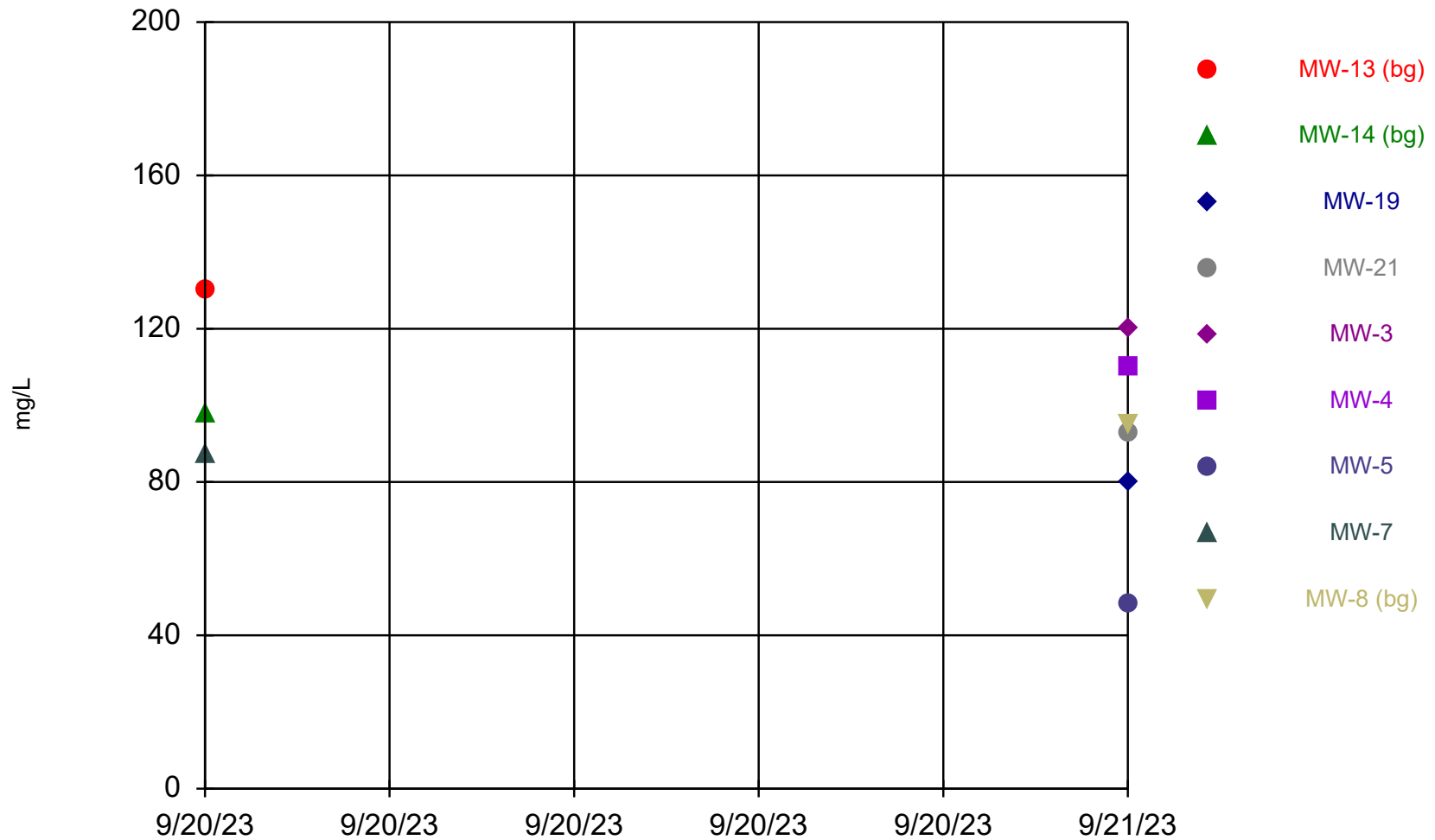
Time Series

Constituent: Boron (ug/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19    | MW-21 | MW-3 | MW-4 | MW-5 | MW-7   | MW-8 (bg) |
|-----------|------------|------------|----------|-------|------|------|------|--------|-----------|
| 9/25/2016 | 50.2 (J)   |            |          |       |      |      |      |        |           |
| 9/26/2016 |            | 282        |          |       |      |      |      |        | <50       |
| 9/27/2016 |            |            | 226      |       |      | 3940 |      | 126    |           |
| 9/28/2016 |            |            |          | 1870  | 740  |      | 444  |        |           |
| 9/13/2017 | 48.6 (J)   |            |          |       |      | 4810 |      | 49 (J) | 37.6 (J)  |
| 9/14/2017 |            | 169        | 44.7 (J) | 3580  | 700  |      | 440  |        |           |
| 9/11/2018 | 41.4 (J)   |            |          | 1270  |      |      |      |        |           |
| 9/12/2018 |            | 651        | 645      |       |      | 3710 | 490  |        | <12.5     |
| 9/13/2018 |            |            |          |       | 616  |      |      | 228    |           |
| 9/16/2019 | 130 (J)    | 360        |          |       |      |      |      |        |           |
| 9/17/2019 |            |            | <110     | 4500  | 970  | 4400 | 840  | <110   | 160 (J)   |
| 9/1/2020  |            | 450        |          |       |      |      |      | 100    | <80       |
| 9/2/2020  | 88 (J)     |            | <80      | 4900  | 770  | 4200 | 460  |        |           |
| 9/27/2021 | 110        | 280        |          |       |      |      |      |        |           |
| 9/28/2021 |            |            |          |       |      |      |      | 120    |           |
| 9/29/2021 |            |            | 72 (J)   | 1700  | 850  | 3400 | 450  |        |           |
| 9/20/2022 |            | 500        | <58      |       |      |      | 390  | 92 (J) | 76 (J)    |
| 9/21/2022 | 94 (J)     |            |          |       | 1200 |      |      |        |           |
| 9/22/2022 |            |            |          | 1400  |      | 4000 |      |        |           |
| 9/20/2023 | 120        | 220        |          |       |      |      |      | 110    |           |
| 9/21/2023 |            |            | <76 (U)  | 1300  | 1300 | 3400 | 420  |        | 81 (J)    |

ND substitution: RL or RL/2 if <15% NDs.

## Calcium



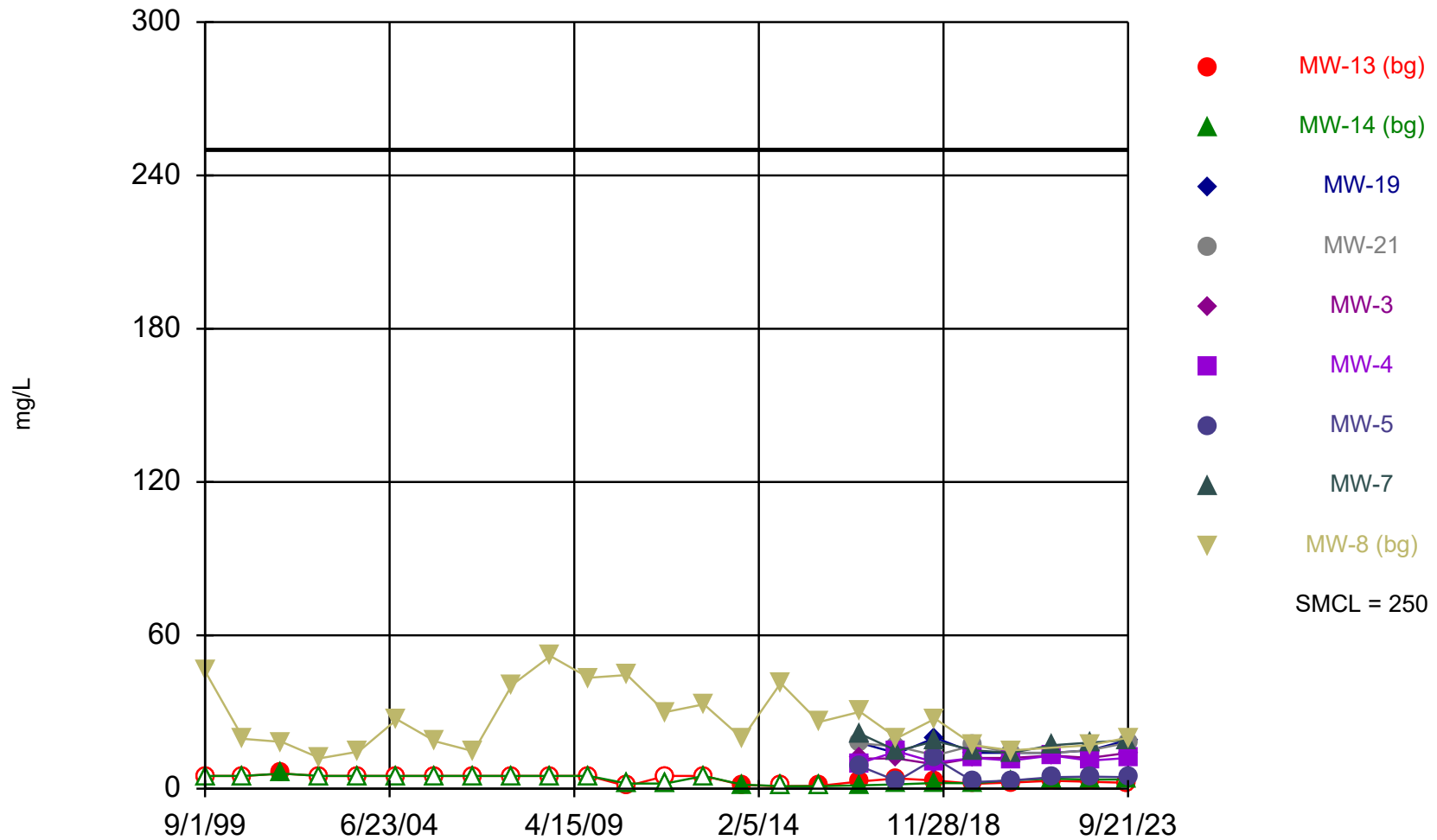
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Calcium (mg/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/20/2023 | 130        | 98         |       |       |      |      |      | 87   |           |
| 9/21/2023 |            |            | 80    | 93    | 120  | 110  | 48   |      | 95        |

## Chloride



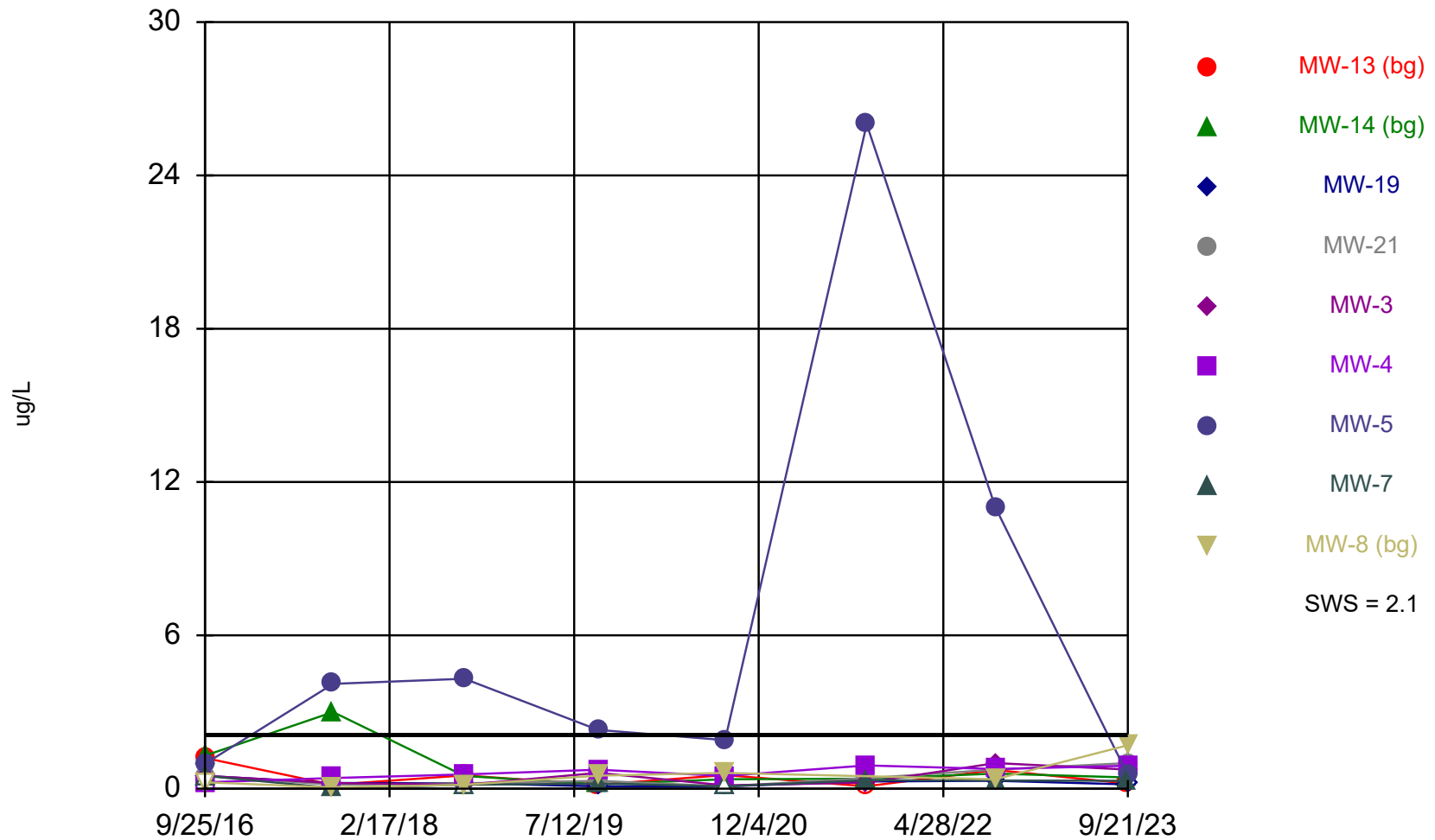
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Chloride (mg/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
 Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19  | MW-21  | MW-3   | MW-4   | MW-5      | MW-7   | MW-8 (bg) |
|-----------|------------|------------|--------|--------|--------|--------|-----------|--------|-----------|
| 9/1/1999  | <5         | <5         |        |        |        |        |           |        | 46        |
| 9/1/2000  | <5         | <5         |        |        |        |        |           |        | 19.5      |
| 9/1/2001  | 5.9        | 5.9        |        |        |        |        |           |        | 18.3      |
| 9/1/2002  | <5         | <5         |        |        |        |        |           |        | 11.9      |
| 9/1/2003  | <5         | <5         |        |        |        |        |           |        | 14.5      |
| 9/1/2004  | <5         | <5         |        |        |        |        |           |        | 27.1      |
| 9/1/2005  | <5         | <5         |        |        |        |        |           |        | 18.5      |
| 9/1/2006  | <5         | <5         |        |        |        |        |           |        | 14.6      |
| 9/1/2007  | <5         | <5         |        |        |        |        |           |        | 40.6      |
| 9/1/2008  | <5         | <5         |        |        |        |        |           |        | 51.9      |
| 9/1/2009  | <5         | <5         |        |        |        |        |           |        | 43.4      |
| 9/1/2010  | <1         | <2         |        |        |        |        |           |        | 44.5      |
| 9/1/2011  | <5         | <2         |        |        |        |        |           |        | 30        |
| 9/1/2012  | <5         | <5         |        |        |        |        |           |        | 33        |
| 9/1/2013  | 1.4        | 1.6        |        |        |        |        |           |        | 19.7      |
| 9/1/2014  | <1         | <1         |        |        |        |        |           |        | 41.3      |
| 9/1/2015  | 1.1        | <1         |        |        |        |        |           |        | 26.1      |
| 9/25/2016 | 2.8        |            |        |        |        |        |           |        |           |
| 9/26/2016 |            | 1.3        |        |        |        |        |           |        | 30.1      |
| 9/27/2016 |            |            | 17.9   |        |        | 10     |           | 21.5   |           |
| 9/28/2016 |            |            |        | 17.7   | 11.8   |        | 8.8       |        |           |
| 9/13/2017 | 4          |            |        |        |        | 14.6   |           | 14.8   | 19.8      |
| 9/14/2017 |            | 1.7        | 13.8   | 16.5   | 11.8   |        | 3         |        |           |
| 9/11/2018 | 3.2        |            |        | 13     |        |        |           |        |           |
| 9/12/2018 |            | 2.2        | 19.9   |        |        | 10.3   | 11.8      |        | 27.4      |
| 9/13/2018 |            |            |        |        | 9.5    |        |           | 18.6   |           |
| 9/16/2019 | 1.9 (J,B)  | 2.1 (J,B)  |        |        |        |        |           |        |           |
| 9/17/2019 |            |            | 14 (B) | 17 (B) | 12 (B) | 12 (B) | 2.6 (J,B) | 15 (B) | 17 (B)    |
| 9/1/2020  |            | 3.3 (J,B)  |        |        |        |        |           | 14 (B) | 15 (B)    |
| 9/2/2020  | 2.4 (J,B)  |            | 14 (B) | 14 (B) | 12 (B) | 11 (B) | 3.2 (J,B) |        |           |
| 9/27/2021 | 3.1 (J)    | 3.9 (J)    |        |        |        |        |           |        |           |
| 9/28/2021 |            |            |        |        |        |        |           | 17     |           |
| 9/29/2021 |            |            | 14     | 14     | 13     | 13     | 4.5 (J)   |        |           |
| 9/20/2022 |            | 3.6 (J)    | 15     |        |        |        | 4.7 (J)   | 18     | 17        |
| 9/21/2022 | 2.7 (J)    |            |        |        | 12     |        |           |        |           |
| 9/22/2022 |            |            |        | 15     |        | 11     |           |        |           |
| 9/20/2023 | <2.3 (U)   | 3.6 (J)    |        |        |        |        |           | 19     |           |
| 9/21/2023 |            |            | 19     | 18     | 14     | 12     | 4.5 (J)   |        | 20        |

## Cobalt



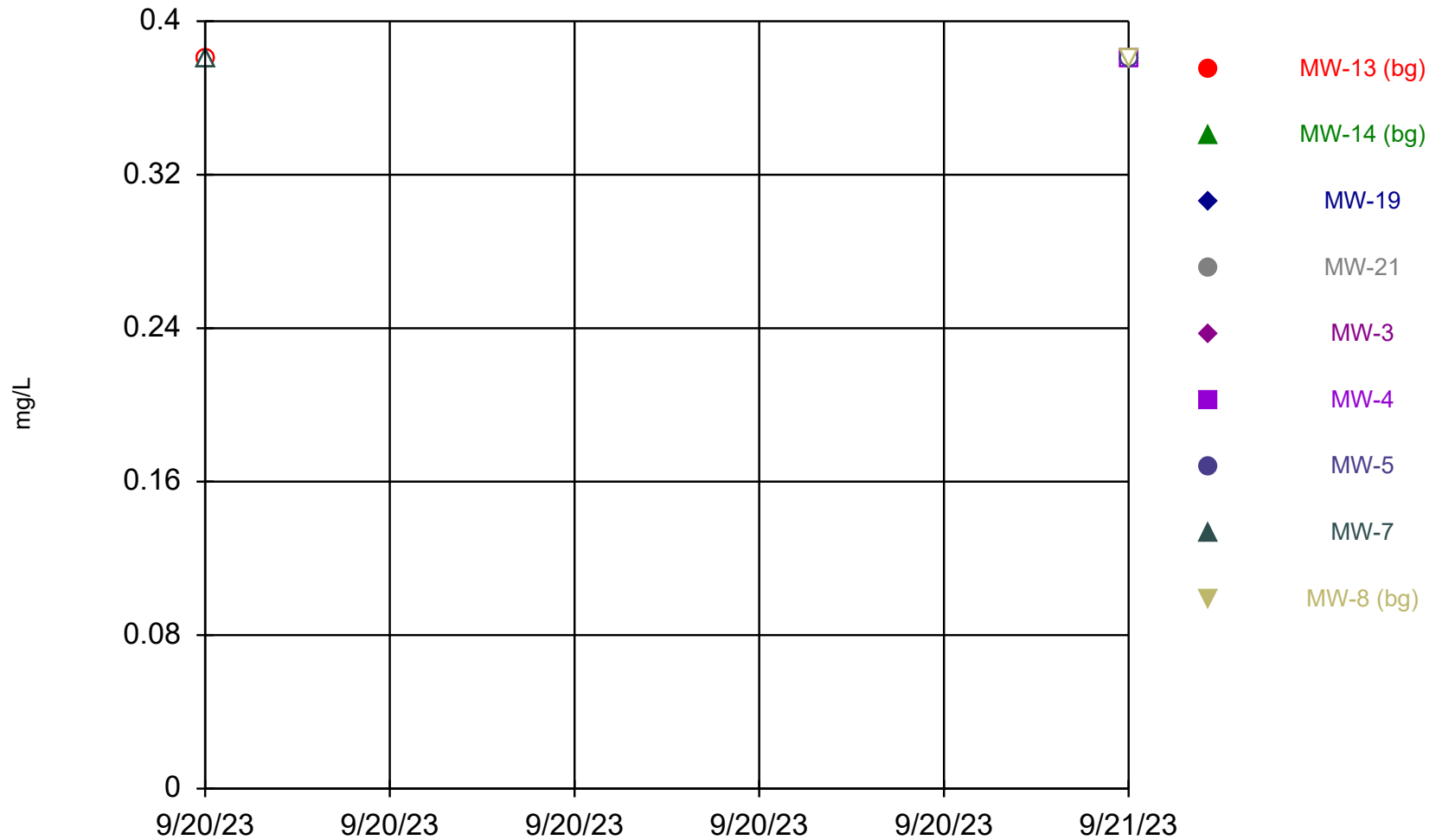
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Cobalt (ug/L)   Analysis Run 10/30/2023 11:17 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4     | MW-5 | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|----------|------|-----------|-----------|
| 9/25/2016 | 1.2        |            |           |          |          |          |      |           |           |
| 9/26/2016 |            | 1.3        |           |          |          |          |      |           | <0.5      |
| 9/27/2016 |            |            | <0.5      |          |          | <0.5     |      | <0.5      |           |
| 9/28/2016 |            |            |           | <0.5     | <0.5     |          | 1    |           |           |
| 9/13/2017 | 0.15 (J)   |            |           |          |          | 0.42 (J) |      | 0.027 (J) | 0.051 (J) |
| 9/14/2017 |            | 3          | 0.22 (J)  | 0.16 (J) | 0.22 (J) |          | 4.1  |           |           |
| 9/11/2018 | 0.52 (J)   |            |           | 0.21 (J) |          |          |      |           |           |
| 9/12/2018 |            | 0.5 (J)    | 0.21 (J)  |          |          | 0.56 (J) | 4.3  |           | 0.15 (J)  |
| 9/13/2018 |            |            |           |          | <0.15    |          |      | <0.15     |           |
| 9/16/2019 | 0.16 (J)   | 0.17 (J)   |           |          |          |          |      |           |           |
| 9/17/2019 |            |            | <0.091    | 0.31 (J) | 0.62     | 0.74     | 2.3  | 0.2 (J)   | 0.51      |
| 9/1/2020  |            | 0.37 (J)   |           |          |          |          |      | <0.091    | 0.62      |
| 9/2/2020  | 0.53       |            | 0.094 (J) | <0.091   | 0.13 (J) | 0.5      | 1.9  |           |           |
| 9/27/2021 | <0.19      | 0.39 (J)   |           |          |          |          |      |           |           |
| 9/28/2021 |            |            |           |          |          |          |      | 0.33 (J)  |           |
| 9/29/2021 |            |            | 0.28 (J)  | 0.41 (J) | 0.24 (J) | 0.91     | 26   |           |           |
| 9/20/2022 |            | 0.59       | 0.31 (J)  |          |          |          | 11   | 0.32 (J)  | 0.37 (J)  |
| 9/21/2022 | 0.73       |            |           |          | 1        |          |      |           |           |
| 9/22/2022 |            |            |           | 0.75     |          | 0.77     |      |           |           |
| 9/20/2023 | 0.2 (J)    | 0.44 (J)   |           |          |          |          |      | 0.31 (J)  |           |
| 9/21/2023 |            |            | <0.17 (U) | 1        | 0.75     | 0.9      | 0.53 |           | 1.7       |

## Fluoride



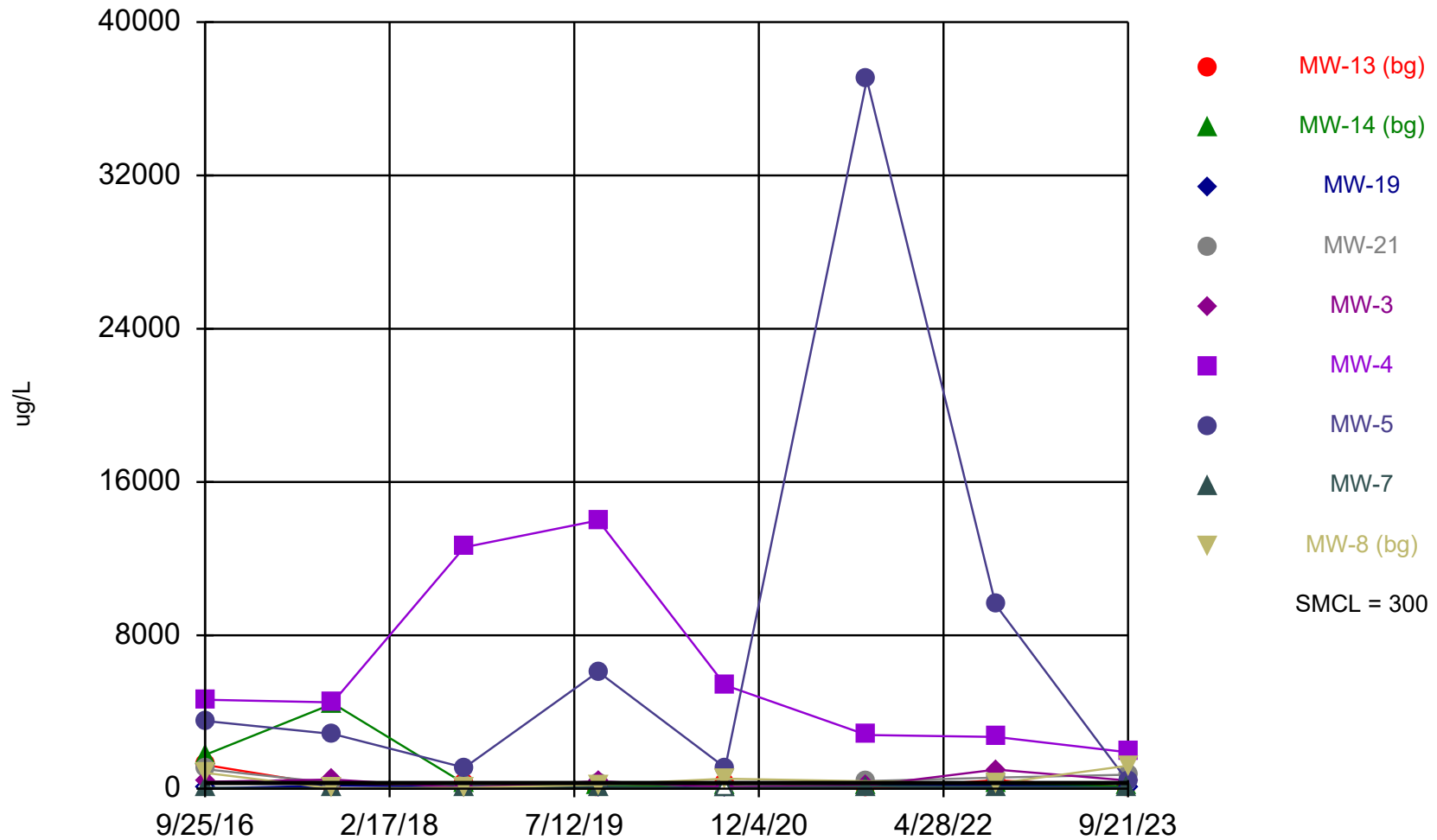
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Fluoride (mg/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21     | MW-3      | MW-4      | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/20/2023 | <0.38 (U)  | <0.38 (U)  |           |           |           |           |           | <0.38 (U) |           |
| 9/21/2023 |            |            | <0.38 (U) | <0.38 (U) | <0.38 (U) | <0.38 (U) | <0.38 (U) |           | <0.38 (U) |

## Iron



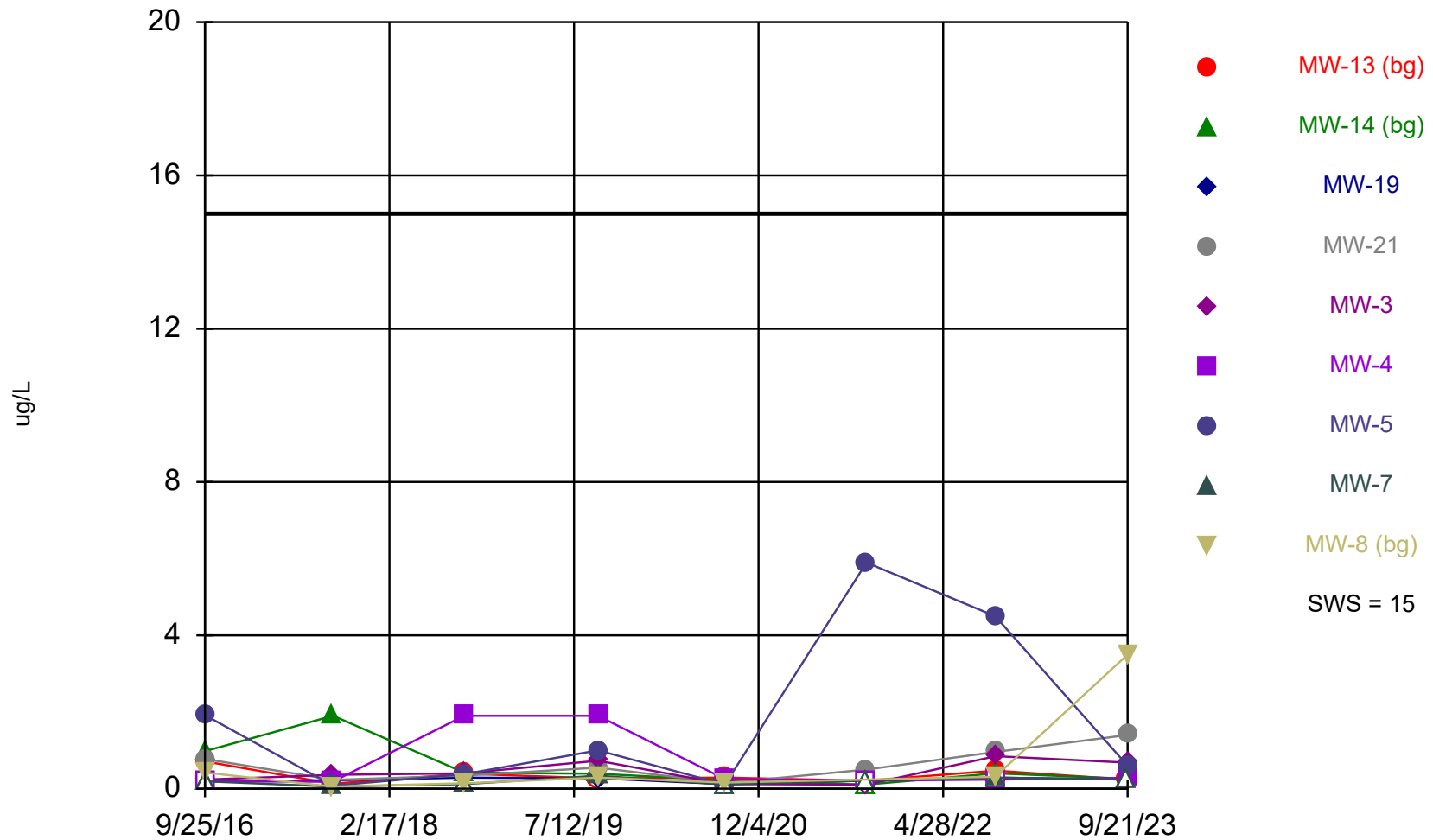
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Time Series

Constituent: Iron (ug/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3     | MW-4  | MW-5  | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|-------|----------|-------|-------|----------|-----------|
| 9/25/2016 | 1240       |            |         |       |          |       |       |          |           |
| 9/26/2016 |            | 1770       |         |       |          |       |       |          | 820       |
| 9/27/2016 |            |            | <12.8   |       |          | 4640  |       | 51.9     |           |
| 9/28/2016 |            |            |         | 1010  | 362      |       | 3530  |          |           |
| 9/13/2017 | 162        |            |         |       |          | 4500  |       | 11.9 (J) | 18.7 (J)  |
| 9/14/2017 |            | 4440       | 162     | 297   | 475      |       | 2850  |          |           |
| 9/11/2018 | 289        |            |         | 195   |          |       |       |          |           |
| 9/12/2018 |            | 267        | 101     |       |          | 12600 | 1100  |          | 45.2 (J)  |
| 9/13/2018 |            |            |         |       | 42.2 (J) |       |       | 41.7 (J) |           |
| 9/16/2019 | 76 (J)     | 130        |         |       |          |       |       |          |           |
| 9/17/2019 |            |            | <66     | 320   | 390      | 14000 | 6100  | 95 (J)   | 200       |
| 9/1/2020  |            | 130        |         |       |          |       |       | <50      | 520       |
| 9/2/2020  | 230        |            | <50     | 110   | 72 (J)   | 5400  | 1100  |          |           |
| 9/27/2021 | <36        | 140        |         |       |          |       |       |          |           |
| 9/28/2021 |            |            |         |       |          |       |       | 110      |           |
| 9/29/2021 |            |            | 130     | 400   | 170      | 2800  | 37000 |          |           |
| 9/20/2022 |            | 240        | 170     |       |          |       | 9600  | 90 (J)   | 270       |
| 9/21/2022 | 440        |            |         |       | 1000     |       |       |          |           |
| 9/22/2022 |            |            |         | 580   |          | 2700  |       |          |           |
| 9/20/2023 | 78 (J)     | 120        |         |       |          |       |       | 54 (J)   |           |
| 9/21/2023 |            |            | <36 (U) | 730   | 430      | 1900  | 360   |          | 1200      |

## Lead



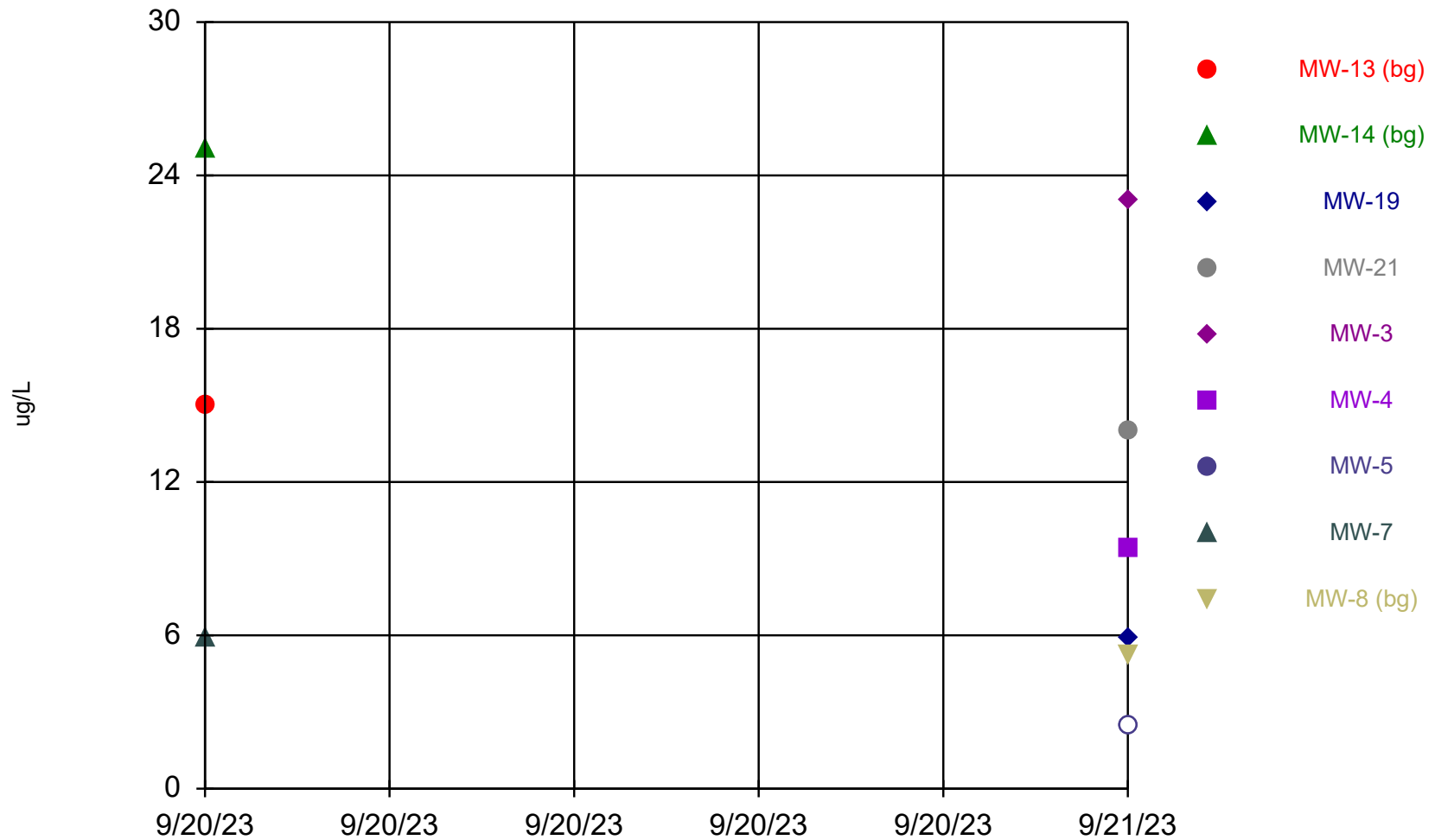
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 11:17 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4     | MW-5     | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|----------|----------|-----------|-----------|
| 9/25/2016 | 0.71 (J)   |            |           |          |          |          |          |           |           |
| 9/26/2016 |            | 0.98 (J)   |           |          |          |          |          |           | 0.42 (J)  |
| 9/27/2016 |            |            | <0.19     |          |          | <0.19    |          | <0.19     |           |
| 9/28/2016 |            |            |           | 0.77 (J) | 0.24 (J) |          | 1.9      |           |           |
| 9/13/2017 | 0.13 (J)   |            |           |          |          | 0.18 (J) |          | 0.056 (J) | 0.053 (J) |
| 9/14/2017 |            | 1.9        | 0.22 (J)  | 0.23 (J) | 0.36 (J) |          | 0.08 (J) |           |           |
| 9/11/2018 | 0.39 (J)   |            |           | 0.34 (J) |          |          |          |           |           |
| 9/12/2018 |            | 0.42 (J)   | 0.29 (J)  |          |          | 1.9      | 0.38 (J) |           | 0.14 (J)  |
| 9/13/2018 |            |            |           |          | 0.4 (J)  |          |          | <0.12     |           |
| 9/16/2019 | <0.27      | 0.39 (J)   |           |          |          |          |          |           |           |
| 9/17/2019 |            |            | <0.27     | 0.55     | 0.73     | 1.9      | 1        | 0.34 (J)  | 0.29 (J)  |
| 9/1/2020  |            | 0.22 (J)   |           |          |          |          |          | <0.11     | 0.16 (J)  |
| 9/2/2020  | 0.29 (J)   |            | 0.12 (J)  | 0.15 (J) | 0.12 (J) | 0.25 (J) | 0.11 (J) |           |           |
| 9/27/2021 | <0.21      | <0.21      |           |          |          |          |          |           |           |
| 9/28/2021 |            |            |           |          |          |          |          | <0.21     |           |
| 9/29/2021 |            |            | <0.21     | 0.5      | <0.21    | <0.21    | 5.9      |           |           |
| 9/20/2022 |            | 0.4 (J)    | 0.29 (J)  |          |          |          | 4.5      | 0.29 (J)  | 0.31 (J)  |
| 9/21/2022 | 0.47 (J)   |            |           |          | 0.85     |          |          |           |           |
| 9/22/2022 |            |            |           | 0.96     |          | <0.24    |          |           |           |
| 9/20/2023 | <0.24 (U)  | 0.26 (J)   |           |          |          |          |          | <0.24 (U) |           |
| 9/21/2023 |            |            | <0.24 (U) | 1.4      | 0.68     | 0.28 (J) | 0.6      |           | 3.5       |

## Lithium



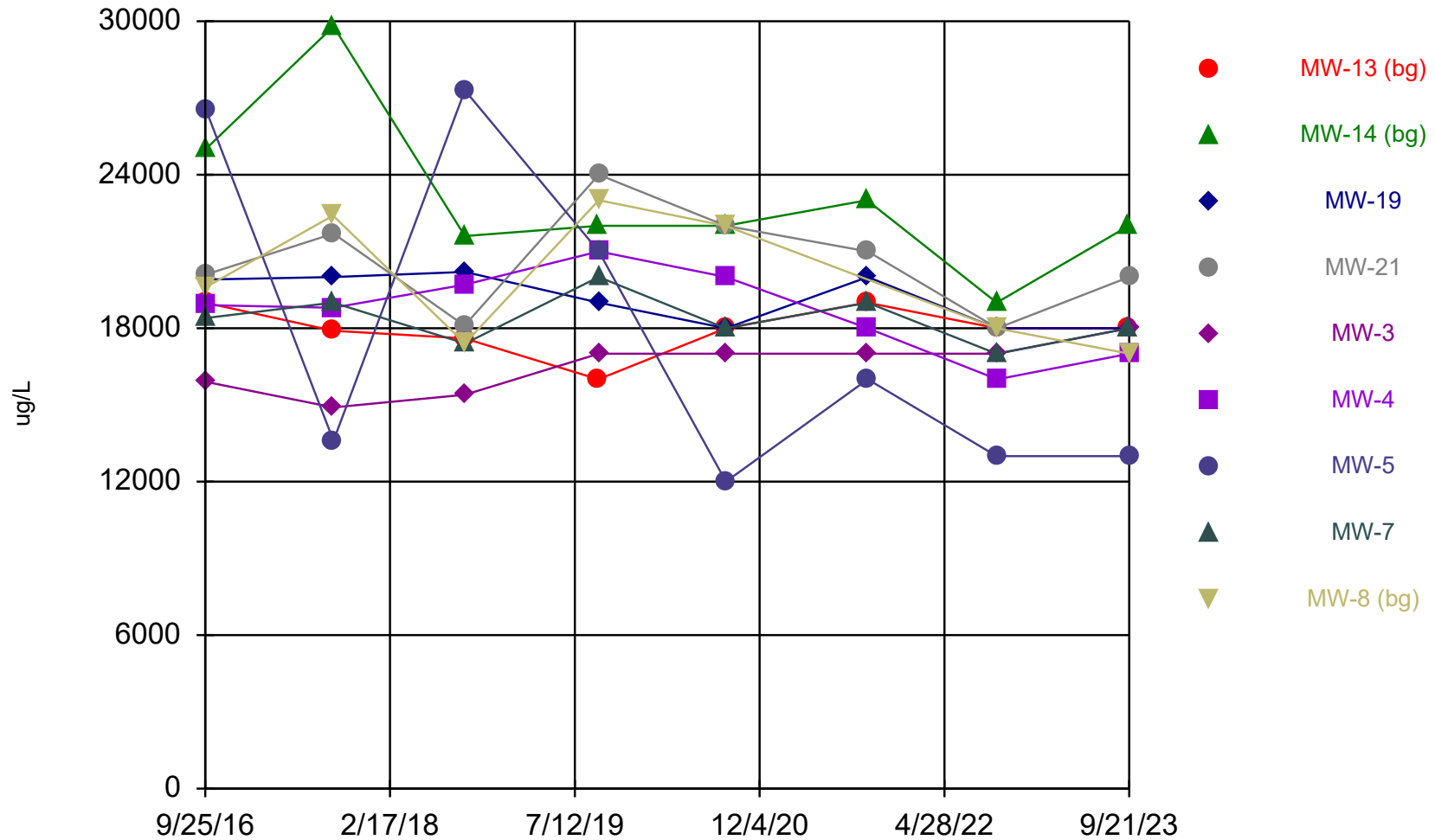
Time Series Analysis Run 10/30/2023 11:16 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Lithium (ug/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3 | MW-4    | MW-5     | MW-7    | MW-8 (bg) |
|-----------|------------|------------|---------|-------|------|---------|----------|---------|-----------|
| 9/20/2023 | 15         | 25         |         |       |      |         |          | 5.9 (J) |           |
| 9/21/2023 |            |            | 5.9 (J) | 14    | 23   | 9.4 (J) | <2.5 (U) |         | 5.2 (J)   |

## Magnesium



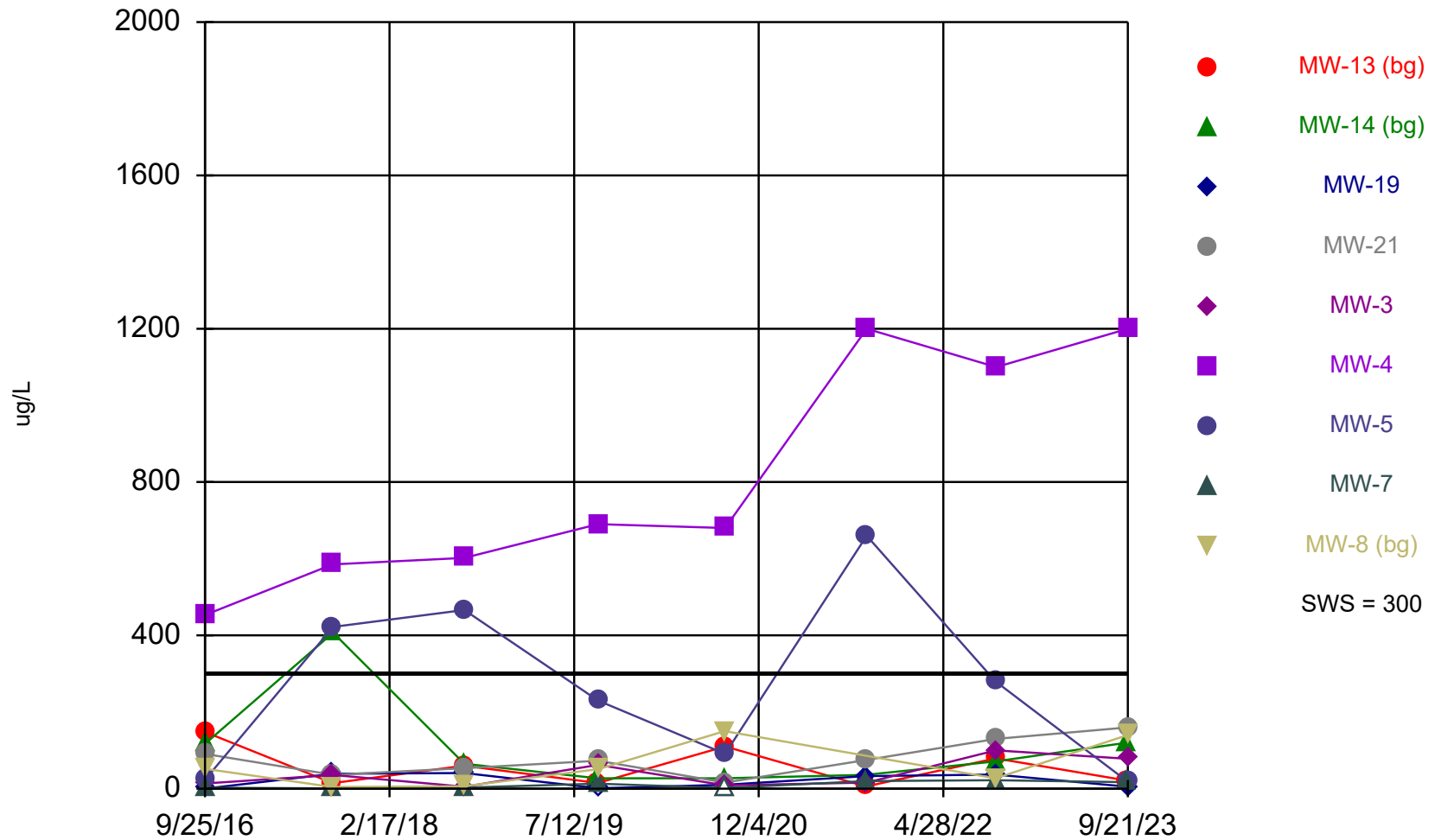
Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Time Series

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3  | MW-4  | MW-5  | MW-7  | MW-8 (bg) |
|-----------|------------|------------|-------|-------|-------|-------|-------|-------|-----------|
| 9/25/2016 | 19000      |            |       |       |       |       |       |       |           |
| 9/26/2016 |            | 25000      |       |       |       |       |       |       | 19600     |
| 9/27/2016 |            |            | 19900 |       |       | 18900 |       | 18400 |           |
| 9/28/2016 |            |            |       | 20100 | 15900 |       | 26500 |       |           |
| 9/13/2017 | 17900      |            |       |       |       | 18800 |       | 19000 | 22400     |
| 9/14/2017 |            | 29800      | 20000 | 21700 | 14900 |       | 13600 |       |           |
| 9/11/2018 | 17600      |            |       | 18100 |       |       |       |       |           |
| 9/12/2018 |            | 21600      | 20200 |       |       | 19700 | 27300 |       | 17400     |
| 9/13/2018 |            |            |       |       | 15400 |       |       | 17400 |           |
| 9/16/2019 | 16000      | 22000      |       |       |       |       |       |       |           |
| 9/17/2019 |            |            | 19000 | 24000 | 17000 | 21000 | 21000 | 20000 | 23000     |
| 9/1/2020  |            | 22000      |       |       |       |       |       | 18000 | 22000     |
| 9/2/2020  | 18000      |            | 18000 | 22000 | 17000 | 20000 | 12000 |       |           |
| 9/27/2021 | 19000      | 23000      |       |       |       |       |       |       |           |
| 9/28/2021 |            |            |       |       |       |       |       | 19000 |           |
| 9/29/2021 |            |            | 20000 | 21000 | 17000 | 18000 | 16000 |       |           |
| 9/20/2022 |            | 19000      | 18000 |       |       |       | 13000 | 17000 | 18000     |
| 9/21/2022 | 18000      |            |       |       | 17000 |       |       |       |           |
| 9/22/2022 |            |            |       | 18000 |       | 16000 |       |       |           |
| 9/20/2023 | 18000      | 22000      |       |       |       |       |       | 18000 |           |
| 9/21/2023 |            |            | 18000 | 20000 | 18000 | 17000 | 13000 |       | 17000     |

## Manganese



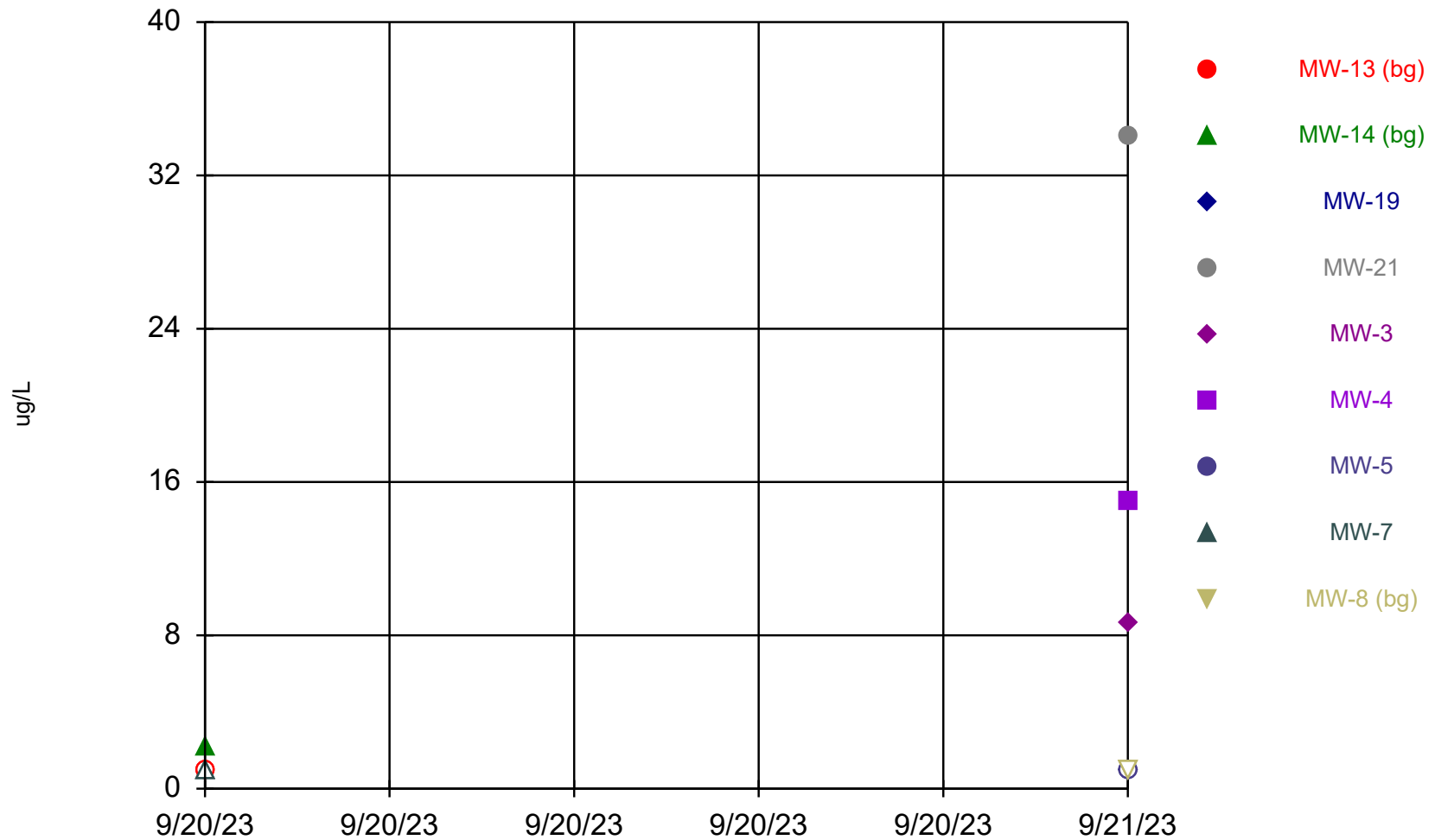
Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Manganese (ug/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3    | MW-4 | MW-5 | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|-------|---------|------|------|----------|-----------|
| 9/25/2016 | 148        |            |         |       |         |      |      |          |           |
| 9/26/2016 |            | 118        |         |       |         |      |      |          | 51.6      |
| 9/27/2016 |            |            | 0.3 (J) |       |         | 454  |      | 2.6      |           |
| 9/28/2016 |            |            |         | 90.3  | 13.7    |      | 26.6 |          |           |
| 9/13/2017 | 14.6       |            |         |       |         | 585  |      | 0.78 (J) | 4.3       |
| 9/14/2017 |            | 407        | 39.1    | 36.1  | 35.8    |      | 422  |          |           |
| 9/11/2018 | 59.8       |            |         | 53.6  |         |      |      |          |           |
| 9/12/2018 |            | 64.9       | 40.9    |       |         | 602  | 466  |          | 6.6       |
| 9/13/2018 |            |            |         |       | 5.2     |      |      | 2.9      |           |
| 9/16/2019 | 15         | 27         |         |       |         |      |      |          |           |
| 9/17/2019 |            |            | <2.5    | 73    | 62      | 690  | 230  | 13       | 51        |
| 9/1/2020  |            | 27         |         |       |         |      |      | <4       | 150       |
| 9/2/2020  | 110        |            | 10      | 16    | 8.6 (J) | 680  | 91   |          |           |
| 9/27/2021 | 5.7 (J)    | 36         |         |       |         |      |      |          |           |
| 9/28/2021 |            |            |         |       |         |      |      | 20       |           |
| 9/29/2021 |            |            | 33      | 75    | 16      | 1200 | 660  |          |           |
| 9/20/2022 |            | 71         | 37      |       |         |      | 280  | 22       | 27        |
| 9/21/2022 | 79         |            |         |       | 100     |      |      |          |           |
| 9/22/2022 |            |            |         | 130   |         | 1100 |      |          |           |
| 9/20/2023 | 21         | 120        |         |       |         |      |      | 17       |           |
| 9/21/2023 |            |            | 5 (J)   | 160   | 78      | 1200 | 18   |          | 140       |

## Molybdenum



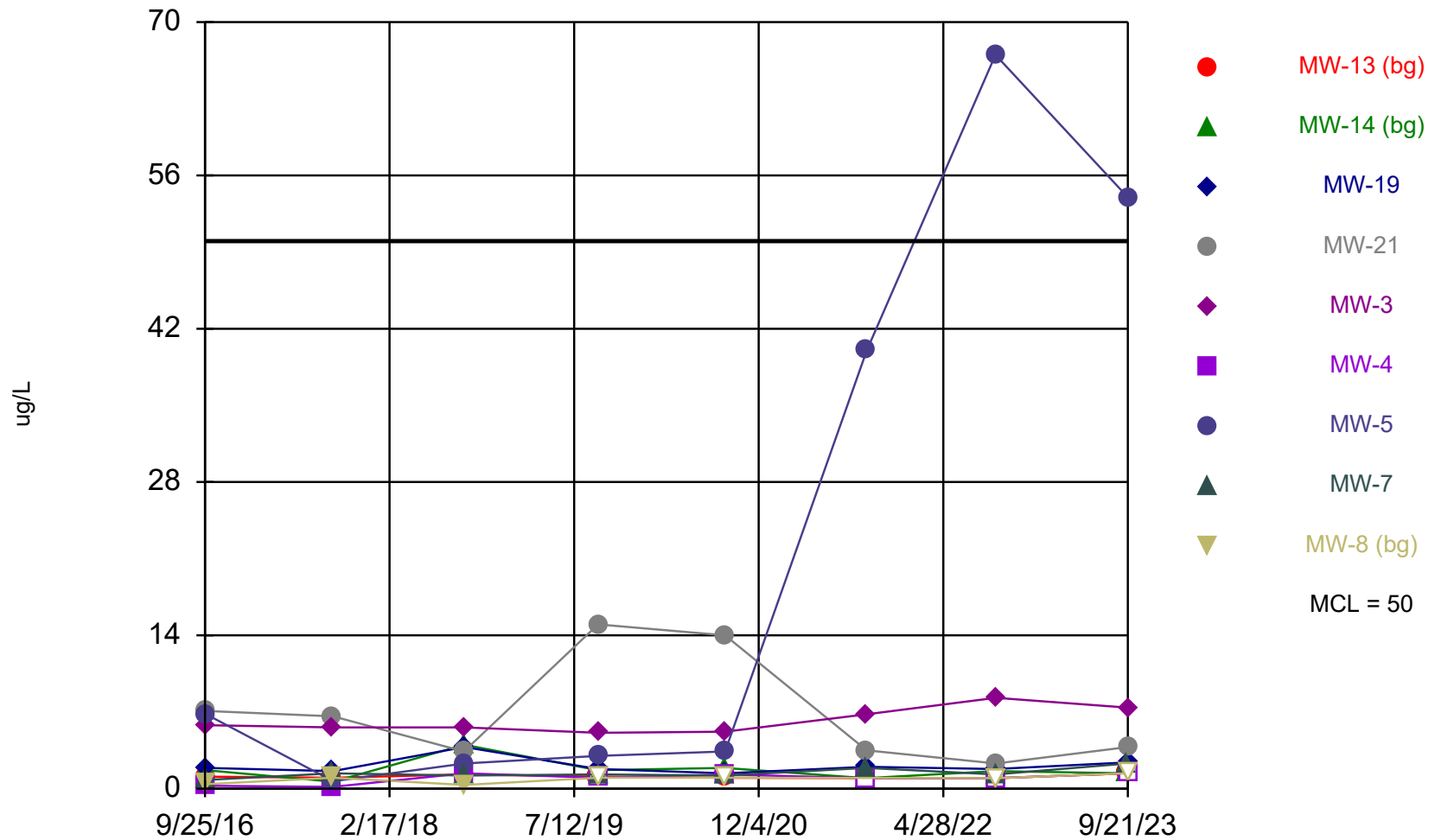
Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Molybdenum (ug/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LFs  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21 | MW-3 | MW-4 | MW-5      | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|-------|------|------|-----------|-----------|-----------|
| 9/20/2023 | <0.91 (U)  | 2.2        |           |       |      |      |           | <0.91 (U) |           |
| 9/21/2023 |            |            | <0.91 (U) | 34    | 8.6  | 15   | <0.91 (U) |           | <0.91 (U) |

## Selenium



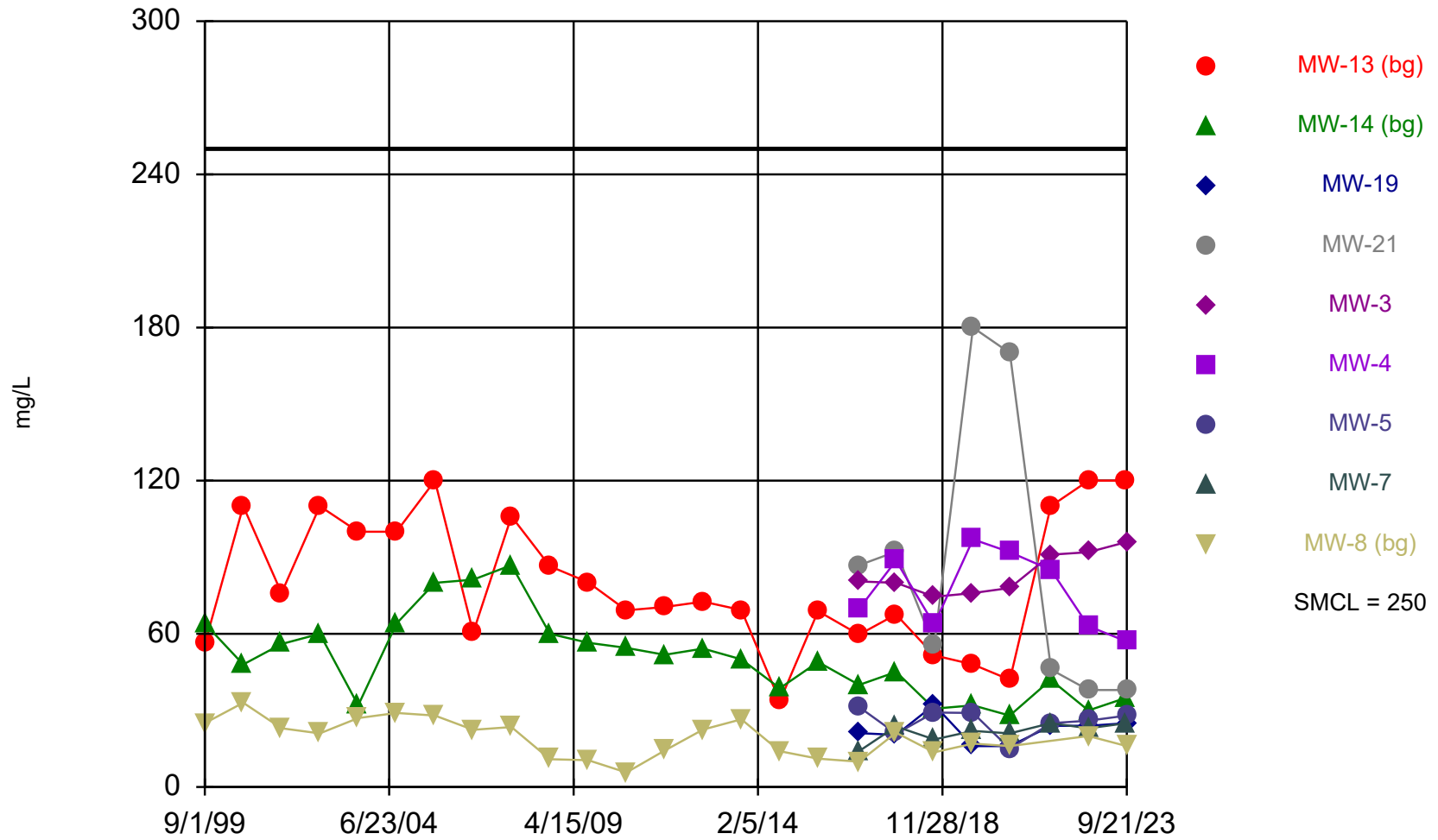
Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 11:17 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21   | MW-3 | MW-4     | MW-5     | MW-7    | MW-8 (bg) |
|-----------|------------|------------|---------|---------|------|----------|----------|---------|-----------|
| 9/25/2016 | 1.1        |            |         |         |      |          |          |         |           |
| 9/26/2016 |            | 1.7        |         |         |      |          |          |         | 0.41 (J)  |
| 9/27/2016 |            |            | 1.9     |         |      | 0.27 (J) |          | 0.8 (J) |           |
| 9/28/2016 |            |            |         | 7.1     | 5.8  |          | 6.8      |         |           |
| 9/13/2017 | 1          |            |         |         |      | 0.17 (J) |          | 1.4     | 1         |
| 9/14/2017 |            | 0.63 (J)   | 1.6     | 6.6     | 5.6  |          | 0.69 (J) |         |           |
| 9/11/2018 | 1.3        |            |         | 3.4     |      |          |          |         |           |
| 9/12/2018 |            | 4          | 3.8     |         |      | 1.4      | 2.3      |         | 0.34 (J)  |
| 9/13/2018 |            |            |         |         | 5.6  |          |          | 1.2     |           |
| 9/16/2019 | 1.1 (J)    | 1.7 (J)    |         |         |      |          |          |         |           |
| 9/17/2019 |            |            | 1.8 (J) | 15      | 5.1  | <1       | 3 (J)    | 1.3 (J) | <1        |
| 9/1/2020  |            | 1.9 (J)    |         |         |      |          |          | 1.2 (J) | <1        |
| 9/2/2020  | <1         |            | 1.4 (J) | 14      | 5.2  | 1.3 (J)  | 3.4 (J)  |         |           |
| 9/27/2021 | <0.96      | <0.96      |         |         |      |          |          |         |           |
| 9/28/2021 |            |            |         |         |      |          |          | 1.9 (J) |           |
| 9/29/2021 |            |            | 2 (J)   | 3.5 (J) | 6.8  | <0.96    | 40       |         |           |
| 9/20/2022 |            | 1.6 (J)    | 1.8 (J) |         |      |          | 67       | 1.3 (J) | <0.96     |
| 9/21/2022 | <0.96      |            |         |         | 8.3  |          |          |         |           |
| 9/22/2022 |            |            |         | 2.3 (J) |      | <0.96    |          |         |           |
| 9/20/2023 | <1.4 (U)   | <1.4 (U)   |         |         |      |          |          | 2.3 (J) |           |
| 9/21/2023 |            |            | 2.4 (J) | 3.8 (J) | 7.4  | <1.4 (U) | 54       |         | <1.4 (U)  |

## Sulfate

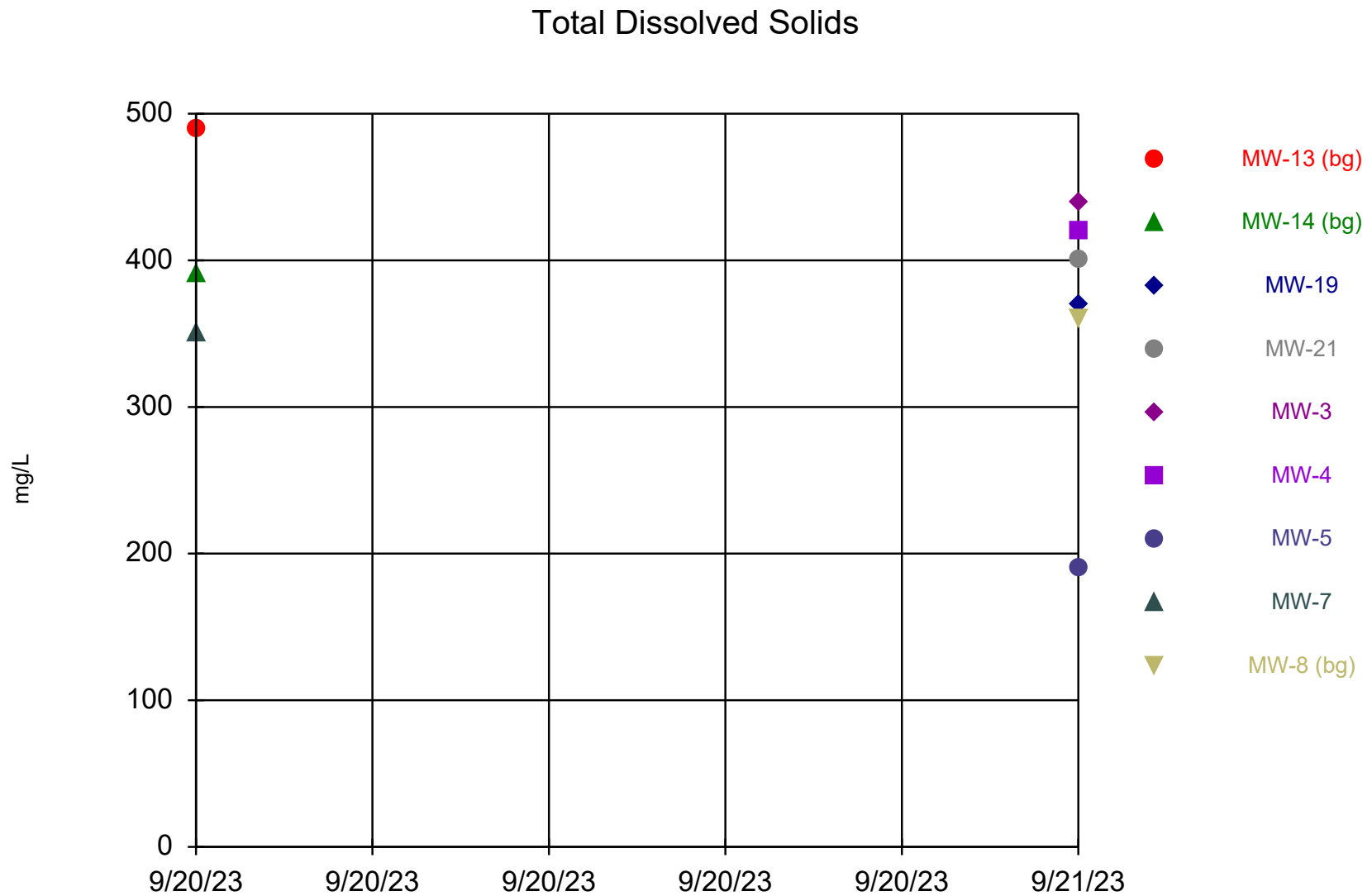


Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 11:17 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/1/1999  | 56         | 64         |       |       |      |      |      |      | 25        |
| 9/1/2000  | 110        | 48         |       |       |      |      |      |      | 33        |
| 9/1/2001  | 76         | 56         |       |       |      |      |      |      | 23        |
| 9/1/2002  | 110        | 60         |       |       |      |      |      |      | 21        |
| 9/1/2003  | 100        | 32         |       |       |      |      |      |      | 27        |
| 9/1/2004  | 100        | 64         |       |       |      |      |      |      | 29        |
| 9/1/2005  | 120        | 80         |       |       |      |      |      |      | 28        |
| 9/1/2006  | 60.5       | 81.2       |       |       |      |      |      |      | 22.4      |
| 9/1/2007  | 106        | 86.9       |       |       |      |      |      |      | 23.5      |
| 9/1/2008  | 86.5       | 60         |       |       |      |      |      |      | 10.9      |
| 9/1/2009  | 80.2       | 56.5       |       |       |      |      |      |      | 10.5      |
| 9/1/2010  | 69.2       | 54.5       |       |       |      |      |      |      | 5.7       |
| 9/1/2011  | 70.5       | 51.8       |       |       |      |      |      |      | 14.3      |
| 9/1/2012  | 72.6       | 54.2       |       |       |      |      |      |      | 22.5      |
| 9/1/2013  | 69.3       | 50         |       |       |      |      |      |      | 26.5      |
| 9/1/2014  | 33.6       | 38.7       |       |       |      |      |      |      | 14        |
| 9/1/2015  | 68.9       | 49         |       |       |      |      |      |      | 11.1      |
| 9/25/2016 | 59.7       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 40         |       |       |      |      |      |      | 9.9       |
| 9/27/2016 |            |            | 21.1  |       |      | 69.8 |      | 14.1 |           |
| 9/28/2016 |            |            |       | 86.9  | 80.5 |      | 31.3 |      |           |
| 9/13/2017 | 67.6       |            |       |       |      | 88.7 |      | 23.7 | 21.3      |
| 9/14/2017 |            | 45.1       | 20.4  | 92.2  | 80   |      | 20.9 |      |           |
| 9/11/2018 | 51.6       |            |       | 55.2  |      |      |      |      |           |
| 9/12/2018 |            | 30.7       | 32.2  |       |      | 63.6 | 29.2 |      | 13.6      |
| 9/13/2018 |            |            |       |       | 74.5 |      |      | 18.6 |           |
| 9/16/2019 | 48         | 32         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 16    | 180   | 76   | 97   | 29   | 22   | 17        |
| 9/1/2020  |            | 28         |       |       |      |      |      | 21   | 16        |
| 9/2/2020  | 42         |            | 16    | 170   | 78   | 92   | 15   |      |           |
| 9/27/2021 | 110        | 42         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 25   |           |
| 9/29/2021 |            |            | 24    | 46    | 91   | 85   | 25   |      |           |
| 9/20/2022 |            | 30         | 24    |       |      |      | 26   | 23   | 20        |
| 9/21/2022 | 120        |            |       |       | 92   |      |      |      |           |
| 9/22/2022 |            |            |       | 38    |      | 63   |      |      |           |
| 9/20/2023 | 120        | 35         |       |       |      |      |      | 25   |           |
| 9/21/2023 |            |            | 25    | 38    | 96   | 57   | 28   |      | 16        |



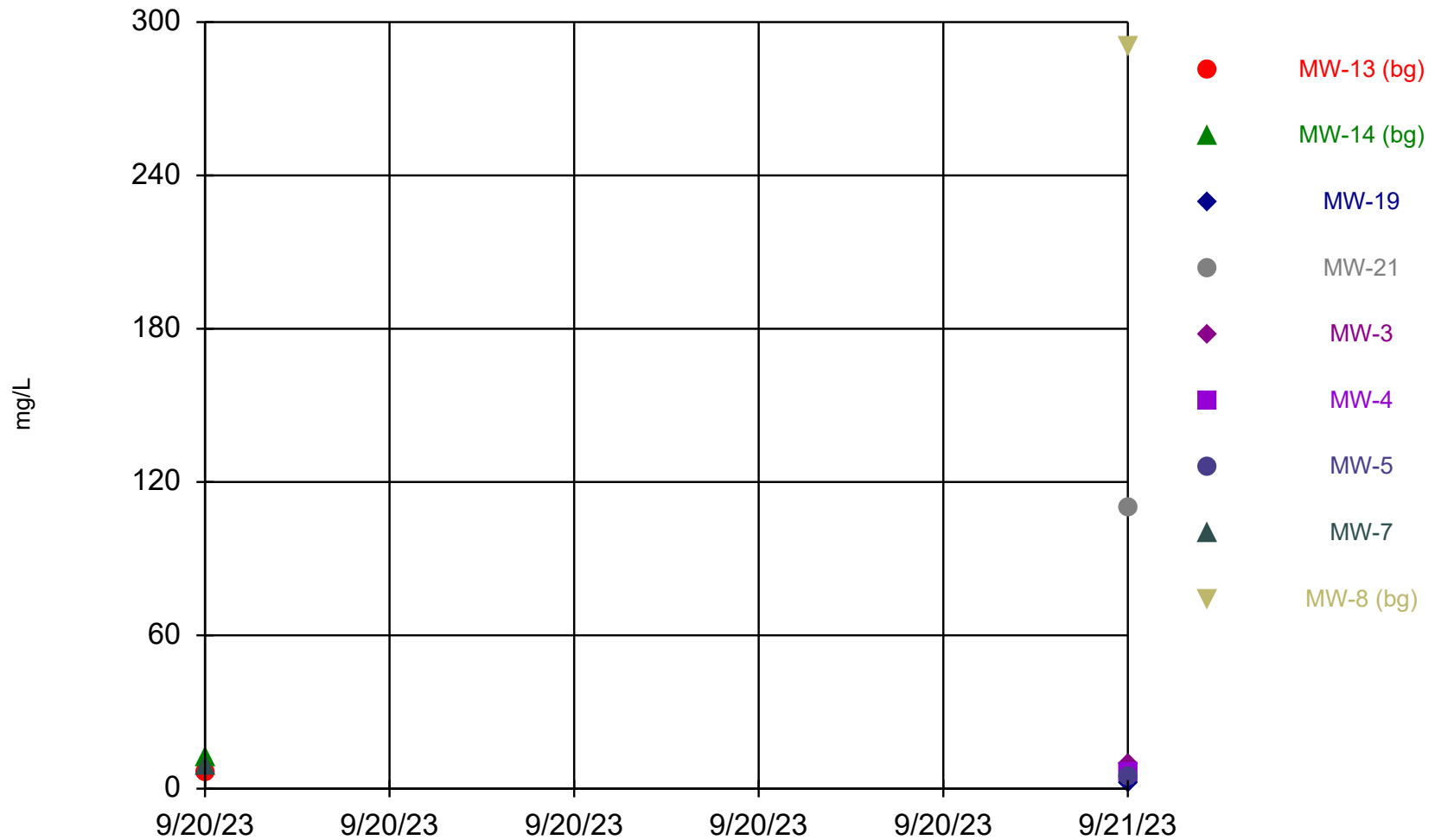
Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/20/2023 | 490        | 390        |       |       |      |      |      | 350  |           |
| 9/21/2023 |            |            | 370   | 400   | 440  | 420  | 190  |      | 360       |

## Total Suspended Solids



Time Series Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

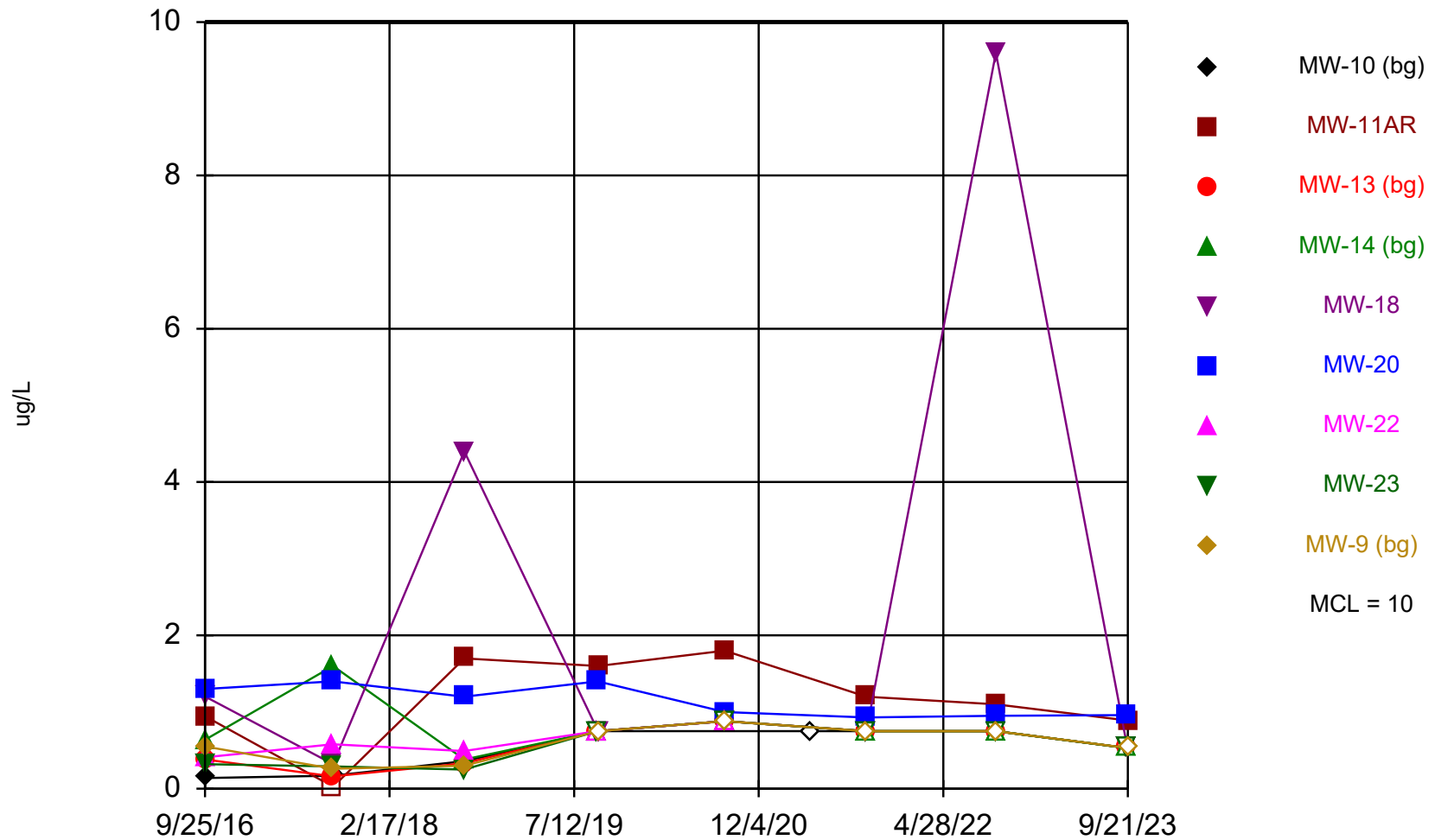
Constituent: Total Suspended Solids (mg/L) Analysis Run 10/30/2023 11:17 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/20/2023 | 6.4        | 12         |       |       |      |      |      | 8.4  |           |
| 9/21/2023 |            |            | 2.1   | 110   | 10   | 6    | 4.5  |      | 290       |

## Attachment E2

### Times Series Graphs – East

## Arsenic



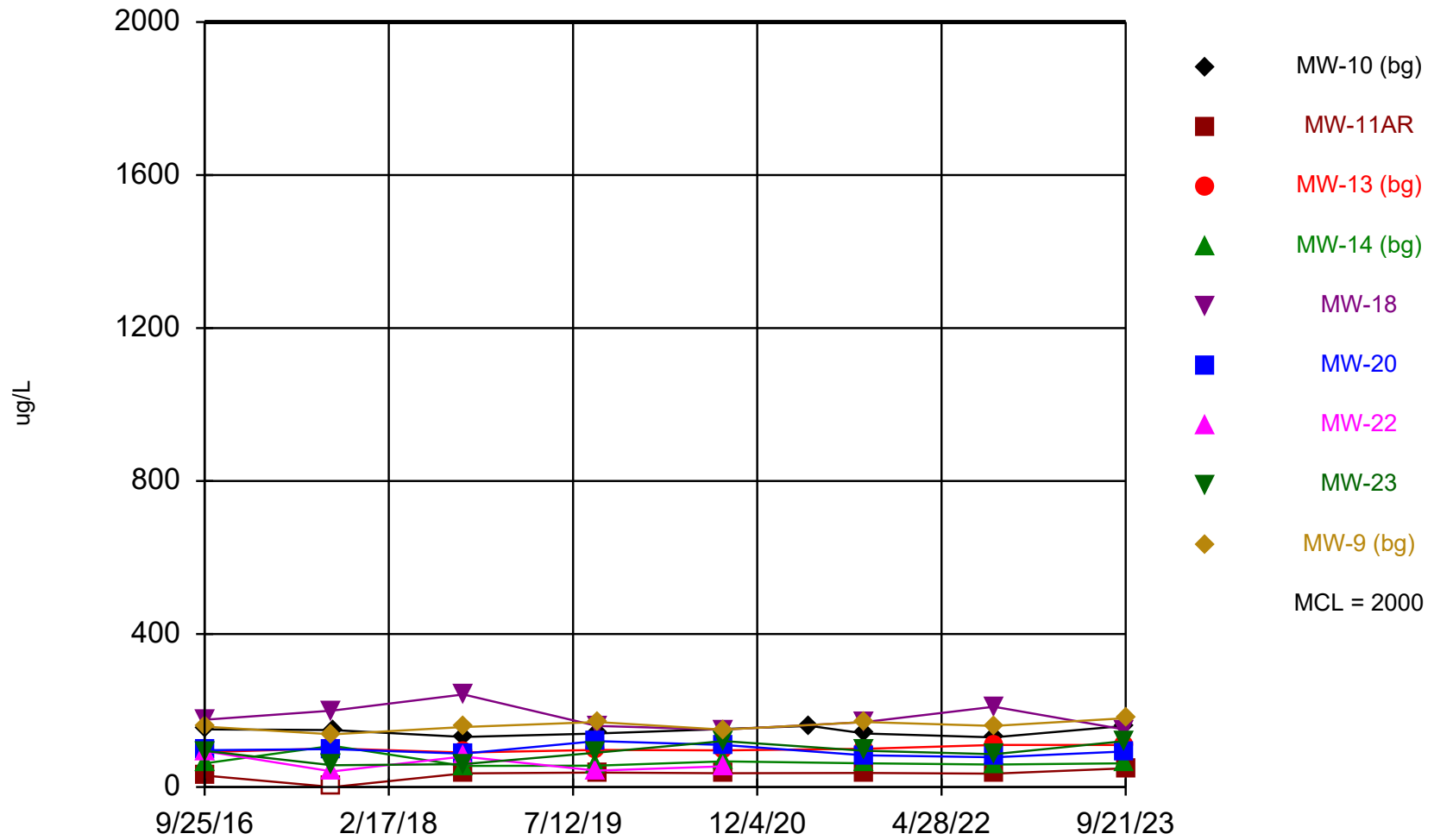
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 12:17 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20    | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|----------|----------|-----------|-----------|
| 9/25/2016 |            |          | 0.38 (J)   |            |           |          |          |           | 0.55 (J)  |
| 9/26/2016 |            |          |            | 0.64 (J)   | 1.2       | 1.3      | 0.41 (J) |           |           |
| 9/27/2016 | 0.14 (J)   | 0.94 (J) |            |            |           |          |          |           |           |
| 9/28/2016 |            |          |            |            |           |          |          | 0.32 (J)  |           |
| 9/13/2017 |            |          | 0.16 (J)   |            |           | 1.4      | 0.58 (J) | 0.29 (J)  |           |
| 9/14/2017 |            | <0.052   |            | 1.6        | 0.32 (J)  |          |          |           | 0.26 (J)  |
| 9/15/2017 | 0.17 (J)   |          |            |            |           |          |          |           |           |
| 9/11/2018 |            |          | 0.33 (J)   |            |           | 1.2      | 0.49 (J) | 0.25 (J)  |           |
| 9/12/2018 | 0.36 (J)   | 1.7      |            | 0.38 (J)   | 4.4       |          |          |           | 0.3 (J)   |
| 9/16/2019 |            |          | <0.75      | <0.75      |           | 1.4 (J)  | <0.75    | <0.75     |           |
| 9/17/2019 | <0.75      | 1.6 (J)  |            |            | <0.75     |          |          |           | <0.75     |
| 9/1/2020  |            | 1.8 (J)  |            | <0.88      | <0.88     |          |          | <0.88     | <0.88     |
| 9/2/2020  |            |          | <0.88      |            |           | 1 (J)    | <0.88    |           |           |
| 4/29/2021 | <0.75      |          |            |            |           |          |          |           |           |
| 9/27/2021 |            |          | <0.75      | <0.75      |           | 0.93 (J) |          | <0.75     |           |
| 9/28/2021 | <0.75      | 1.2 (J)  |            |            | <0.75     |          |          |           | <0.75     |
| 9/20/2022 | <0.75      |          |            | <0.75      |           |          |          |           | <0.75     |
| 9/21/2022 |            | 1.1 (J)  | <0.75      |            | 9.6       | 0.95 (J) |          | <0.75     |           |
| 9/18/2023 | <0.53 (U)  |          |            |            |           |          |          | <0.53 (U) |           |
| 9/20/2023 |            |          | <0.53 (U)  | <0.53 (U)  | <0.53 (U) | 0.96 (J) |          |           |           |
| 9/21/2023 |            | 0.89 (J) |            |            |           |          |          |           | <0.53 (U) |

## Barium



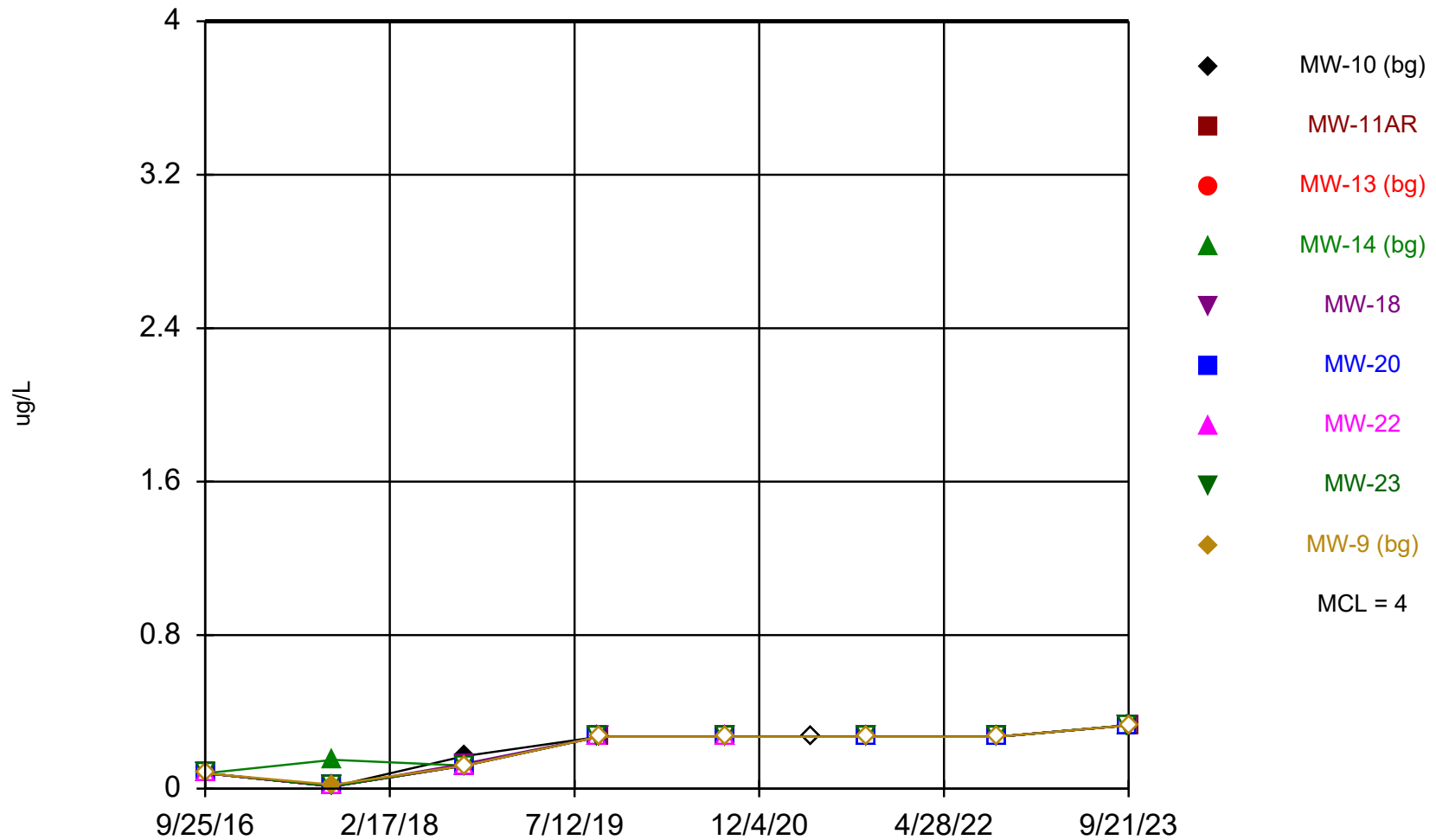
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Barium (ug/L)   Analysis Run 10/30/2023 12:17 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 91.2       |            |       |       |       |       | 158       |
| 9/26/2016 |            |         |            | 62.1       | 176   | 96.5  | 93.8  |       |           |
| 9/27/2016 | 151        | 30.1    |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 94.2  |           |
| 9/13/2017 |            |         | 101        |            |       | 99.1  | 40.9  | 57    |           |
| 9/14/2017 |            | <0.095  |            | 108        | 200   |       |       |       | 138       |
| 9/15/2017 | 149        |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 90.4       |            |       | 87.3  | 79.6  | 60    |           |
| 9/12/2018 | 131        | 35.6    |            | 55.1       | 242   |       |       |       | 157       |
| 9/16/2019 |            |         | 97         | 56         |       | 120   | 43    | 90    |           |
| 9/17/2019 | 140        | 38      |            |            | 160   |       |       |       | 170       |
| 9/1/2020  |            | 36      |            | 67         | 150   |       |       | 120   | 150       |
| 9/2/2020  |            |         | 96         |            |       | 110   | 54    |       |           |
| 4/29/2021 | 160        |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 100        | 62         |       | 83    |       | 95    |           |
| 9/28/2021 | 140        | 37      |            |            | 170   |       |       |       | 170       |
| 9/20/2022 | 130        |         |            | 59         |       |       |       |       | 160       |
| 9/21/2022 |            | 35      | 110        |            | 210   | 78    |       | 86    |           |
| 9/18/2023 | 160        |         |            |            |       |       |       | 120   |           |
| 9/20/2023 |            |         | 110        | 62         | 150   | 93    |       |       |           |
| 9/21/2023 |            | 49      |            |            |       |       |       |       | 180       |

## Beryllium



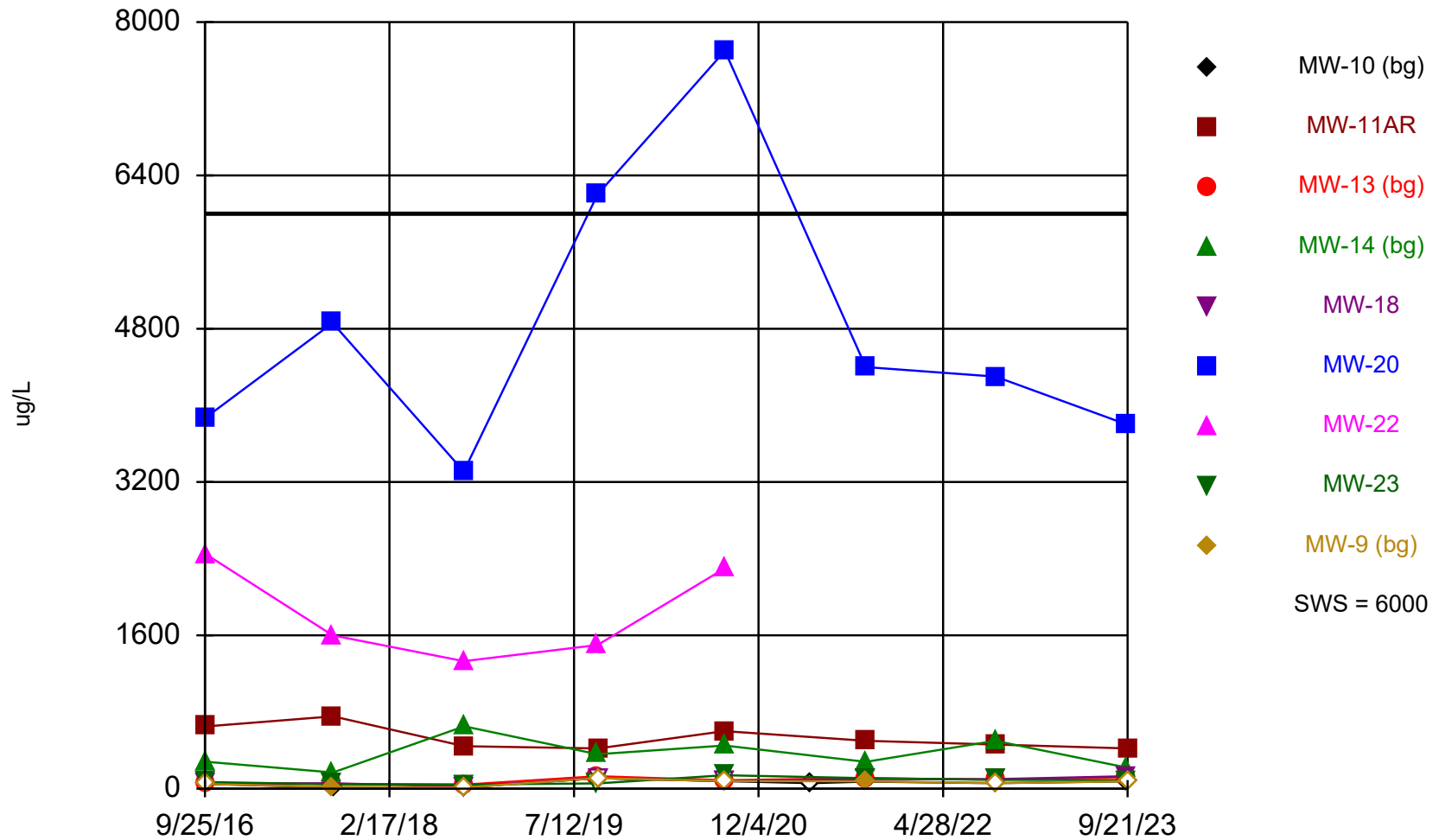
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Beryllium (ug/L)   Analysis Run 10/30/2023 12:17 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR   | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22  | MW-23     | MW-9 (bg) |
|-----------|------------|-----------|------------|------------|-----------|-----------|--------|-----------|-----------|
| 9/25/2016 |            |           | <0.08      |            |           |           |        |           | <0.08     |
| 9/26/2016 |            |           |            | <0.08      | <0.08     | <0.08     | <0.08  |           |           |
| 9/27/2016 | <0.08      | <0.08     |            |            |           |           |        |           |           |
| 9/28/2016 |            |           |            |            |           |           |        | <0.08     |           |
| 9/13/2017 |            |           | <0.012     |            |           | <0.012    | <0.012 | <0.012    |           |
| 9/14/2017 |            | <0.012    |            | 0.15 (J)   | <0.012    |           |        |           | 0.02 (J)  |
| 9/15/2017 | <0.012     |           |            |            |           |           |        |           |           |
| 9/11/2018 |            |           | <0.12      |            |           | <0.12     | <0.12  | <0.12     |           |
| 9/12/2018 | 0.17 (J)   | <0.12     |            | <0.12      | 0.13 (J)  |           |        |           | <0.12     |
| 9/16/2019 |            |           | <0.27      | <0.27      |           | <0.27     | <0.27  | <0.27     |           |
| 9/17/2019 | <0.27      | <0.27     |            |            | <0.27     |           |        |           | <0.27     |
| 9/1/2020  |            | <0.27     |            | <0.27      | <0.27     |           |        | <0.27     | <0.27     |
| 9/2/2020  |            |           | <0.27      |            |           | <0.27     | <0.27  |           |           |
| 4/29/2021 | <0.27      |           |            |            |           |           |        |           |           |
| 9/27/2021 |            |           | <0.27      | <0.27      |           | <0.27     |        | <0.27     |           |
| 9/28/2021 | <0.27      | <0.27     |            |            | <0.27     |           |        |           | <0.27     |
| 9/20/2022 | <0.27      |           |            | <0.27      |           |           |        |           | <0.27     |
| 9/21/2022 |            | <0.27     | <0.27      |            | <0.27     | <0.27     |        | <0.27     |           |
| 9/18/2023 | <0.33 (U)  |           |            |            |           |           |        | <0.33 (U) |           |
| 9/20/2023 |            |           | <0.33 (U)  | <0.33 (U)  | <0.33 (U) | <0.33 (U) |        |           |           |
| 9/21/2023 |            | <0.33 (U) |            |            |           |           |        |           | <0.33 (U) |

## Boron



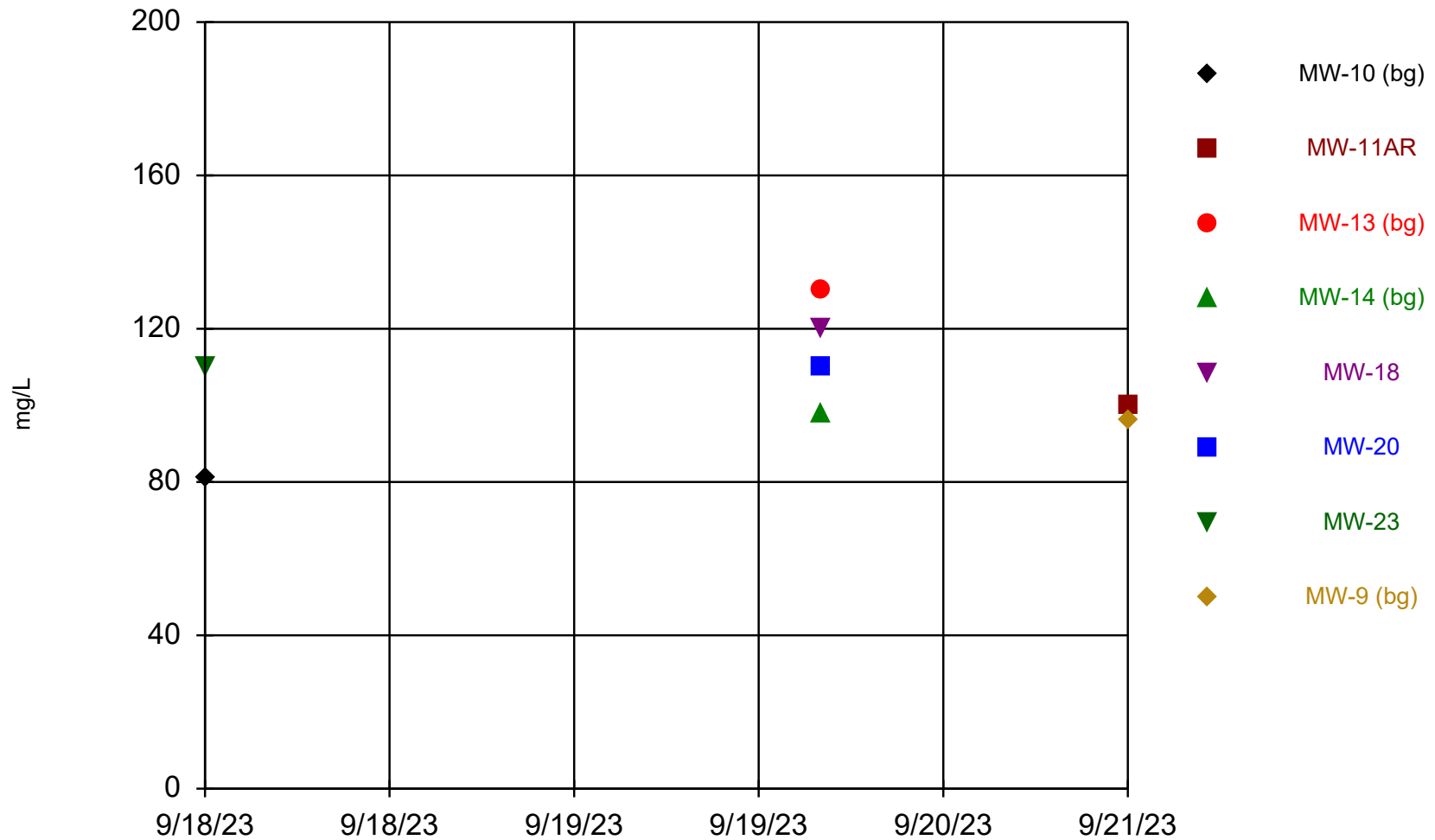
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Boron (ug/L)    Analysis Run 10/30/2023 12:17 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18    | MW-20 | MW-22 | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|----------|-------|-------|----------|-----------|
| 9/25/2016 |            |         | 50.2 (J)   |            |          |       |       |          | <50       |
| 9/26/2016 |            |         |            | 282        | 53.8 (J) | 3870  | 2450  |          |           |
| 9/27/2016 | <50        | 650     |            |            |          |       |       |          |           |
| 9/28/2016 |            |         |            |            |          |       |       | 70.1 (J) |           |
| 9/13/2017 |            |         | 48.6 (J)   |            |          | 4860  | 1600  | 47 (J)   |           |
| 9/14/2017 |            | 755     |            | 169        | 57 (J)   |       |       |          | 17.2 (J)  |
| 9/15/2017 | 14.1 (J)   |         |            |            |          |       |       |          |           |
| 9/11/2018 |            |         | 41.4 (J)   |            |          | 3310  | 1330  | 42.9 (J) |           |
| 9/12/2018 | <12.5      | 443     |            | 651        | 21.6 (J) |       |       |          | <12.5     |
| 9/16/2019 |            |         | 130 (J)    | 360        |          | 6200  | 1500  | <110     |           |
| 9/17/2019 | <110       | 420     |            |            | <110     |       |       |          | <110      |
| 9/1/2020  |            | 600     |            | 450        | <80      |       |       | 140      | <80       |
| 9/2/2020  |            |         | 88 (J)     |            |          | 7700  | 2300  |          |           |
| 4/29/2021 | <58        |         |            |            |          |       |       |          |           |
| 9/27/2021 |            |         | 110        | 280        |          | 4400  |       | 110      |           |
| 9/28/2021 | 74 (J)     | 500     |            |            | 100      |       |       |          | 77 (J)    |
| 9/20/2022 | <58        |         |            | 500        |          |       |       |          | <58       |
| 9/21/2022 |            | 460     | 94 (J)     |            | 100      | 4300  |       | 92 (J)   |           |
| 9/18/2023 | <76 (U)    |         |            |            |          |       |       | 89 (J)   |           |
| 9/20/2023 |            |         | 120        | 220        | 130      | 3800  |       |          |           |
| 9/21/2023 |            | 420     |            |            |          |       |       |          | <76 (U)   |

## Calcium



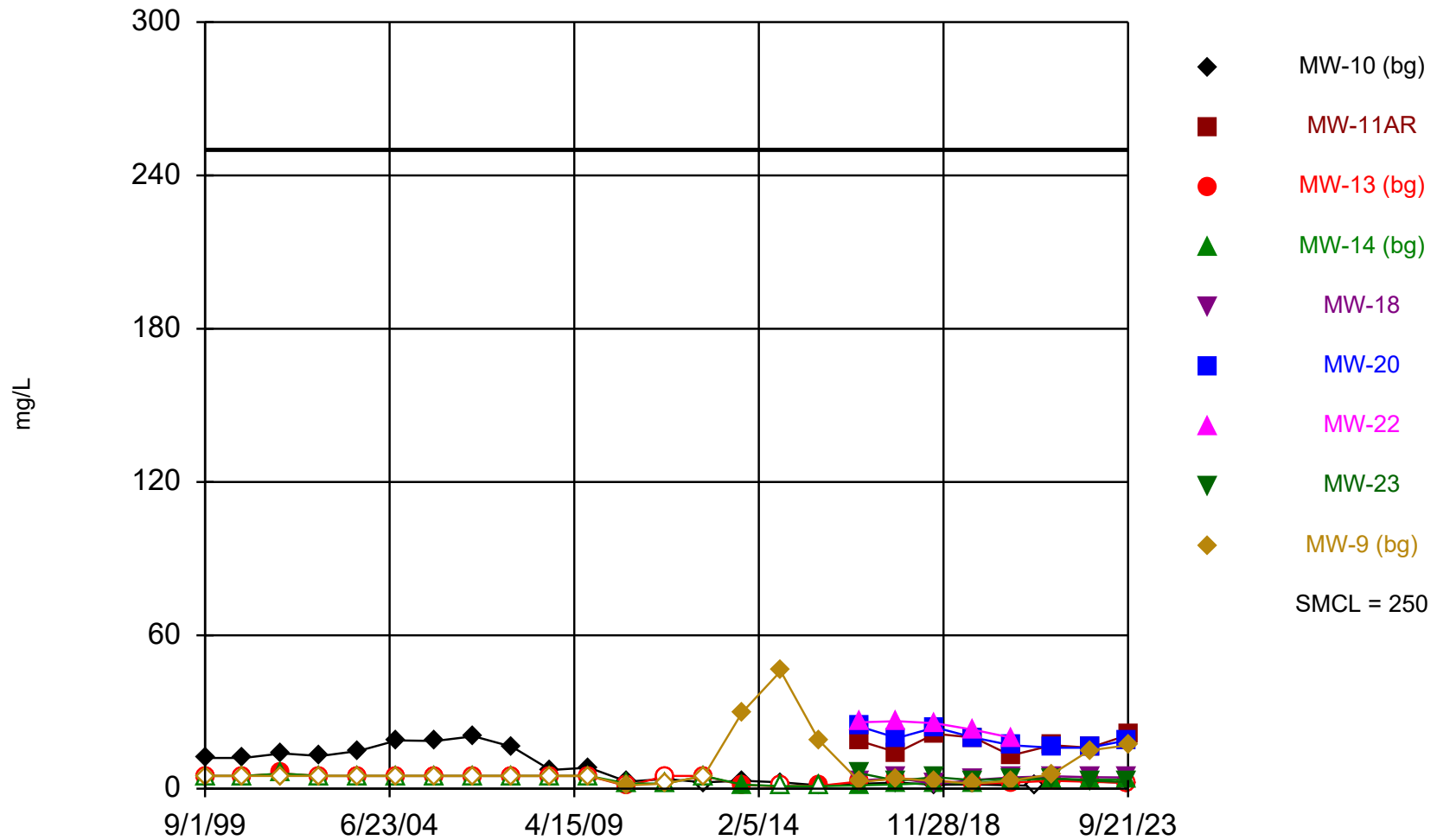
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Calcium (mg/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-----------|
| 9/18/2023 | 81         |         |            |            |       |       | 110   |           |
| 9/20/2023 |            |         | 130        | 98         | 120   | 110   |       |           |
| 9/21/2023 |            | 100     |            |            |       |       |       | 96        |

## Chloride



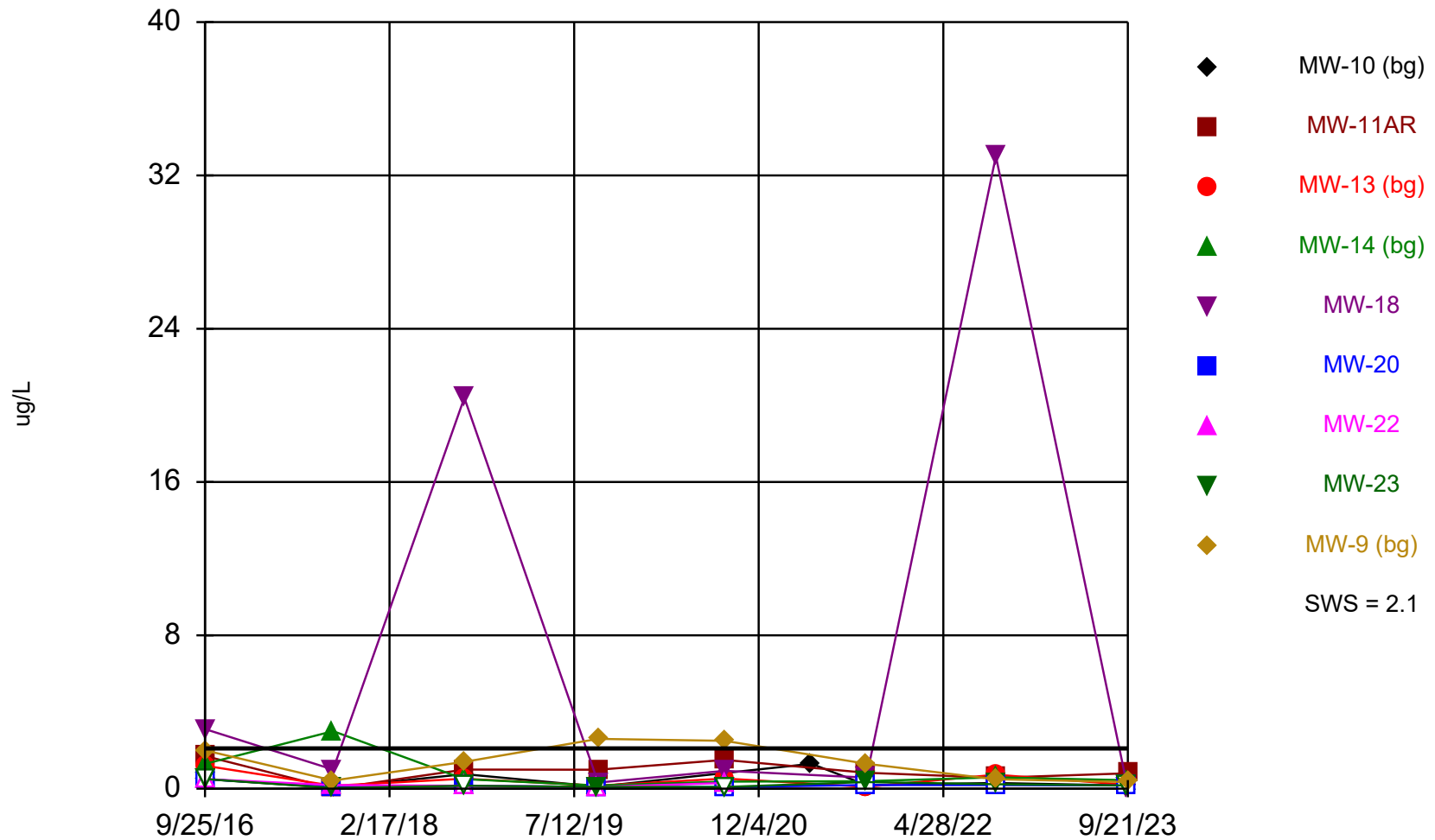
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Chloride (mg/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20  | MW-22  | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|--------|--------|-----------|-----------|
| 9/1/1999  | 12         |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2000  | 12         |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2001  | 13.8       |         | 5.9        | 5.9        |           |        |        |           | <5        |
| 9/1/2002  | 12.8       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2003  | 14.8       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2004  | 18.9       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2005  | 18.7       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2006  | 20.5       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2007  | 16.4       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2008  | 7.31       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2009  | 8.21       |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2010  | 2.76       |         | <1         | <2         |           |        |        |           | 1.25      |
| 9/1/2011  | 3.81       |         | <5         | <2         |           |        |        |           | <2        |
| 9/1/2012  | <5         |         | <5         | <5         |           |        |        |           | <5        |
| 9/1/2013  | 3.1        |         | 1.4        | 1.6        |           |        |        |           | 29.9      |
| 9/1/2014  | 2.5        |         | <1         | <1         |           |        |        |           | 46        |
| 9/1/2015  | 1.3        |         | 1.1        | <1         |           |        |        |           | 18.9      |
| 9/25/2016 |            |         | 2.8        |            |           |        |        |           | 2.6       |
| 9/26/2016 |            |         |            | 1.3        | 3.2       | 24.3   | 26     |           |           |
| 9/27/2016 | 1.9        | 18.6    |            |            |           |        |        |           |           |
| 9/28/2016 |            |         |            |            |           |        |        | 6         |           |
| 9/13/2017 |            |         | 4          |            |           | 19.8   | 26.4   | 3.1       |           |
| 9/14/2017 |            | 14.2    |            | 1.7        | 4.2       |        |        |           | 4         |
| 9/15/2017 | 2.4        |         |            |            |           |        |        |           |           |
| 9/11/2018 |            |         | 3.2        |            |           | 24     | 25.6   | 4.5       |           |
| 9/12/2018 | 1.5        | 21.5    |            | 2.2        | 1.8       |        |        |           | 3         |
| 9/16/2019 |            |         | 1.9 (J,B)  | 2.1 (J,B)  |           | 20 (B) | 23 (B) | 3.3 (J,B) |           |
| 9/17/2019 | 1.7 (J,B)  | 20 (B)  |            |            | 3.4 (J,B) |        |        |           | 2 (J,B)   |
| 9/1/2020  |            | 13 (B)  |            | 3.3 (J,B)  | 4.4 (J,B) |        |        | 4 (J,B)   | 3.1 (J,B) |
| 9/2/2020  |            |         | 2.4 (J,B)  |            |           | 17 (B) | 20 (B) |           |           |
| 4/29/2021 | <2.2       |         |            |            |           |        |        |           |           |
| 9/27/2021 |            |         | 3.1 (J)    | 3.9 (J)    |           | 16     |        | 4 (J)     |           |
| 9/28/2021 | 4 (J)      | 17      |            |            | 4.9 (J)   |        |        |           | 5.7       |
| 9/20/2022 | 2.9 (J)    |         |            | 3.6 (J)    |           |        |        |           | 15        |
| 9/21/2022 |            | 16      | 2.7 (J)    |            | 4.5 (J)   | 16     |        | 3.1 (J)   |           |
| 9/18/2023 | 2.3 (J)    |         |            |            |           |        |        | 2.6 (J)   |           |
| 9/20/2023 |            |         | <2.3 (U)   | 3.6 (J)    | 4.4 (J)   | 19     |        |           |           |
| 9/21/2023 |            | 21      |            |            |           |        |        |           | 17        |

## Cobalt



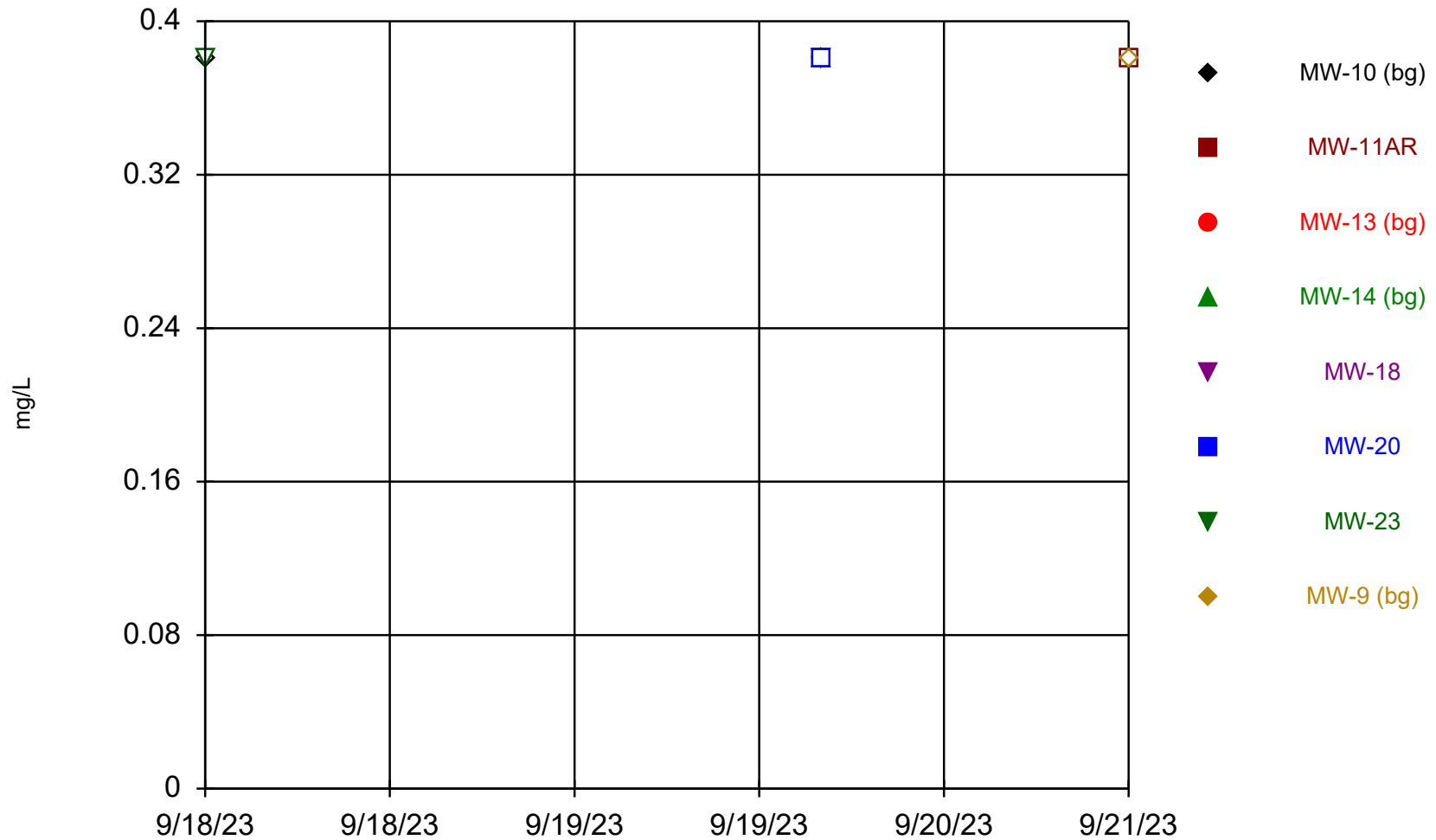
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Cobalt (ug/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|-----------|----------|-----------|-----------|
| 9/25/2016 |            |         | 1.2        |            |           |           |          |           | 2         |
| 9/26/2016 |            |         |            | 1.3        | 3.1       | <0.5      | <0.5     |           |           |
| 9/27/2016 | <0.5       | 1.7     |            |            |           |           |          |           |           |
| 9/28/2016 |            |         |            |            |           |           |          | <0.5      |           |
| 9/13/2017 |            |         | 0.15 (J)   |            |           | 0.09 (J)  | 0.19 (J) | 0.036 (J) |           |
| 9/14/2017 |            | <0.014  |            | 3          | 1         |           |          |           | 0.43 (J)  |
| 9/15/2017 | 0.05 (J)   |         |            |            |           |           |          |           |           |
| 9/11/2018 |            |         | 0.52 (J)   |            |           | 0.16 (J)  | <0.15    | <0.15     |           |
| 9/12/2018 | 0.76 (J)   | 1       |            | 0.5 (J)    | 20.4      |           |          |           | 1.4       |
| 9/16/2019 |            |         | 0.16 (J)   | 0.17 (J)   |           | <0.091    | <0.091   | 0.094 (J) |           |
| 9/17/2019 | 0.11 (J)   | 0.99    |            |            | 0.32 (J)  |           |          |           | 2.6       |
| 9/1/2020  |            | 1.5     |            | 0.37 (J)   | 0.93      |           |          | <0.091    | 2.5       |
| 9/2/2020  |            |         | 0.53       |            |           | <0.091    | 0.3 (J)  |           |           |
| 4/29/2021 | 1.3        |         |            |            |           |           |          |           |           |
| 9/27/2021 |            |         | <0.19      | 0.39 (J)   |           | <0.19     |          | 0.35 (J)  |           |
| 9/28/2021 | <0.19      | 0.83    |            |            | 0.58      |           |          |           | 1.3       |
| 9/20/2022 | 0.3 (J)    |         |            | 0.59       |           |           |          |           | 0.49 (J)  |
| 9/21/2022 |            | 0.57    | 0.73       |            | 33        | <0.19     |          | 0.23 (J)  |           |
| 9/18/2023 | <0.17 (U)  |         |            |            |           |           |          | <0.17 (U) |           |
| 9/20/2023 |            |         | 0.2 (J)    | 0.44 (J)   | <0.17 (U) | <0.17 (U) |          |           |           |
| 9/21/2023 |            | 0.8     |            |            |           |           |          |           | 0.35 (J)  |

## Fluoride



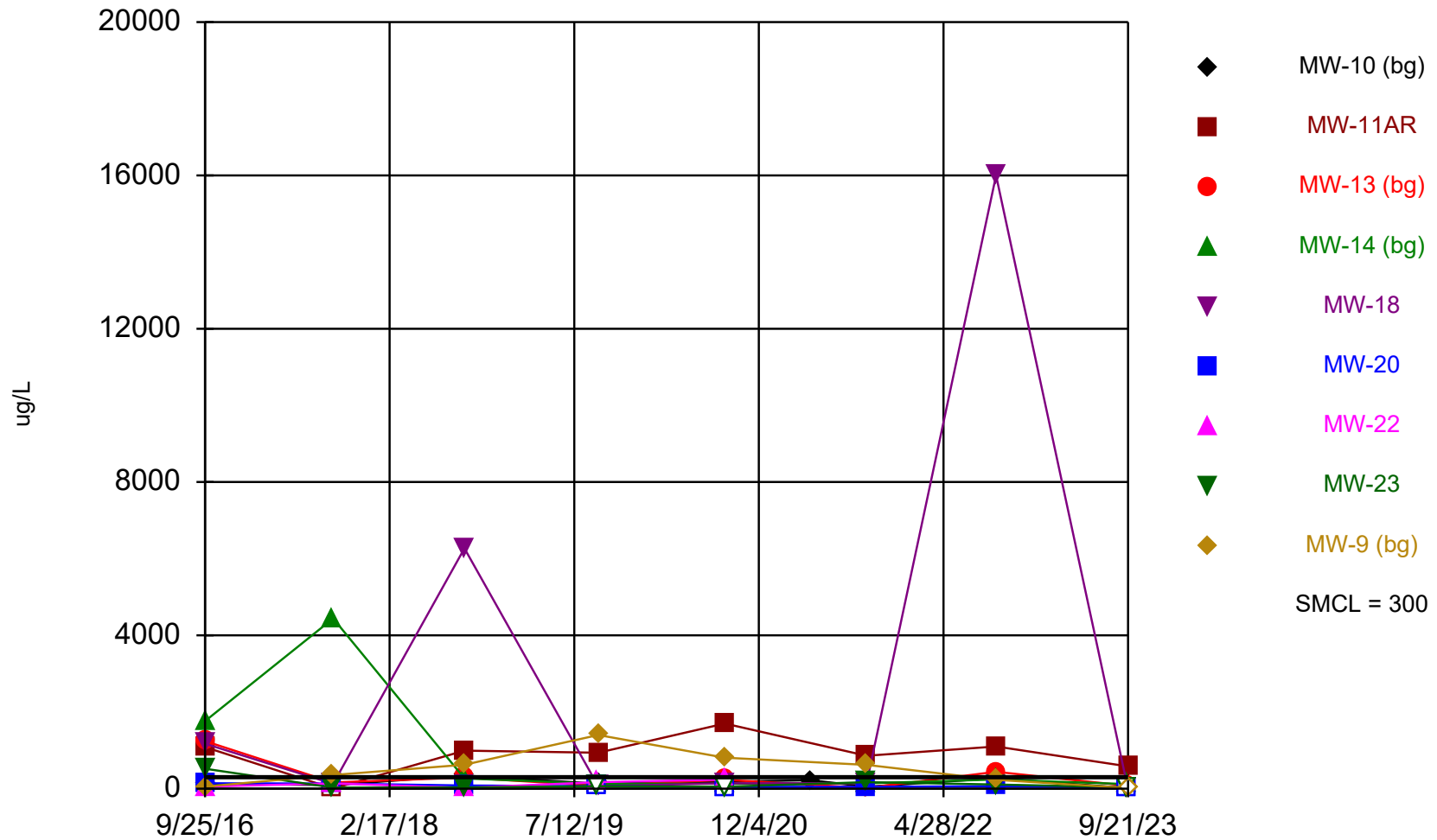
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Fluoride (mg/L) Analysis Run 10/30/2023 12:17 PM View: East Closed L  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR   | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-23     | MW-9 (bg) |
|-----------|------------|-----------|------------|------------|-----------|-----------|-----------|-----------|
| 9/18/2023 | <0.38 (U)  |           |            |            |           |           | <0.38 (U) |           |
| 9/20/2023 |            |           | <0.38 (U)  | <0.38 (U)  | <0.38 (U) | <0.38 (U) |           |           |
| 9/21/2023 |            | <0.38 (U) |            |            |           |           |           | <0.38 (U) |

## Iron



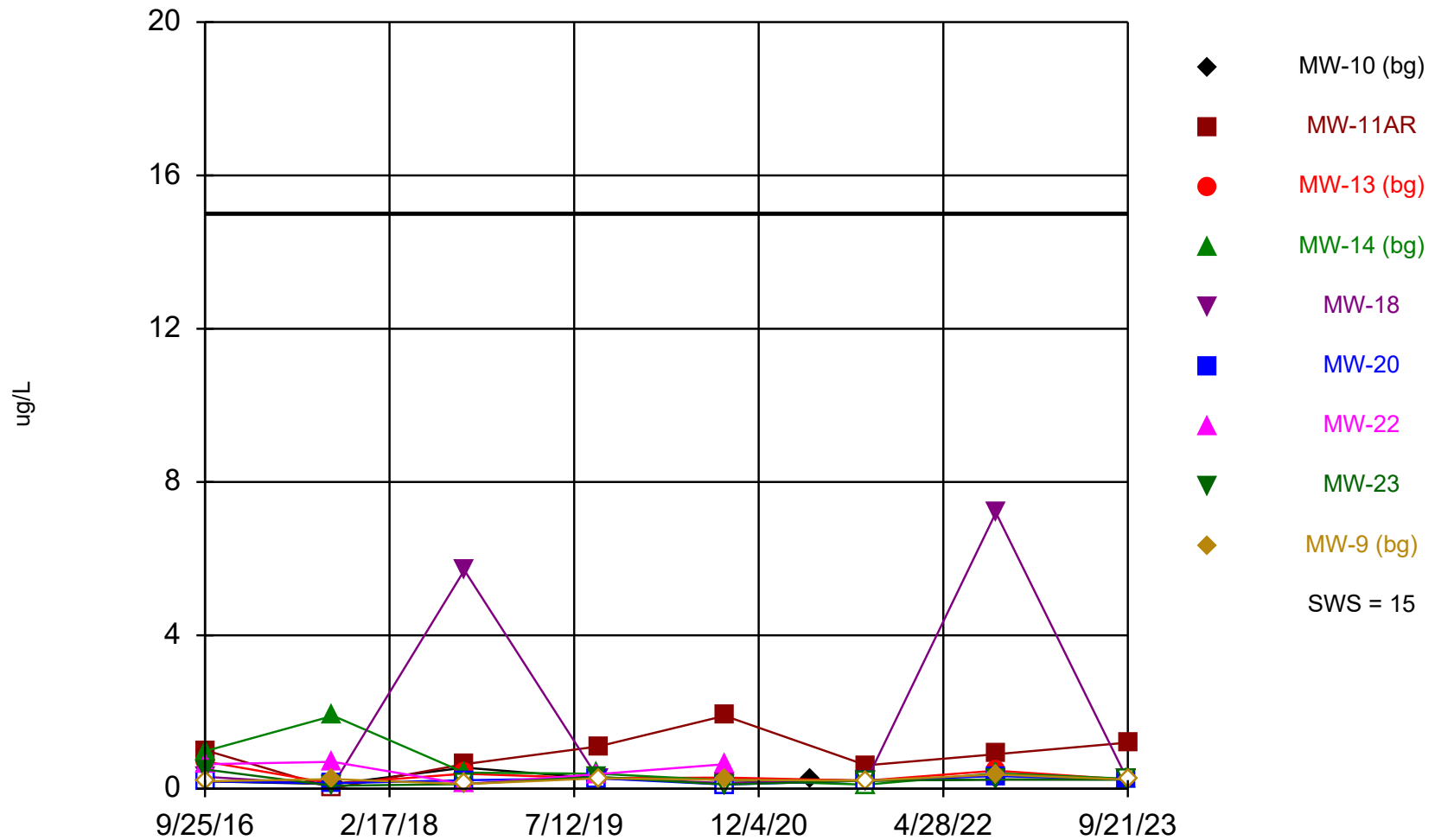
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Iron (ug/L)    Analysis Run 10/30/2023 12:17 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20   | MW-22    | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|---------|----------|----------|-----------|
| 9/25/2016 |            |         | 1240       |            |         |         |          |          | 55.7      |
| 9/26/2016 |            |         |            | 1770       | 1170    | 140     | 54.6     |          |           |
| 9/27/2016 | 126        | 1080    |            |            |         |         |          |          |           |
| 9/28/2016 |            |         |            |            |         |         |          | 518      |           |
| 9/13/2017 |            |         | 162        |            |         | 135     | 139      | 30.3 (J) |           |
| 9/14/2017 |            | <9.6    |            | 4440       | 128     |         |          |          | 357       |
| 9/15/2017 | 93.1       |         |            |            |         |         |          |          |           |
| 9/11/2018 |            |         | 289        |            |         | 82.8    | 23.9 (J) | 34.3 (J) |           |
| 9/12/2018 | 344        | 993     |            | 267        | 6270    |         |          |          | 624       |
| 9/16/2019 |            |         | 76 (J)     | 130        |         | <66     | 170      | <66      |           |
| 9/17/2019 | 130        | 940     |            |            | <66     |         |          |          | 1400      |
| 9/1/2020  |            | 1700    |            | 130        | 140     |         |          | <50      | 810       |
| 9/2/2020  |            |         | 230        |            |         | <50     | 240      |          |           |
| 4/29/2021 | 220        |         |            |            |         |         |          |          |           |
| 9/27/2021 |            |         | <36        | 140        |         | 49 (J)  |          | 170      |           |
| 9/28/2021 | 52 (J)     | 860     |            |            | 140     |         |          |          | 620       |
| 9/20/2022 | 270        |         |            | 240        |         |         |          |          | 230       |
| 9/21/2022 |            | 1100    | 440        |            | 16000   | 67 (J)  |          | 110      |           |
| 9/18/2023 | <36 (U)    |         |            |            |         |         |          | <36 (U)  |           |
| 9/20/2023 |            |         | 78 (J)     | 120        | <36 (U) | <36 (U) |          |          |           |
| 9/21/2023 |            | 580     |            |            |         |         |          |          | <36 (U)   |

## Lead



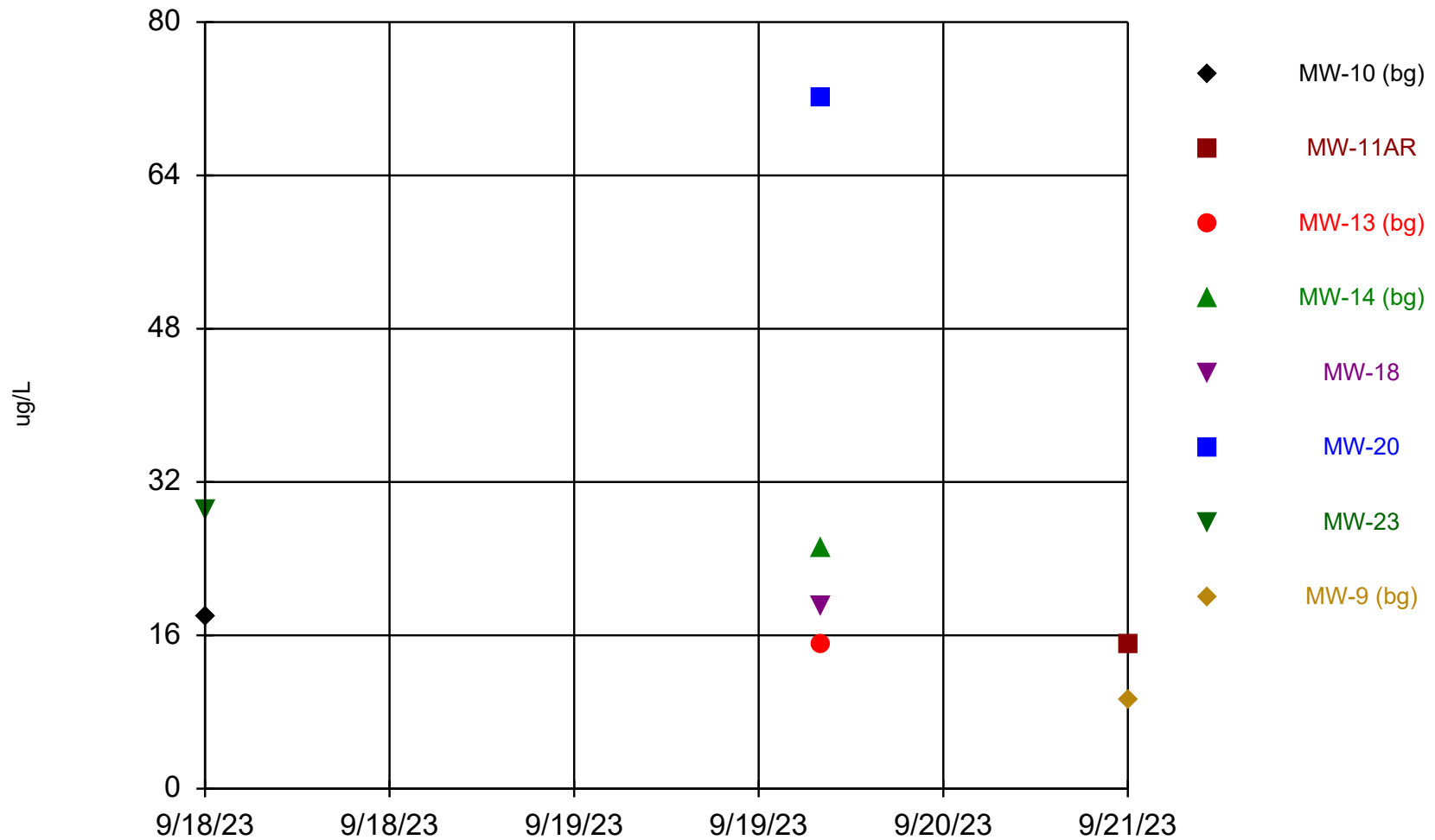
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 12:17 PM   View: East Closed LF  
 Marshelltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20    | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|----------|----------|-----------|-----------|
| 9/25/2016 |            |          | 0.71 (J)   |            |           |          |          |           | <0.19     |
| 9/26/2016 |            |          |            | 0.98 (J)   | 0.31 (J)  | <0.19    | 0.64 (J) |           |           |
| 9/27/2016 | <0.19      | 1        |            |            |           |          |          |           |           |
| 9/28/2016 |            |          |            |            |           |          |          | 0.5 (J)   |           |
| 9/13/2017 |            |          | 0.13 (J)   |            |           | 0.14 (J) | 0.7 (J)  | 0.076 (J) |           |
| 9/14/2017 |            | <0.033   |            | 1.9        | 0.1 (J)   |          |          |           | 0.25 (J)  |
| 9/15/2017 | 0.12 (J)   |          |            |            |           |          |          |           |           |
| 9/11/2018 |            |          | 0.39 (J)   |            |           | 0.22 (J) | <0.12    | <0.12     |           |
| 9/12/2018 | 0.55 (J)   | 0.64 (J) |            | 0.42 (J)   | 5.7       |          |          |           | <0.12     |
| 9/16/2019 |            |          | <0.27      | 0.39 (J)   |           | <0.27    | 0.38 (J) | 0.31 (J)  |           |
| 9/17/2019 | <0.27      | 1.1      |            |            | <0.27     |          |          |           | <0.27     |
| 9/1/2020  |            | 1.9      |            | 0.22 (J)   | 0.15 (J)  |          |          | <0.11     | 0.23 (J)  |
| 9/2/2020  |            |          | 0.29 (J)   |            |           | <0.11    | 0.64     |           |           |
| 4/29/2021 | 0.23 (J)   |          |            |            |           |          |          |           |           |
| 9/27/2021 |            |          | <0.21      | <0.21      |           | <0.21    |          | <0.21     |           |
| 9/28/2021 | <0.21      | 0.61     |            |            | <0.21     |          |          |           | <0.21     |
| 9/20/2022 | <0.24      |          |            | 0.4 (J)    |           |          |          |           | 0.37 (J)  |
| 9/21/2022 |            | 0.9      | 0.47 (J)   |            | 7.2       | 0.33 (J) |          | <0.24     |           |
| 9/18/2023 | <0.24 (U)  |          |            |            |           |          |          | <0.24 (U) |           |
| 9/20/2023 |            |          | <0.24 (U)  | 0.26 (J)   | <0.24 (U) | 0.24 (J) |          |           |           |
| 9/21/2023 |            | 1.2      |            |            |           |          |          |           | <0.24 (U) |

## Lithium



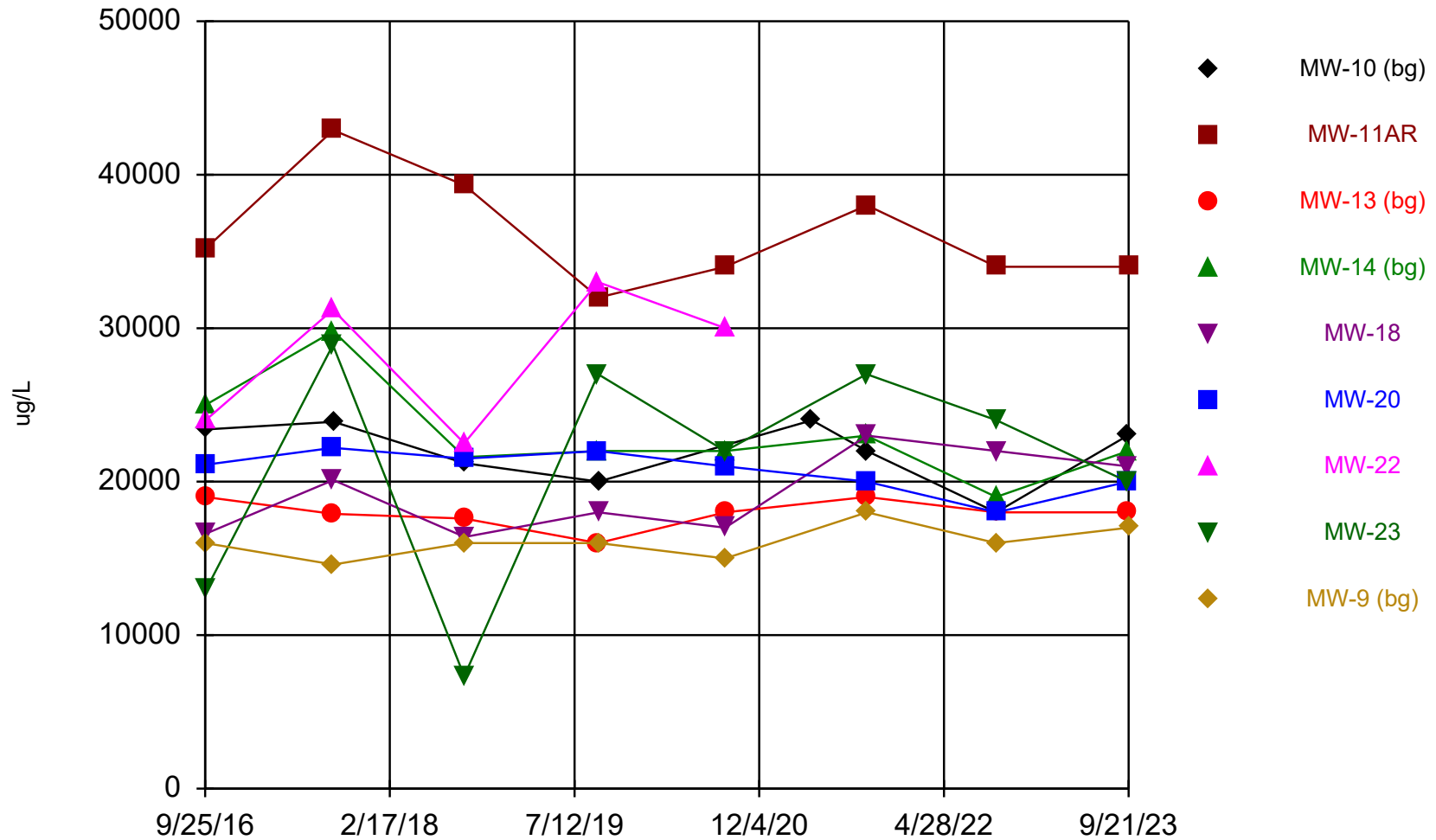
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Lithium (ug/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-----------|
| 9/18/2023 | 18         |         |            |            |       |       | 29    |           |
| 9/20/2023 |            |         | 15         | 25         | 19    | 72    |       |           |
| 9/21/2023 |            | 15      |            |            |       |       |       | 9.3 (J)   |

## Magnesium



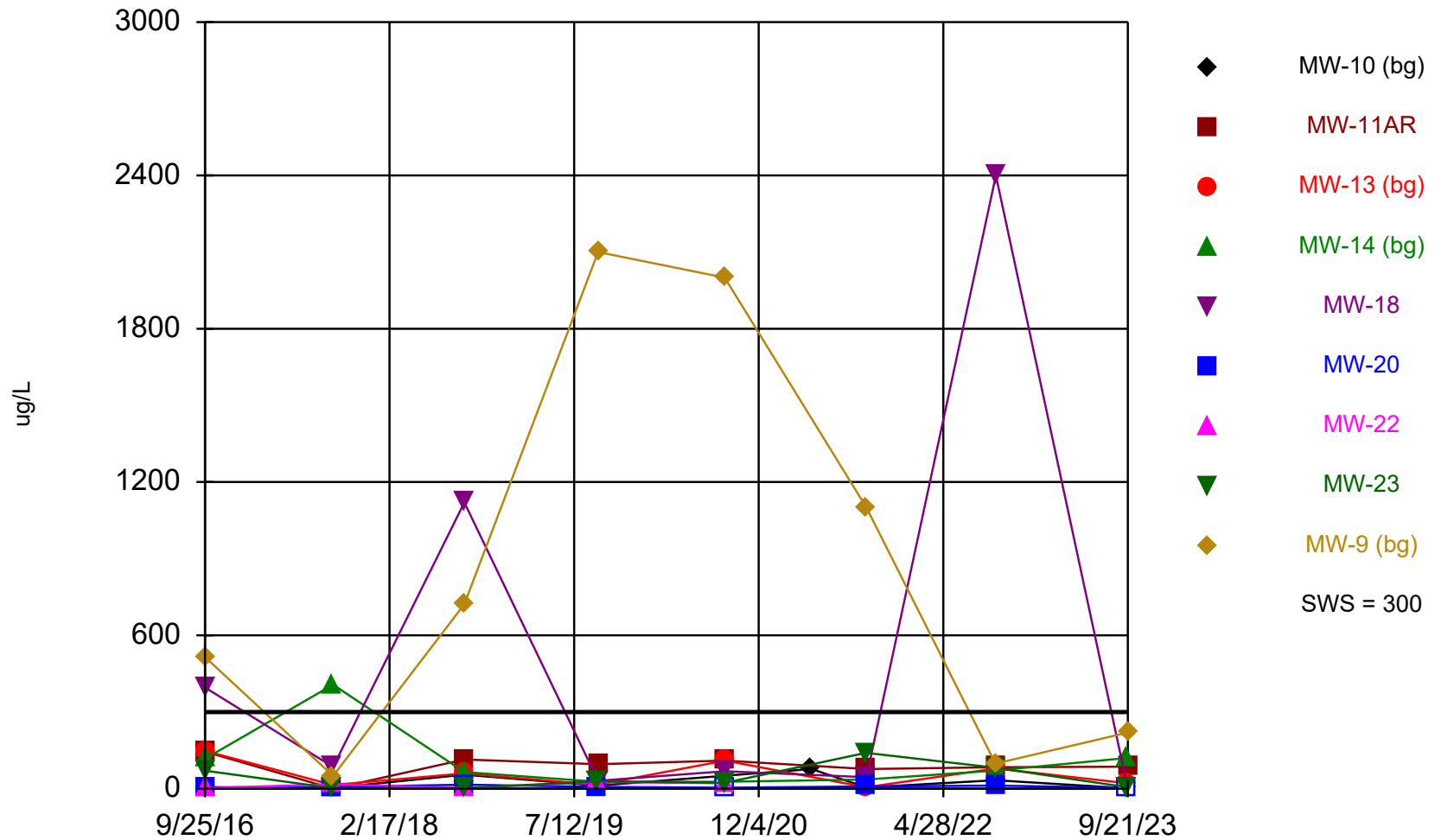
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Time Series

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 12:17 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 19000      |            |       |       |       |       | 16000     |
| 9/26/2016 |            |         |            | 25000      | 16600 | 21100 | 24000 |       |           |
| 9/27/2016 | 23400      | 35200   |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 13000 |           |
| 9/13/2017 |            |         | 17900      |            |       | 22200 | 31200 | 28900 |           |
| 9/14/2017 |            | 42900   |            | 29800      | 20100 |       |       |       | 14600     |
| 9/15/2017 | 23900      |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 17600      |            |       | 21500 | 22500 | 7320  |           |
| 9/12/2018 | 21200      | 39300   |            | 21600      | 16400 |       |       |       | 16000     |
| 9/16/2019 |            |         | 16000      | 22000      |       | 22000 | 33000 | 27000 |           |
| 9/17/2019 | 20000      | 32000   |            |            | 18000 |       |       |       | 16000     |
| 9/1/2020  |            | 34000   |            | 22000      | 17000 |       |       | 22000 | 15000     |
| 9/2/2020  |            |         | 18000      |            |       | 21000 | 30000 |       |           |
| 4/29/2021 | 24000      |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 19000      | 23000      |       | 20000 |       | 27000 |           |
| 9/28/2021 | 22000      | 38000   |            |            | 23000 |       |       |       | 18000     |
| 9/20/2022 | 18000      |         |            | 19000      |       |       |       |       | 16000     |
| 9/21/2022 |            | 34000   | 18000      |            | 22000 | 18000 |       | 24000 |           |
| 9/18/2023 | 23000      |         |            |            |       |       |       | 20000 |           |
| 9/20/2023 |            |         | 18000      | 22000      | 21000 | 20000 |       |       |           |
| 9/21/2023 |            | 34000   |            |            |       |       |       |       | 17000     |

## Manganese



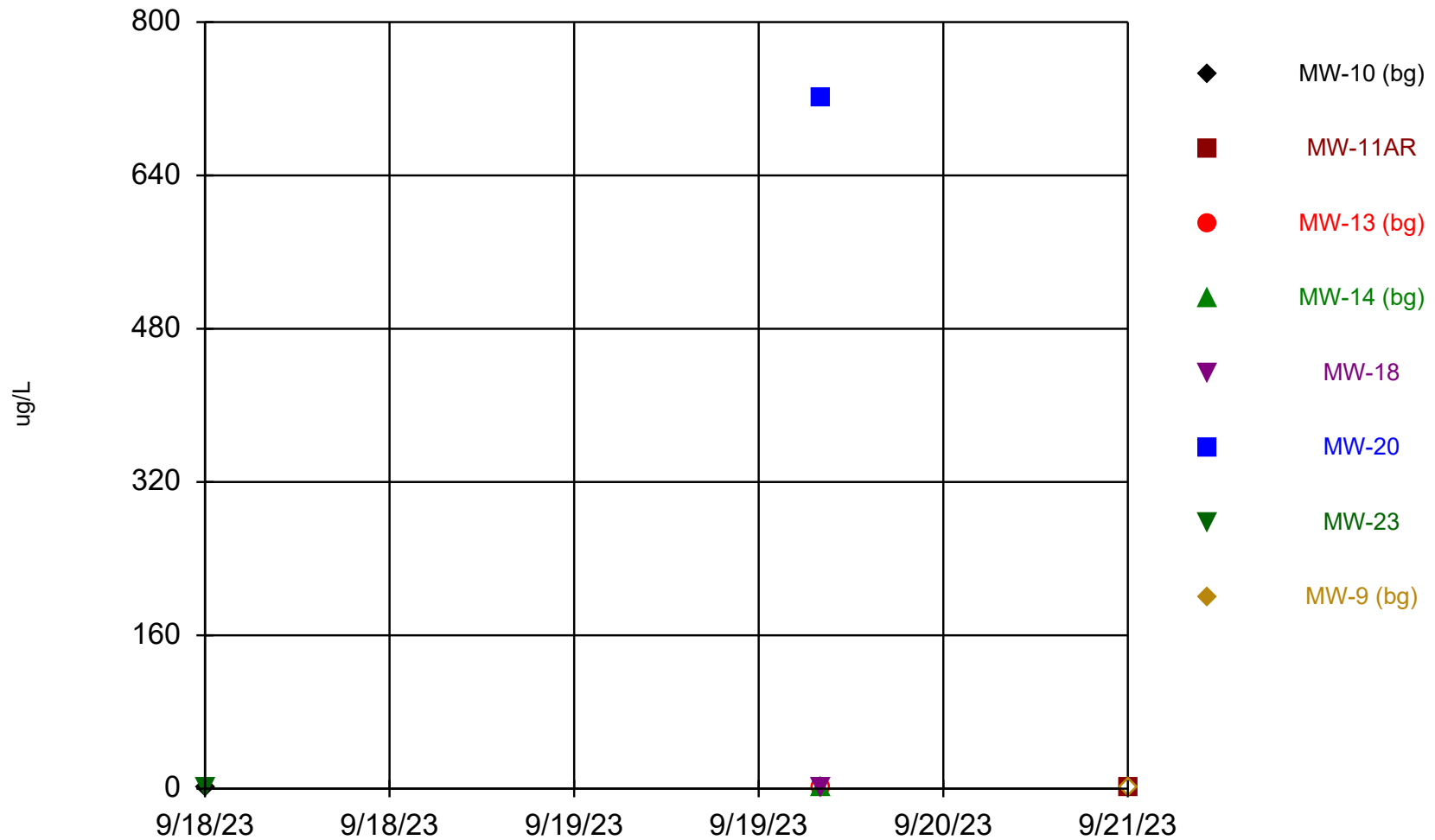
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Manganese (ug/L)   Analysis Run 10/30/2023 12:17 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20    | MW-22 | MW-23   | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|----------|-------|---------|-----------|
| 9/25/2016 |            |         | 148        |            |         |          |       |         | 515       |
| 9/26/2016 |            |         |            | 118        | 395     | 4.2      | 2.5   |         |           |
| 9/27/2016 | 6.1        | 144     |            |            |         |          |       |         |           |
| 9/28/2016 |            |         |            |            |         |          |       | 70      |           |
| 9/13/2017 |            |         | 14.6       |            |         | 6.3      | 17.2  | 2.2     |           |
| 9/14/2017 |            | <0.07   |            | 407        | 85.3    |          |       |         | 49.8      |
| 9/15/2017 | 3.2        |         |            |            |         |          |       |         |           |
| 9/11/2018 |            |         | 59.8       |            |         | 15.7     | 2.9   | 2       |           |
| 9/12/2018 | 54.9       | 114     |            | 64.9       | 1120    |          |       |         | 722       |
| 9/16/2019 |            |         | 15         | 27         |         | 7.3 (J)  | 26    | 29      |           |
| 9/17/2019 | 12         | 96      |            |            | 31      |          |       |         | 2100      |
| 9/1/2020  |            | 110     |            | 27         | 68      |          |       | 23      | 2000      |
| 9/2/2020  |            |         | 110        |            |         | <4       | 21    |         |           |
| 4/29/2021 | 77         |         |            |            |         |          |       |         |           |
| 9/27/2021 |            |         | 5.7 (J)    | 36         |         | 8.8 (J)  |       | 140     |           |
| 9/28/2021 | 4.9 (J)    | 77      |            |            | 45      |          |       |         | 1100      |
| 9/20/2022 | 33         |         |            | 71         |         |          |       |         | 98        |
| 9/21/2022 |            | 84      | 79         |            | 2400    | 12       |       | 82      |           |
| 9/18/2023 | <3.6 (U)   |         |            |            |         |          |       | 5.8 (J) |           |
| 9/20/2023 |            |         | 21         | 120        | 7.5 (J) | <3.6 (U) |       |         |           |
| 9/21/2023 |            | 86      |            |            |         |          |       |         | 220       |

## Molybdenum



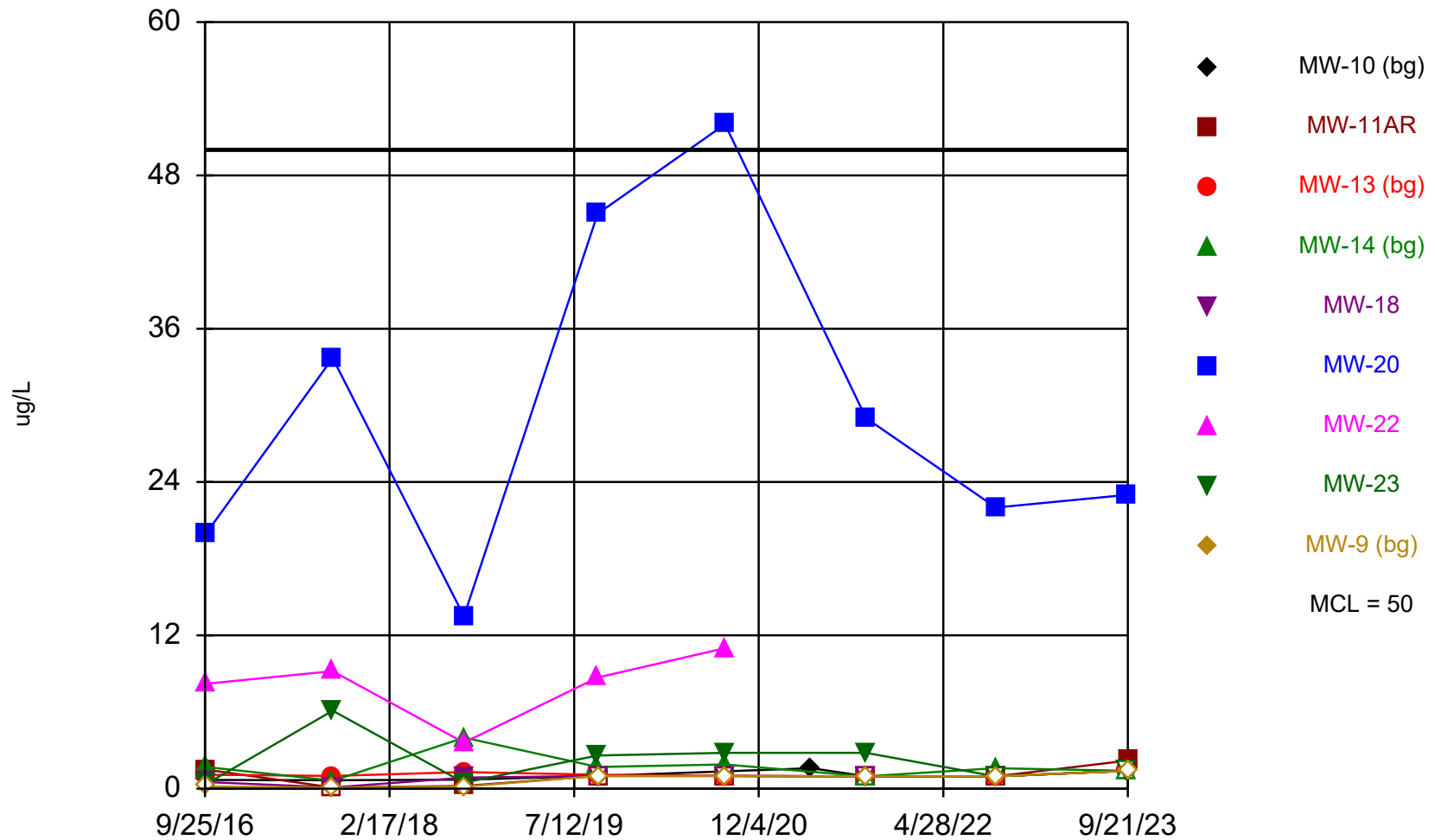
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Molybdenum (ug/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18    | MW-20 | MW-23   | MW-9 (bg) |
|-----------|------------|---------|------------|------------|----------|-------|---------|-----------|
| 9/18/2023 | 1 (J)      |         |            |            |          |       | 1.5 (J) |           |
| 9/20/2023 |            |         | <0.91 (U)  | 2.2        | 0.99 (J) | 720   |         |           |
| 9/21/2023 |            | 2.2     |            |            |          |       |         | <0.91 (U) |

## Selenium



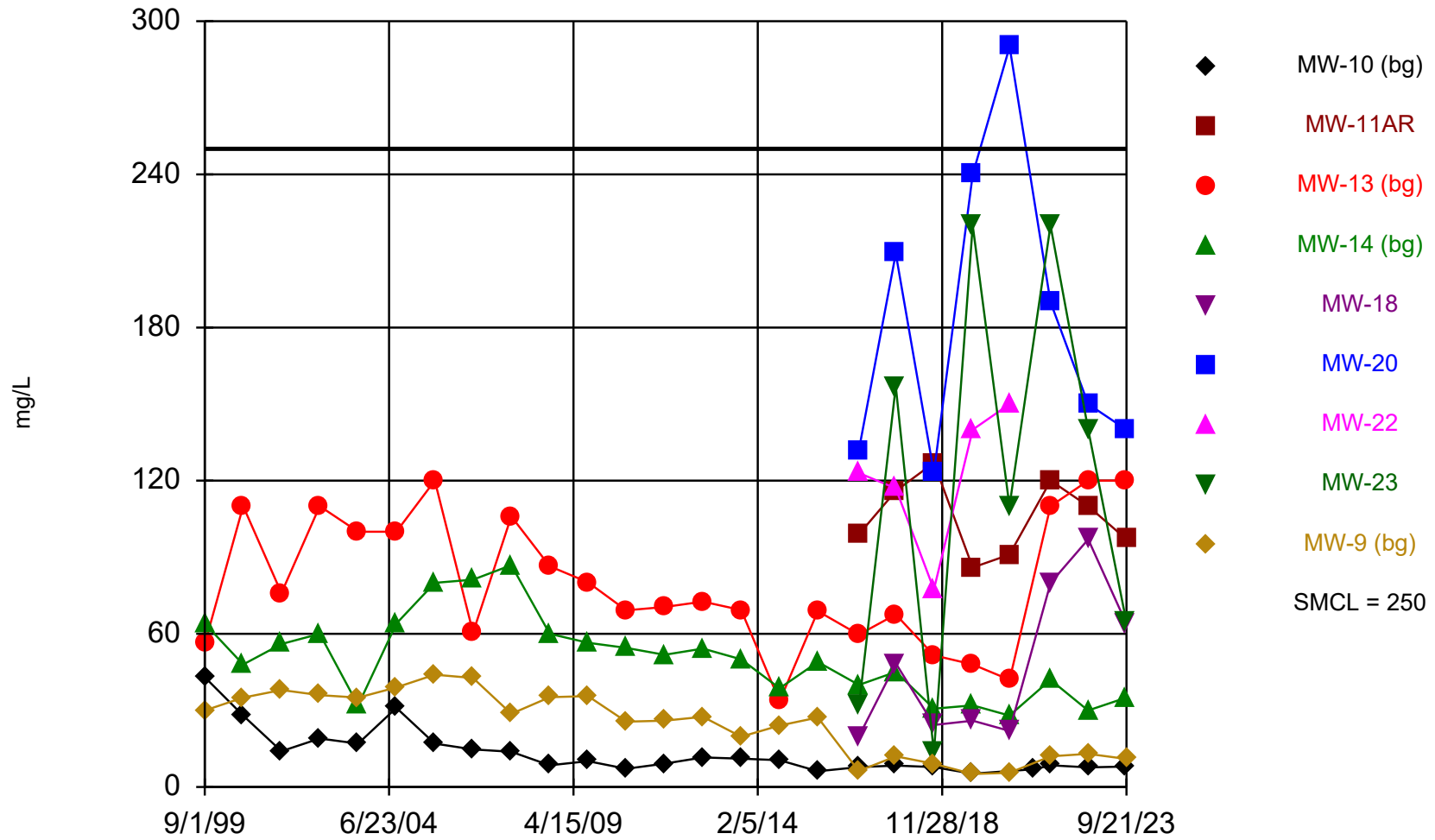
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Selenium (ug/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR  | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20 | MW-22 | MW-23    | MW-9 (bg) |
|-----------|------------|----------|------------|------------|-----------|-------|-------|----------|-----------|
| 9/25/2016 |            |          | 1.1        |            |           |       |       |          | <0.18     |
| 9/26/2016 |            |          |            | 1.7        | 0.52 (J)  | 19.9  | 8.2   |          |           |
| 9/27/2016 | 0.68 (J)   | 1.5      |            |            |           |       |       |          |           |
| 9/28/2016 |            |          |            |            |           |       |       | 0.36 (J) |           |
| 9/13/2017 |            |          | 1          |            |           | 33.7  | 9.2   | 6.1      |           |
| 9/14/2017 |            | <0.086   |            | 0.63 (J)   | 0.094 (J) |       |       |          | <0.086    |
| 9/15/2017 | 0.66 (J)   |          |            |            |           |       |       |          |           |
| 9/11/2018 |            |          | 1.3        |            |           | 13.5  | 3.6   | 0.47 (J) |           |
| 9/12/2018 | 0.71 (J)   | 0.22 (J) |            | 4          | 0.87 (J)  |       |       |          | <0.16     |
| 9/16/2019 |            |          | 1.1 (J)    | 1.7 (J)    |           | 45    | 8.7   | 2.6 (J)  |           |
| 9/17/2019 | <1         | <1       |            |            | <1        |       |       |          | <1        |
| 9/1/2020  |            | <1       |            | 1.9 (J)    | <1        |       |       | 2.8 (J)  | <1        |
| 9/2/2020  |            |          | <1         |            |           | 52    | 11    |          |           |
| 4/29/2021 | 1.6 (J)    |          |            |            |           |       |       |          |           |
| 9/27/2021 |            |          | <0.96      | <0.96      |           | 29    |       | 2.8 (J)  |           |
| 9/28/2021 | <0.96      | <0.96    |            |            | <0.96     |       |       |          | <0.96     |
| 9/20/2022 | <0.96      |          |            | 1.6 (J)    |           |       |       |          | <0.96     |
| 9/21/2022 |            | <0.96    | <0.96      |            | <0.96     | 22    |       | <0.96    |           |
| 9/18/2023 | <1.4 (U)   |          |            |            |           |       |       | <1.4 (U) |           |
| 9/20/2023 |            |          | <1.4 (U)   | <1.4 (U)   | <1.4 (U)  | 23    |       |          |           |
| 9/21/2023 |            | 2.2 (J)  |            |            |           |       |       |          | <1.4 (U)  |

## Sulfate



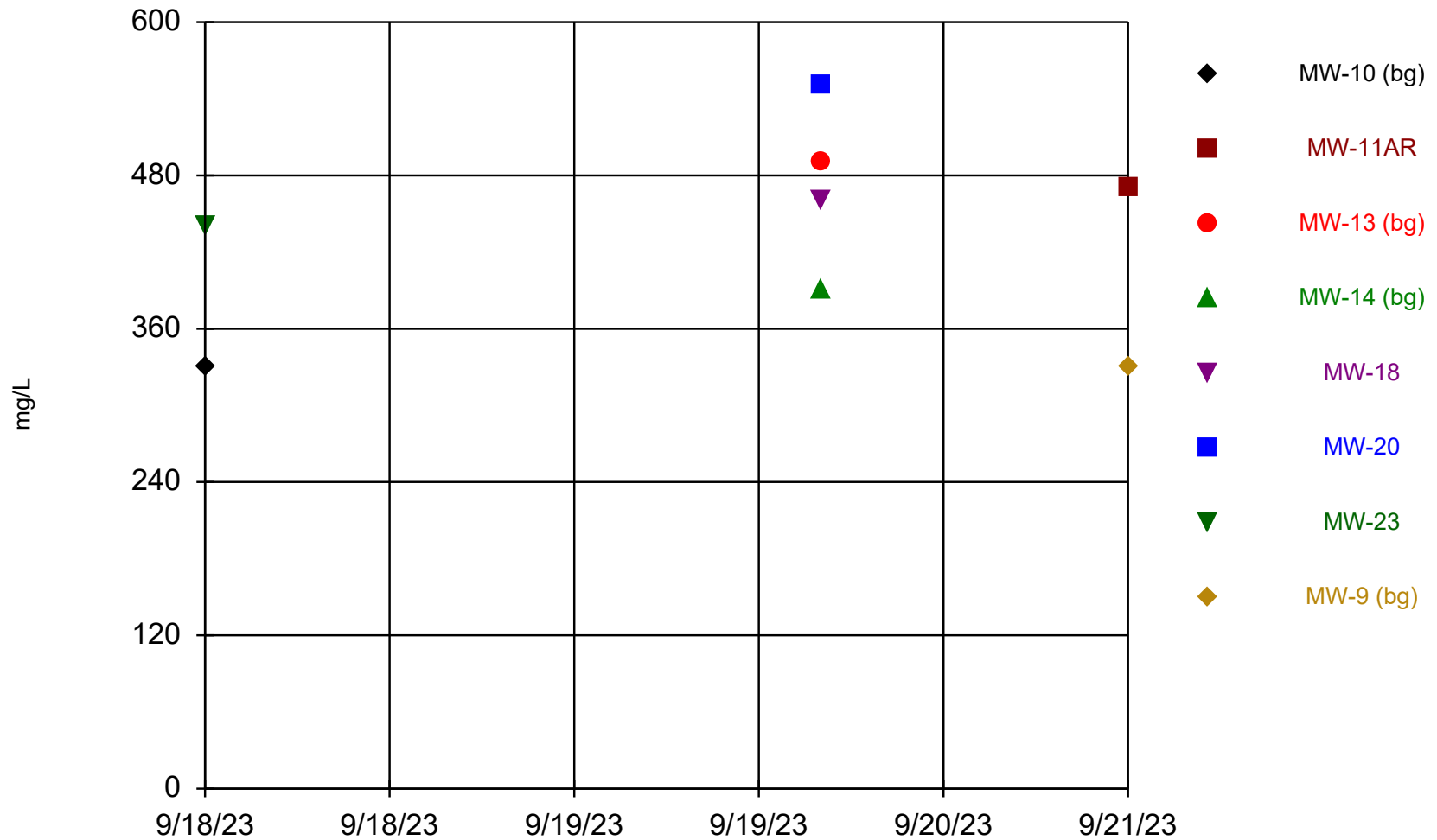
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Time Series

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 12:17 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/1/1999  | 43         |         | 56         | 64         |       |       |       |       | 30        |
| 9/1/2000  | 28         |         | 110        | 48         |       |       |       |       | 35        |
| 9/1/2001  | 14         |         | 76         | 56         |       |       |       |       | 38        |
| 9/1/2002  | 19         |         | 110        | 60         |       |       |       |       | 36        |
| 9/1/2003  | 17         |         | 100        | 32         |       |       |       |       | 35        |
| 9/1/2004  | 31         |         | 100        | 64         |       |       |       |       | 39        |
| 9/1/2005  | 17         |         | 120        | 80         |       |       |       |       | 44        |
| 9/1/2006  | 14.7       |         | 60.5       | 81.2       |       |       |       |       | 42.7      |
| 9/1/2007  | 13.8       |         | 106        | 86.9       |       |       |       |       | 28.7      |
| 9/1/2008  | 8.48       |         | 86.5       | 60         |       |       |       |       | 35.2      |
| 9/1/2009  | 10.1       |         | 80.2       | 56.5       |       |       |       |       | 35.6      |
| 9/1/2010  | 7.17       |         | 69.2       | 54.5       |       |       |       |       | 25.6      |
| 9/1/2011  | 9.16       |         | 70.5       | 51.8       |       |       |       |       | 26        |
| 9/1/2012  | 11.6       |         | 72.6       | 54.2       |       |       |       |       | 27.5      |
| 9/1/2013  | 11.1       |         | 69.3       | 50         |       |       |       |       | 19.7      |
| 9/1/2014  | 10.5       |         | 33.6       | 38.7       |       |       |       |       | 24.1      |
| 9/1/2015  | 6.2        |         | 68.9       | 49         |       |       |       |       | 27.2      |
| 9/25/2016 |            |         | 59.7       |            |       |       |       |       | 6.3       |
| 9/26/2016 |            |         |            | 40         | 19.8  | 132   | 123   |       |           |
| 9/27/2016 | 7.8        | 99      |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 31.8  |           |
| 9/13/2017 |            |         | 67.6       |            |       | 209   | 117   | 157   |           |
| 9/14/2017 |            | 116     |            | 45.1       | 48.4  |       |       |       | 12        |
| 9/15/2017 | 8.4        |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 51.6       |            |       | 123   | 77.4  | 13.5  |           |
| 9/12/2018 | 7.8        | 127     |            | 30.7       | 24.3  |       |       |       | 9.1       |
| 9/16/2019 |            |         | 48         | 32         |       | 240   | 140   | 220   |           |
| 9/17/2019 | 5.2        | 86      |            |            | 26    |       |       |       | 5.1       |
| 9/1/2020  |            | 91      |            | 28         | 22    |       |       | 110   | 5.6       |
| 9/2/2020  |            |         | 42         |            |       | 290   | 150   |       |           |
| 4/29/2021 | 7          |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 110        | 42         |       | 190   |       | 220   |           |
| 9/28/2021 | 8.5        | 120     |            |            | 80    |       |       |       | 12        |
| 9/20/2022 | 7.7        |         |            | 30         |       |       |       |       | 13        |
| 9/21/2022 |            | 110     | 120        |            | 97    | 150   |       | 140   |           |
| 9/18/2023 | 8          |         |            |            |       |       |       | 65    |           |
| 9/20/2023 |            |         | 120        | 35         | 64    | 140   |       |       |           |
| 9/21/2023 |            | 97      |            |            |       |       |       |       | 11        |

## Total Dissolved Solids



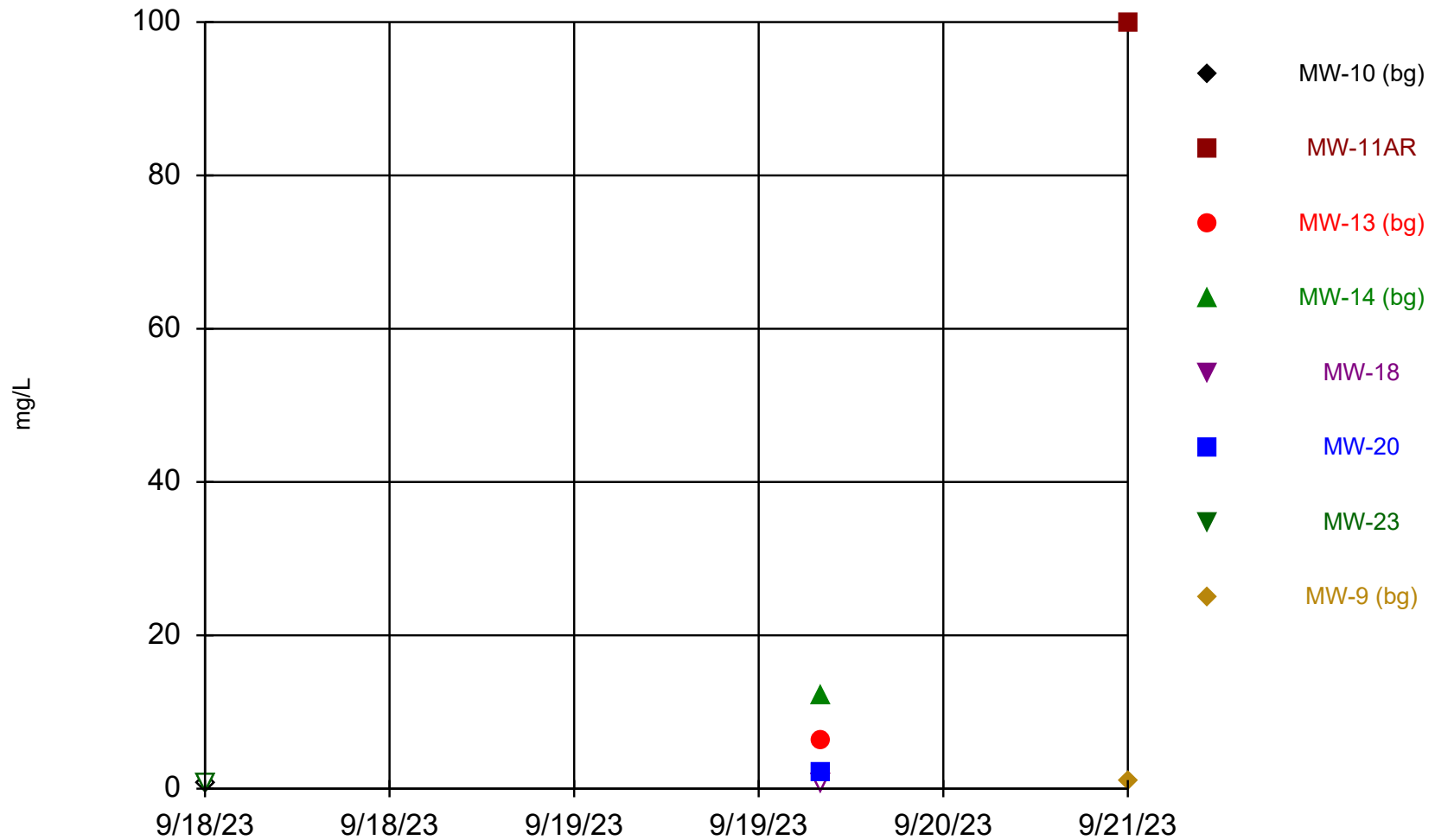
Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-----------|
| 9/18/2023 | 330        |         |            |            |       |       | 440   |           |
| 9/20/2023 |            |         | 490        | 390        | 460   | 550   |       |           |
| 9/21/2023 |            | 470     |            |            |       |       |       | 330       |

## Total Suspended Solids



Time Series Analysis Run 10/30/2023 12:12 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

## Time Series

Constituent: Total Suspended Solids (mg/L) Analysis Run 10/30/2023 12:17 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20 | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|-------|-----------|-----------|
| 9/18/2023 | <0.64 (U)  |         |            |            |           |       | <0.64 (U) |           |
| 9/20/2023 |            |         | 6.4        | 12         | <0.64 (U) | 2     |           |           |
| 9/21/2023 |            | 100     |            |            |           |       |           | 1.1 (J)   |



## Attachment E3

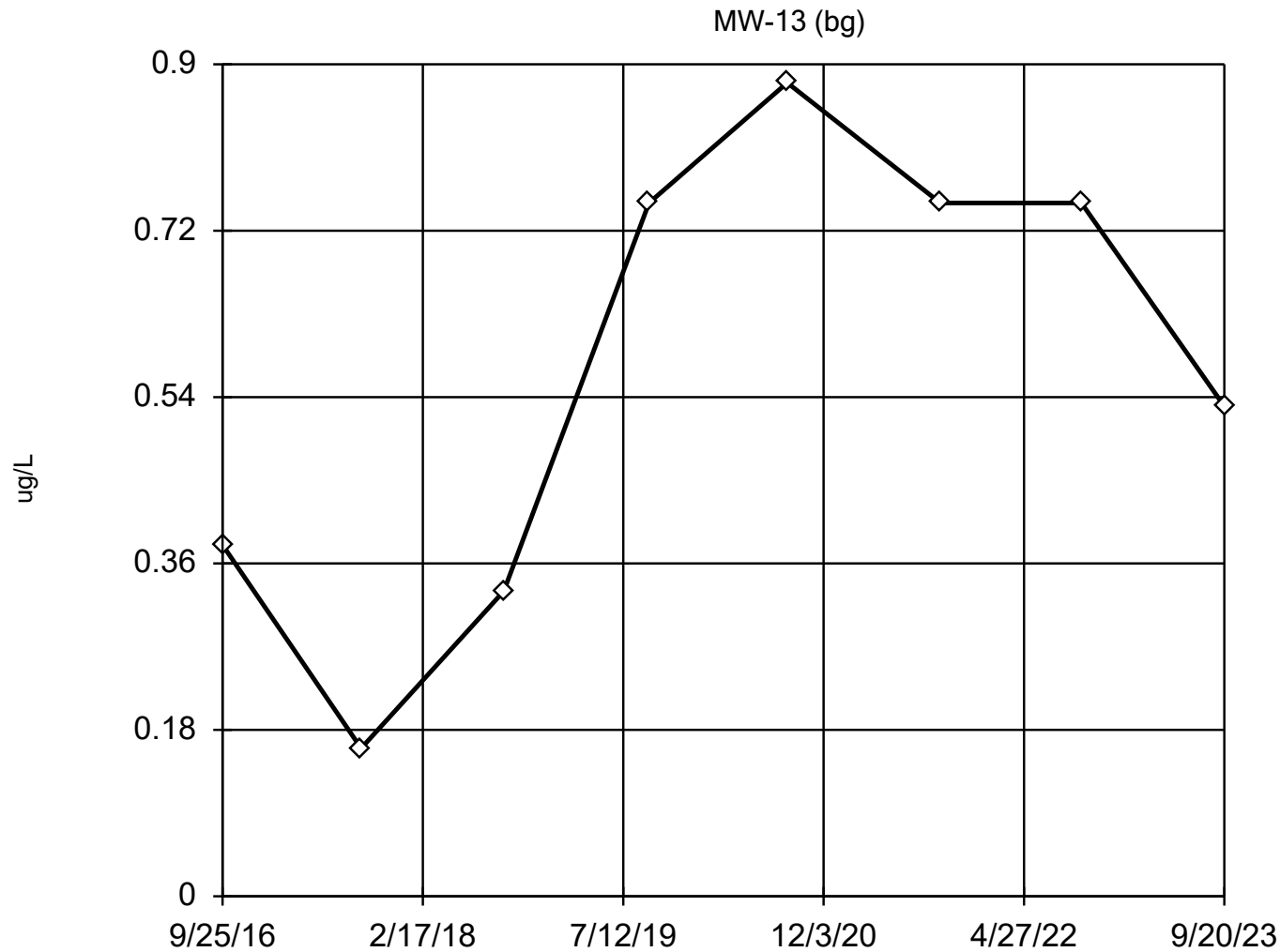
### Outlier Analysis Results – West

# Outlier Analysis

Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 11:24 AM

| <u>Constituent</u>   | <u>Well</u>       | <u>Outlier</u> | <u>Value(s)</u> | <u>Date(s)</u>   | <u>Method</u>   | <u>Alpha</u> | <u>N</u> | <u>Mean</u>  | <u>Std. Dev.</u> | <u>Distribution</u> | <u>Normality Test</u> |
|----------------------|-------------------|----------------|-----------------|------------------|-----------------|--------------|----------|--------------|------------------|---------------------|-----------------------|
| Arsenic (ug/L)       | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.5662       | 0.2554           | normal              | ShapiroWilk           |
| Arsenic (ug/L)       | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.785        | 0.3639           | ln(x)               | ShapiroWilk           |
| Arsenic (ug/L)       | MW-8 (bg)         | No             | n/a             | n/a              | Dixon`s         | 0.05         | 7        | 0.6286       | 0.1913           | normal              | ShapiroWilk           |
| Barium (ug/L)        | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 99.45        | 7.495            | normal              | ShapiroWilk           |
| <b>Barium (ug/L)</b> | <b>MW-14 (bg)</b> | <b>Yes</b>     | <b>108</b>      | <b>9/14/2017</b> | <b>Dixon`s</b>  | <b>0.05</b>  | <b>8</b> | <b>66.4</b>  | <b>17.23</b>     | <b>normal</b>       | <b>ShapiroWilk</b>    |
| Barium (ug/L)        | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 128.1        | 14.72            | normal              | ShapiroWilk           |
| Beryllium (ug/L)     | MW-13 (bg)        | No             | n/a             | n/a              | NP (nrm)        | NaN          | 8        | 0.2028       | 0.115            | unknown             | ShapiroWilk           |
| Beryllium (ug/L)     | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.22         | 0.08992          | normal              | ShapiroWilk           |
| Beryllium (ug/L)     | MW-8 (bg)         | No             | n/a             | n/a              | Dixon`s         | 0.05         | 7        | 0.1931       | 0.1207           | normal              | ShapiroWilk           |
| Boron (ug/L)         | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 85.28        | 34.64            | normal              | ShapiroWilk           |
| Boron (ug/L)         | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 364          | 160.7            | normal              | ShapiroWilk           |
| Boron (ug/L)         | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 71.01        | 46.74            | normal              | ShapiroWilk           |
| Chloride (mg/L)      | MW-13 (bg)        | No             | n/a             | n/a              | NP (nrm)        | NaN          | 25       | 3.712        | 1.596            | unknown             | ShapiroWilk           |
| Chloride (mg/L)      | MW-14 (bg)        | n/a            | n/a             | n/a              | NP (nrm)        | NaN          | 25       | 3.608        | 1.617            | unknown             | ShapiroWilk           |
| Chloride (mg/L)      | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 24       | 26.97        | 11.87            | ln(x)               | ShapiroWilk           |
| Cobalt (ug/L)        | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.4481       | 0.3808           | normal              | ShapiroWilk           |
| Cobalt (ug/L)        | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.845        | 0.9325           | ln(x)               | ShapiroWilk           |
| Cobalt (ug/L)        | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 0.5216       | 0.556            | ln(x)               | ShapiroWilk           |
| Iron (ug/L)          | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 316.6        | 397.1            | ln(x)               | ShapiroWilk           |
| <b>Iron (ug/L)</b>   | <b>MW-14 (bg)</b> | <b>Yes</b>     | <b>4440</b>     | <b>9/14/2017</b> | <b>NP (nrm)</b> | <b>NaN</b>   | <b>8</b> | <b>904.6</b> | <b>1535</b>      | <b>unknown</b>      | <b>ShapiroWilk</b>    |
| Iron (ug/L)          | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 439.1        | 437.5            | normal              | ShapiroWilk           |
| Lead (ug/L)          | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.3387       | 0.1831           | normal              | ShapiroWilk           |
| Lead (ug/L)          | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 0.5844       | 0.5921           | ln(x)               | ShapiroWilk           |
| Lead (ug/L)          | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 0.6961       | 1.242            | ln(x)               | ShapiroWilk           |
| Magnesium (ug/L)     | MW-13 (bg)        | No             | n/a             | n/a              | NP (nrm)        | NaN          | 8        | 17938        | 936.5            | unknown             | ShapiroWilk           |
| Magnesium (ug/L)     | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 23050        | 3189             | normal              | ShapiroWilk           |
| Magnesium (ug/L)     | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 19914        | 2537             | normal              | ShapiroWilk           |
| Manganese (ug/L)     | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 56.64        | 52.2             | normal              | ShapiroWilk           |
| Manganese (ug/L)     | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 108.9        | 126              | ln(x)               | ShapiroWilk           |
| Manganese (ug/L)     | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 61.5         | 60.11            | normal              | ShapiroWilk           |
| Selenium (ug/L)      | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 1.102        | 0.1644           | normal              | ShapiroWilk           |
| Selenium (ug/L)      | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 8        | 1.736        | 1.008            | ln(x)               | ShapiroWilk           |
| Selenium (ug/L)      | MW-8 (bg)         | No             | n/a             | n/a              | EPA 1989        | 0.05         | 7        | 0.8729       | 0.3724           | normal              | ShapiroWilk           |
| Sulfate (mg/L)       | MW-13 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 25       | 80.33        | 26.2             | normal              | ShapiroWilk           |
| Sulfate (mg/L)       | MW-14 (bg)        | No             | n/a             | n/a              | EPA 1989        | 0.05         | 25       | 50.78        | 16.31            | normal              | ShapiroWilk           |
| Sulfate (mg/L)       | MW-8 (bg)         | No             | n/a             | n/a              | Rosner`s        | 0.01         | 24       | 19.22        | 7.104            | normal              | ShapiroWilk           |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.5662, std. dev. 0.2554, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9125  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Arsenic Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

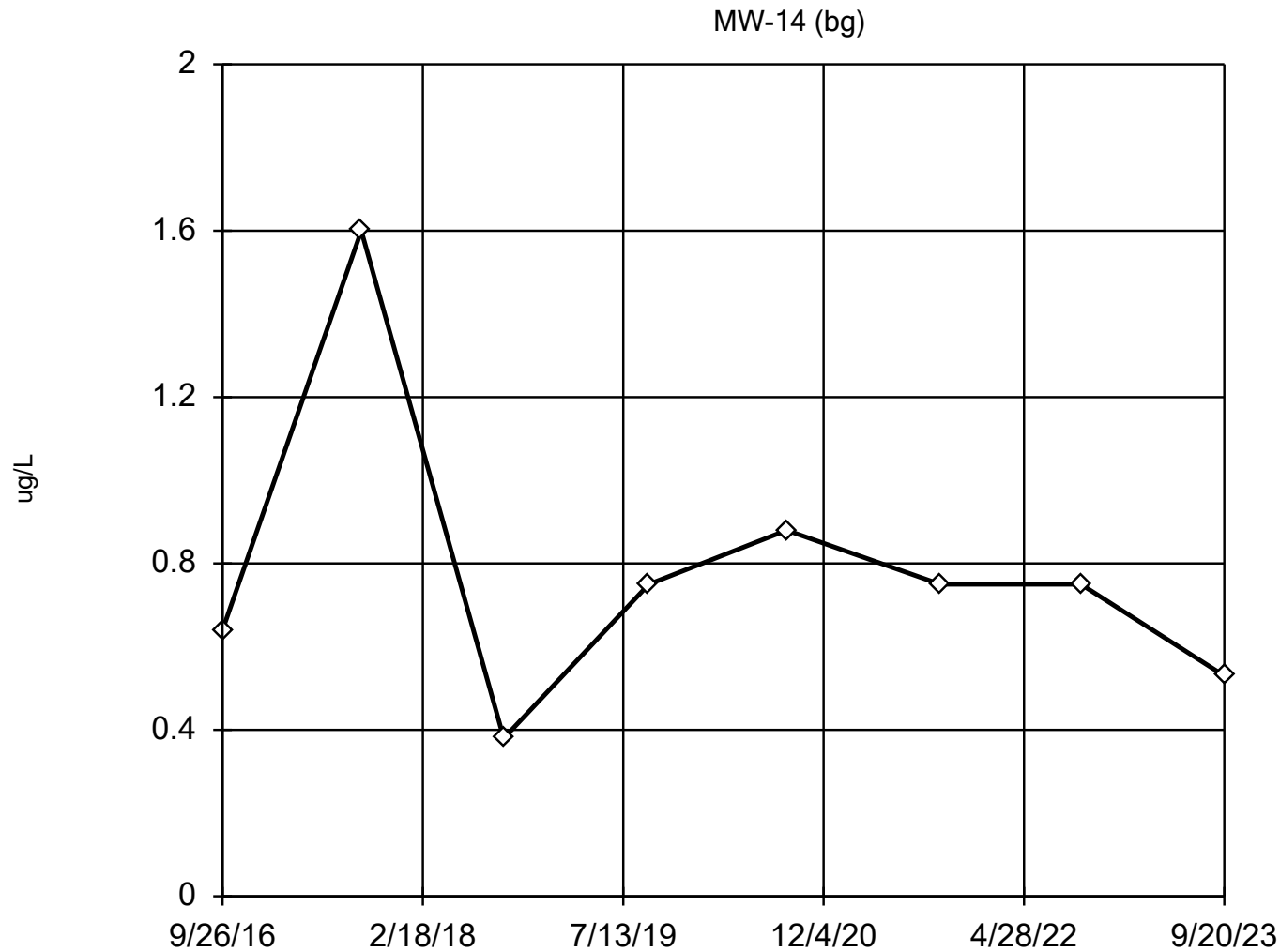
# EPA 1989 Outlier Screening

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | 0.38 (J)  |
| 9/13/2017 | 0.16 (J)  |
| 9/11/2018 | 0.33 (J)  |
| 9/16/2019 | <0.75     |
| 9/2/2020  | <0.88     |
| 9/27/2021 | <0.75     |
| 9/21/2022 | <0.75     |
| 9/20/2023 | <0.53 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.785, std. dev. 0.3639, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9341  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

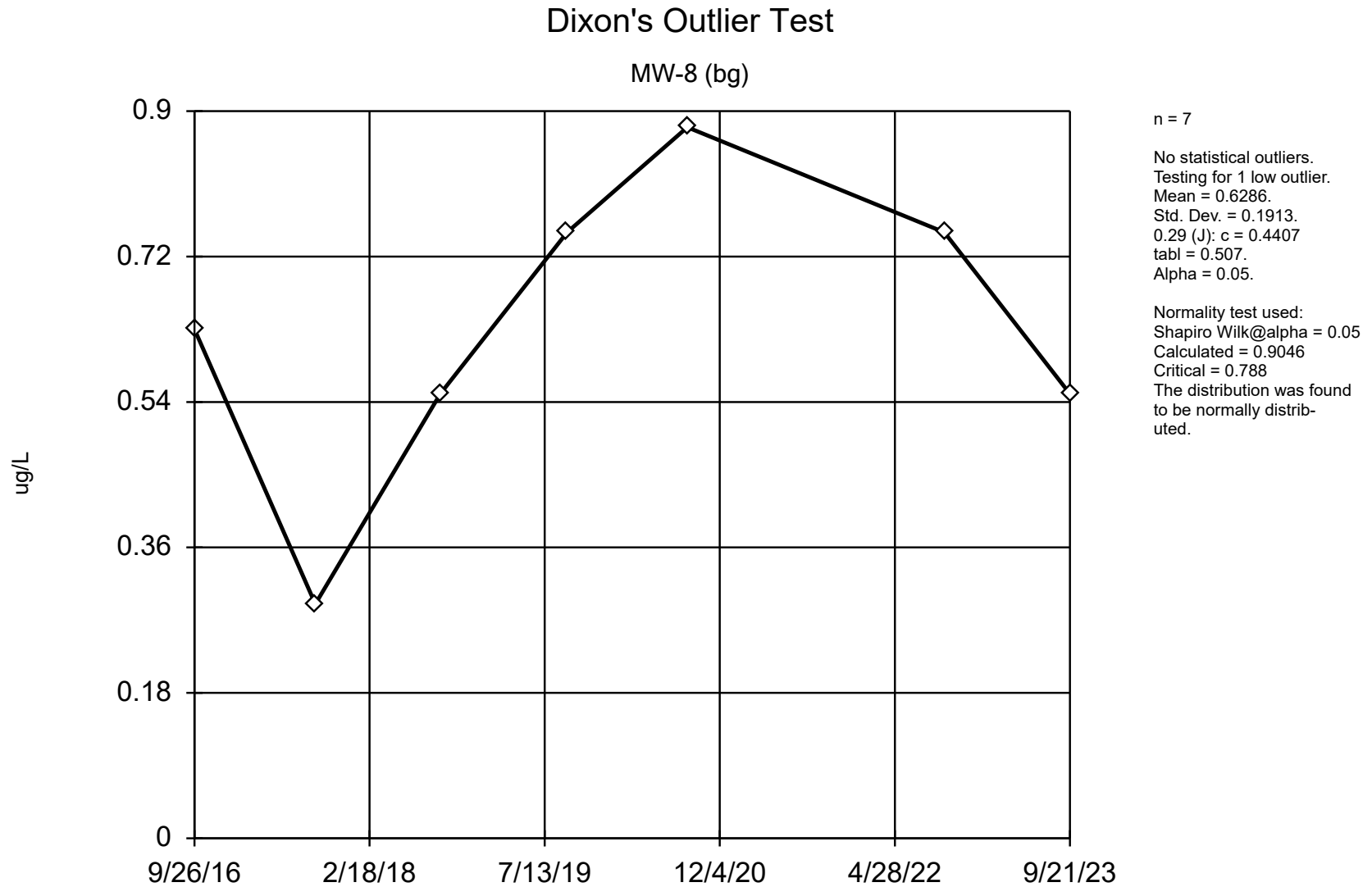
Constituent: Arsenic Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |           |
|-----------|-----------|
| 9/26/2016 | 0.64 (J)  |
| 9/14/2017 | 1.6       |
| 9/12/2018 | 0.38 (J)  |
| 9/16/2019 | <0.75     |
| 9/1/2020  | <0.88     |
| 9/27/2021 | <0.75     |
| 9/20/2022 | <0.75     |
| 9/20/2023 | <0.53 (U) |



Constituent: Arsenic    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

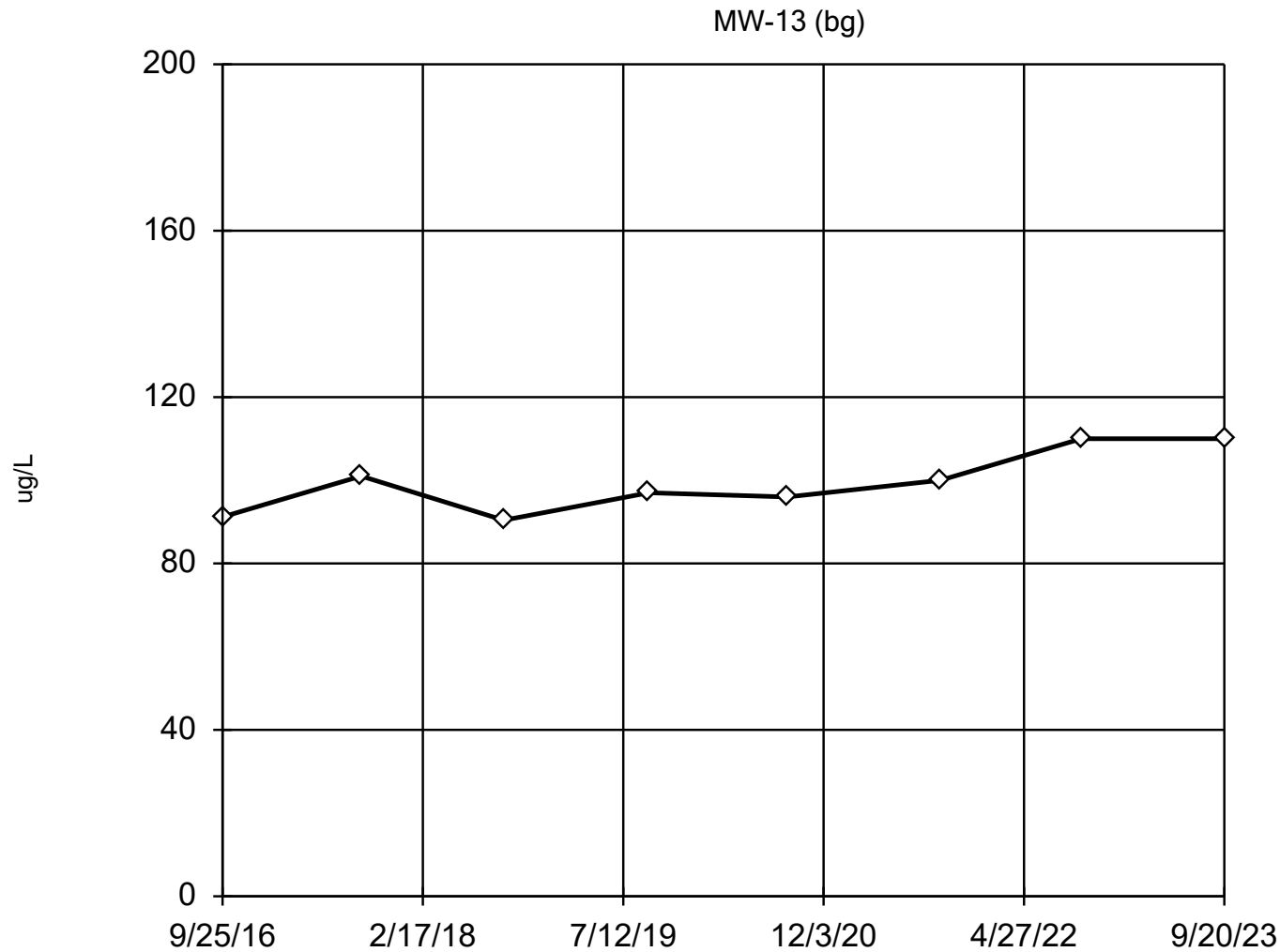
# Dixon's Outlier Test

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | 0.63 (J) |
| 9/13/2017 | 0.29 (J) |
| 9/12/2018 | 0.55 (J) |
| 9/17/2019 | <0.75    |
| 9/1/2020  | <0.88    |
| 9/20/2022 | <0.75    |
| 9/21/2023 | 0.55 (J) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 99.45, std. dev. 7.495, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9037  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Barium   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

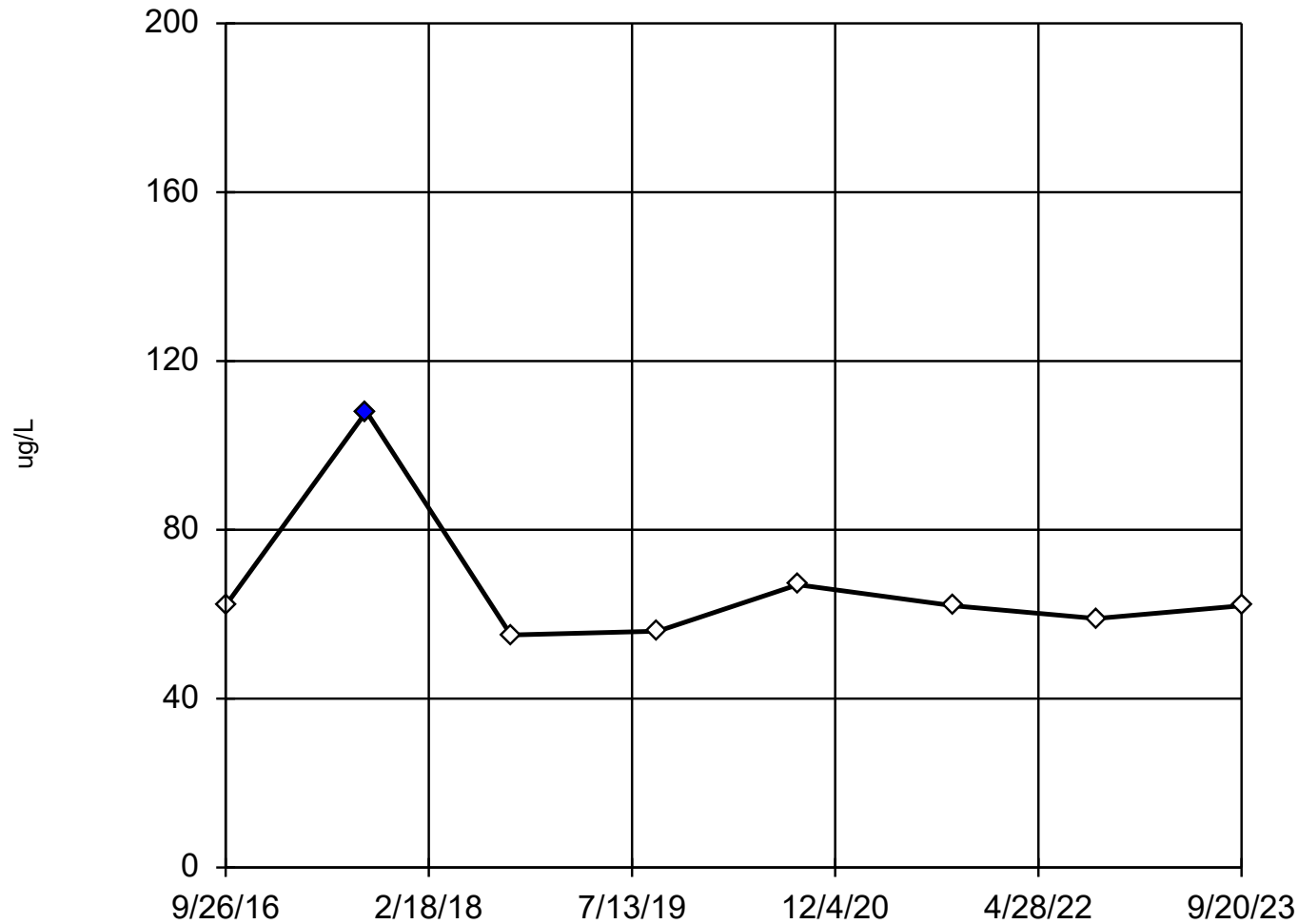
Constituent: Barium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |      |
|-----------|------|
| 9/25/2016 | 91.2 |
| 9/13/2017 | 101  |
| 9/11/2018 | 90.4 |
| 9/16/2019 | 97   |
| 9/2/2020  | 96   |
| 9/27/2021 | 100  |
| 9/21/2022 | 110  |
| 9/20/2023 | 110  |

## Dixon's Outlier Test

MW-14 (bg)



n = 8

Statistical outlier is drawn as solid.  
Testing for 1 high outlier.  
Mean = 66.4.  
Std. Dev. = 17.23.  
108: c = 0.7885  
tab1 = 0.554.  
Alpha = 0.05.

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9294  
Critical = 0.803  
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Barium   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

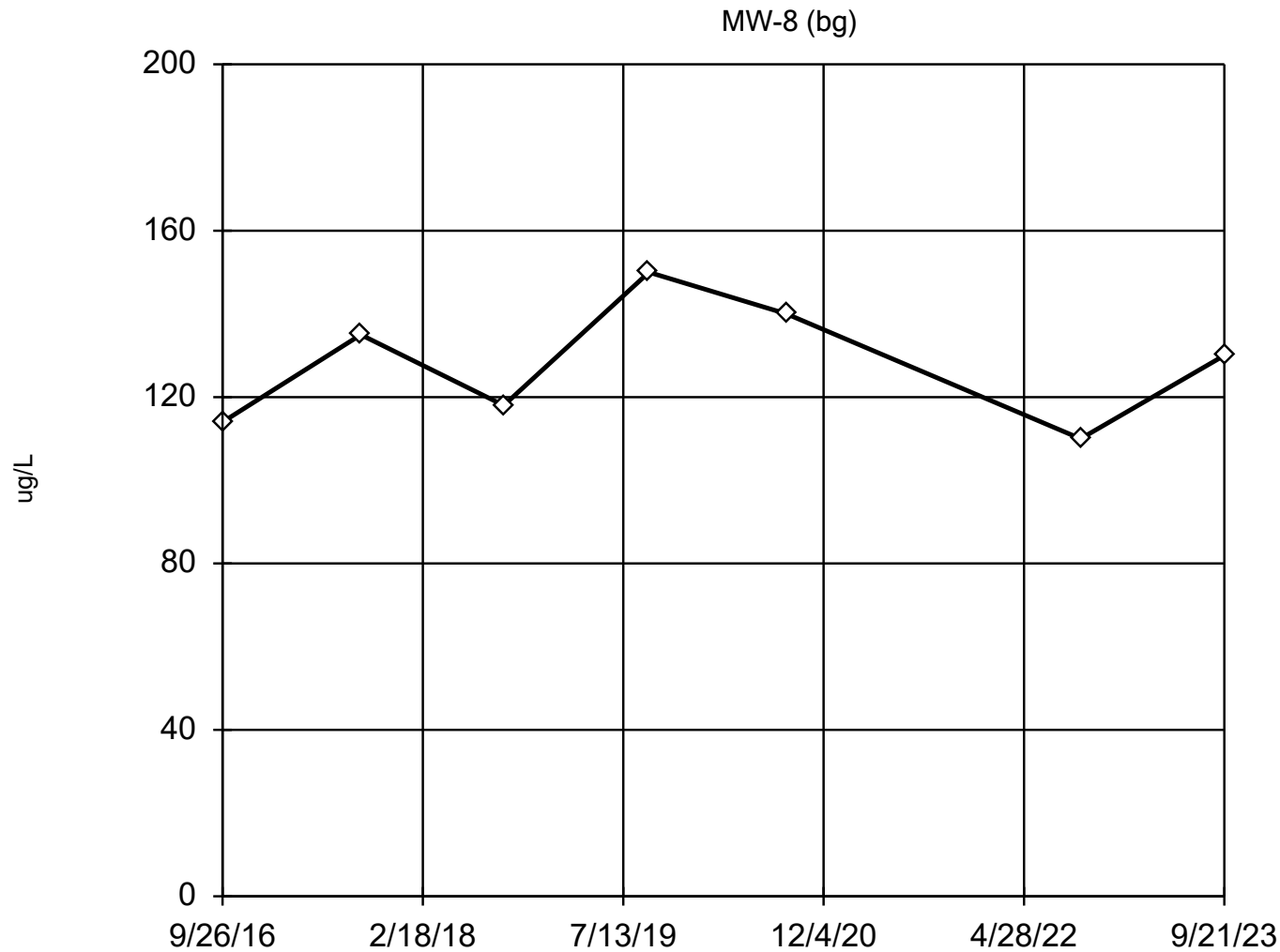
# Dixon's Outlier Test

Constituent: Barium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |         |
|-----------|---------|
| 9/26/2016 | 62.1    |
| 9/14/2017 | 108 (O) |
| 9/12/2018 | 55.1    |
| 9/16/2019 | 56      |
| 9/1/2020  | 67      |
| 9/27/2021 | 62      |
| 9/20/2022 | 59      |
| 9/20/2023 | 62      |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 128.1, std. dev. 14.72, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9522  
Critical = 0.803  
The distribution was found to be normally distributed.

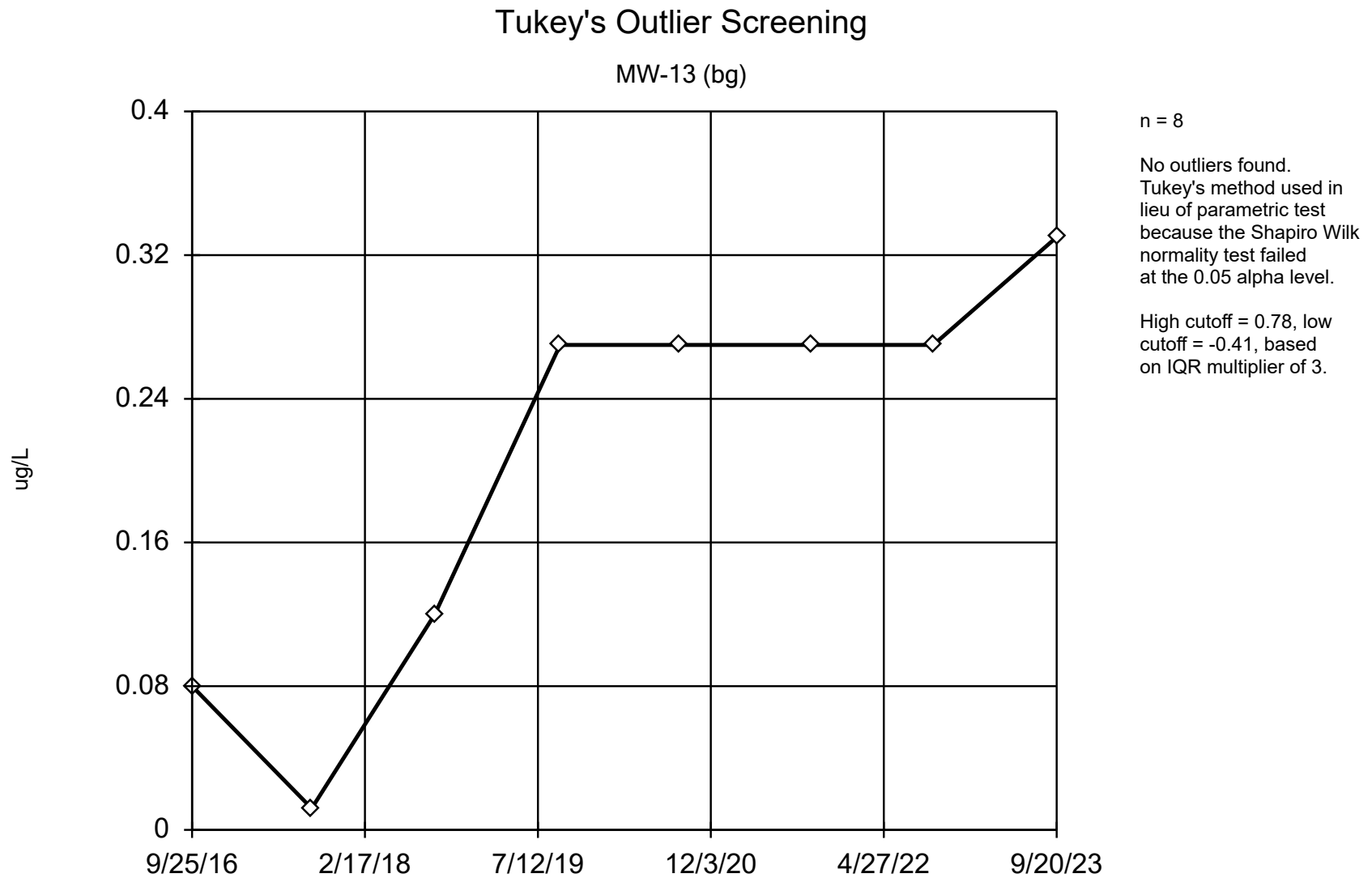
Constituent: Barium   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Barium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |     |
|-----------|-----|
| 9/26/2016 | 114 |
| 9/13/2017 | 135 |
| 9/12/2018 | 118 |
| 9/17/2019 | 150 |
| 9/1/2020  | 140 |
| 9/20/2022 | 110 |
| 9/21/2023 | 130 |



Constituent: Beryllium    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

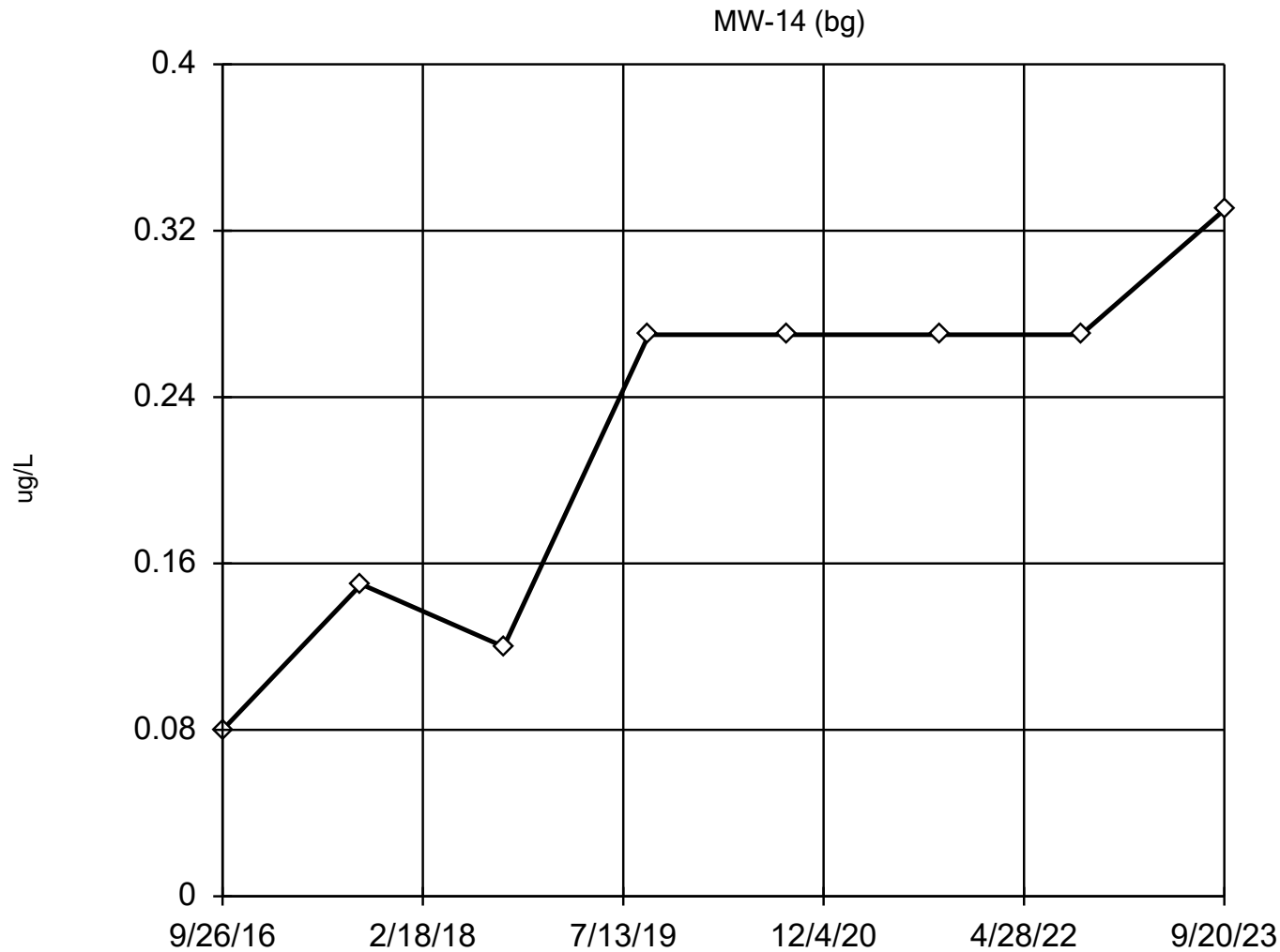
# Tukey's Outlier Screening

Constituent: Beryllium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | <0.08     |
| 9/13/2017 | <0.012    |
| 9/11/2018 | <0.12     |
| 9/16/2019 | <0.27     |
| 9/2/2020  | <0.27     |
| 9/27/2021 | <0.27     |
| 9/21/2022 | <0.27     |
| 9/20/2023 | <0.33 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.22, std. dev. 0.08992, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8526  
Critical = 0.818  
The distribution was found to be normally distributed.

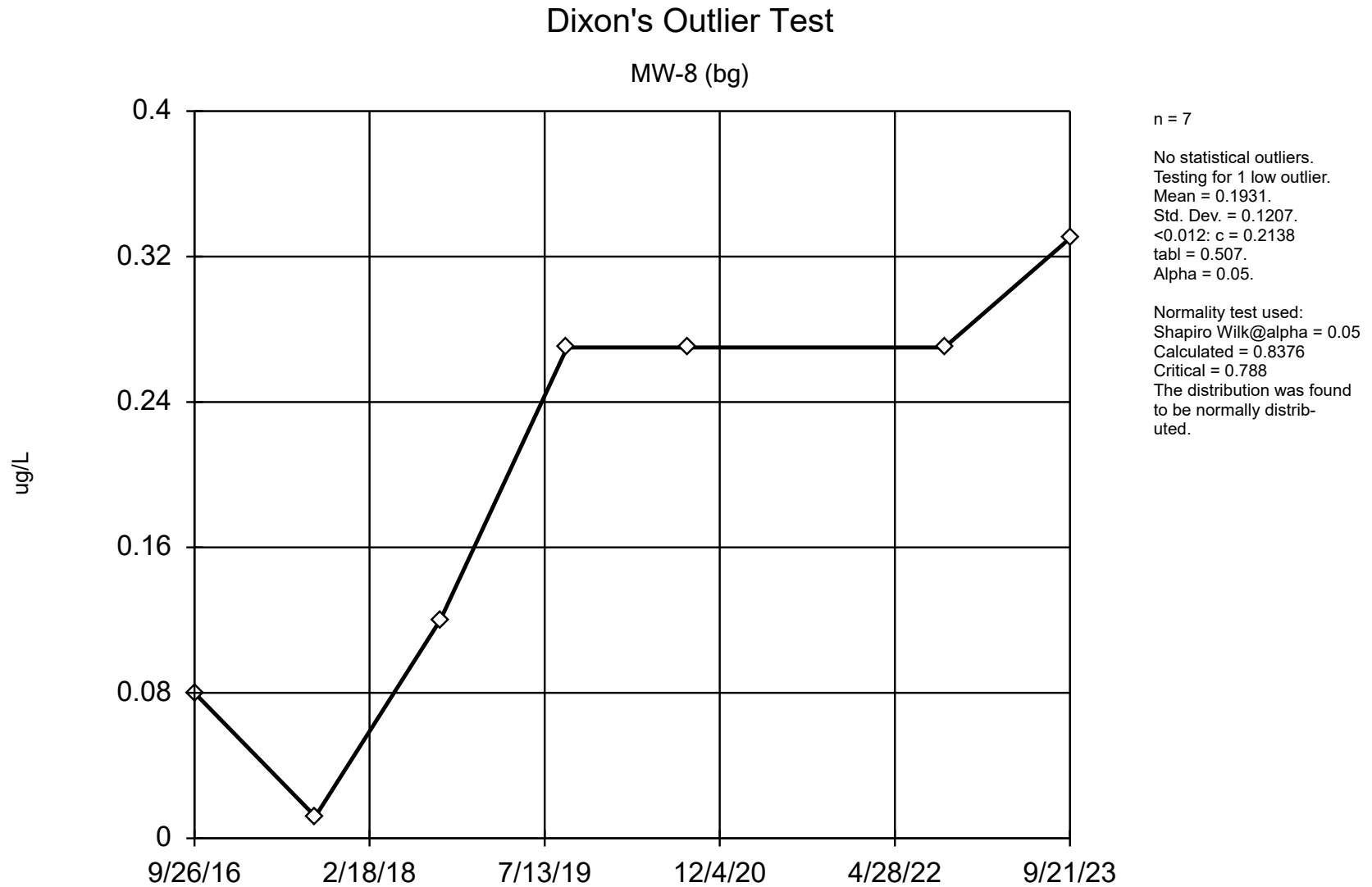
Constituent: Beryllium    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Beryllium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |           |
|-----------|-----------|
| 9/26/2016 | <0.08     |
| 9/14/2017 | 0.15 (J)  |
| 9/12/2018 | <0.12     |
| 9/16/2019 | <0.27     |
| 9/1/2020  | <0.27     |
| 9/27/2021 | <0.27     |
| 9/20/2022 | <0.27     |
| 9/20/2023 | <0.33 (U) |



Constituent: Beryllium    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

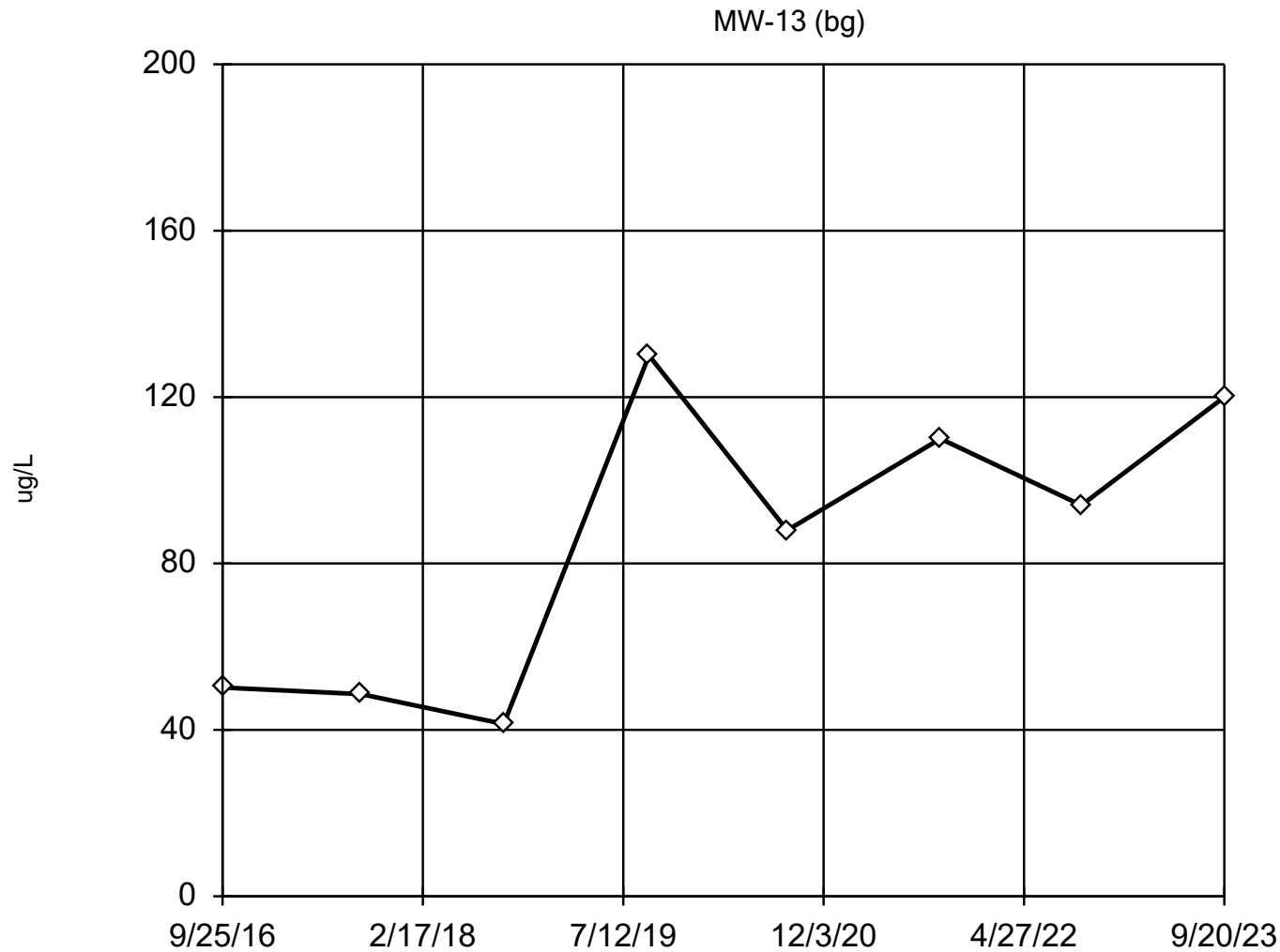
# Dixon's Outlier Test

Constituent: Beryllium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |           |
|-----------|-----------|
| 9/26/2016 | <0.08     |
| 9/13/2017 | <0.012    |
| 9/12/2018 | <0.12     |
| 9/17/2019 | <0.27     |
| 9/1/2020  | <0.27     |
| 9/20/2022 | <0.27     |
| 9/21/2023 | <0.33 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 85.28, std. dev. 34.64, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9003  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Boron   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

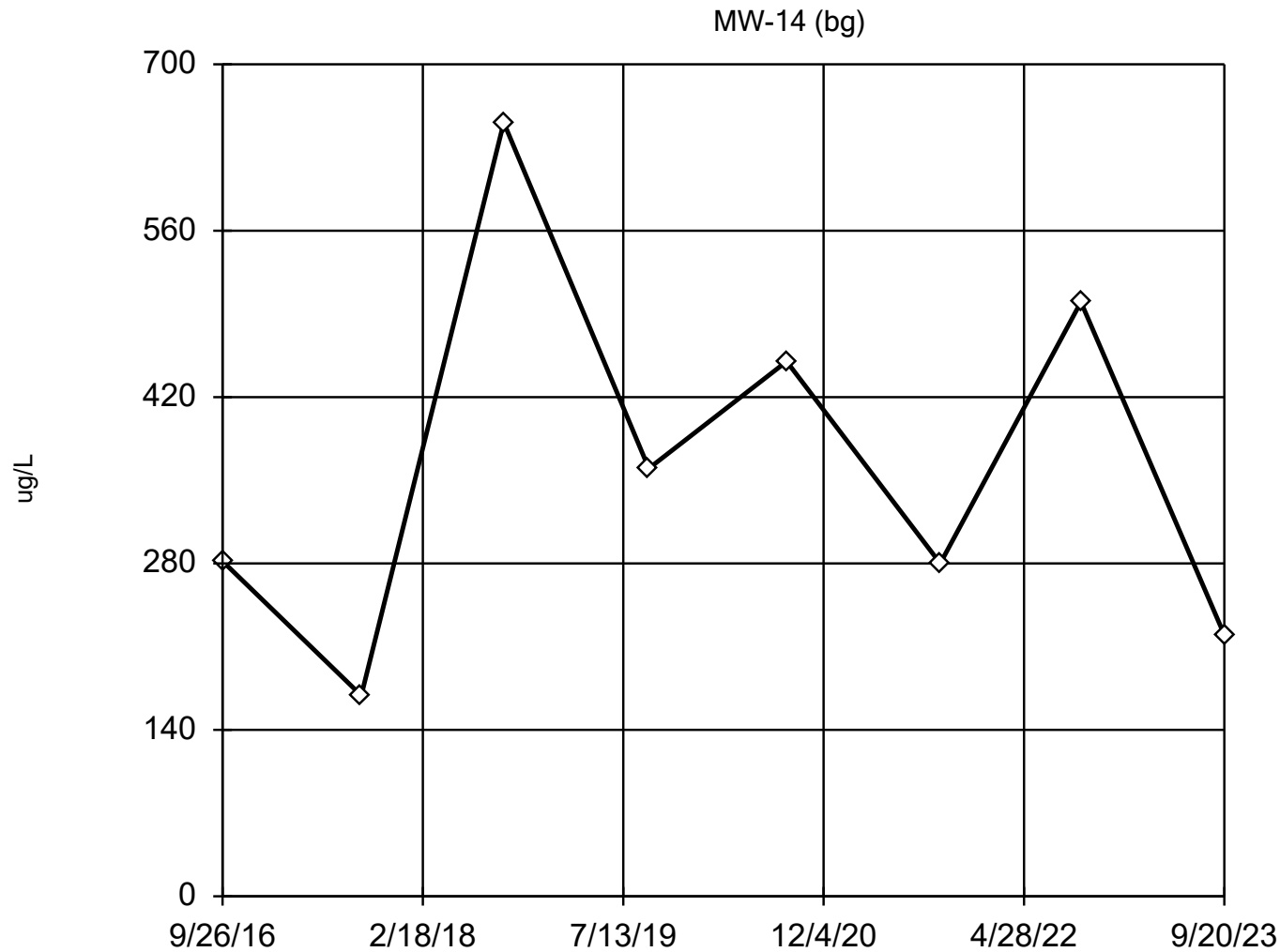
# EPA 1989 Outlier Screening

Constituent: Boron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |          |
|-----------|----------|
| 9/25/2016 | 50.2 (J) |
| 9/13/2017 | 48.6 (J) |
| 9/11/2018 | 41.4 (J) |
| 9/16/2019 | 130 (J)  |
| 9/2/2020  | 88 (J)   |
| 9/27/2021 | 110      |
| 9/21/2022 | 94 (J)   |
| 9/20/2023 | 120      |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 364, std. dev. 160.7, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9493  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Boron   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

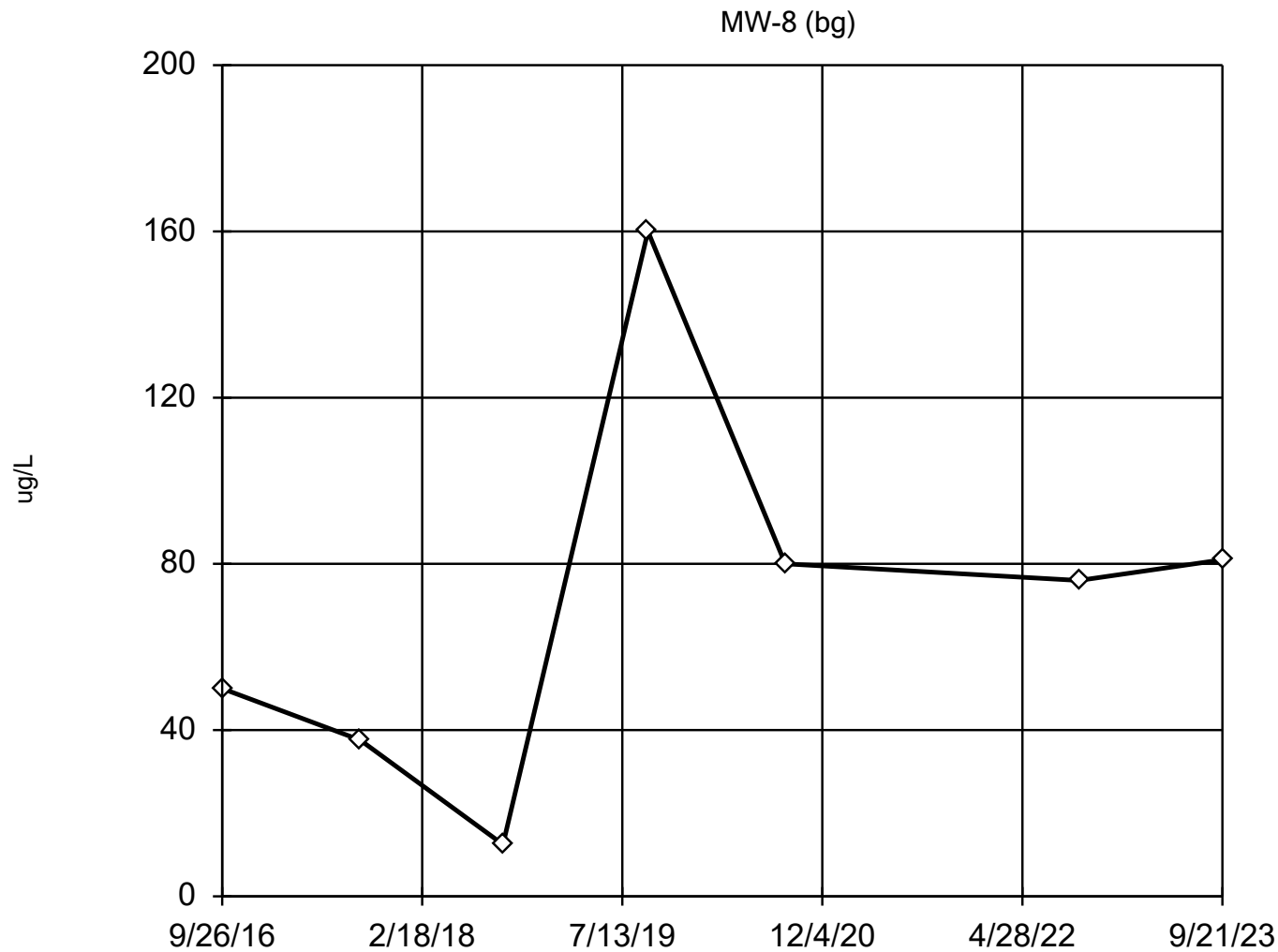
# EPA 1989 Outlier Screening

Constituent: Boron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |     |
|-----------|-----|
| 9/26/2016 | 282 |
| 9/14/2017 | 169 |
| 9/12/2018 | 651 |
| 9/16/2019 | 360 |
| 9/1/2020  | 450 |
| 9/27/2021 | 280 |
| 9/20/2022 | 500 |
| 9/20/2023 | 220 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 71.01, std. dev. 46.74, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9114  
Critical = 0.803  
The distribution was found to be normally distributed.

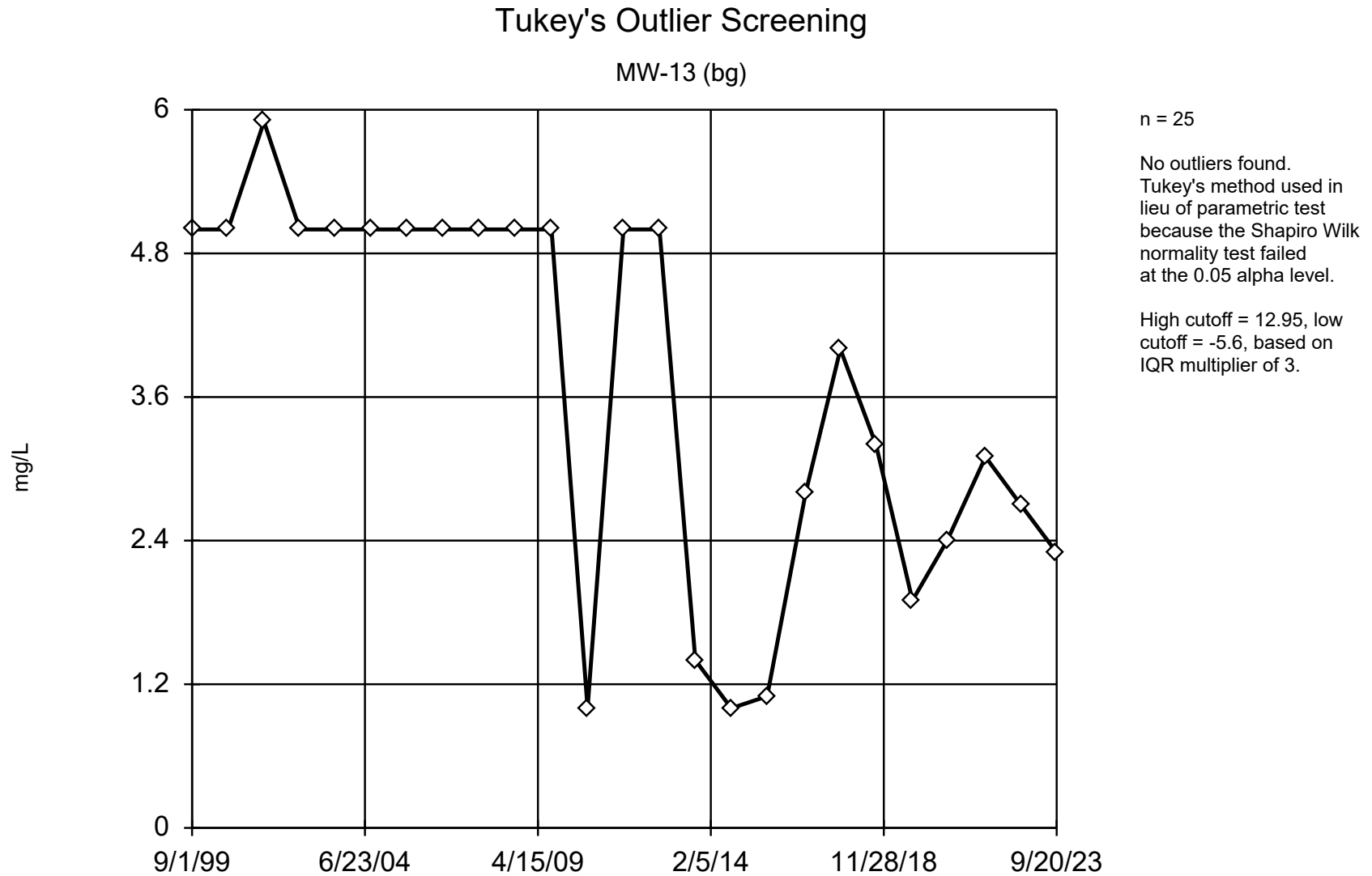
Constituent: Boron   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Boron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | <50      |
| 9/13/2017 | 37.6 (J) |
| 9/12/2018 | <12.5    |
| 9/17/2019 | 160 (J)  |
| 9/1/2020  | <80      |
| 9/20/2022 | 76 (J)   |
| 9/21/2023 | 81 (J)   |



# Tukey's Outlier Screening

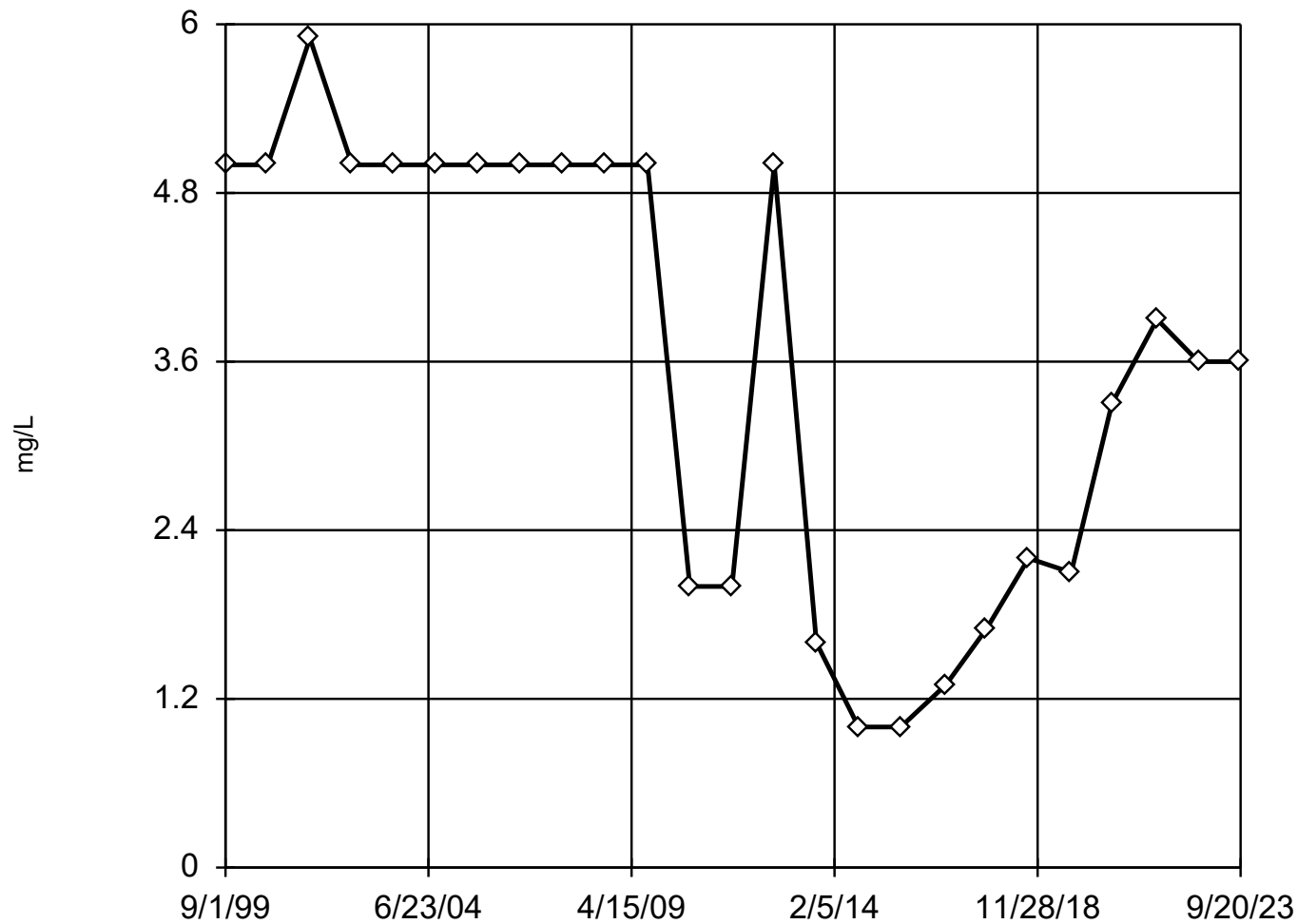
Constituent: Chloride (mg/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-13 (bg)

|           |           |
|-----------|-----------|
| 9/1/1999  | <5        |
| 9/1/2000  | <5        |
| 9/1/2001  | 5.9       |
| 9/1/2002  | <5        |
| 9/1/2003  | <5        |
| 9/1/2004  | <5        |
| 9/1/2005  | <5        |
| 9/1/2006  | <5        |
| 9/1/2007  | <5        |
| 9/1/2008  | <5        |
| 9/1/2009  | <5        |
| 9/1/2010  | <1        |
| 9/1/2011  | <5        |
| 9/1/2012  | <5        |
| 9/1/2013  | 1.4       |
| 9/1/2014  | <1        |
| 9/1/2015  | 1.1       |
| 9/25/2016 | 2.8       |
| 9/13/2017 | 4         |
| 9/11/2018 | 3.2       |
| 9/16/2019 | 1.9 (J,B) |
| 9/2/2020  | 2.4 (J,B) |
| 9/27/2021 | 3.1 (J)   |
| 9/21/2022 | 2.7 (J)   |
| 9/20/2023 | <2.3 (U)  |

## Tukey's Outlier Screening

MW-14 (bg)



n = 25

No outliers found.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.05 alpha level.

The results were invalidated, because both the lower and upper quartiles represent reporting limits.

Constituent: Chloride    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

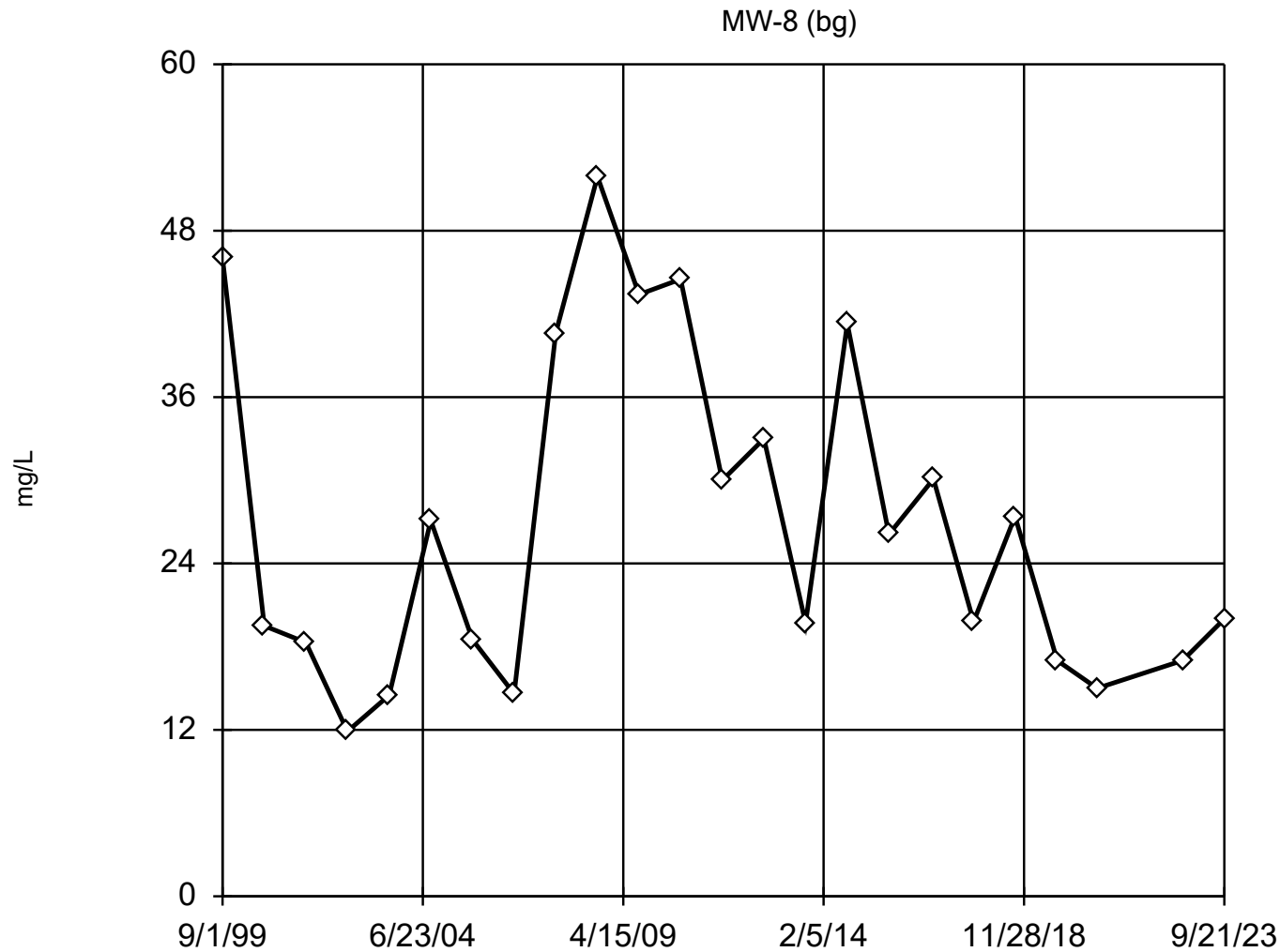
# Tukey's Outlier Screening

Constituent: Chloride (mg/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |           |
|-----------|-----------|
| 9/1/1999  | <5        |
| 9/1/2000  | <5        |
| 9/1/2001  | 5.9       |
| 9/1/2002  | <5        |
| 9/1/2003  | <5        |
| 9/1/2004  | <5        |
| 9/1/2005  | <5        |
| 9/1/2006  | <5        |
| 9/1/2007  | <5        |
| 9/1/2008  | <5        |
| 9/1/2009  | <5        |
| 9/1/2010  | <2        |
| 9/1/2011  | <2        |
| 9/1/2012  | <5        |
| 9/1/2013  | 1.6       |
| 9/1/2014  | <1        |
| 9/1/2015  | <1        |
| 9/26/2016 | 1.3       |
| 9/14/2017 | 1.7       |
| 9/12/2018 | 2.2       |
| 9/16/2019 | 2.1 (J,B) |
| 9/1/2020  | 3.3 (J,B) |
| 9/27/2021 | 3.9 (J)   |
| 9/20/2022 | 3.6 (J)   |
| 9/20/2023 | 3.6 (J)   |

## EPA Screening (suspected outliers for Rosner's Test)



n = 24

Rosner's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 26.97, std. dev. 11.87, critical Tn 2.644

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9408  
Critical = 0.916 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Chloride    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

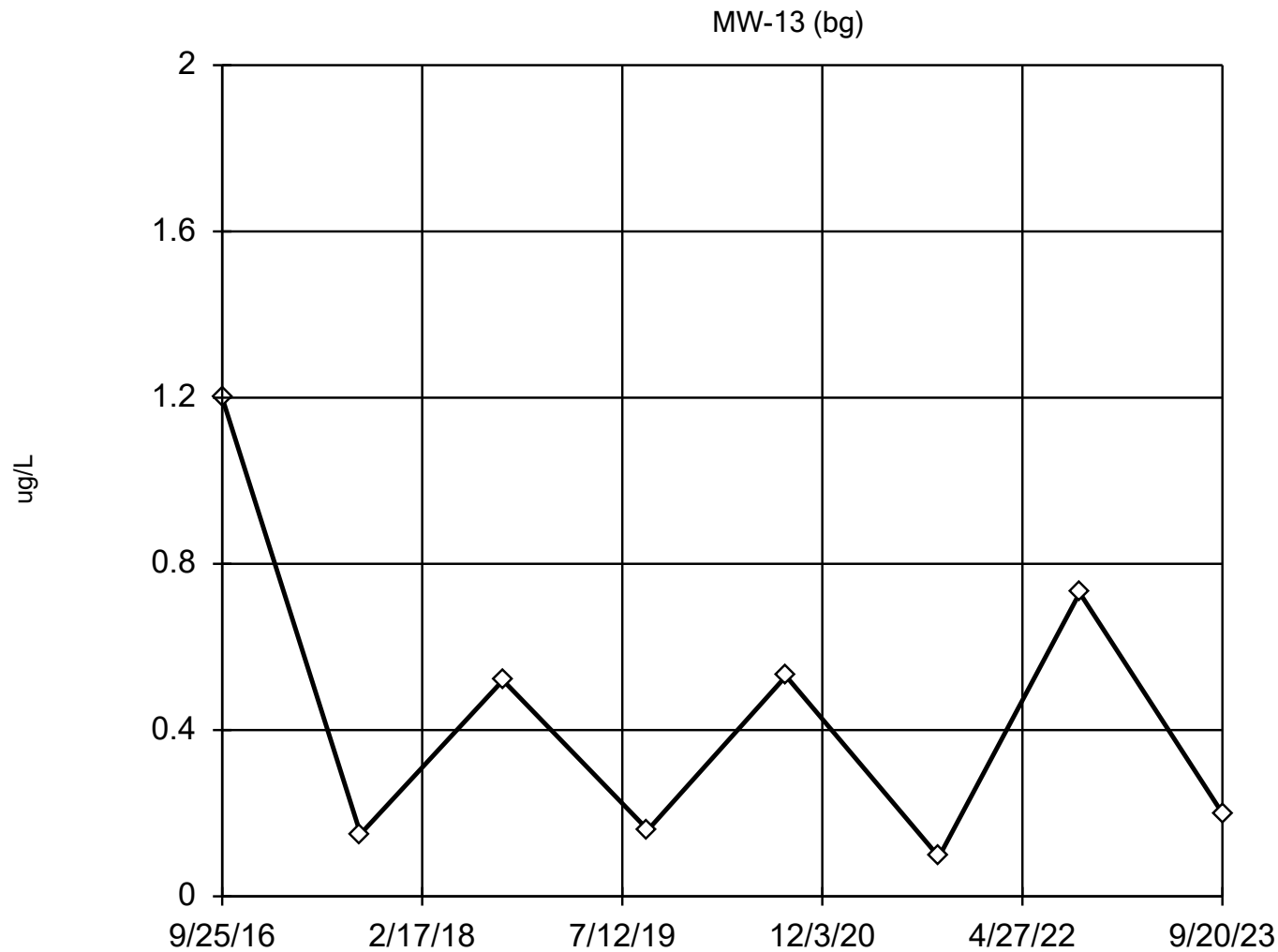
# EPA 1989 Outlier Screening

Constituent: Chloride (mg/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-8 (bg)

|           |        |
|-----------|--------|
| 9/1/1999  | 46     |
| 9/1/2000  | 19.5   |
| 9/1/2001  | 18.3   |
| 9/1/2002  | 11.9   |
| 9/1/2003  | 14.5   |
| 9/1/2004  | 27.1   |
| 9/1/2005  | 18.5   |
| 9/1/2006  | 14.6   |
| 9/1/2007  | 40.6   |
| 9/1/2008  | 51.9   |
| 9/1/2009  | 43.4   |
| 9/1/2010  | 44.5   |
| 9/1/2011  | 30     |
| 9/1/2012  | 33     |
| 9/1/2013  | 19.7   |
| 9/1/2014  | 41.3   |
| 9/1/2015  | 26.1   |
| 9/26/2016 | 30.1   |
| 9/13/2017 | 19.8   |
| 9/12/2018 | 27.4   |
| 9/17/2019 | 17 (B) |
| 9/1/2020  | 15 (B) |
| 9/20/2022 | 17     |
| 9/21/2023 | 20     |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.4481, std. dev. 0.3808, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8609  
Critical = 0.818  
The distribution was found to be normally distributed.

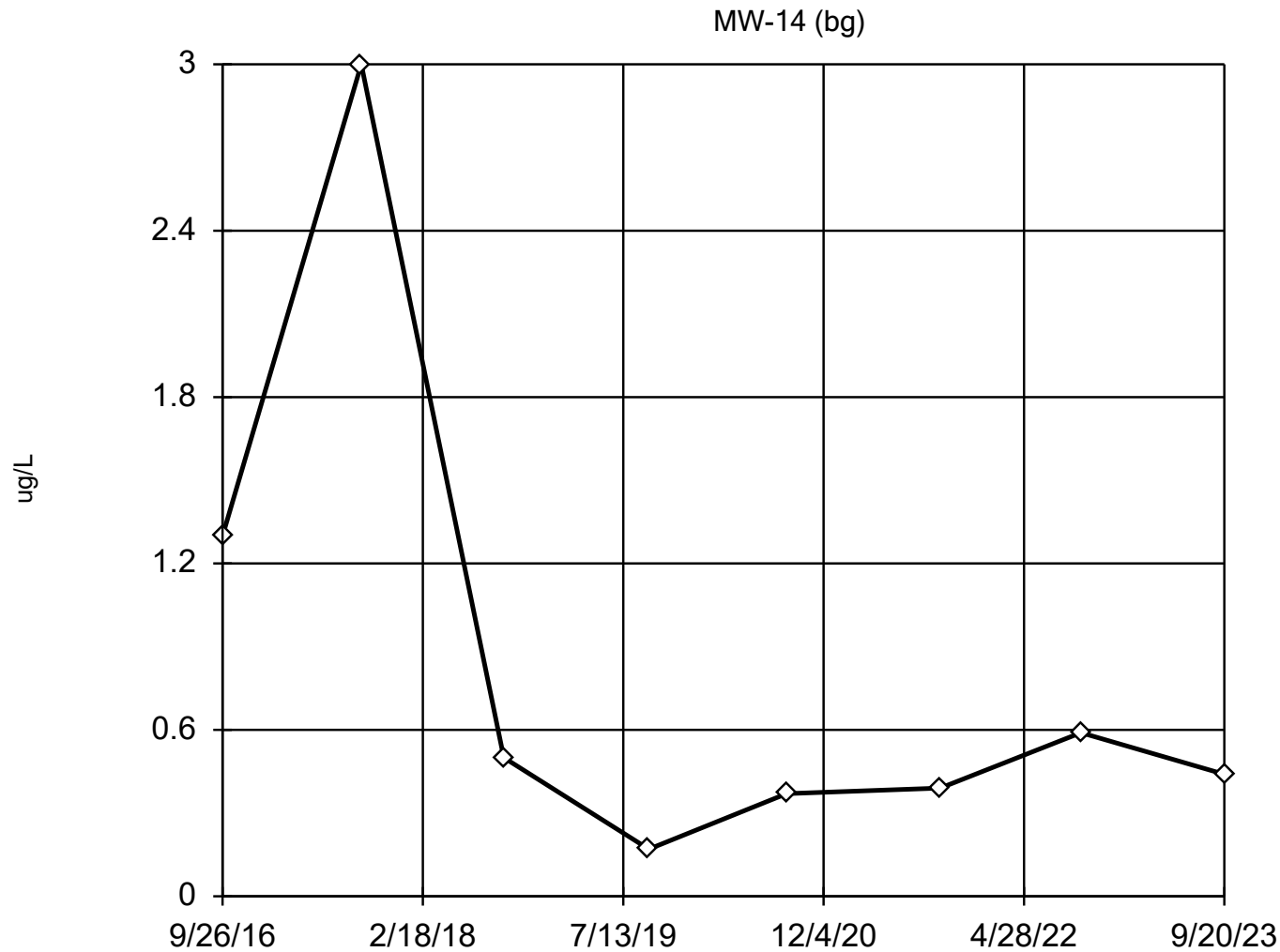
Constituent: Cobalt    Analysis Run 10/30/2023 11:22 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

| MW-13 (bg) |          |
|------------|----------|
| 9/25/2016  | 1.2      |
| 9/13/2017  | 0.15 (J) |
| 9/11/2018  | 0.52 (J) |
| 9/16/2019  | 0.16 (J) |
| 9/2/2020   | 0.53     |
| 9/27/2021  | <0.19    |
| 9/21/2022  | 0.73     |
| 9/20/2023  | 0.2 (J)  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.845, std. dev. 0.9325, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9222  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Cobalt   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

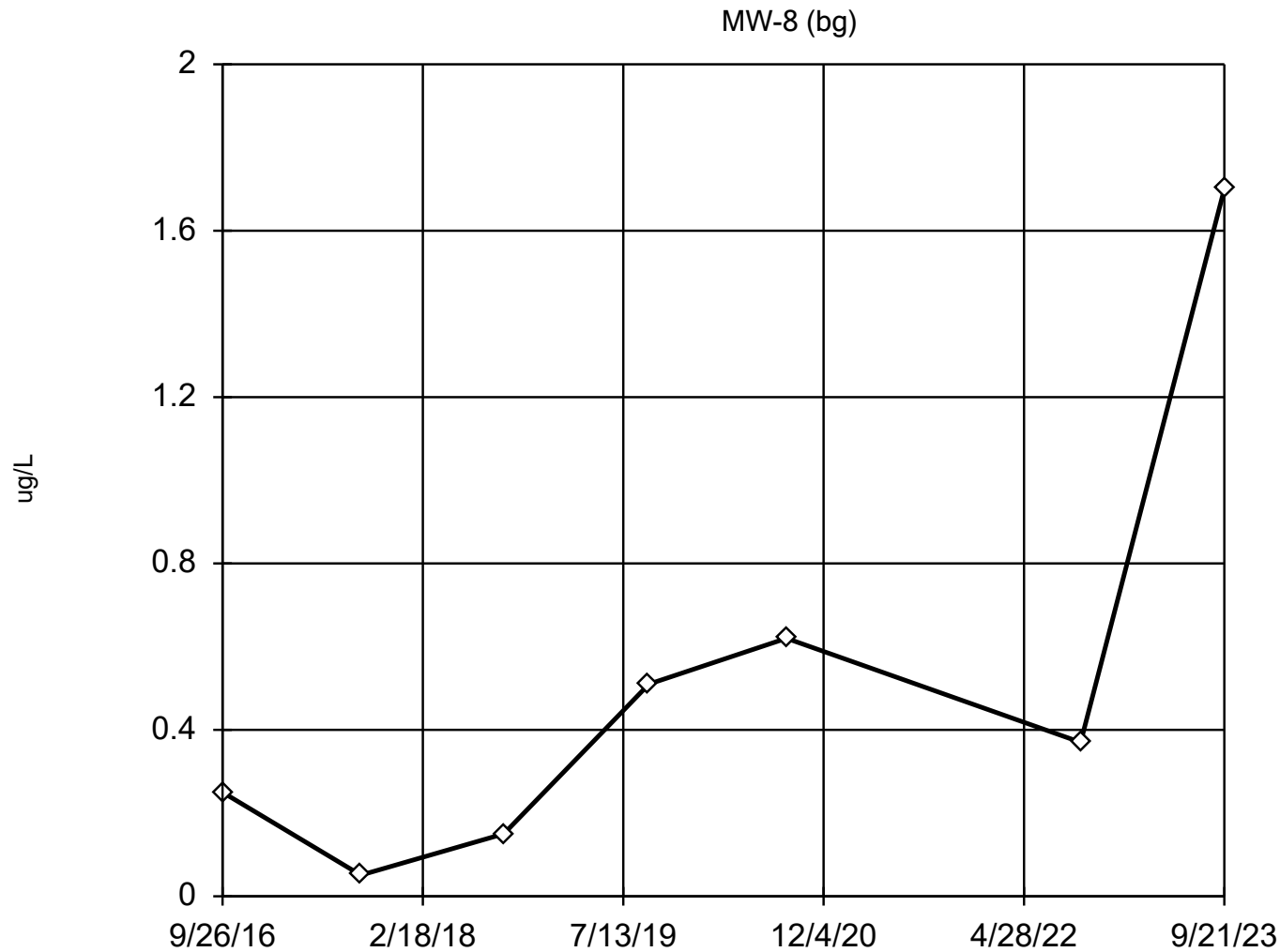
# EPA 1989 Outlier Screening

Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | 1.3      |
| 9/14/2017 | 3        |
| 9/12/2018 | 0.5 (J)  |
| 9/16/2019 | 0.17 (J) |
| 9/1/2020  | 0.37 (J) |
| 9/27/2021 | 0.39 (J) |
| 9/20/2022 | 0.59     |
| 9/20/2023 | 0.44 (J) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.5216, std. dev. 0.556, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9871  
Critical = 0.803 (after natural log transformation)  
The distribution was found to be log-normal.

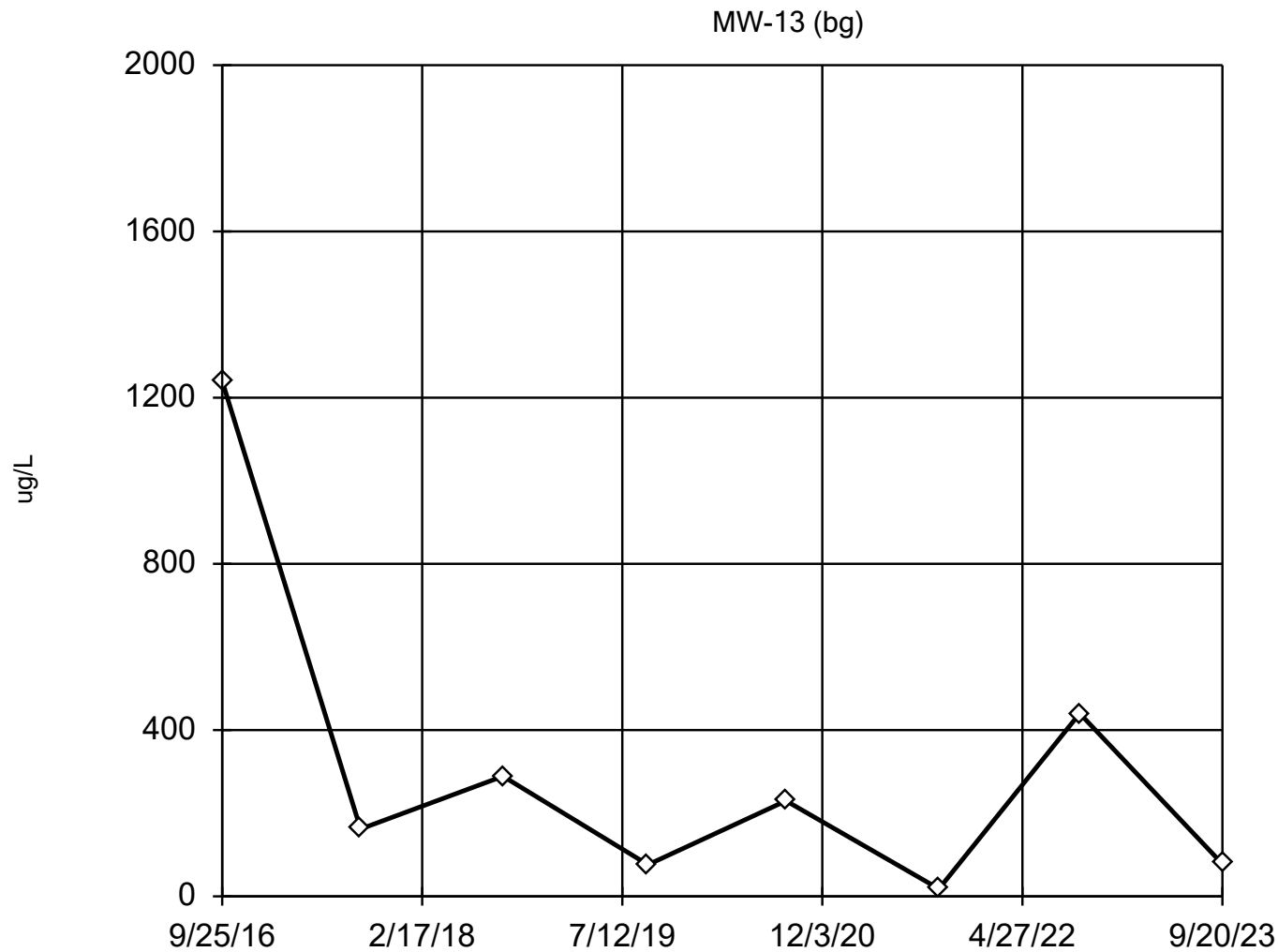
Constituent: Cobalt   Analysis Run 10/30/2023 11:22 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

| MW-8 (bg) |           |
|-----------|-----------|
| 9/26/2016 | <0.5      |
| 9/13/2017 | 0.051 (J) |
| 9/12/2018 | 0.15 (J)  |
| 9/17/2019 | 0.51      |
| 9/1/2020  | 0.62      |
| 9/20/2022 | 0.37 (J)  |
| 9/21/2023 | 1.7       |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 316.6, std. dev. 397.1, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9826  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Iron Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

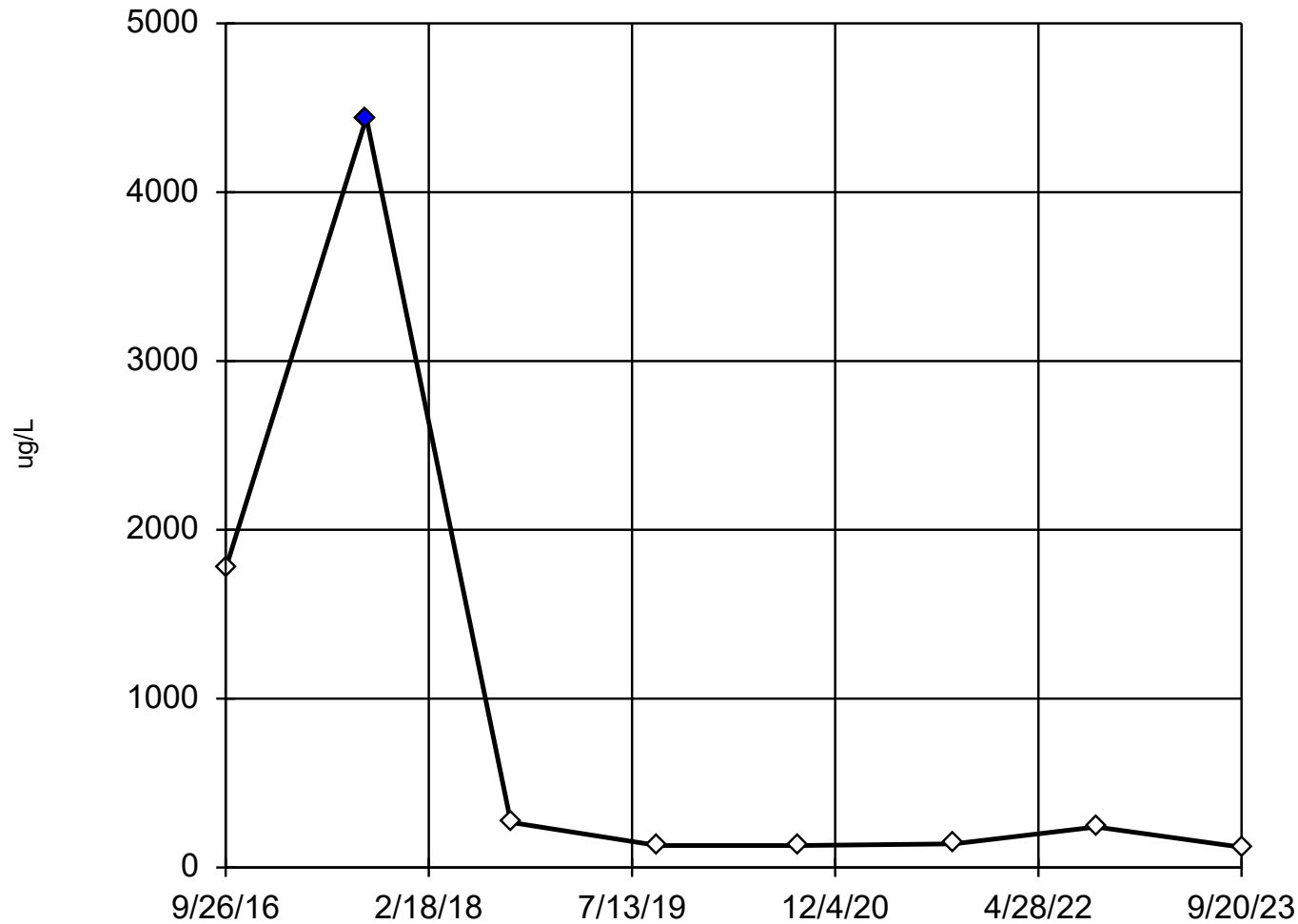
Constituent: Iron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |        |
|-----------|--------|
| 9/25/2016 | 1240   |
| 9/13/2017 | 162    |
| 9/11/2018 | 289    |
| 9/16/2019 | 76 (J) |
| 9/2/2020  | 230    |
| 9/27/2021 | <36    |
| 9/21/2022 | 440    |
| 9/20/2023 | 78 (J) |

## Tukey's Outlier Screening

MW-14 (bg)



n = 8

Outlier is drawn as solid.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.05 alpha level.

High cutoff = 3684, low cutoff = -2536, based on IQR multiplier of 3.

Constituent: Iron Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

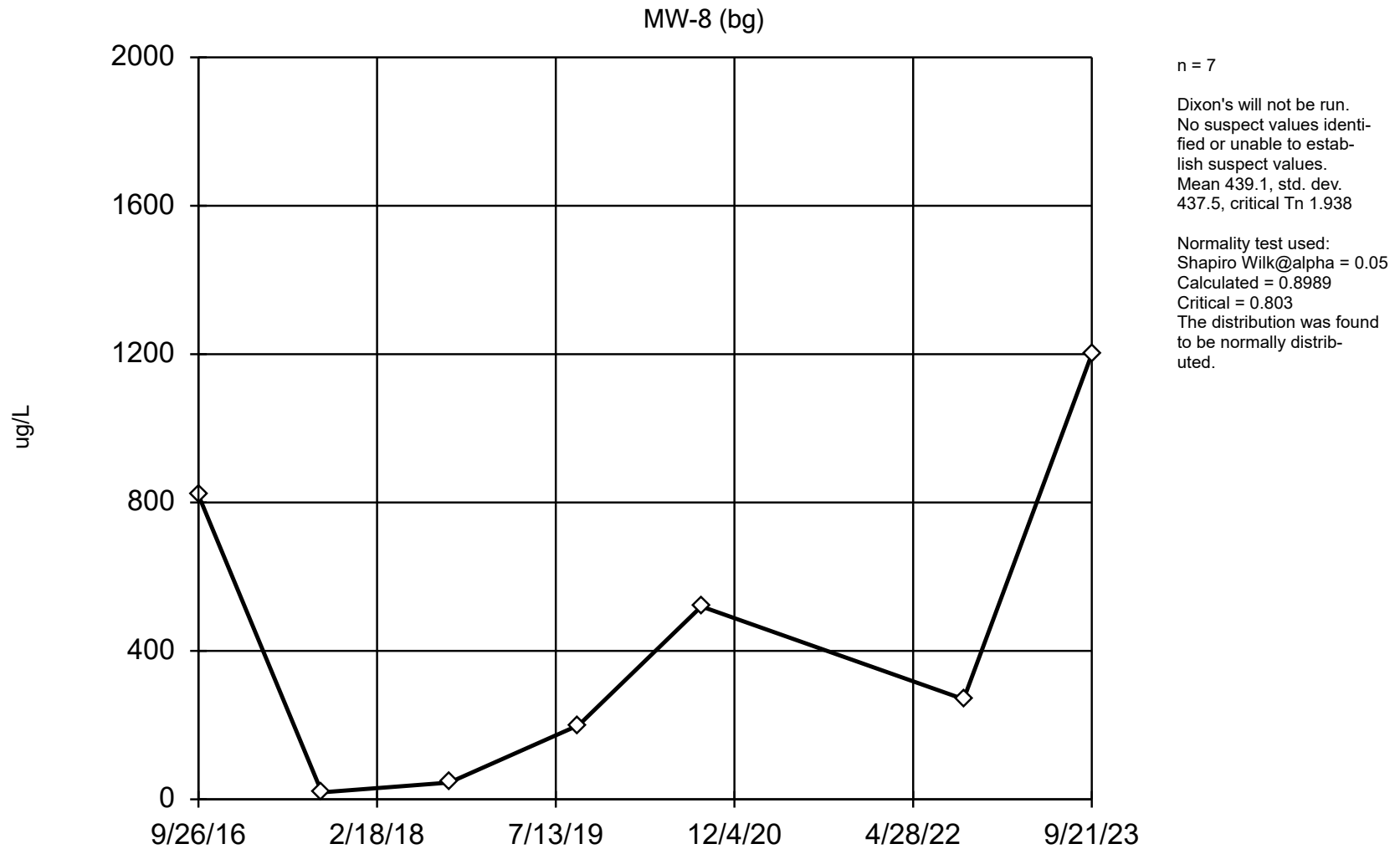
# Tukey's Outlier Screening

Constituent: Iron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | 1770     |
| 9/14/2017 | 4440 (O) |
| 9/12/2018 | 267      |
| 9/16/2019 | 130      |
| 9/1/2020  | 130      |
| 9/27/2021 | 140      |
| 9/20/2022 | 240      |
| 9/20/2023 | 120      |

## EPA Screening (suspected outliers for Dixon's Test)



Constituent: Iron Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

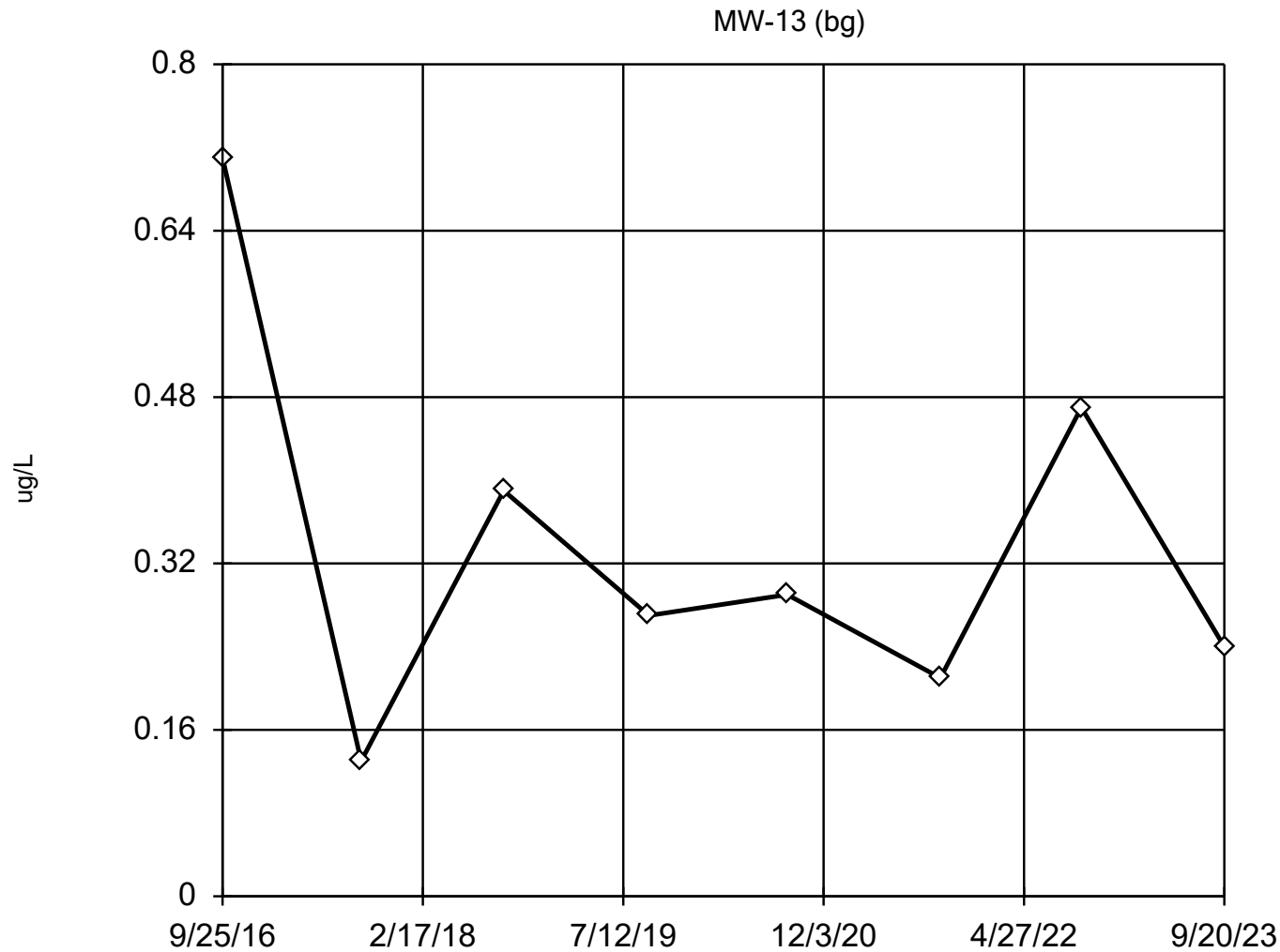
# EPA 1989 Outlier Screening

Constituent: Iron (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | 820      |
| 9/13/2017 | 18.7 (J) |
| 9/12/2018 | 45.2 (J) |
| 9/17/2019 | 200      |
| 9/1/2020  | 520      |
| 9/20/2022 | 270      |
| 9/21/2023 | 1200     |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.3387, std. dev. 0.1831, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9038  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Lead Analysis Run 10/30/2023 11:22 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

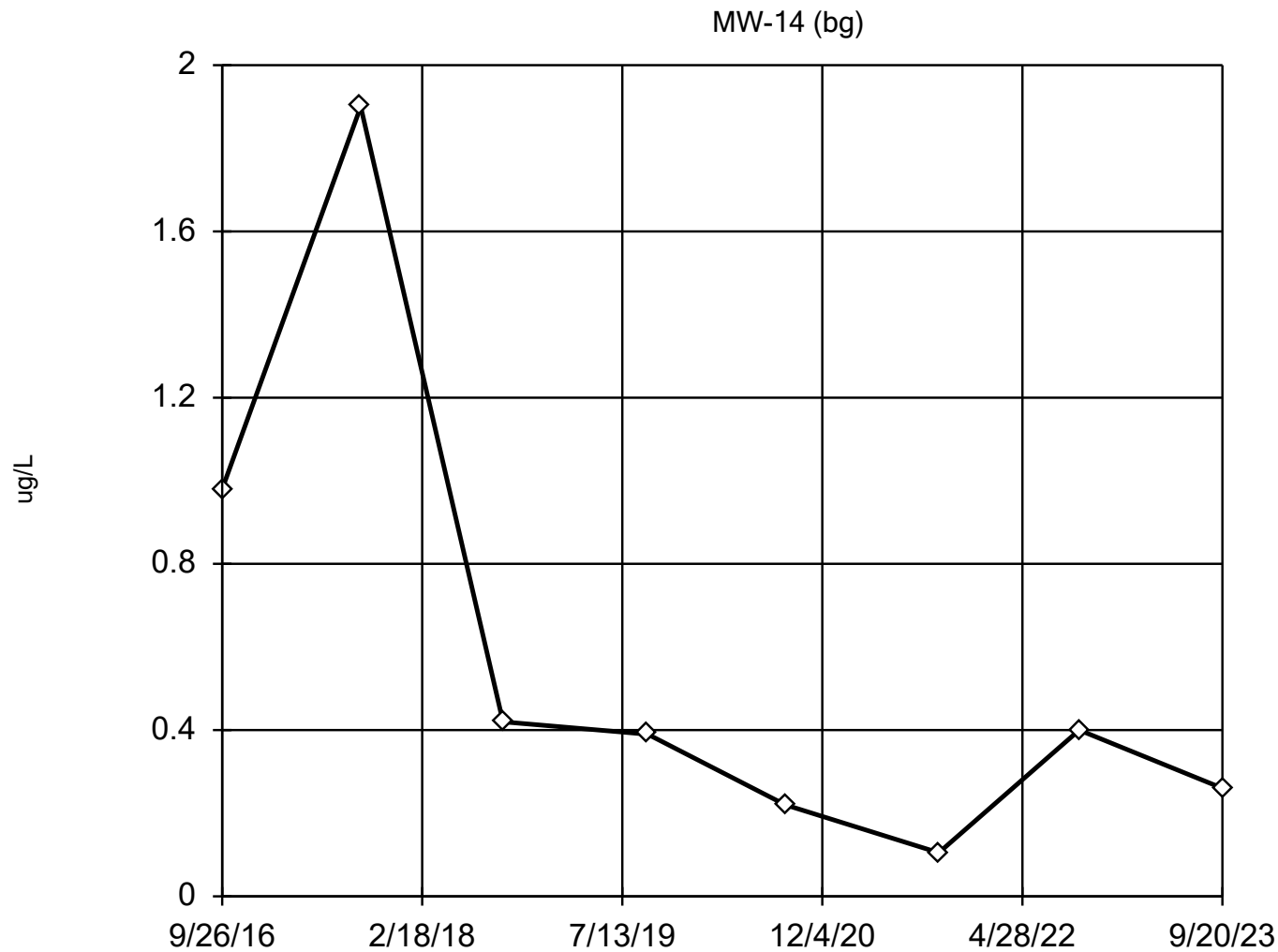
# EPA 1989 Outlier Screening

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-13 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | 0.71 (J)  |
| 9/13/2017 | 0.13 (J)  |
| 9/11/2018 | 0.39 (J)  |
| 9/16/2019 | <0.27     |
| 9/2/2020  | 0.29 (J)  |
| 9/27/2021 | <0.21     |
| 9/21/2022 | 0.47 (J)  |
| 9/20/2023 | <0.24 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.5844, std. dev. 0.5921, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9591  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Lead Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

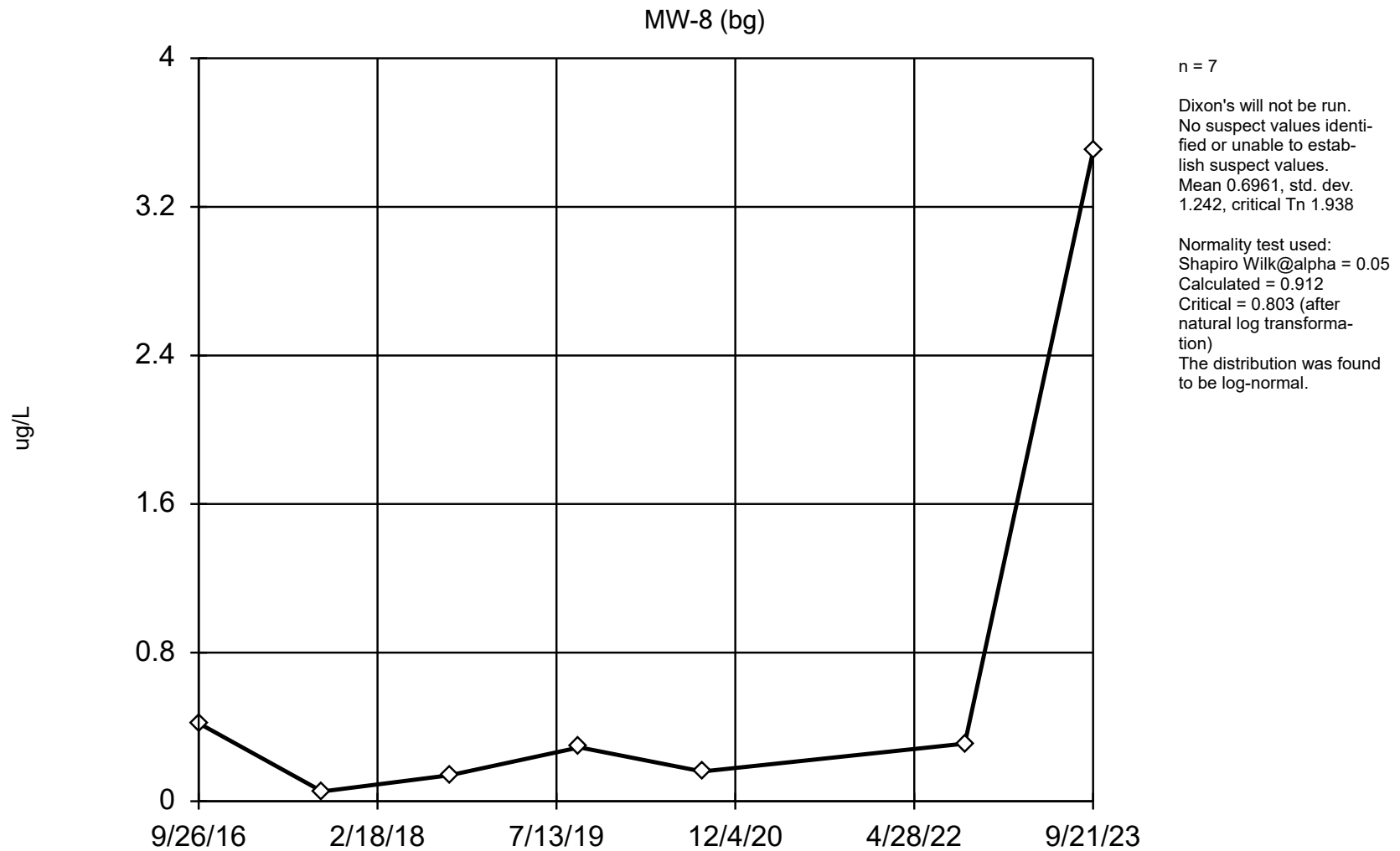
# EPA 1989 Outlier Screening

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-14 (bg)

|           |          |
|-----------|----------|
| 9/26/2016 | 0.98 (J) |
| 9/14/2017 | 1.9      |
| 9/12/2018 | 0.42 (J) |
| 9/16/2019 | 0.39 (J) |
| 9/1/2020  | 0.22 (J) |
| 9/27/2021 | <0.21    |
| 9/20/2022 | 0.4 (J)  |
| 9/20/2023 | 0.26 (J) |

## EPA Screening (suspected outliers for Dixon's Test)



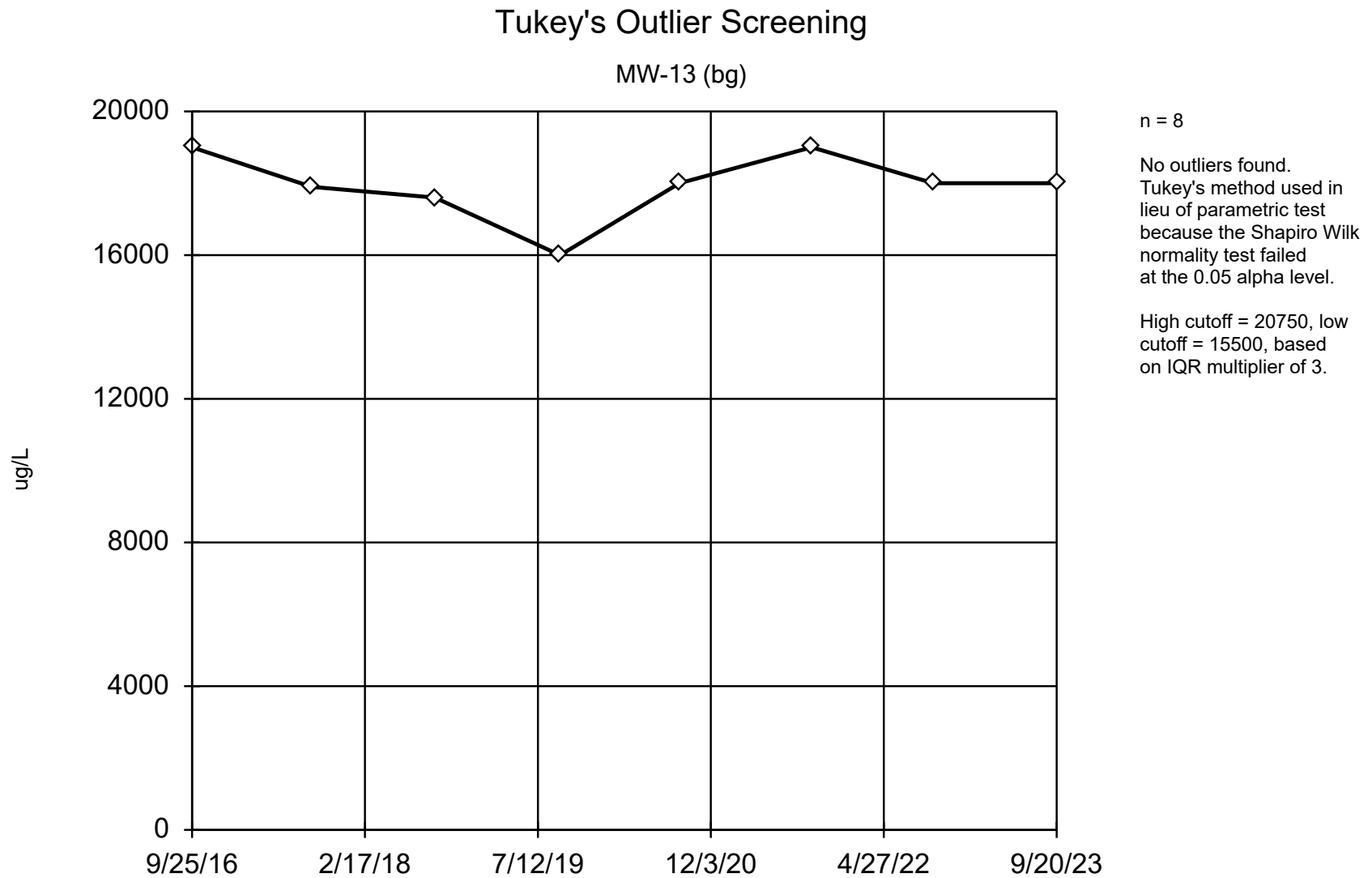
Constituent: Lead Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Lead (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |           |
|-----------|-----------|
| 9/26/2016 | 0.42 (J)  |
| 9/13/2017 | 0.053 (J) |
| 9/12/2018 | 0.14 (J)  |
| 9/17/2019 | 0.29 (J)  |
| 9/1/2020  | 0.16 (J)  |
| 9/20/2022 | 0.31 (J)  |
| 9/21/2023 | 3.5       |



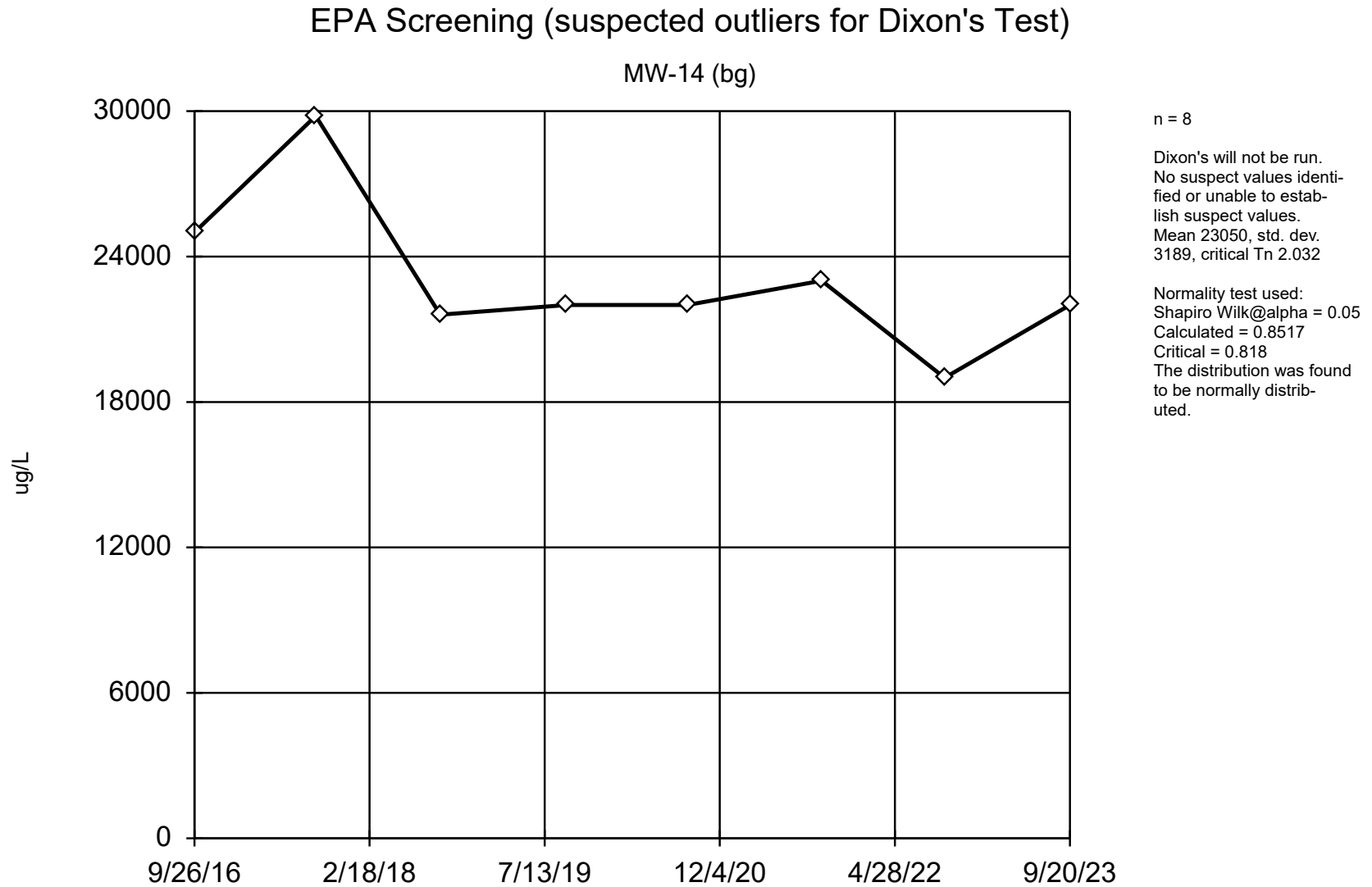
Constituent: Magnesium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Tukey's Outlier Screening

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |       |
|-----------|-------|
| 9/25/2016 | 19000 |
| 9/13/2017 | 17900 |
| 9/11/2018 | 17600 |
| 9/16/2019 | 16000 |
| 9/2/2020  | 18000 |
| 9/27/2021 | 19000 |
| 9/21/2022 | 18000 |
| 9/20/2023 | 18000 |



Constituent: Magnesium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

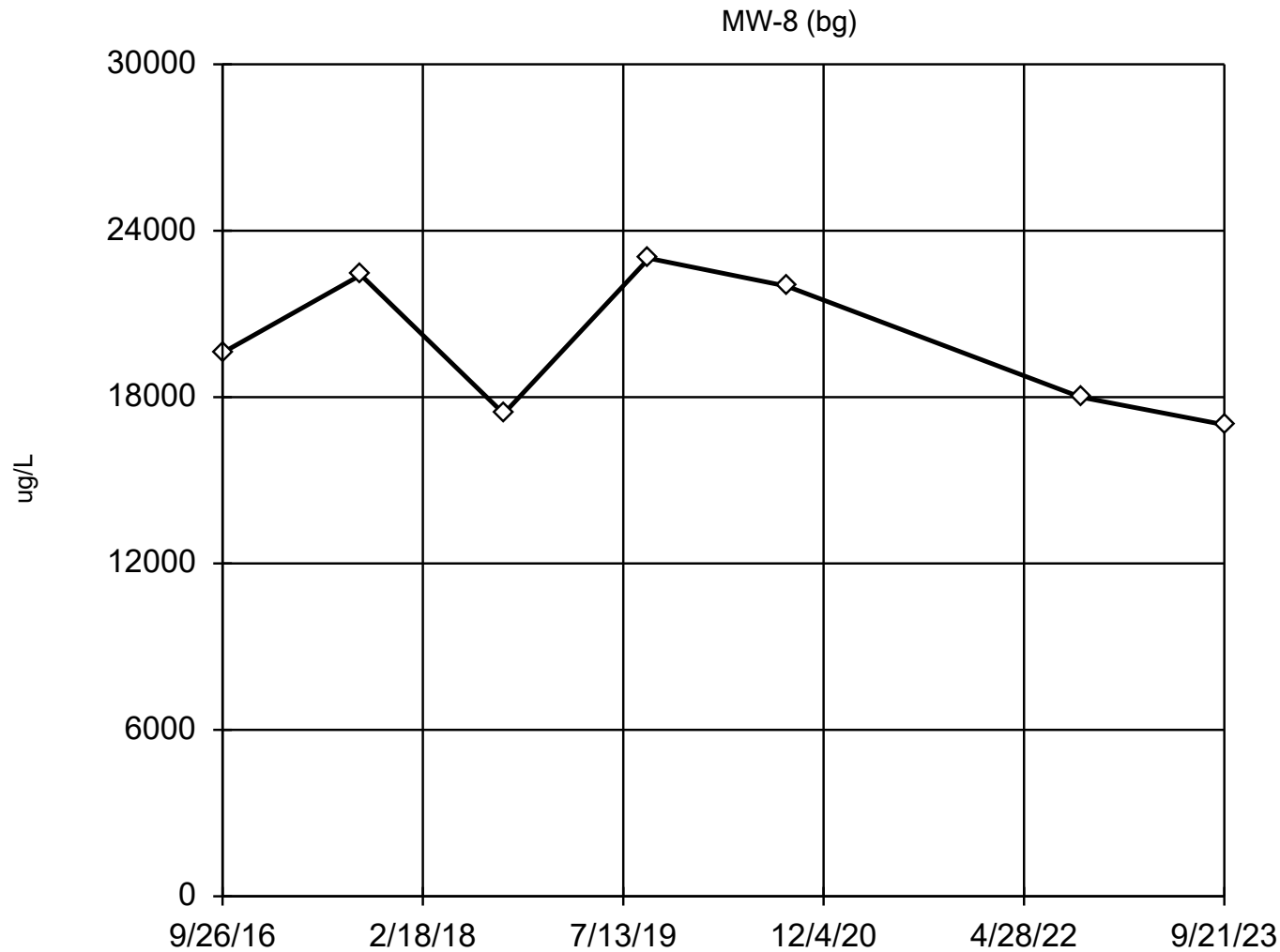
# EPA 1989 Outlier Screening

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |       |
|-----------|-------|
| 9/26/2016 | 25000 |
| 9/14/2017 | 29800 |
| 9/12/2018 | 21600 |
| 9/16/2019 | 22000 |
| 9/1/2020  | 22000 |
| 9/27/2021 | 23000 |
| 9/20/2022 | 19000 |
| 9/20/2023 | 22000 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 19914, std. dev. 2537, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8756  
Critical = 0.803  
The distribution was found to be normally distributed.

Constituent: Magnesium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

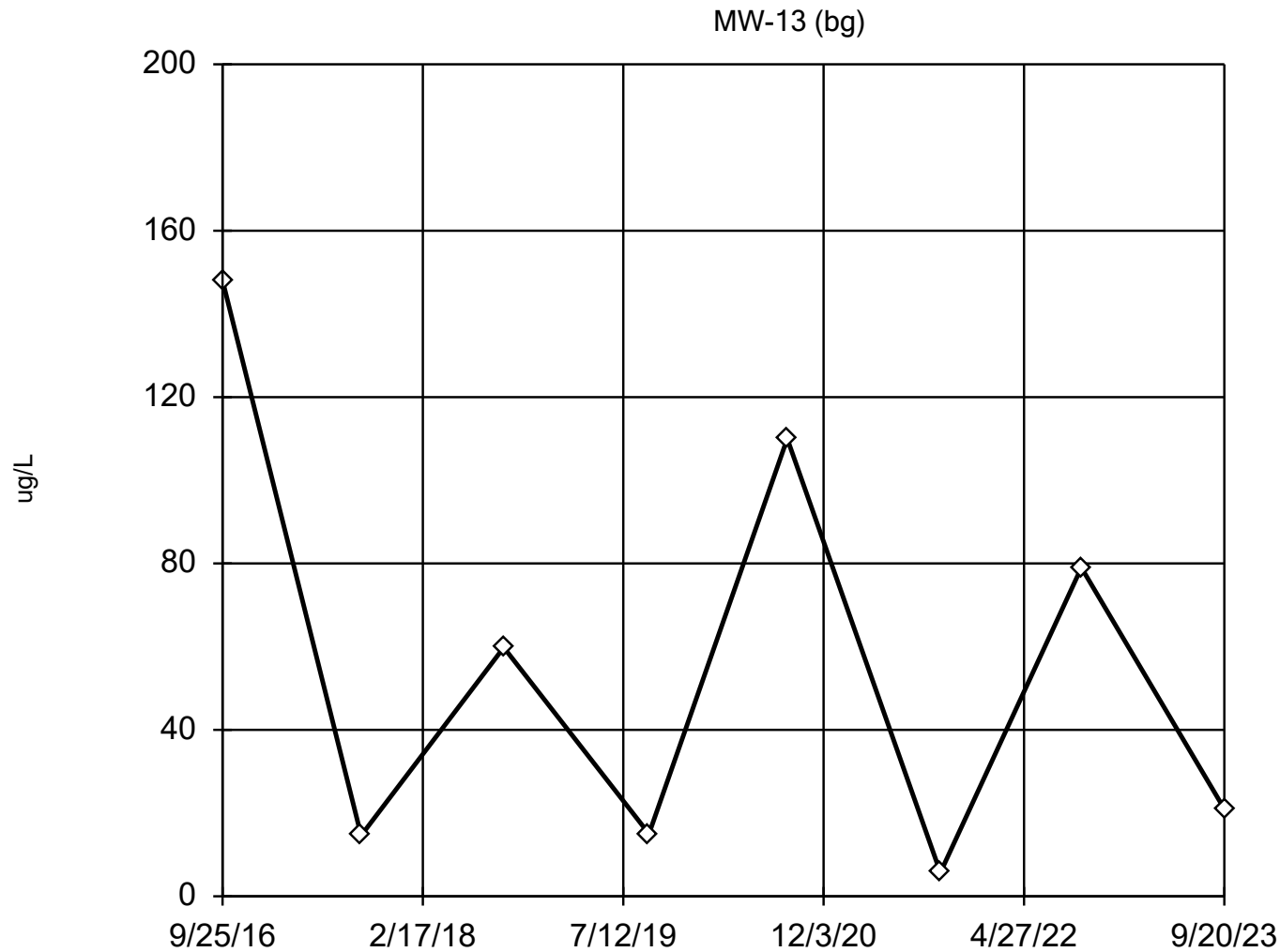
# EPA 1989 Outlier Screening

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |       |
|-----------|-------|
| 9/26/2016 | 19600 |
| 9/13/2017 | 22400 |
| 9/12/2018 | 17400 |
| 9/17/2019 | 23000 |
| 9/1/2020  | 22000 |
| 9/20/2022 | 18000 |
| 9/21/2023 | 17000 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 56.64, std. dev. 52.2, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8812  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Manganese Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

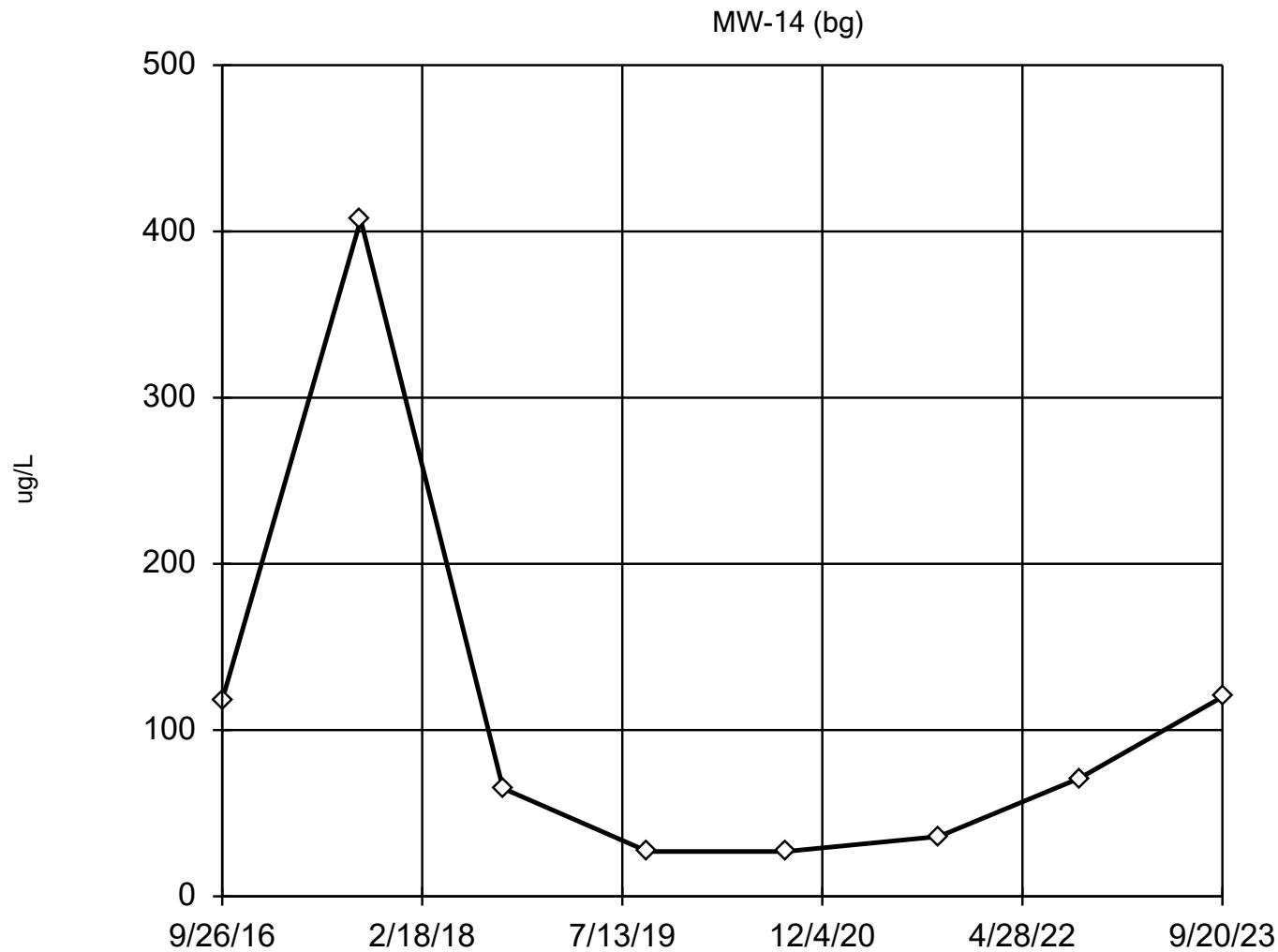
# EPA 1989 Outlier Screening

Constituent: Manganese (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-13 (bg)

|           |         |
|-----------|---------|
| 9/25/2016 | 148     |
| 9/13/2017 | 14.6    |
| 9/11/2018 | 59.8    |
| 9/16/2019 | 15      |
| 9/2/2020  | 110     |
| 9/27/2021 | 5.7 (J) |
| 9/21/2022 | 79      |
| 9/20/2023 | 21      |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 108.9, std. dev. 126, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9137  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Manganese Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

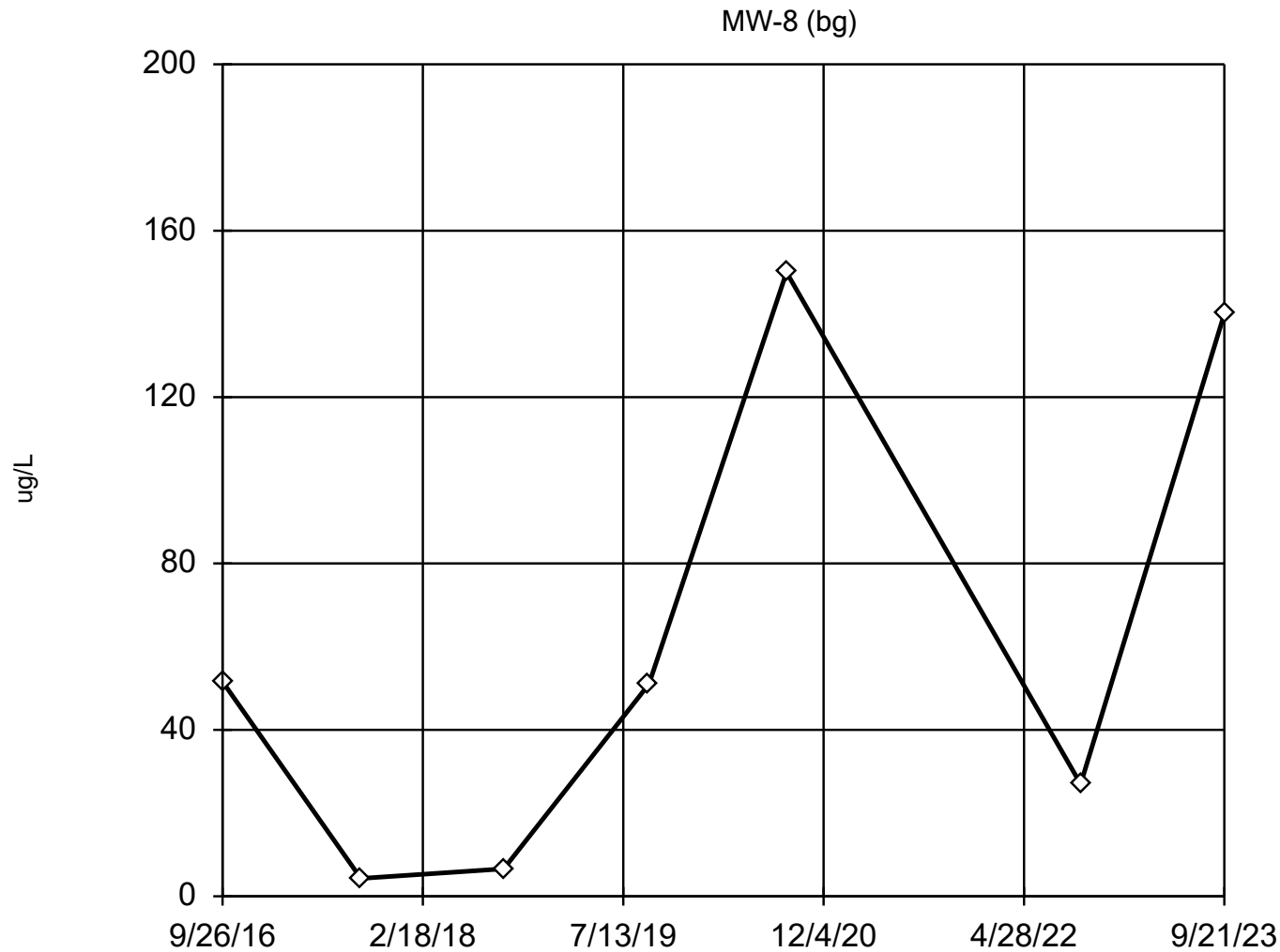
# EPA 1989 Outlier Screening

Constituent: Manganese (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-14 (bg)

|           |      |
|-----------|------|
| 9/26/2016 | 118  |
| 9/14/2017 | 407  |
| 9/12/2018 | 64.9 |
| 9/16/2019 | 27   |
| 9/1/2020  | 27   |
| 9/27/2021 | 36   |
| 9/20/2022 | 71   |
| 9/20/2023 | 120  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 61.5, std. dev. 60.11, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8369  
Critical = 0.803  
The distribution was found to be normally distributed.

Constituent: Manganese Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

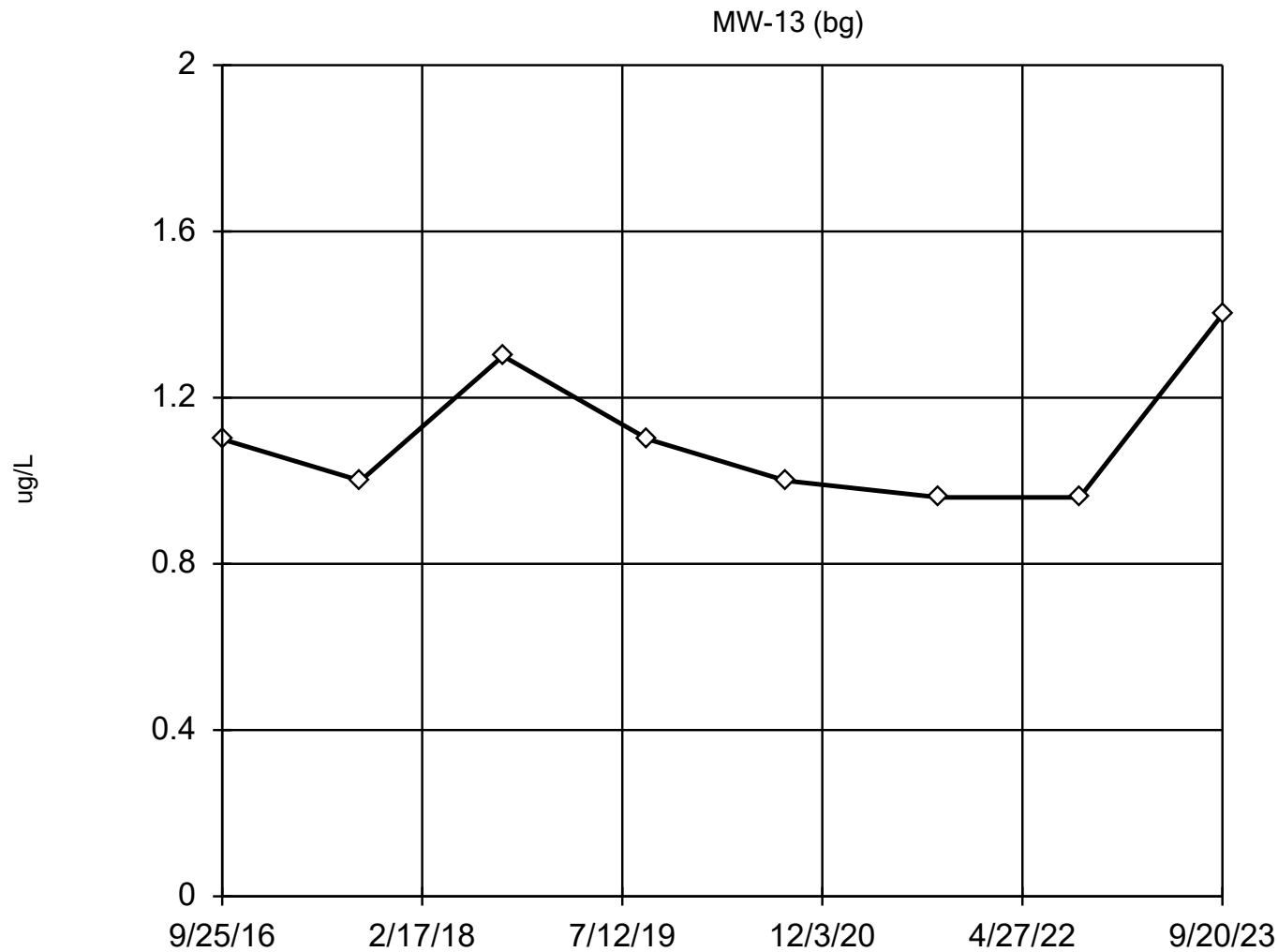
# EPA 1989 Outlier Screening

Constituent: Manganese (ug/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |      |
|-----------|------|
| 9/26/2016 | 51.6 |
| 9/13/2017 | 4.3  |
| 9/12/2018 | 6.6  |
| 9/17/2019 | 51   |
| 9/1/2020  | 150  |
| 9/20/2022 | 27   |
| 9/21/2023 | 140  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 1.102, std. dev. 0.1644, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8328  
Critical = 0.818  
The distribution was found to be normally distributed.

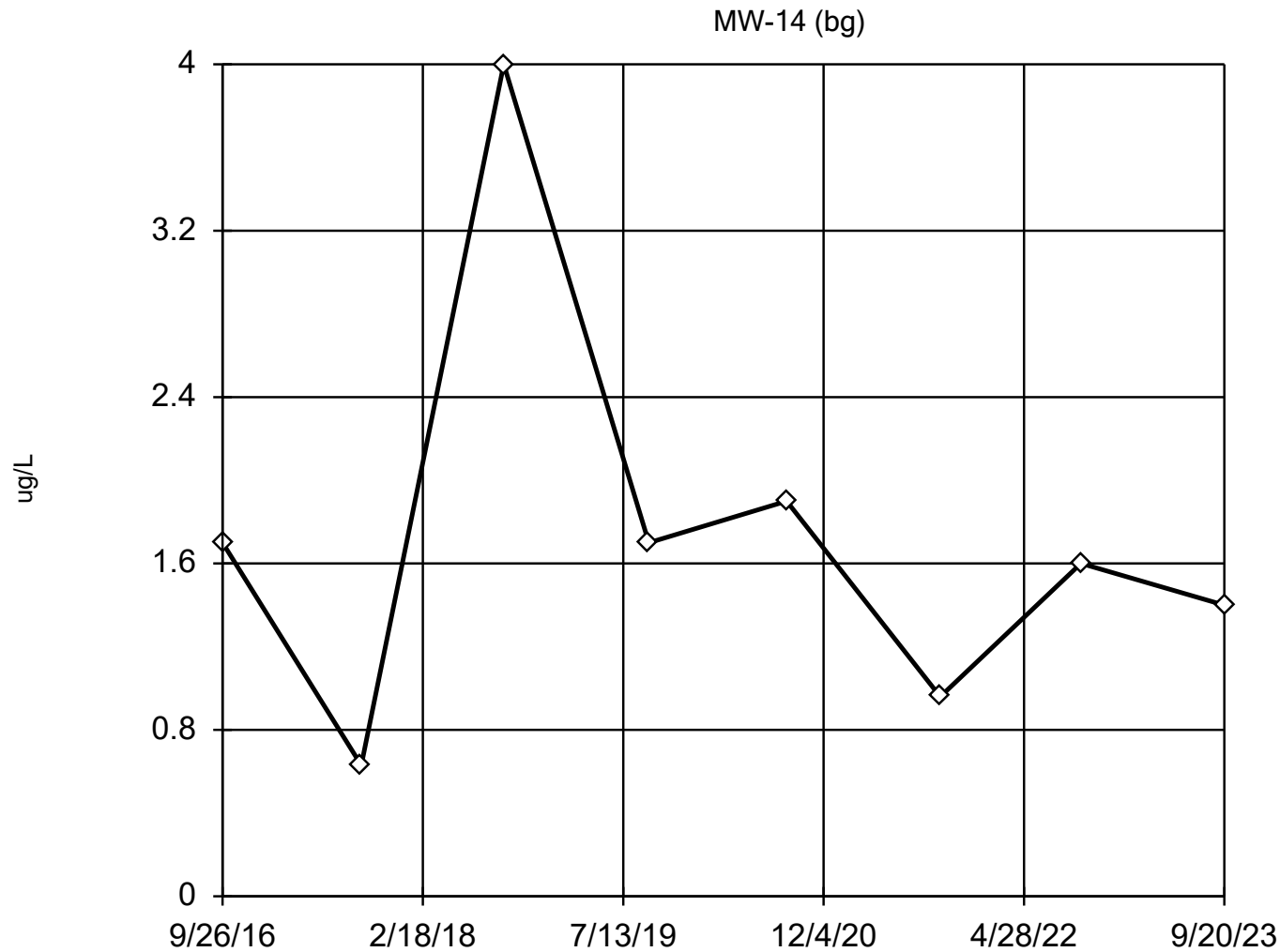
Constituent: Selenium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

| MW-13 (bg) |          |
|------------|----------|
| 9/25/2016  | 1.1      |
| 9/13/2017  | 1        |
| 9/11/2018  | 1.3      |
| 9/16/2019  | 1.1 (J)  |
| 9/2/2020   | <1       |
| 9/27/2021  | <0.96    |
| 9/21/2022  | <0.96    |
| 9/20/2023  | <1.4 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 1.736, std. dev. 1.008, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9377  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

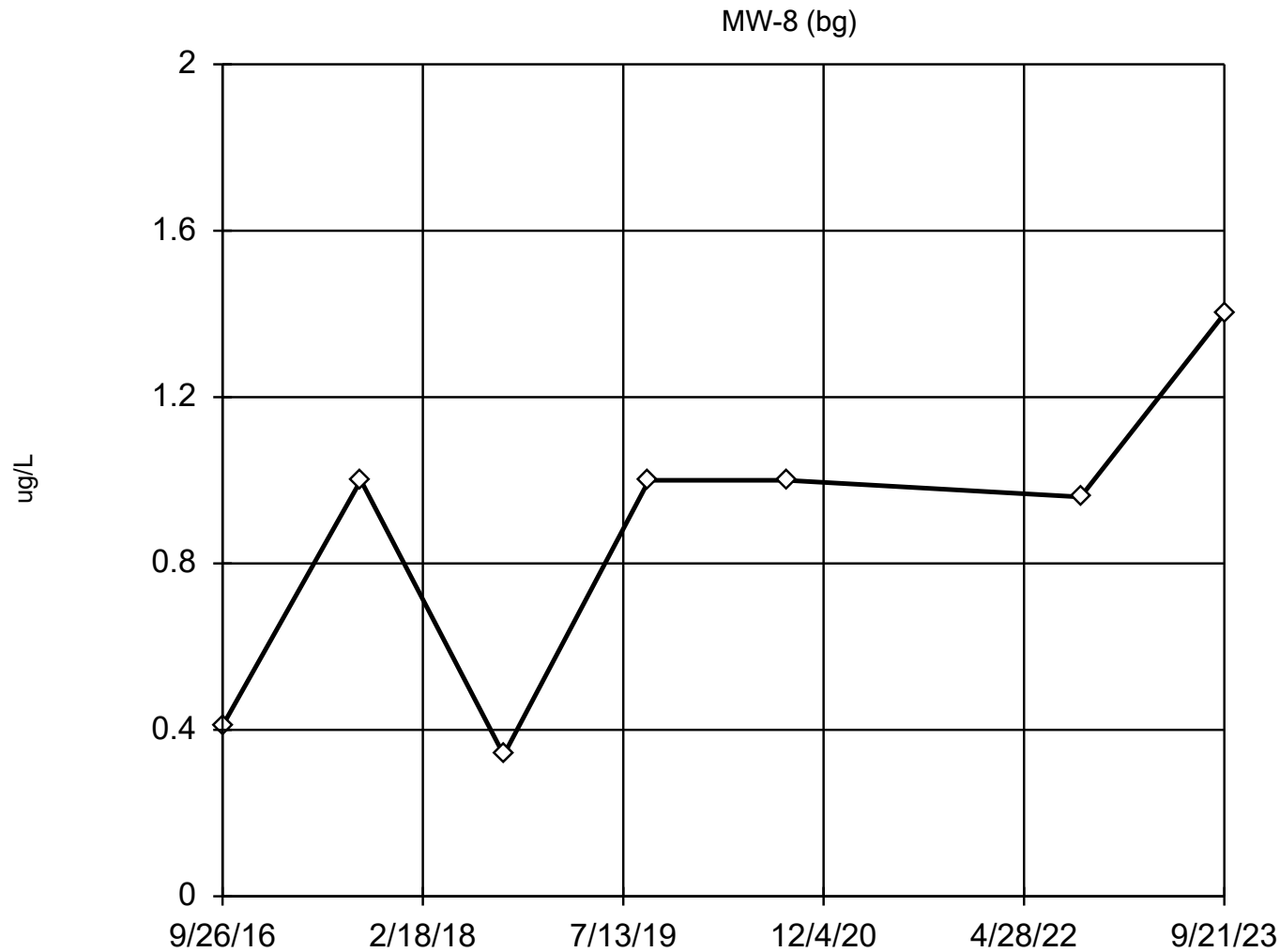
Constituent: Selenium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

| MW-14 (bg) |          |
|------------|----------|
| 9/26/2016  | 1.7      |
| 9/14/2017  | 0.63 (J) |
| 9/12/2018  | 4        |
| 9/16/2019  | 1.7 (J)  |
| 9/1/2020   | 1.9 (J)  |
| 9/27/2021  | <0.96    |
| 9/20/2022  | 1.6 (J)  |
| 9/20/2023  | <1.4 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 7

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.8729, std. dev. 0.3724, critical Tn 1.938

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8583  
Critical = 0.803  
The distribution was found to be normally distributed.

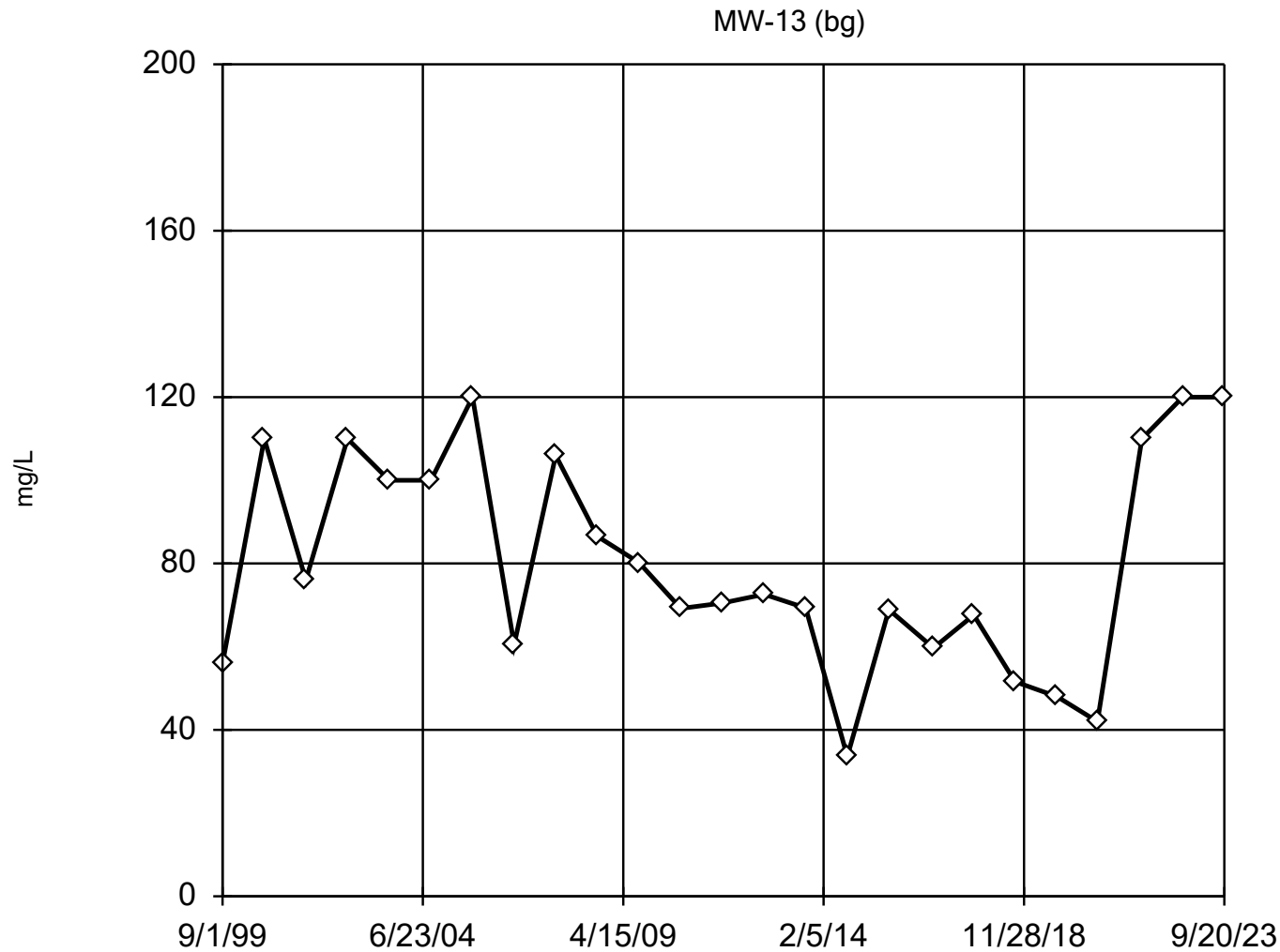
Constituent: Selenium    Analysis Run 10/30/2023 11:23 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           |           |
|-----------|-----------|
|           | MW-8 (bg) |
| 9/26/2016 | 0.41 (J)  |
| 9/13/2017 | 1         |
| 9/12/2018 | 0.34 (J)  |
| 9/17/2019 | <1        |
| 9/1/2020  | <1        |
| 9/20/2022 | <0.96     |
| 9/21/2023 | <1.4 (U)  |

## EPA Screening (suspected outliers for Rosner's Test)



n = 25

Rosner's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 80.33, std. dev. 26.2, critical Tn 2.663

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9362  
Critical = 0.918  
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 10/30/2023 11:23 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

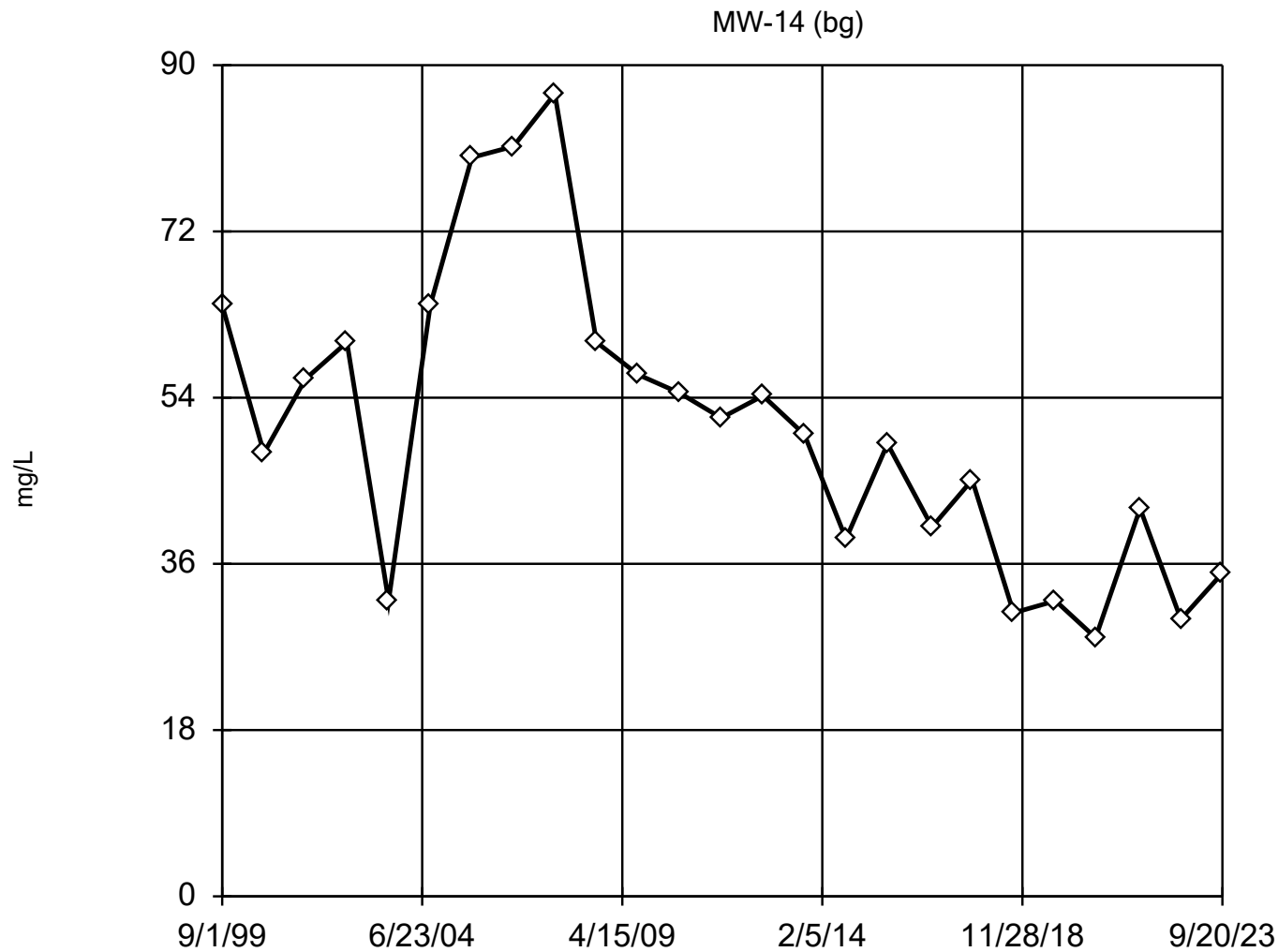
# EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-13 (bg)

|           |      |
|-----------|------|
| 9/1/1999  | 56   |
| 9/1/2000  | 110  |
| 9/1/2001  | 76   |
| 9/1/2002  | 110  |
| 9/1/2003  | 100  |
| 9/1/2004  | 100  |
| 9/1/2005  | 120  |
| 9/1/2006  | 60.5 |
| 9/1/2007  | 106  |
| 9/1/2008  | 86.5 |
| 9/1/2009  | 80.2 |
| 9/1/2010  | 69.2 |
| 9/1/2011  | 70.5 |
| 9/1/2012  | 72.6 |
| 9/1/2013  | 69.3 |
| 9/1/2014  | 33.6 |
| 9/1/2015  | 68.9 |
| 9/25/2016 | 59.7 |
| 9/13/2017 | 67.6 |
| 9/11/2018 | 51.6 |
| 9/16/2019 | 48   |
| 9/2/2020  | 42   |
| 9/27/2021 | 110  |
| 9/21/2022 | 120  |
| 9/20/2023 | 120  |

## EPA Screening (suspected outliers for Rosner's Test)



# EPA 1989 Outlier Screening

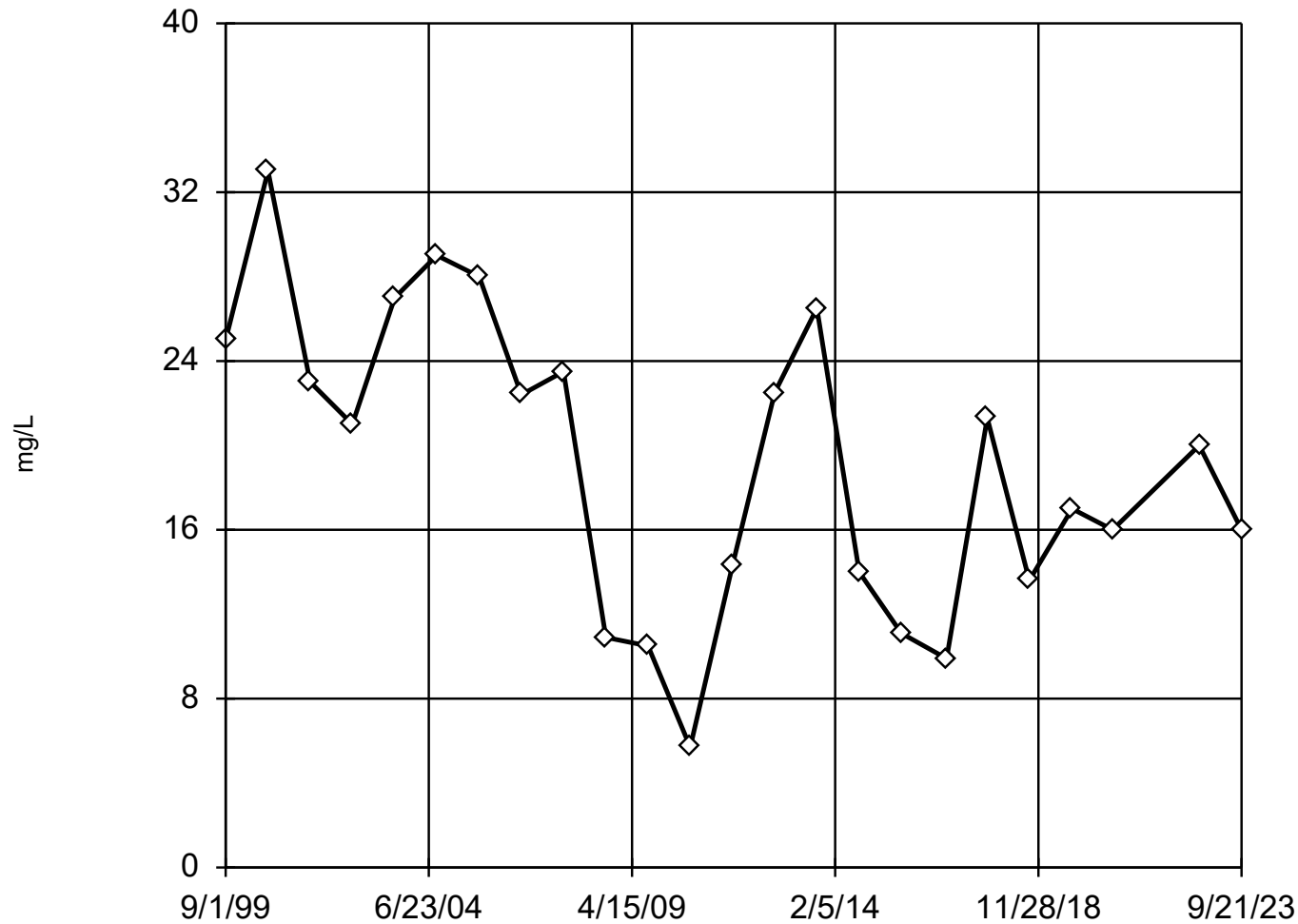
Constituent: Sulfate (mg/L)   Analysis Run 10/30/2023 11:24 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-14 (bg)

|           |      |
|-----------|------|
| 9/1/1999  | 64   |
| 9/1/2000  | 48   |
| 9/1/2001  | 56   |
| 9/1/2002  | 60   |
| 9/1/2003  | 32   |
| 9/1/2004  | 64   |
| 9/1/2005  | 80   |
| 9/1/2006  | 81.2 |
| 9/1/2007  | 86.9 |
| 9/1/2008  | 60   |
| 9/1/2009  | 56.5 |
| 9/1/2010  | 54.5 |
| 9/1/2011  | 51.8 |
| 9/1/2012  | 54.2 |
| 9/1/2013  | 50   |
| 9/1/2014  | 38.7 |
| 9/1/2015  | 49   |
| 9/26/2016 | 40   |
| 9/14/2017 | 45.1 |
| 9/12/2018 | 30.7 |
| 9/16/2019 | 32   |
| 9/1/2020  | 28   |
| 9/27/2021 | 42   |
| 9/20/2022 | 30   |
| 9/20/2023 | 35   |

## Rosner's Outlier Test

MW-8 (bg)



n = 24

No statistical outliers.

k = 1

r = 1.94

Tabulated value = 2.824

Alpha = 0.01

Normality test used:

Shapiro Wilk@alpha = 0.05

Calculated = 0.9595

Critical = 0.914

The distribution was found to be normally distributed.

Constituent: Sulfate   Analysis Run 10/30/2023 11:23 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# Rosner's Outlier Test

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 11:24 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-8 (bg)

|           |      |
|-----------|------|
| 9/1/1999  | 25   |
| 9/1/2000  | 33   |
| 9/1/2001  | 23   |
| 9/1/2002  | 21   |
| 9/1/2003  | 27   |
| 9/1/2004  | 29   |
| 9/1/2005  | 28   |
| 9/1/2006  | 22.4 |
| 9/1/2007  | 23.5 |
| 9/1/2008  | 10.9 |
| 9/1/2009  | 10.5 |
| 9/1/2010  | 5.7  |
| 9/1/2011  | 14.3 |
| 9/1/2012  | 22.5 |
| 9/1/2013  | 26.5 |
| 9/1/2014  | 14   |
| 9/1/2015  | 11.1 |
| 9/26/2016 | 9.9  |
| 9/13/2017 | 21.3 |
| 9/12/2018 | 13.6 |
| 9/17/2019 | 17   |
| 9/1/2020  | 16   |
| 9/20/2022 | 20   |
| 9/21/2023 | 16   |



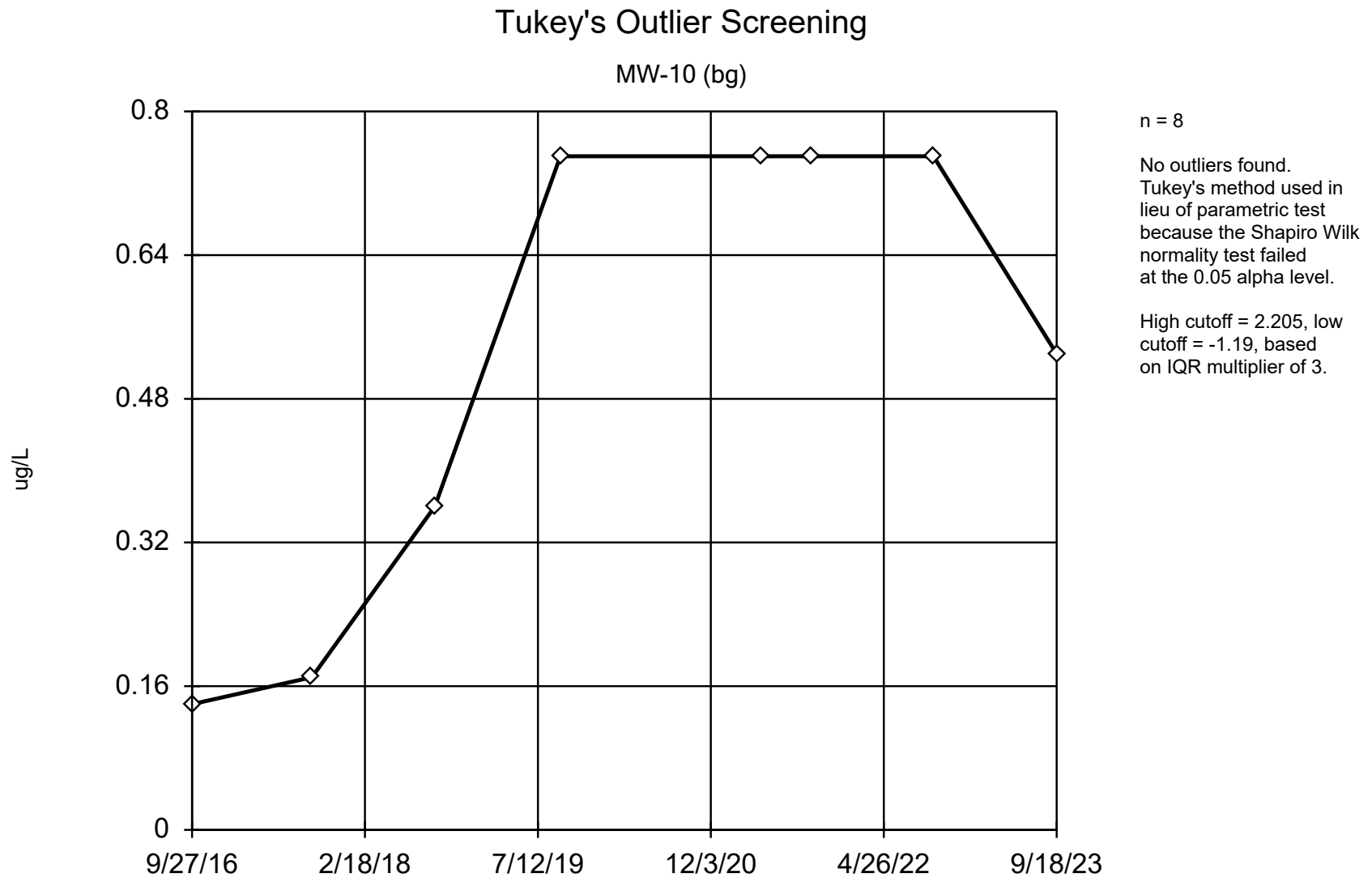
## Attachment E4

### Outlier Analysis Results - East

# Outlier Analysis

Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 12:20 PM

| <u>Constituent</u>     | <u>Well</u>      | <u>Outlier</u> | <u>Value(s)</u>     | <u>Date(s)</u>      | <u>Method</u>   | <u>Alpha</u> | <u>N</u>  | <u>Mean</u>  | <u>Std. Dev.</u> | <u>Distribution</u> | <u>Normality Test</u> |
|------------------------|------------------|----------------|---------------------|---------------------|-----------------|--------------|-----------|--------------|------------------|---------------------|-----------------------|
| Arsenic (ug/L)         | MW-10 (bg)       | No             | n/a                 | n/a                 | NP (nrm)        | NaN          | 8         | 0.525        | 0.2683           | unknown             | ShapiroWilk           |
| Arsenic (ug/L)         | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.5962       | 0.2264           | normal              | ShapiroWilk           |
| Barium (ug/L)          | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 145.1        | 11.79            | normal              | ShapiroWilk           |
| Barium (ug/L)          | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 160.4        | 13.07            | normal              | ShapiroWilk           |
| Beryllium (ug/L)       | MW-10 (bg)       | n/a            | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.209        | 0.1112           | unknown             | ShapiroWilk           |
| Beryllium (ug/L)       | MW-9 (bg)        | No             | n/a                 | n/a                 | NP (nrm)        | NaN          | 8         | 0.2038       | 0.1131           | unknown             | ShapiroWilk           |
| Boron (ug/L)           | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 56.58        | 32.36            | normal              | ShapiroWilk           |
| Boron (ug/L)           | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 60.09        | 33.03            | normal              | ShapiroWilk           |
| Chloride (mg/L)        | MW-10 (bg)       | No             | n/a                 | n/a                 | NP (nrm)        | NaN          | 25        | 7.568        | 6.576            | unknown             | ShapiroWilk           |
| <b>Chloride (mg/L)</b> | <b>MW-9 (bg)</b> | <b>Yes</b>     | <b>29.9,46,1...</b> | <b>9/1/2013,...</b> | <b>NP (nrm)</b> | <b>NaN</b>   | <b>25</b> | <b>8.418</b> | <b>10.19</b>     | <b>unknown</b>      | <b>ShapiroWilk</b>    |
| Cobalt (ug/L)          | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.4225       | 0.4241           | normal              | ShapiroWilk           |
| Cobalt (ug/L)          | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 1.384        | 0.9172           | normal              | ShapiroWilk           |
| Iron (ug/L)            | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 156.6        | 112              | normal              | ShapiroWilk           |
| Iron (ug/L)            | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 514.3        | 456.3            | normal              | ShapiroWilk           |
| Lead (ug/L)            | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.2562       | 0.1269           | ln(x)               | ShapiroWilk           |
| Lead (ug/L)            | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.235        | 0.07131          | normal              | ShapiroWilk           |
| Magnesium (ug/L)       | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 21938        | 2110             | normal              | ShapiroWilk           |
| Magnesium (ug/L)       | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 16075        | 1063             | normal              | ShapiroWilk           |
| Manganese (ug/L)       | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 24.11        | 28.28            | ln(x)               | ShapiroWilk           |
| Manganese (ug/L)       | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 850.6        | 817.6            | normal              | ShapiroWilk           |
| Selenium (ug/L)        | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.9962       | 0.3433           | normal              | ShapiroWilk           |
| Selenium (ug/L)        | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 8         | 0.7182       | 0.4988           | normal              | ShapiroWilk           |
| Sulfate (mg/L)         | MW-10 (bg)       | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 25        | 13.29        | 8.899            | ln(x)               | ShapiroWilk           |
| Sulfate (mg/L)         | MW-9 (bg)        | No             | n/a                 | n/a                 | EPA 1989        | 0.05         | 25        | 24.94        | 12.43            | normal              | ShapiroWilk           |



Constituent: Arsenic    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

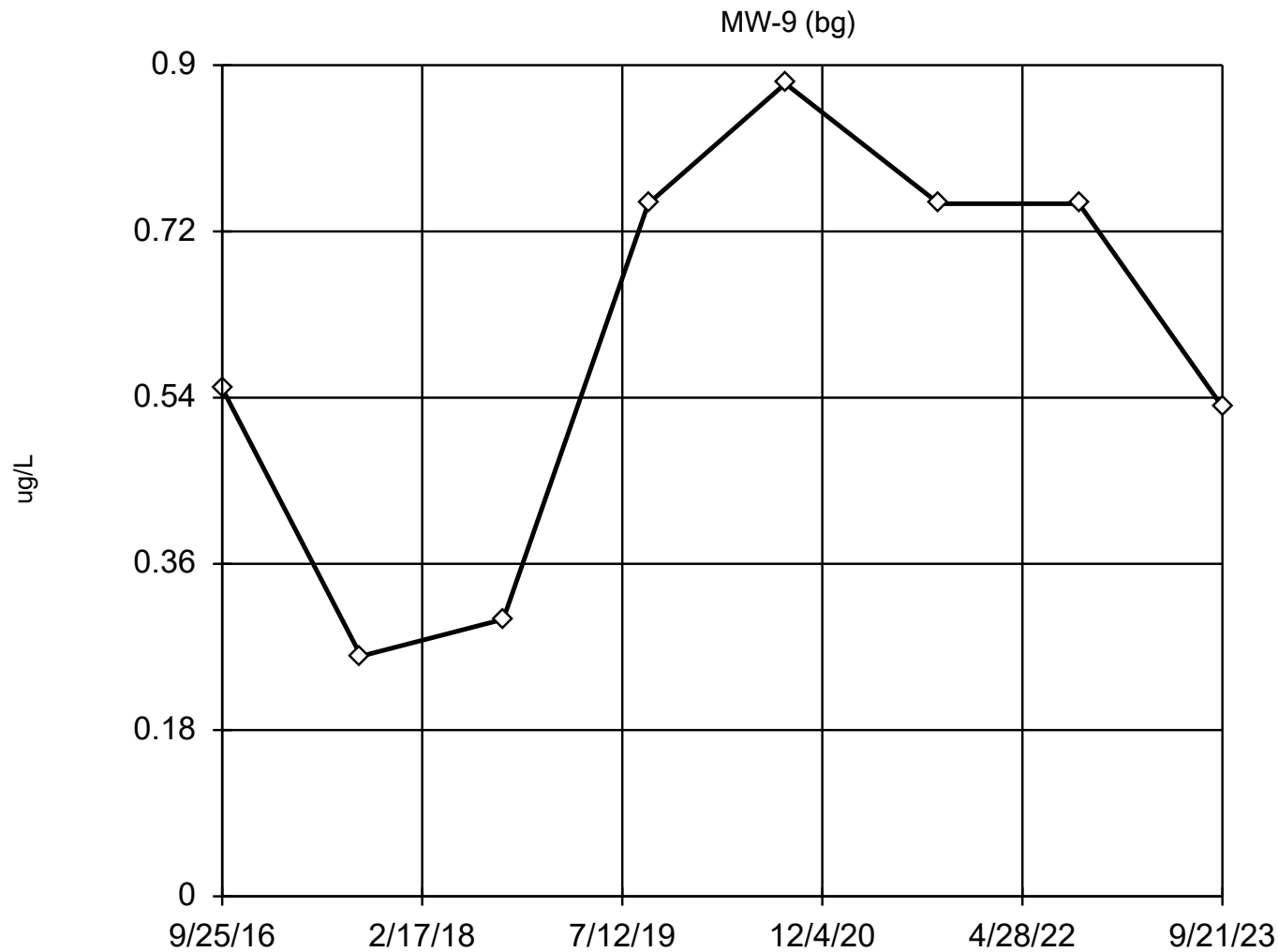
# Tukey's Outlier Screening

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-10 (bg)

|           |           |
|-----------|-----------|
| 9/27/2016 | 0.14 (J)  |
| 9/15/2017 | 0.17 (J)  |
| 9/12/2018 | 0.36 (J)  |
| 9/17/2019 | <0.75     |
| 4/29/2021 | <0.75     |
| 9/28/2021 | <0.75     |
| 9/20/2022 | <0.75     |
| 9/18/2023 | <0.53 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.5962, std. dev. 0.2264, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8966  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Arsenic Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

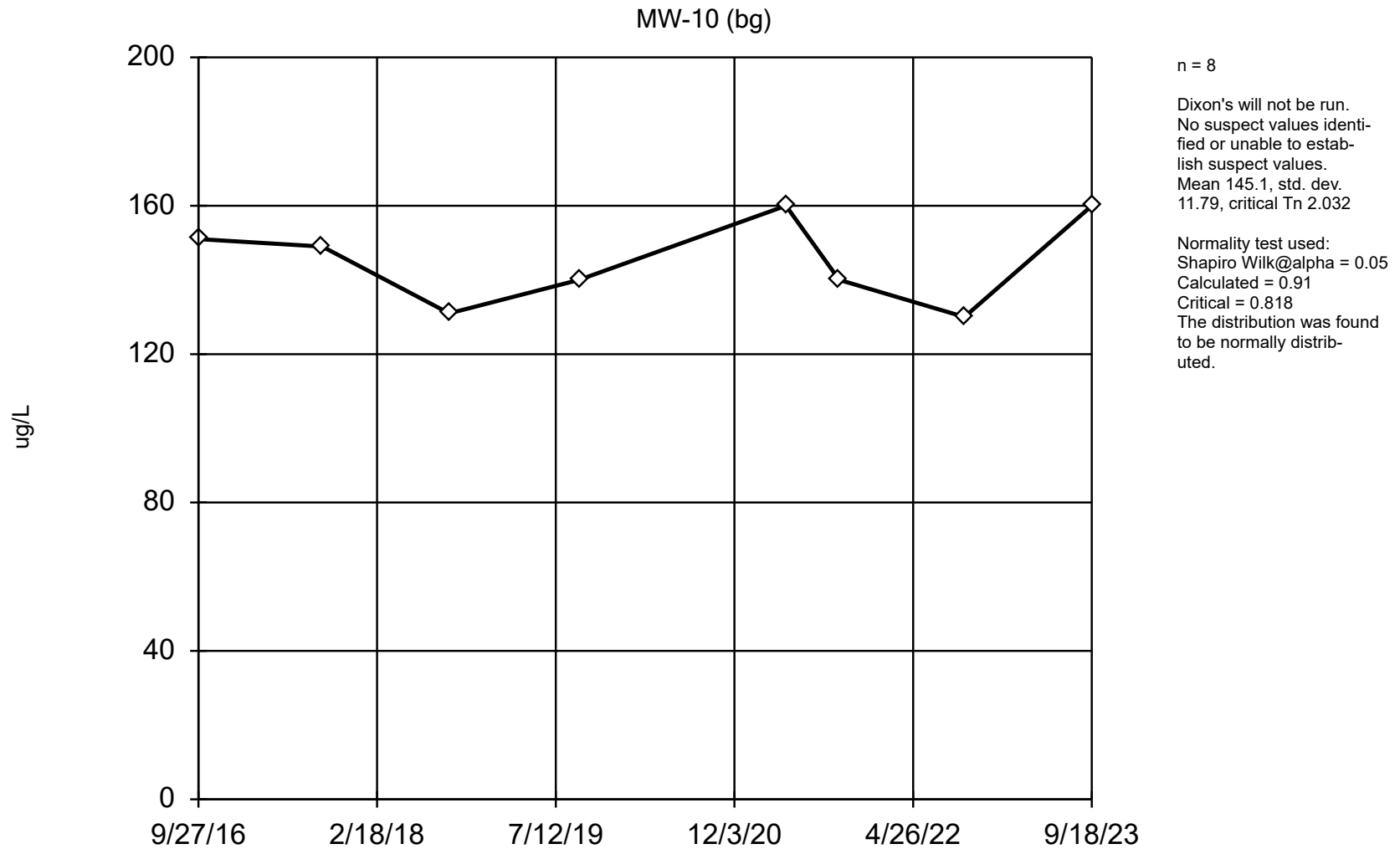
# EPA 1989 Outlier Screening

Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | 0.55 (J)  |
| 9/14/2017 | 0.26 (J)  |
| 9/12/2018 | 0.3 (J)   |
| 9/17/2019 | <0.75     |
| 9/1/2020  | <0.88     |
| 9/28/2021 | <0.75     |
| 9/20/2022 | <0.75     |
| 9/21/2023 | <0.53 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



Constituent: Barium Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

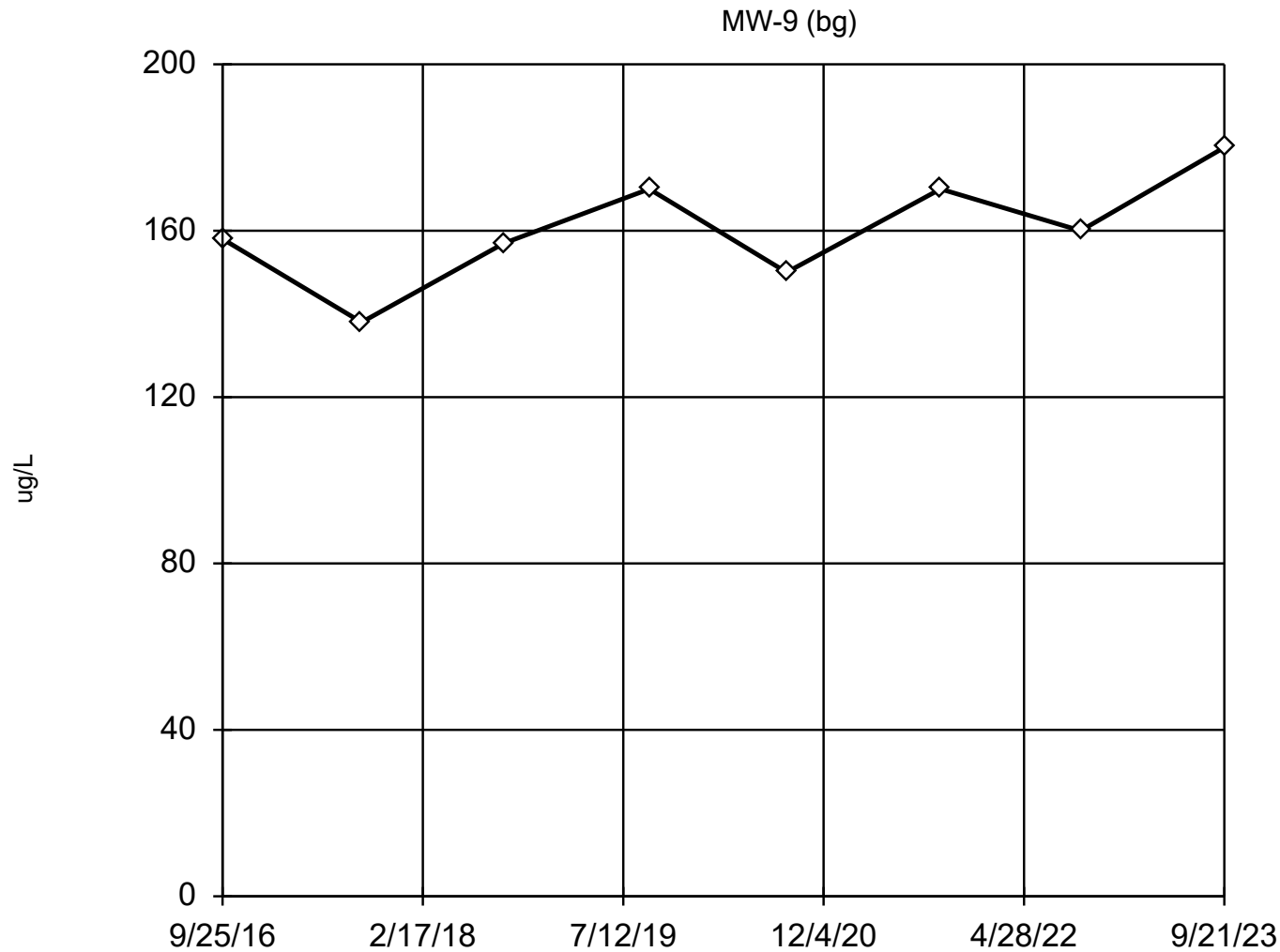
# EPA 1989 Outlier Screening

Constituent: Barium (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-10 (bg)

|           |     |
|-----------|-----|
| 9/27/2016 | 151 |
| 9/15/2017 | 149 |
| 9/12/2018 | 131 |
| 9/17/2019 | 140 |
| 4/29/2021 | 160 |
| 9/28/2021 | 140 |
| 9/20/2022 | 130 |
| 9/18/2023 | 160 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 160.4, std. dev. 13.07, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9737  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Barium   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

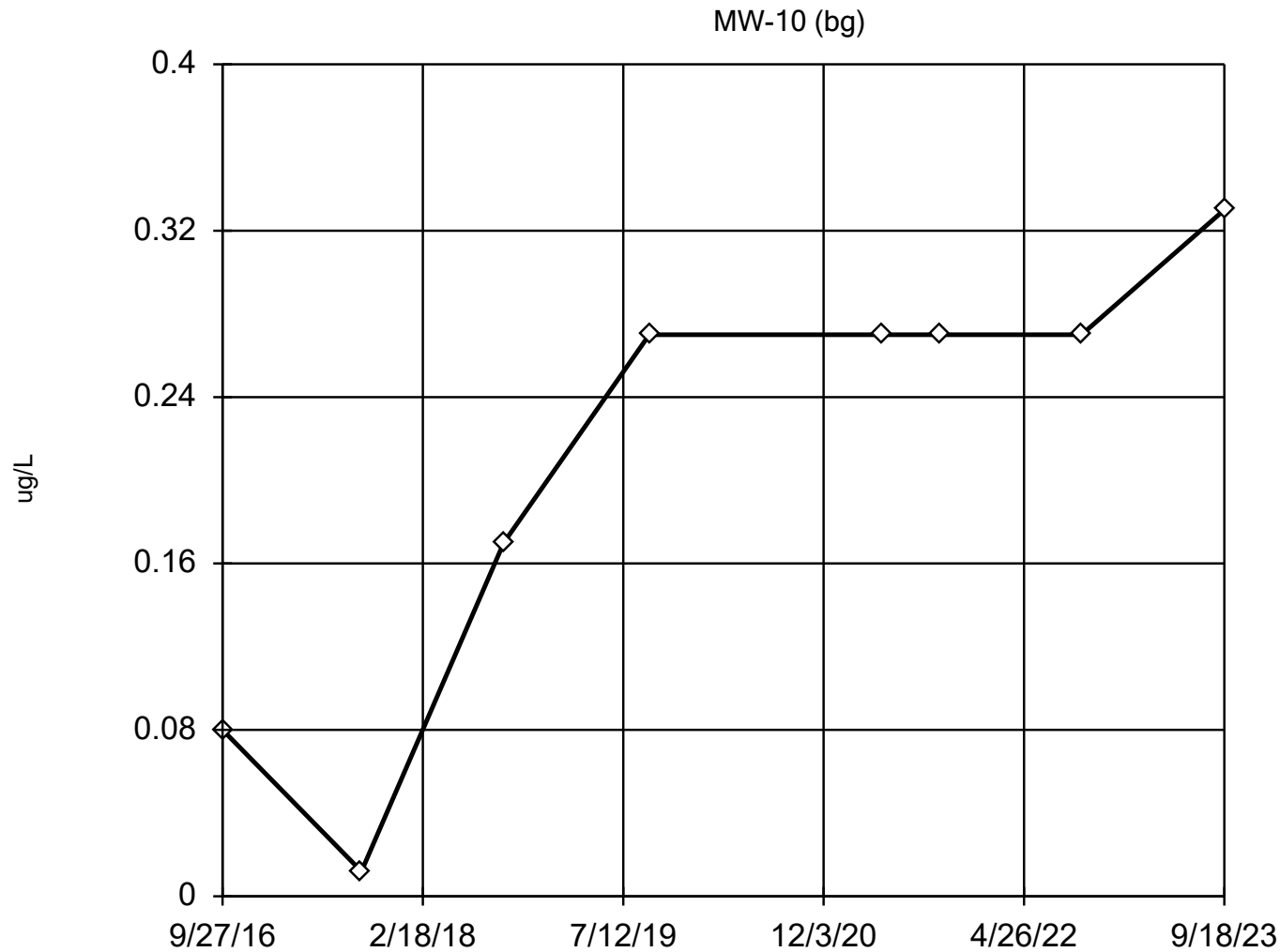
# EPA 1989 Outlier Screening

Constituent: Barium (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |     |
|-----------|-----|
| 9/25/2016 | 158 |
| 9/14/2017 | 138 |
| 9/12/2018 | 157 |
| 9/17/2019 | 170 |
| 9/1/2020  | 150 |
| 9/28/2021 | 170 |
| 9/20/2022 | 160 |
| 9/21/2023 | 180 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.

Mean 0.209, std. dev. 0.1112, critical Tn 2.032.

After removing suspect data: mean 0.2371, std. dev. 0.08381, Tn 1.938; mean 0.2633, std. dev. 0.05164, Tn 1.822; mean 0.282, std. dev. 0.02683, Tn 1.672.

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8428  
Critical = 0.818  
The distribution was found to be normally distributed.

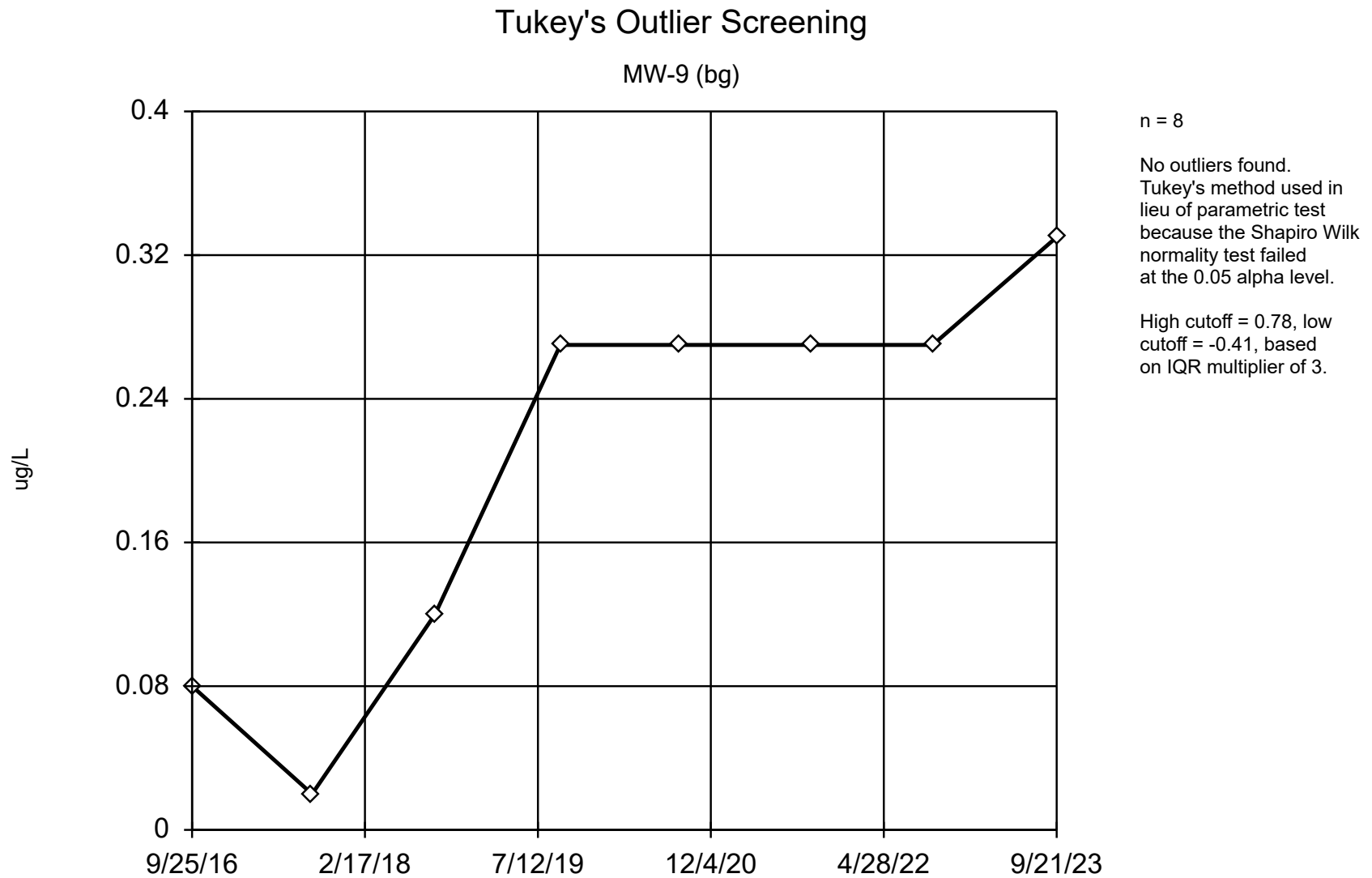
Constituent: Beryllium Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Beryllium (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-10 (bg)

|           |           |
|-----------|-----------|
| 9/27/2016 | <0.08     |
| 9/15/2017 | <0.012    |
| 9/12/2018 | 0.17 (J)  |
| 9/17/2019 | <0.27     |
| 4/29/2021 | <0.27     |
| 9/28/2021 | <0.27     |
| 9/20/2022 | <0.27     |
| 9/18/2023 | <0.33 (U) |



Constituent: Beryllium    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

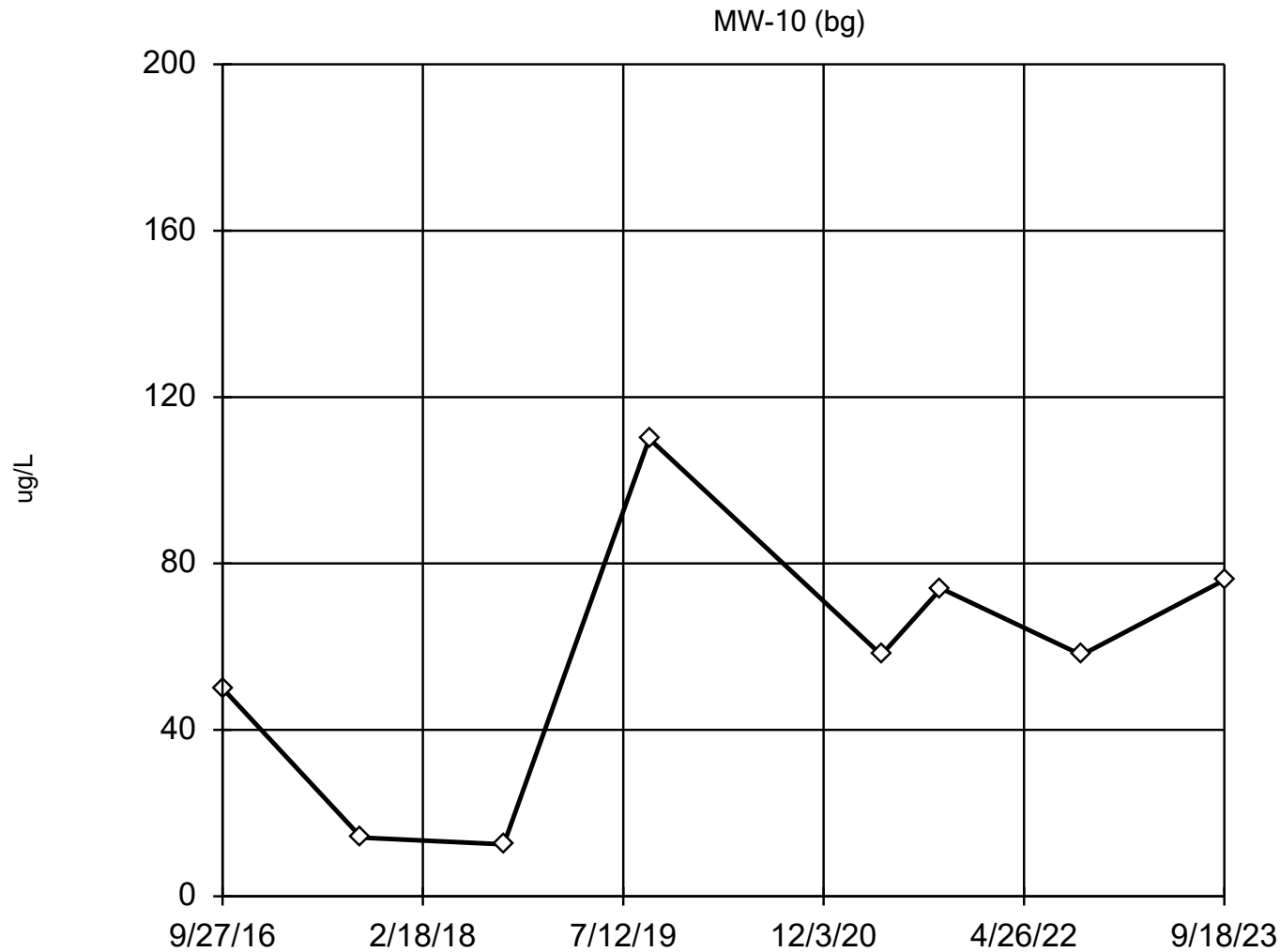
# Tukey's Outlier Screening

Constituent: Beryllium (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | <0.08     |
| 9/14/2017 | 0.02 (J)  |
| 9/12/2018 | <0.12     |
| 9/17/2019 | <0.27     |
| 9/1/2020  | <0.27     |
| 9/28/2021 | <0.27     |
| 9/20/2022 | <0.27     |
| 9/21/2023 | <0.33 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 56.58, std. dev. 32.36, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9349  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Boron    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

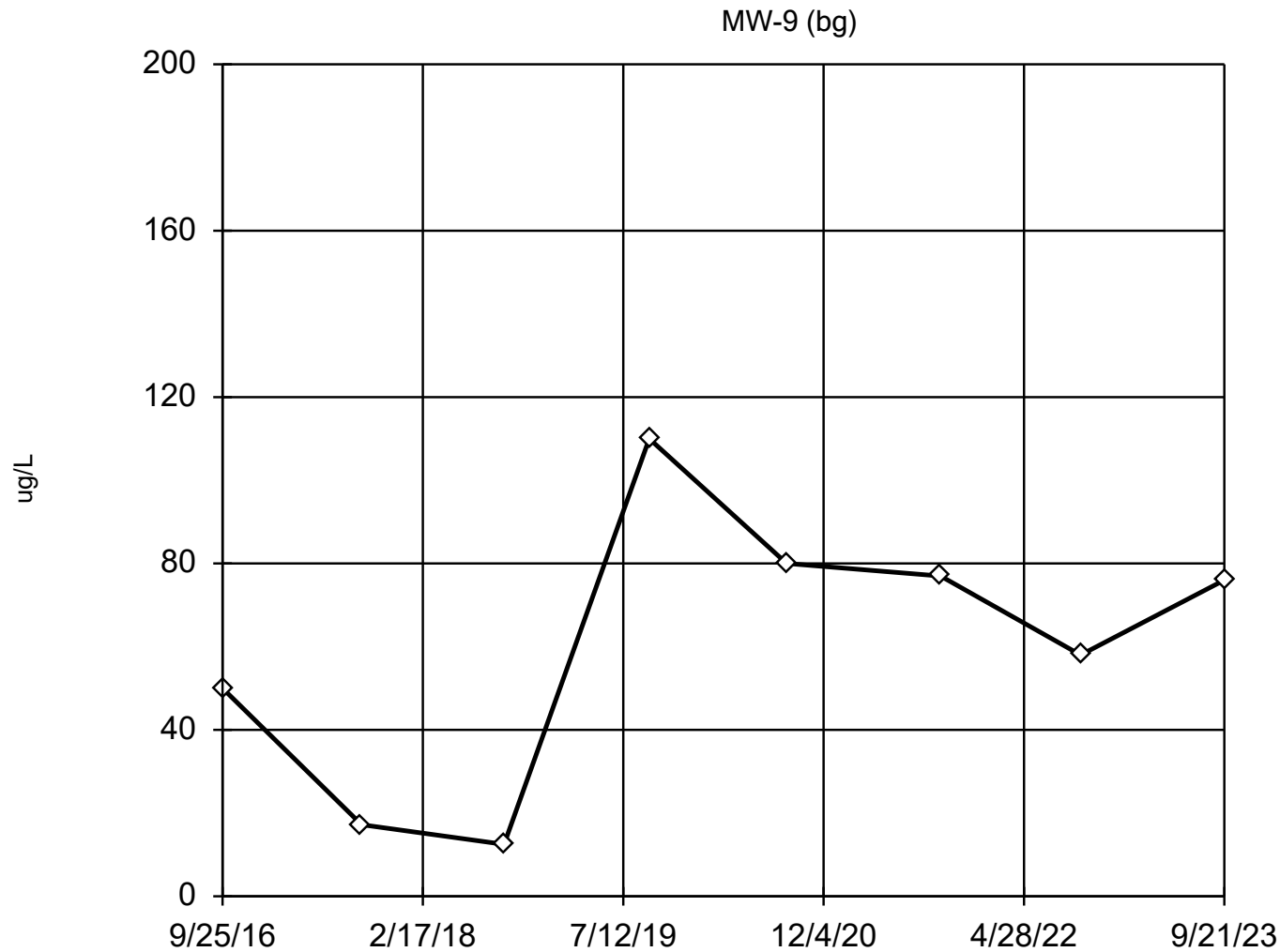
# EPA 1989 Outlier Screening

Constituent: Boron (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-10 (bg)

|           |          |
|-----------|----------|
| 9/27/2016 | <50      |
| 9/15/2017 | 14.1 (J) |
| 9/12/2018 | <12.5    |
| 9/17/2019 | <110     |
| 4/29/2021 | <58      |
| 9/28/2021 | 74 (J)   |
| 9/20/2022 | <58      |
| 9/18/2023 | <76 (U)  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 60.09, std. dev. 33.03, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.937  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Boron    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# EPA 1989 Outlier Screening

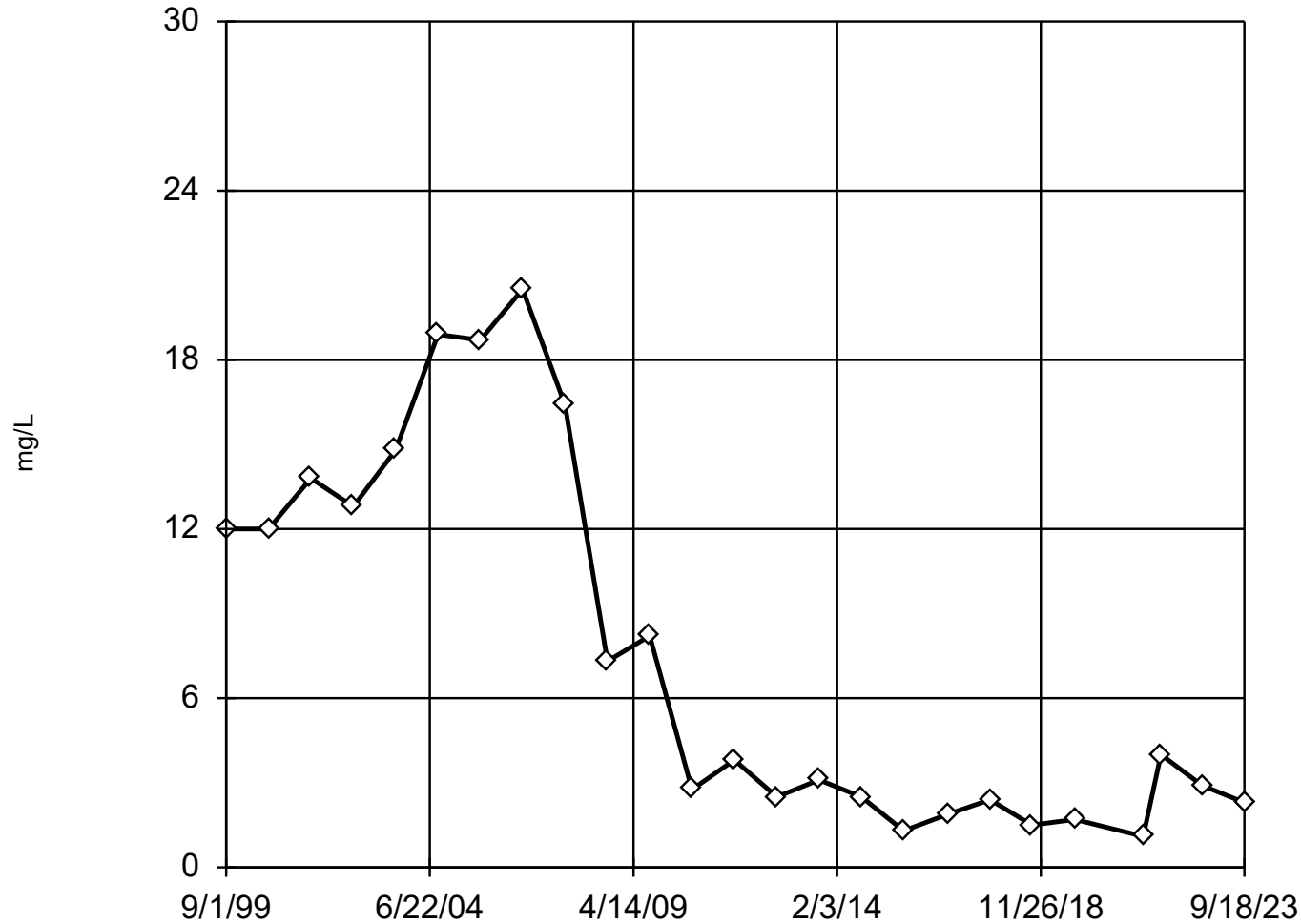
Constituent: Boron (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |          |
|-----------|----------|
| 9/25/2016 | <50      |
| 9/14/2017 | 17.2 (J) |
| 9/12/2018 | <12.5    |
| 9/17/2019 | <110     |
| 9/1/2020  | <80      |
| 9/28/2021 | 77 (J)   |
| 9/20/2022 | <58      |
| 9/21/2023 | <76 (U)  |

## Tukey's Outlier Screening

MW-10 (bg)



n = 25

No outliers found.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.05 alpha level.

High cutoff = 46.15, low cutoff = -30.5, based on IQR multiplier of 3.

Constituent: Chloride    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

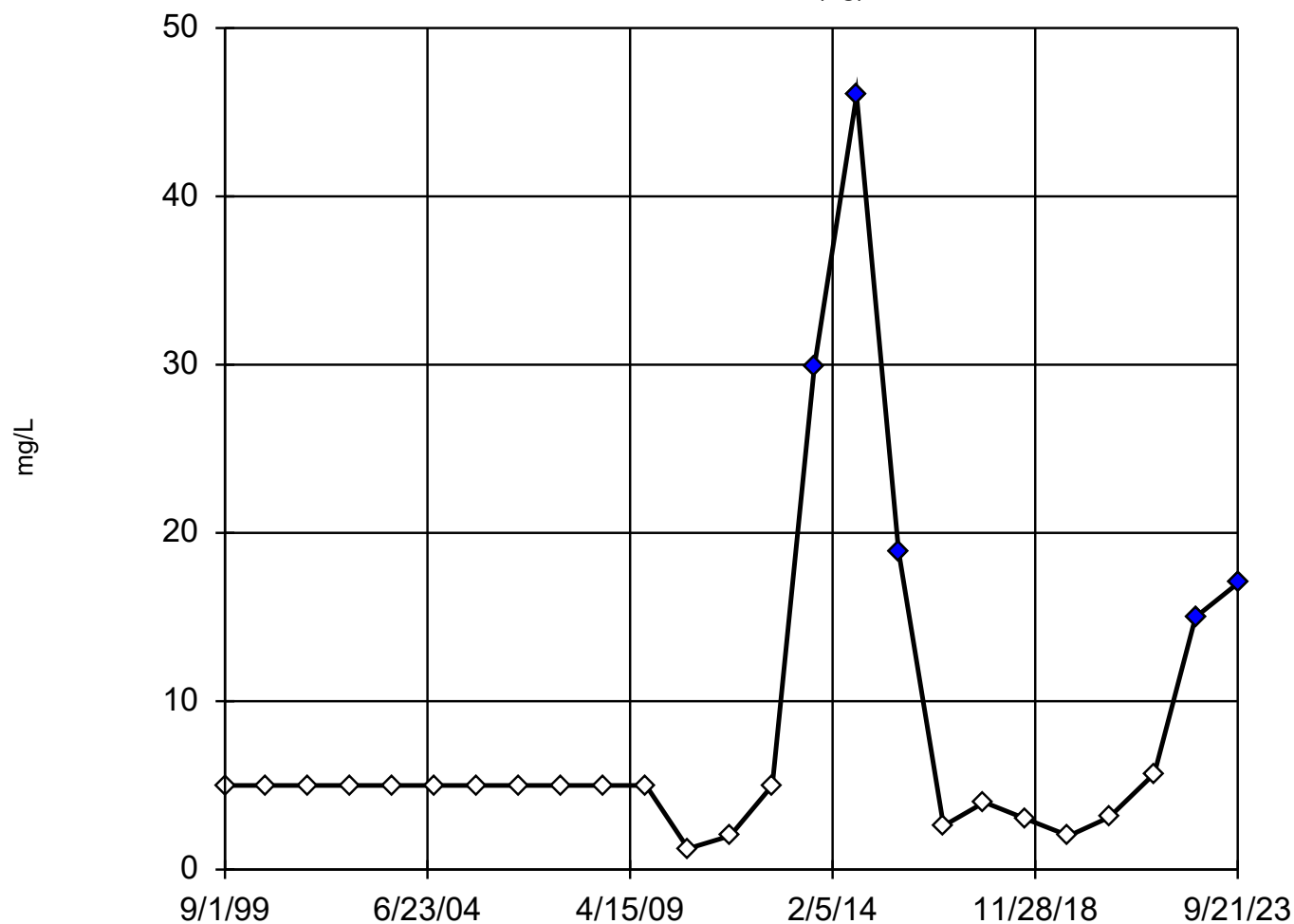
# Tukey's Outlier Screening

Constituent: Chloride (mg/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-10 (bg) |
|-----------|------------|
| 9/1/1999  | 12         |
| 9/1/2000  | 12         |
| 9/1/2001  | 13.8       |
| 9/1/2002  | 12.8       |
| 9/1/2003  | 14.8       |
| 9/1/2004  | 18.9       |
| 9/1/2005  | 18.7       |
| 9/1/2006  | 20.5       |
| 9/1/2007  | 16.4       |
| 9/1/2008  | 7.31       |
| 9/1/2009  | 8.21       |
| 9/1/2010  | 2.76       |
| 9/1/2011  | 3.81       |
| 9/1/2012  | <5         |
| 9/1/2013  | 3.1        |
| 9/1/2014  | 2.5        |
| 9/1/2015  | 1.3        |
| 9/27/2016 | 1.9        |
| 9/15/2017 | 2.4        |
| 9/12/2018 | 1.5        |
| 9/17/2019 | 1.7 (J,B)  |
| 4/29/2021 | <2.2       |
| 9/28/2021 | 4 (J)      |
| 9/20/2022 | 2.9 (J)    |
| 9/18/2023 | 2.3 (J)    |

## Tukey's Outlier Screening

MW-9 (bg)



n = 25

Outliers are drawn as solid.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.05 alpha level.

High cutoff = 10.75, low cutoff = -1.85, based on IQR multiplier of 3.

Constituent: Chloride    Analysis Run 10/30/2023 12:19 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

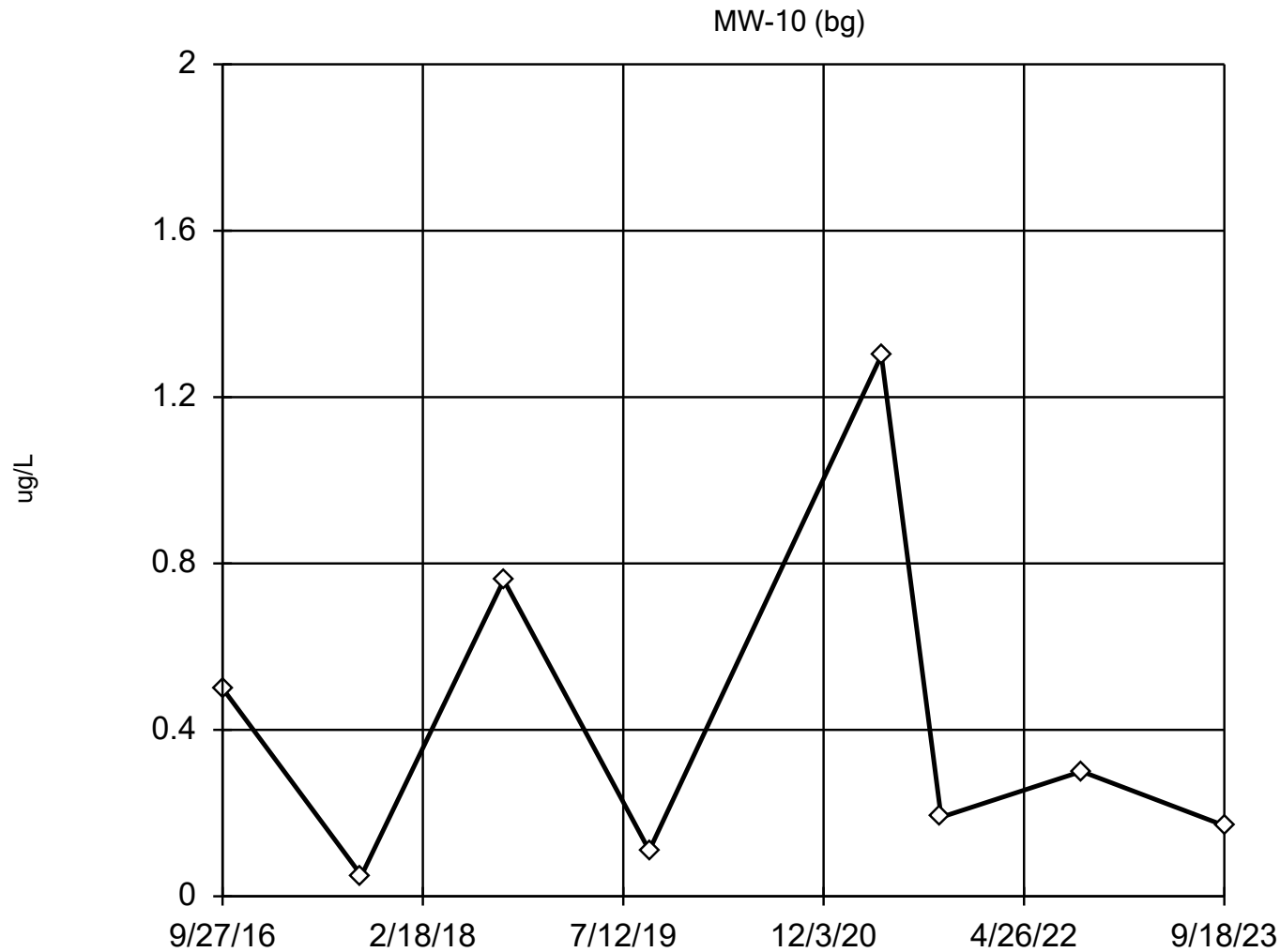
# Tukey's Outlier Screening

Constituent: Chloride (mg/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-9 (bg)

|           |           |
|-----------|-----------|
| 9/1/1999  | <5        |
| 9/1/2000  | <5        |
| 9/1/2001  | <5        |
| 9/1/2002  | <5        |
| 9/1/2003  | <5        |
| 9/1/2004  | <5        |
| 9/1/2005  | <5        |
| 9/1/2006  | <5        |
| 9/1/2007  | <5        |
| 9/1/2008  | <5        |
| 9/1/2009  | <5        |
| 9/1/2010  | 1.25      |
| 9/1/2011  | <2        |
| 9/1/2012  | <5        |
| 9/1/2013  | 29.9 (O)  |
| 9/1/2014  | 46 (O)    |
| 9/1/2015  | 18.9 (O)  |
| 9/25/2016 | 2.6       |
| 9/14/2017 | 4         |
| 9/12/2018 | 3         |
| 9/17/2019 | 2 (J,B)   |
| 9/1/2020  | 3.1 (J,B) |
| 9/28/2021 | 5.7       |
| 9/20/2022 | 15 (O)    |
| 9/21/2023 | 17 (O)    |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.4225, std. dev. 0.4241, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8358  
Critical = 0.818  
The distribution was found to be normally distributed.

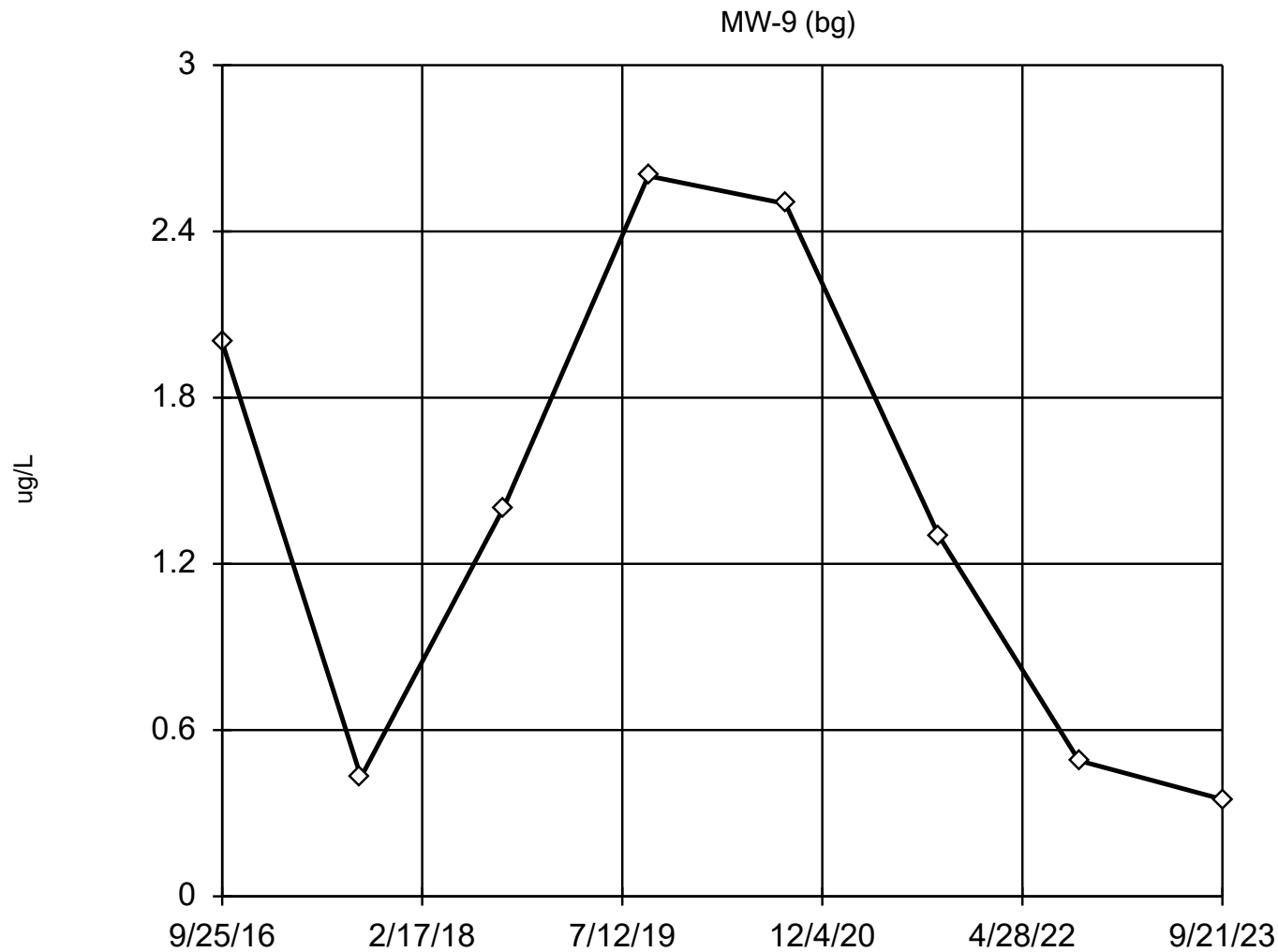
Constituent: Cobalt Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) |
|-----------|------------|
| 9/27/2016 | <0.5       |
| 9/15/2017 | 0.05 (J)   |
| 9/12/2018 | 0.76 (J)   |
| 9/17/2019 | 0.11 (J)   |
| 4/29/2021 | 1.3        |
| 9/28/2021 | <0.19      |
| 9/20/2022 | 0.3 (J)    |
| 9/18/2023 | <0.17 (U)  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 1.384, std. dev. 0.9172, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8869  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Cobalt Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

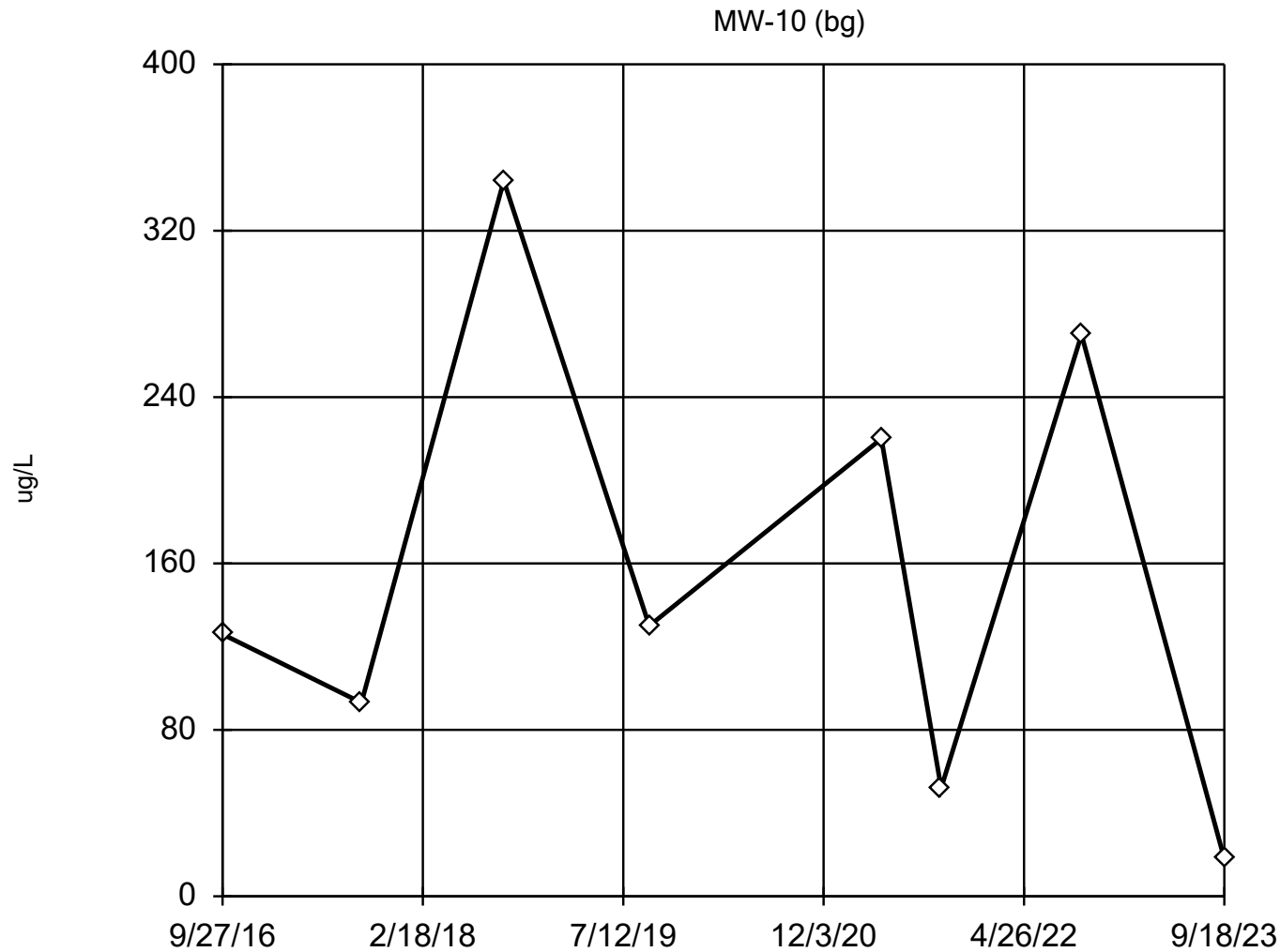
# EPA 1989 Outlier Screening

Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |          |
|-----------|----------|
| 9/25/2016 | 2        |
| 9/14/2017 | 0.43 (J) |
| 9/12/2018 | 1.4      |
| 9/17/2019 | 2.6      |
| 9/1/2020  | 2.5      |
| 9/28/2021 | 1.3      |
| 9/20/2022 | 0.49 (J) |
| 9/21/2023 | 0.35 (J) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 156.6, std. dev. 112, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9484  
Critical = 0.818  
The distribution was found to be normally distributed.

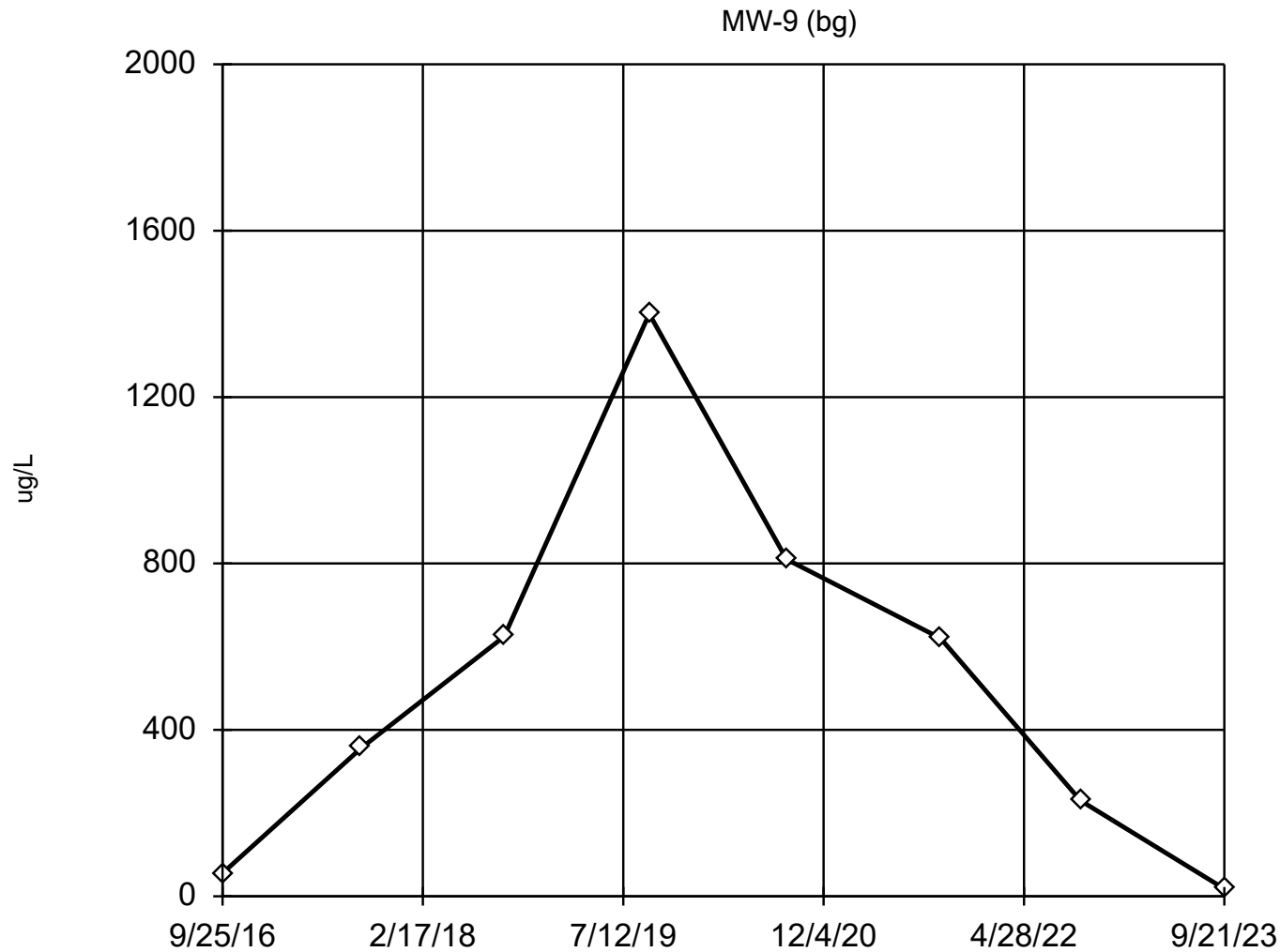
Constituent: Iron   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Iron (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

| MW-10 (bg) |         |
|------------|---------|
| 9/27/2016  | 126     |
| 9/15/2017  | 93.1    |
| 9/12/2018  | 344     |
| 9/17/2019  | 130     |
| 4/29/2021  | 220     |
| 9/28/2021  | 52 (J)  |
| 9/20/2022  | 270     |
| 9/18/2023  | <36 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 514.3, std. dev. 456.3, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9209  
Critical = 0.818  
The distribution was found to be normally distributed.

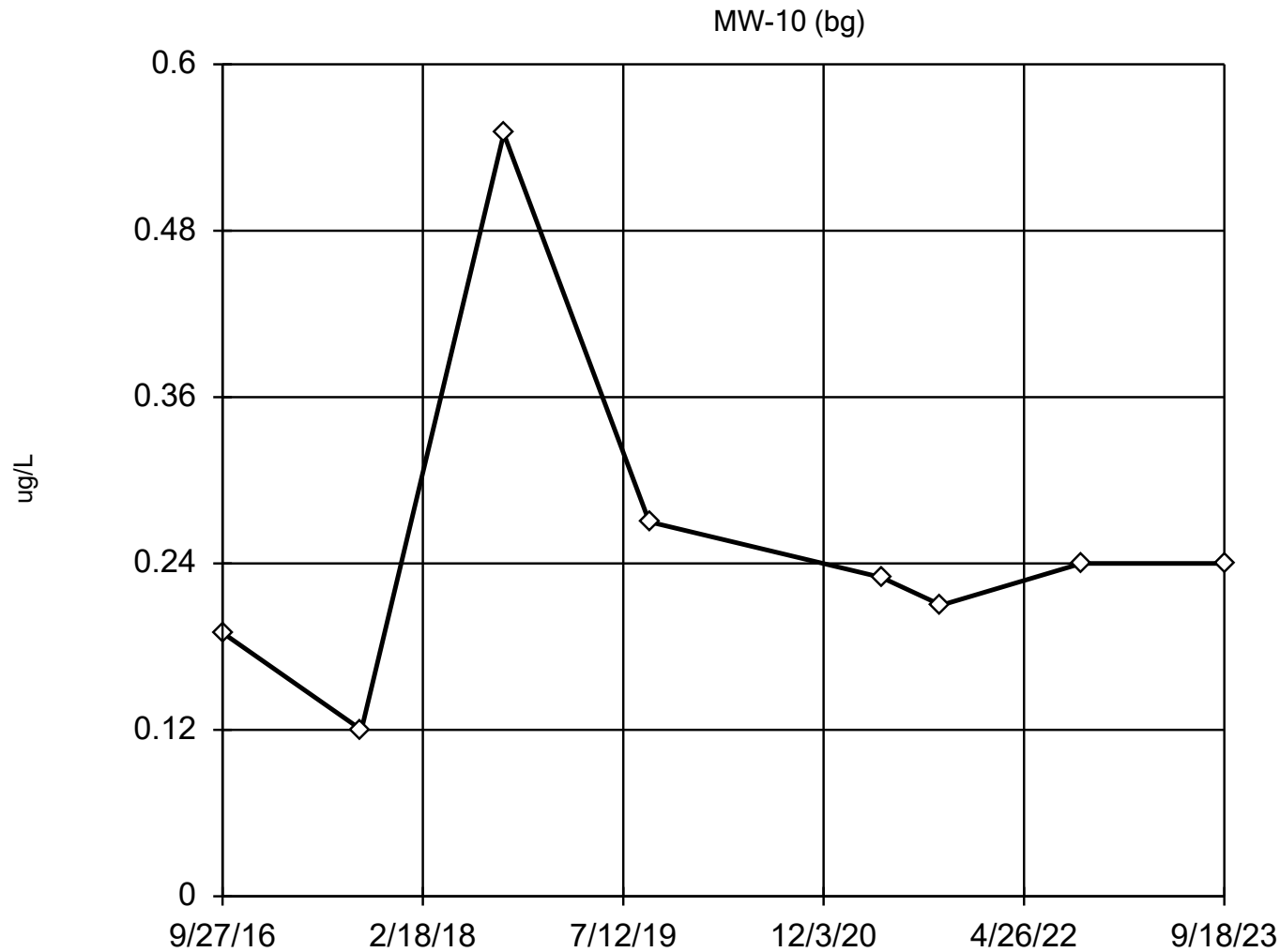
Constituent: Iron   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Iron (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

| MW-9 (bg) |         |
|-----------|---------|
| 9/25/2016 | 55.7    |
| 9/14/2017 | 357     |
| 9/12/2018 | 624     |
| 9/17/2019 | 1400    |
| 9/1/2020  | 810     |
| 9/28/2021 | 620     |
| 9/20/2022 | 230     |
| 9/21/2023 | <36 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.2562, std. dev. 0.1269, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8936  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Lead Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

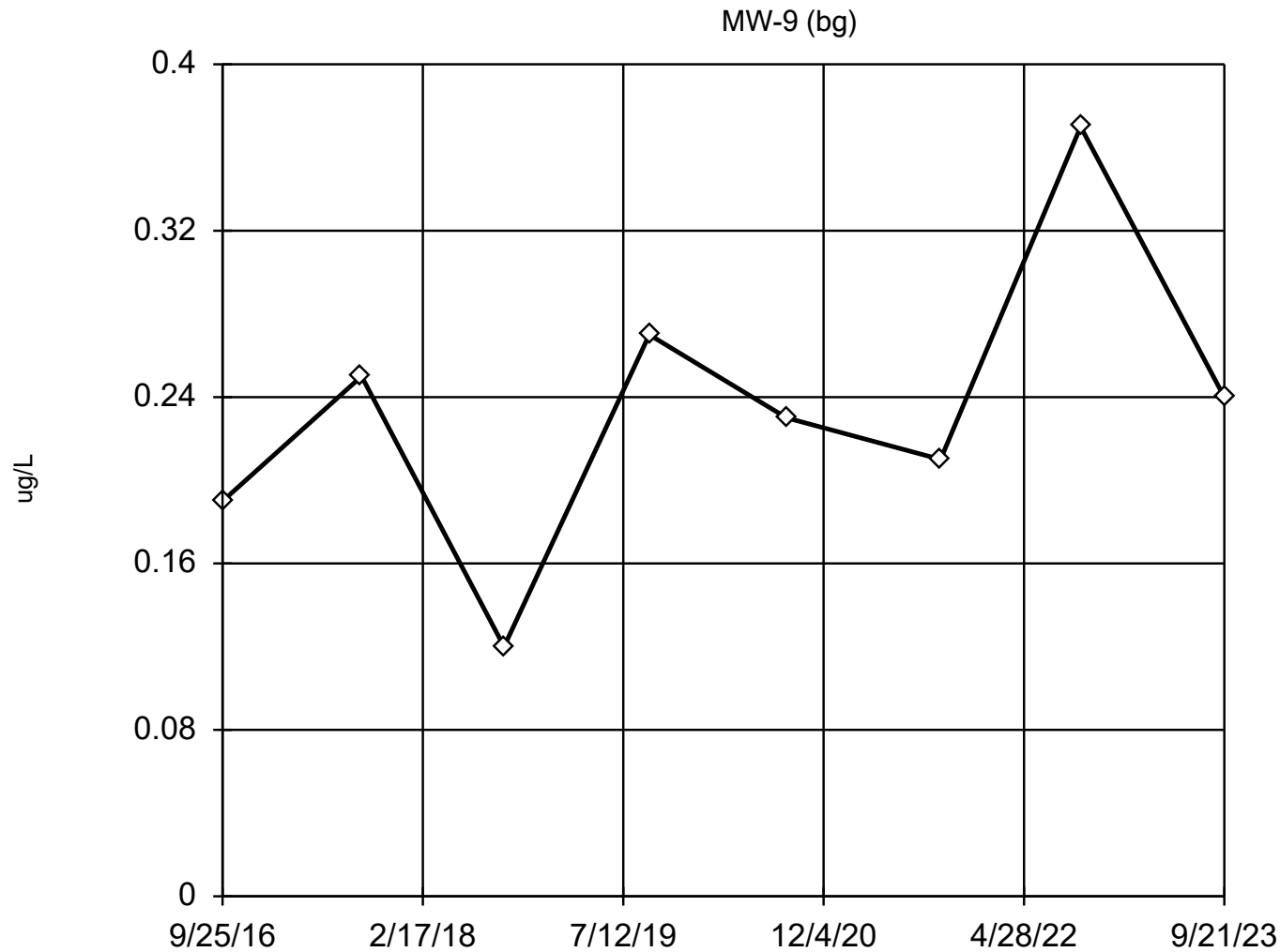
# EPA 1989 Outlier Screening

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-10 (bg)

|           |           |
|-----------|-----------|
| 9/27/2016 | <0.19     |
| 9/15/2017 | 0.12 (J)  |
| 9/12/2018 | 0.55 (J)  |
| 9/17/2019 | <0.27     |
| 4/29/2021 | 0.23 (J)  |
| 9/28/2021 | <0.21     |
| 9/20/2022 | <0.24     |
| 9/18/2023 | <0.24 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.235, std. dev. 0.07131, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9525  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Lead Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

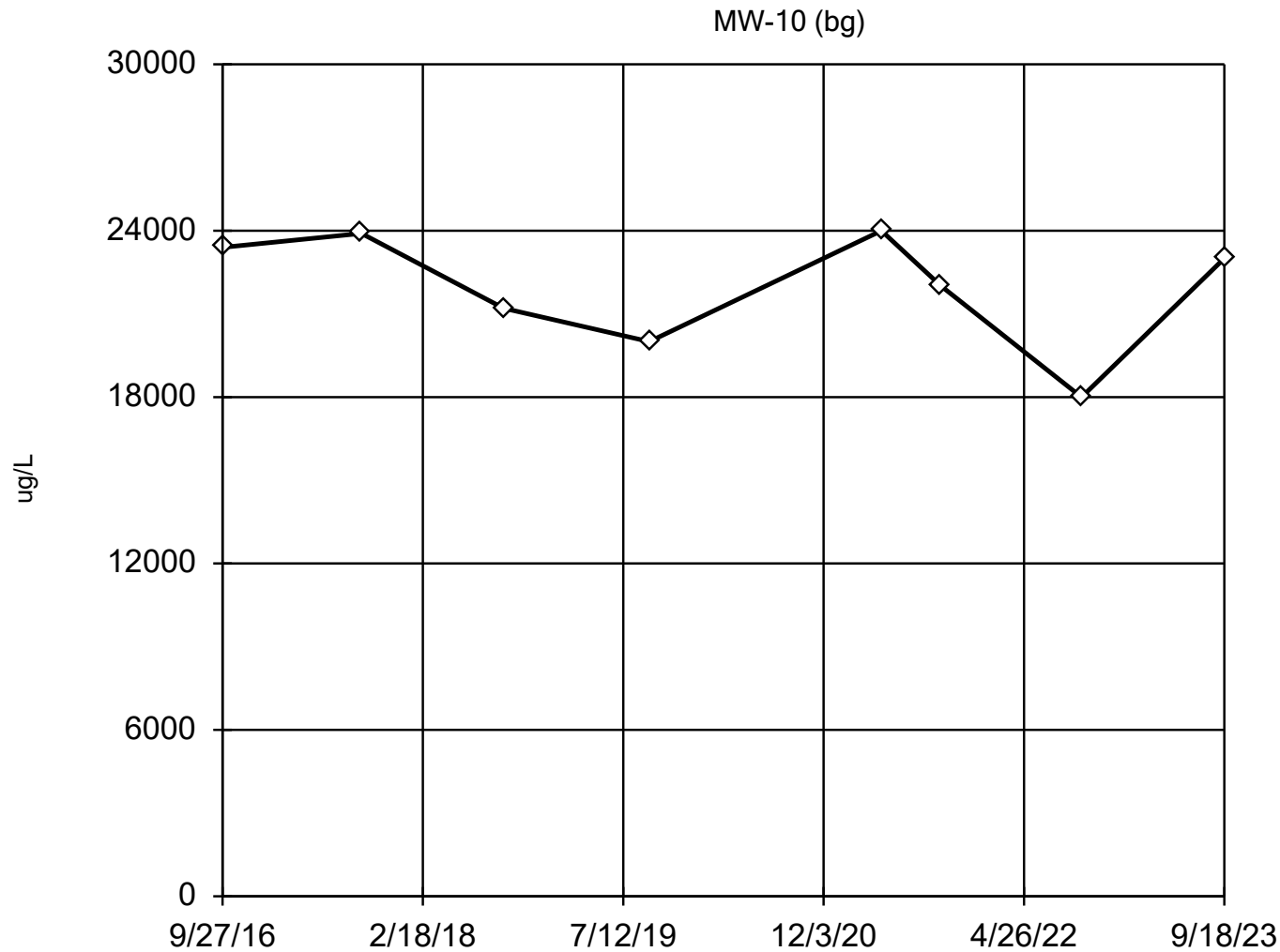
# EPA 1989 Outlier Screening

Constituent: Lead (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-9 (bg)

|           |           |
|-----------|-----------|
| 9/25/2016 | <0.19     |
| 9/14/2017 | 0.25 (J)  |
| 9/12/2018 | <0.12     |
| 9/17/2019 | <0.27     |
| 9/1/2020  | 0.23 (J)  |
| 9/28/2021 | <0.21     |
| 9/20/2022 | 0.37 (J)  |
| 9/21/2023 | <0.24 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 21938, std. dev. 2110, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9025  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Magnesium   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

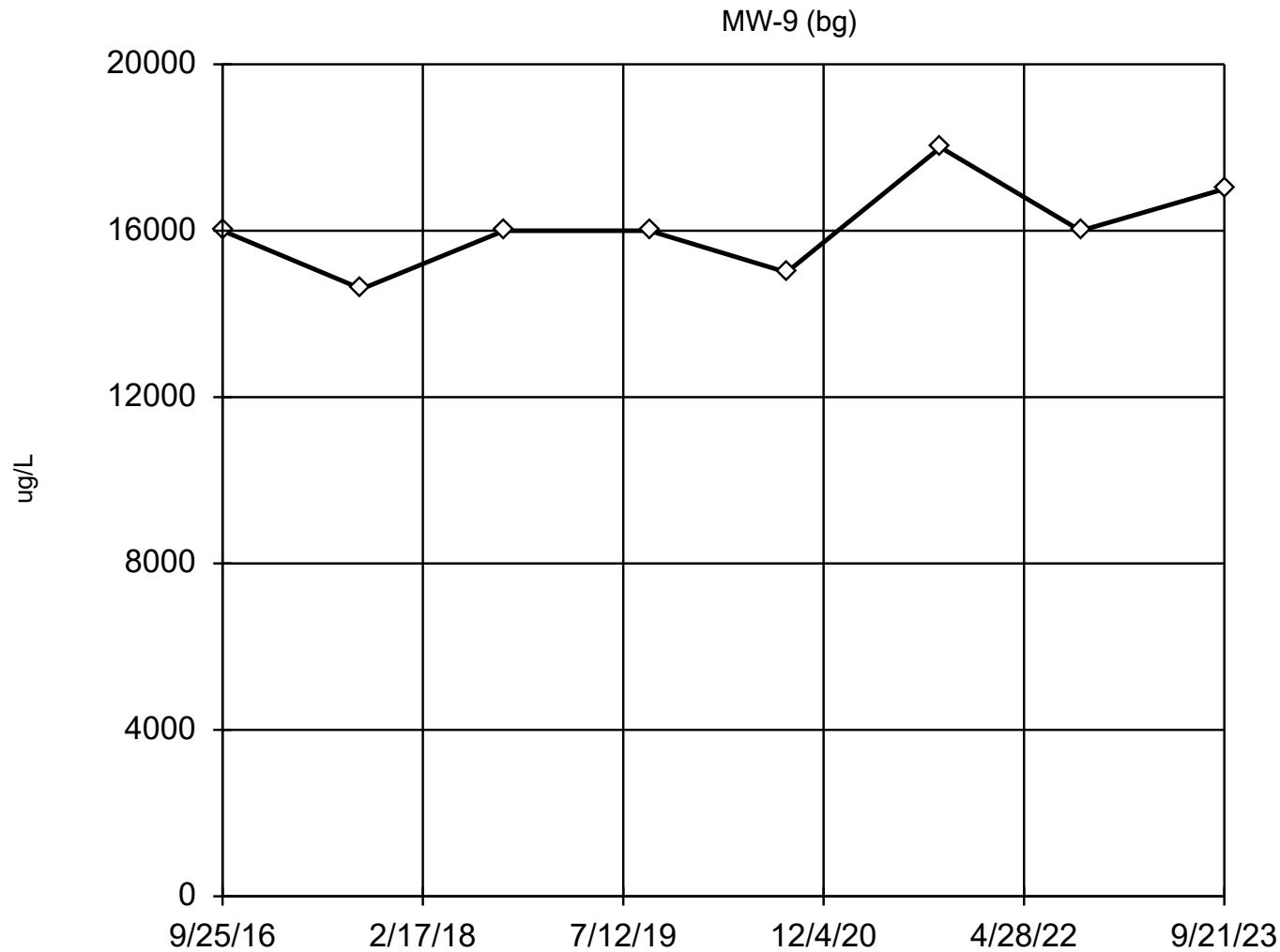
# EPA 1989 Outlier Screening

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-10 (bg)

|           |       |
|-----------|-------|
| 9/27/2016 | 23400 |
| 9/15/2017 | 23900 |
| 9/12/2018 | 21200 |
| 9/17/2019 | 20000 |
| 4/29/2021 | 24000 |
| 9/28/2021 | 22000 |
| 9/20/2022 | 18000 |
| 9/18/2023 | 23000 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 16075, std. dev. 1063, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9146  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Magnesium   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

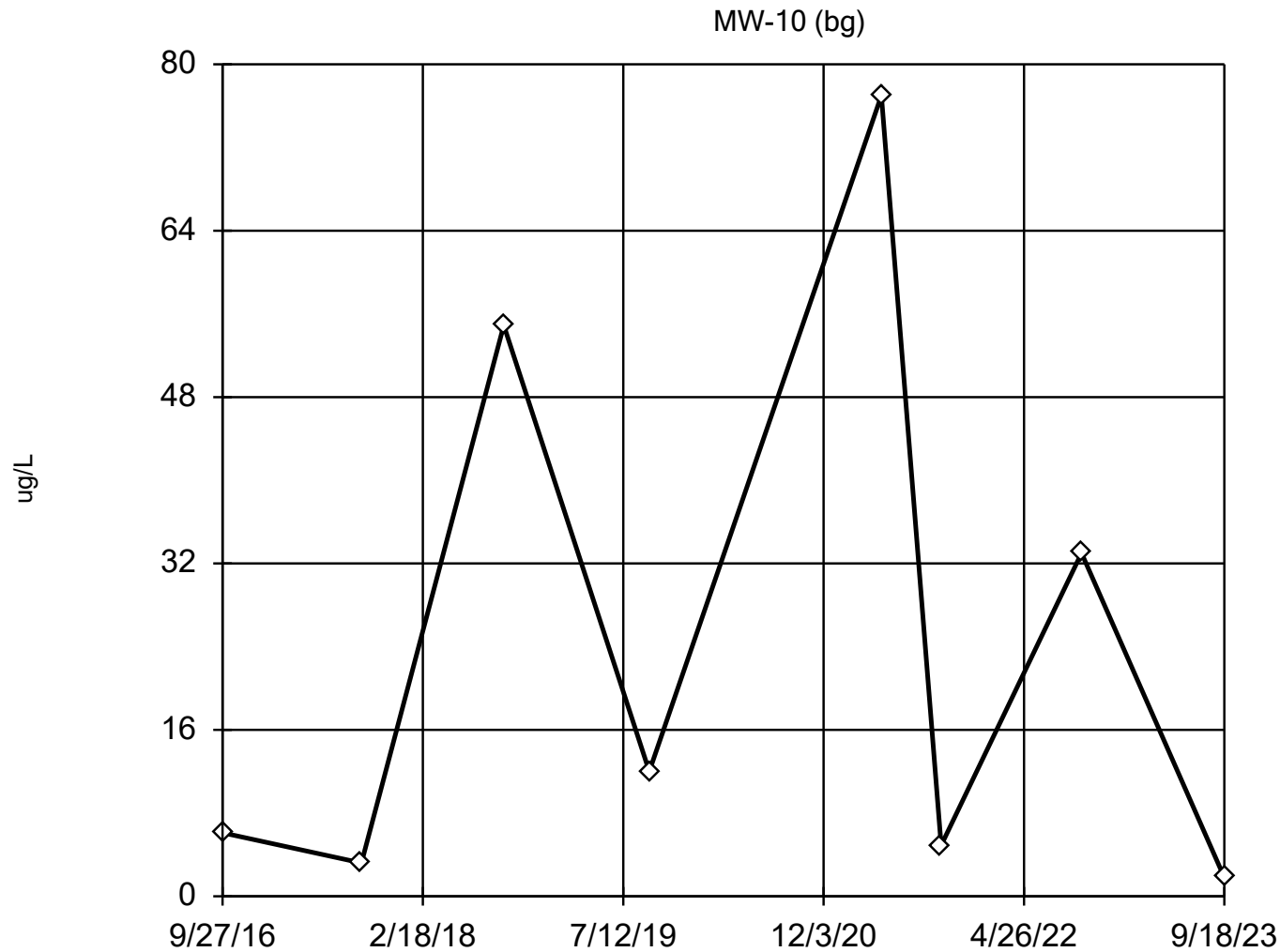
# EPA 1989 Outlier Screening

Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |       |
|-----------|-------|
| 9/25/2016 | 16000 |
| 9/14/2017 | 14600 |
| 9/12/2018 | 16000 |
| 9/17/2019 | 16000 |
| 9/1/2020  | 15000 |
| 9/28/2021 | 18000 |
| 9/20/2022 | 16000 |
| 9/21/2023 | 17000 |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 24.11, std. dev. 28.28, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9383  
Critical = 0.818 (after natural log transformation)  
The distribution was found to be log-normal.

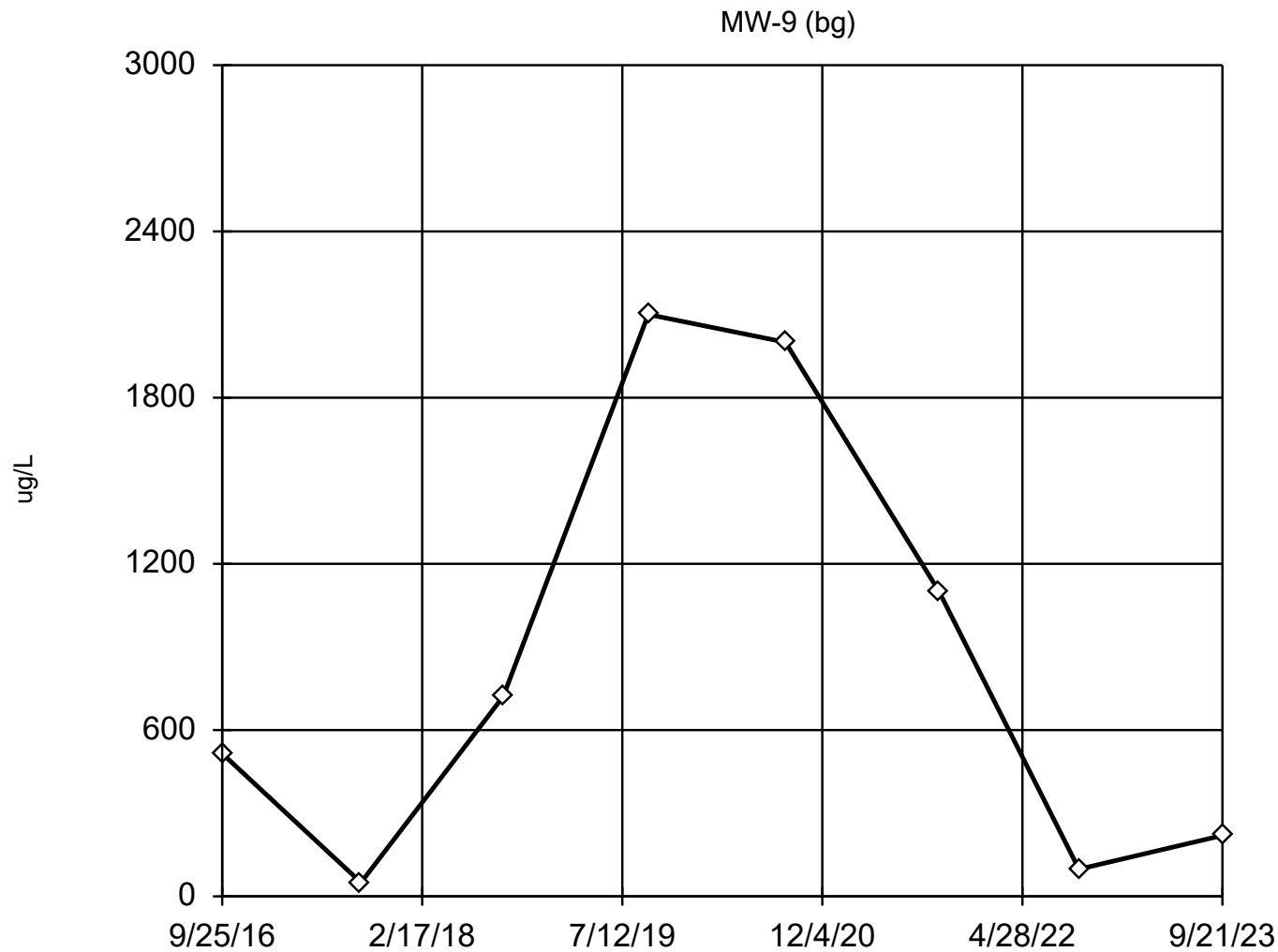
Constituent: Manganese Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Manganese (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

| MW-10 (bg) |          |
|------------|----------|
| 9/27/2016  | 6.1      |
| 9/15/2017  | 3.2      |
| 9/12/2018  | 54.9     |
| 9/17/2019  | 12       |
| 4/29/2021  | 77       |
| 9/28/2021  | 4.9 (J)  |
| 9/20/2022  | 33       |
| 9/18/2023  | <3.6 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 850.6, std. dev. 817.6, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8614  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Manganese Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

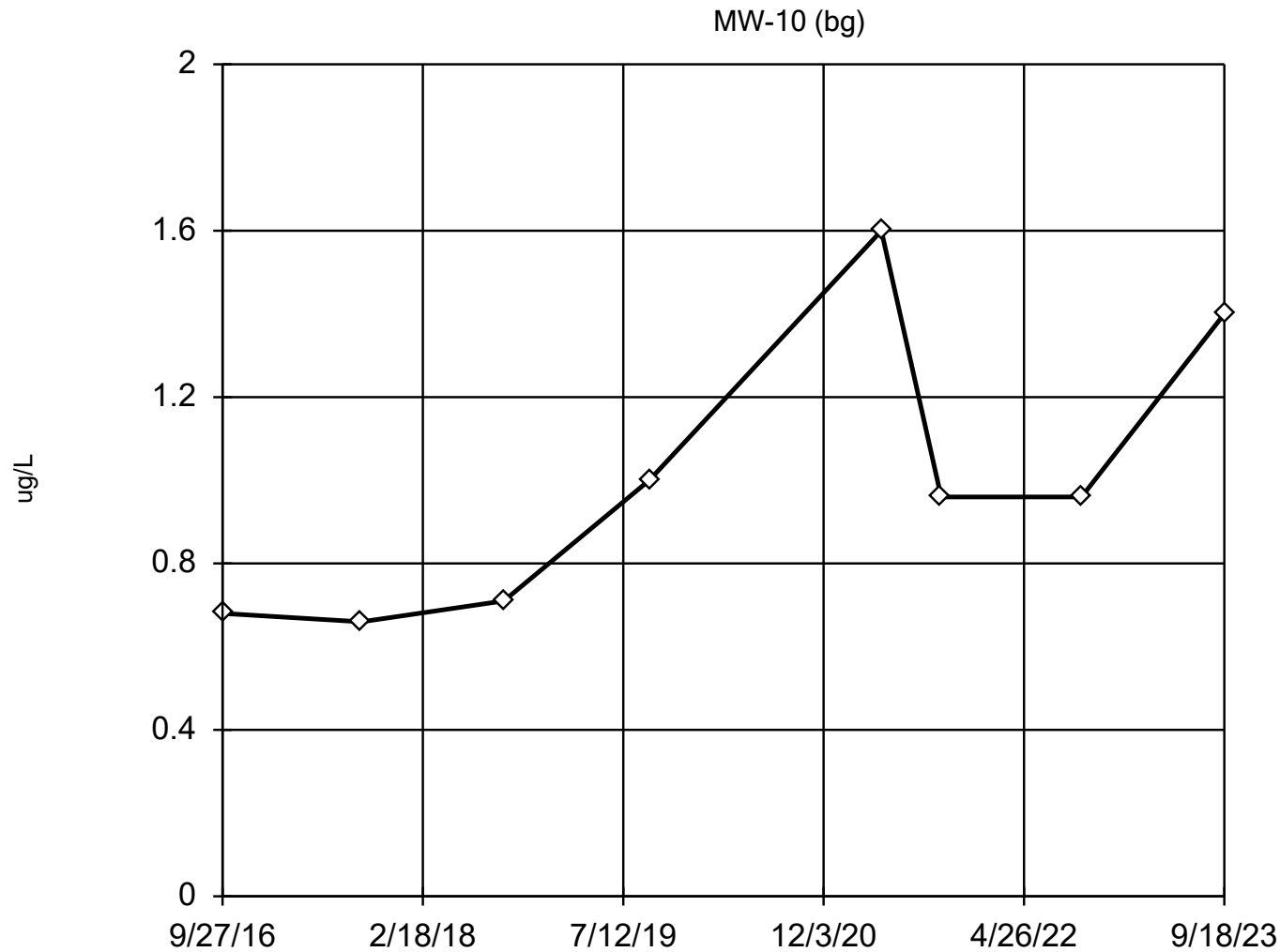
# EPA 1989 Outlier Screening

Constituent: Manganese (ug/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |      |
|-----------|------|
| 9/25/2016 | 515  |
| 9/14/2017 | 49.8 |
| 9/12/2018 | 722  |
| 9/17/2019 | 2100 |
| 9/1/2020  | 2000 |
| 9/28/2021 | 1100 |
| 9/20/2022 | 98   |
| 9/21/2023 | 220  |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.9962, std. dev. 0.3433, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8699  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Selenium   Analysis Run 10/30/2023 12:19 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

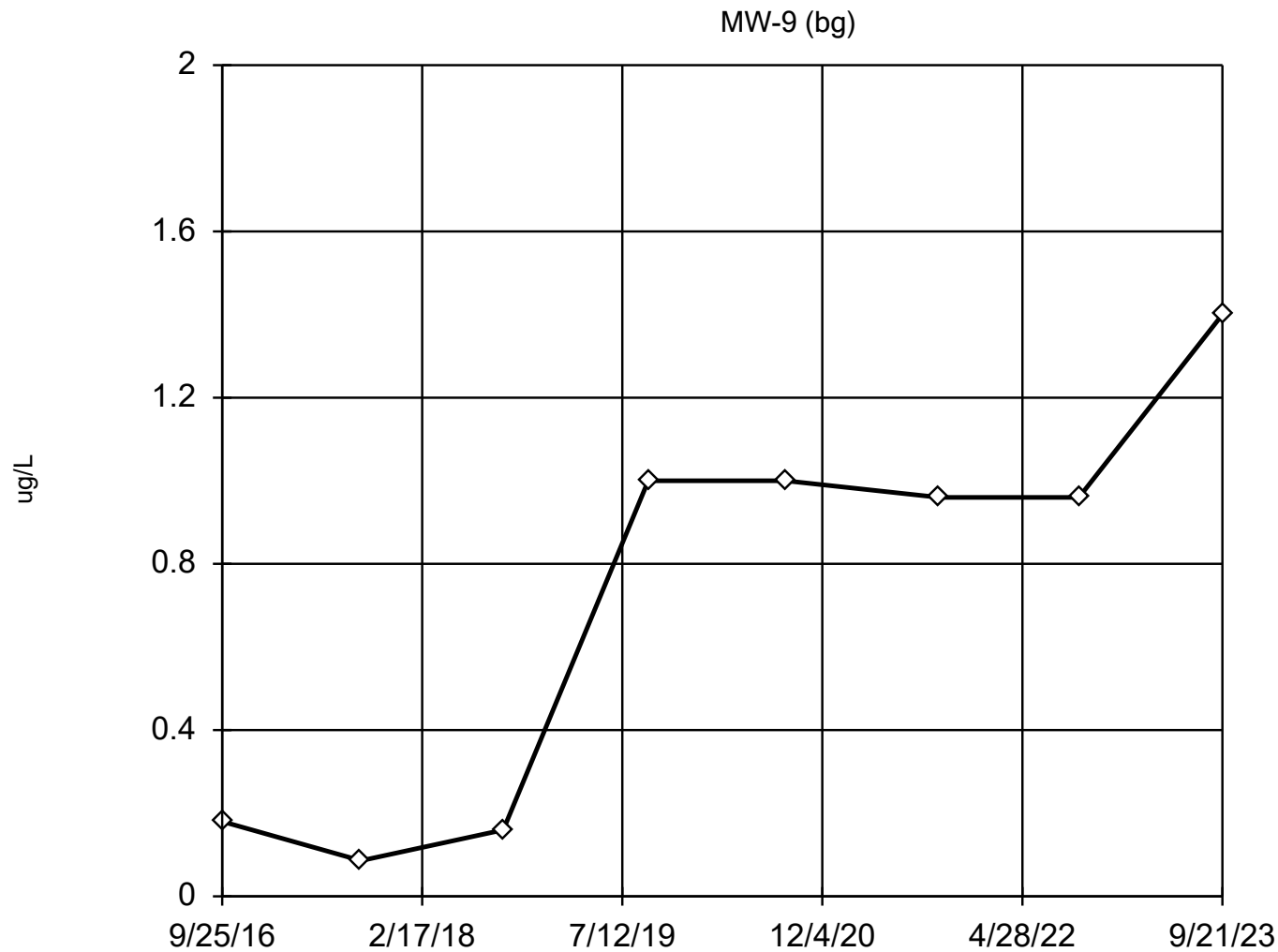
# EPA 1989 Outlier Screening

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-10 (bg)

|           |          |
|-----------|----------|
| 9/27/2016 | 0.68 (J) |
| 9/15/2017 | 0.66 (J) |
| 9/12/2018 | 0.71 (J) |
| 9/17/2019 | <1       |
| 4/29/2021 | 1.6 (J)  |
| 9/28/2021 | <0.96    |
| 9/20/2022 | <0.96    |
| 9/18/2023 | <1.4 (U) |

## EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 0.7182, std. dev. 0.4988, critical Tn 2.032

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.8323  
Critical = 0.818  
The distribution was found to be normally distributed.

Constituent: Selenium Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

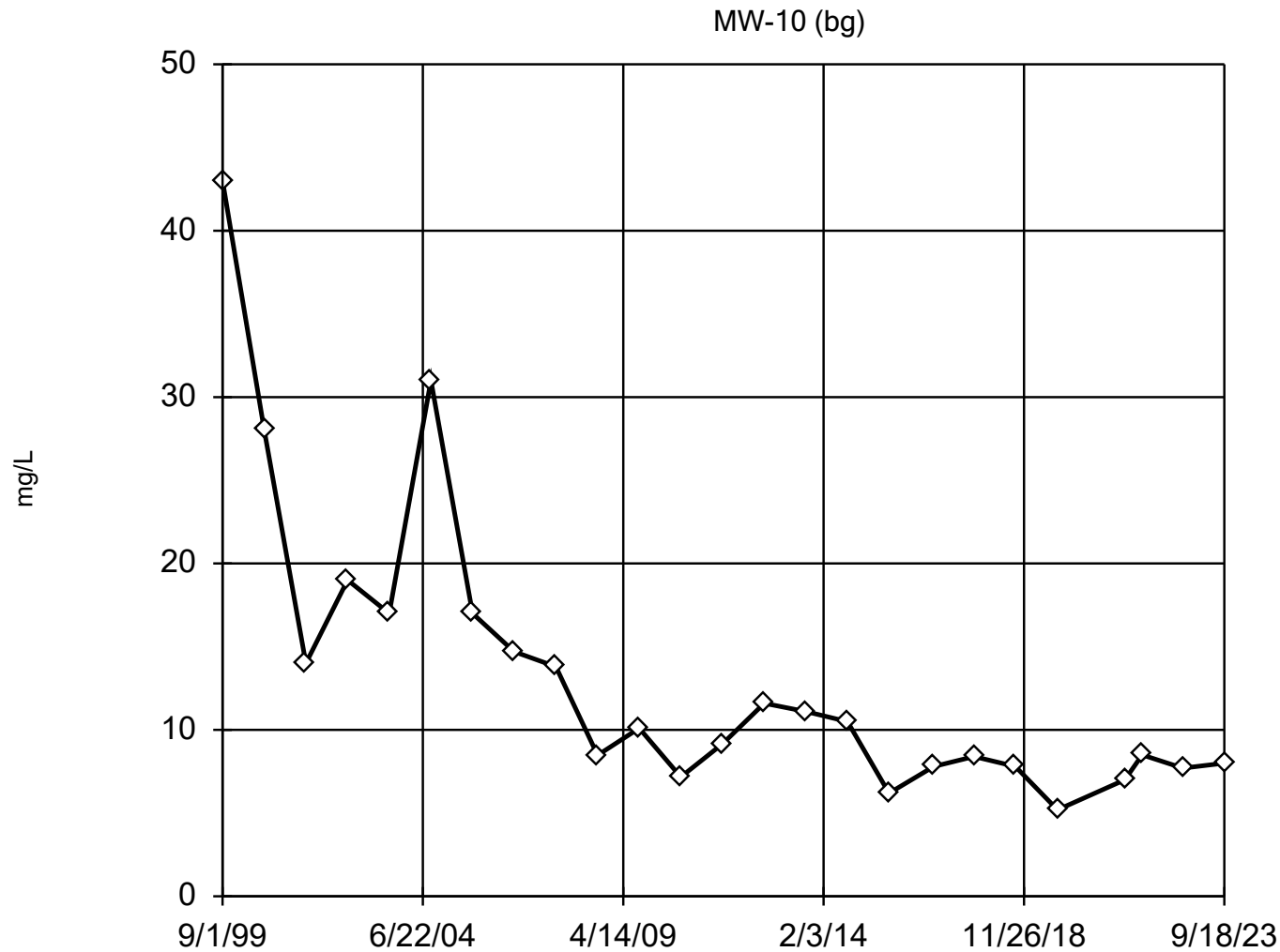
# EPA 1989 Outlier Screening

Constituent: Selenium (ug/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-9 (bg)

|           |          |
|-----------|----------|
| 9/25/2016 | <0.18    |
| 9/14/2017 | <0.086   |
| 9/12/2018 | <0.16    |
| 9/17/2019 | <1       |
| 9/1/2020  | <1       |
| 9/28/2021 | <0.96    |
| 9/20/2022 | <0.96    |
| 9/21/2023 | <1.4 (U) |

## EPA Screening (suspected outliers for Rosner's Test)



n = 25

Rosner's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 13.29, std. dev. 8.899, critical Tn 2.663

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9215  
Critical = 0.918 (after natural log transformation)  
The distribution was found to be log-normal.

Constituent: Sulfate Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

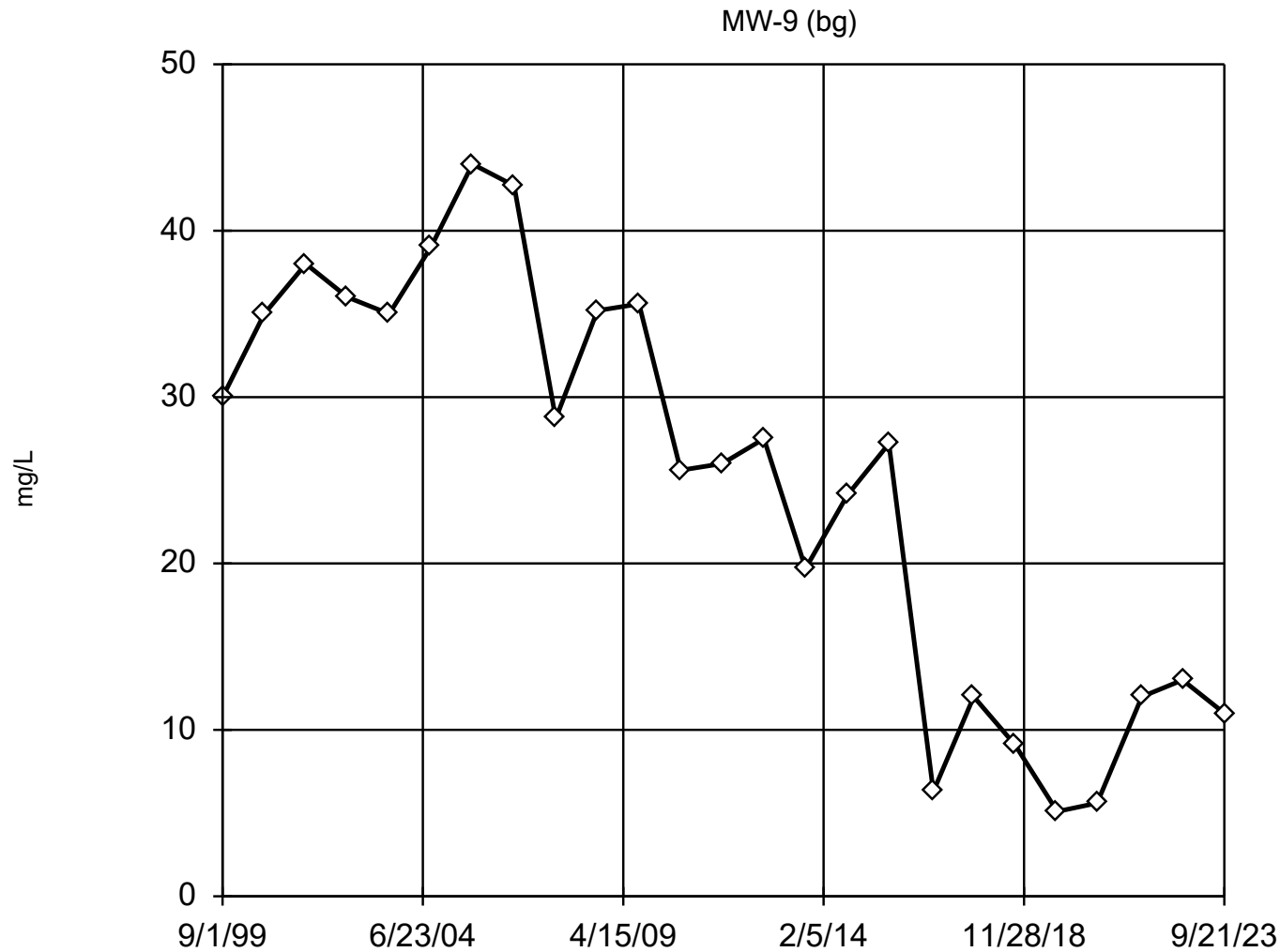
# EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L)   Analysis Run 10/30/2023 12:20 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

MW-10 (bg)

|           |      |
|-----------|------|
| 9/1/1999  | 43   |
| 9/1/2000  | 28   |
| 9/1/2001  | 14   |
| 9/1/2002  | 19   |
| 9/1/2003  | 17   |
| 9/1/2004  | 31   |
| 9/1/2005  | 17   |
| 9/1/2006  | 14.7 |
| 9/1/2007  | 13.8 |
| 9/1/2008  | 8.48 |
| 9/1/2009  | 10.1 |
| 9/1/2010  | 7.17 |
| 9/1/2011  | 9.16 |
| 9/1/2012  | 11.6 |
| 9/1/2013  | 11.1 |
| 9/1/2014  | 10.5 |
| 9/1/2015  | 6.2  |
| 9/27/2016 | 7.8  |
| 9/15/2017 | 8.4  |
| 9/12/2018 | 7.8  |
| 9/17/2019 | 5.2  |
| 4/29/2021 | 7    |
| 9/28/2021 | 8.5  |
| 9/20/2022 | 7.7  |
| 9/18/2023 | 8    |

## EPA Screening (suspected outliers for Rosner's Test)



n = 25

Rosner's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 24.94, std. dev. 12.43, critical Tn 2.663

Normality test used:  
Shapiro Wilk@alpha = 0.05  
Calculated = 0.9213  
Critical = 0.918  
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 10/30/2023 12:19 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 12:20 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

MW-9 (bg)

|           |      |
|-----------|------|
| 9/1/1999  | 30   |
| 9/1/2000  | 35   |
| 9/1/2001  | 38   |
| 9/1/2002  | 36   |
| 9/1/2003  | 35   |
| 9/1/2004  | 39   |
| 9/1/2005  | 44   |
| 9/1/2006  | 42.7 |
| 9/1/2007  | 28.7 |
| 9/1/2008  | 35.2 |
| 9/1/2009  | 35.6 |
| 9/1/2010  | 25.6 |
| 9/1/2011  | 26   |
| 9/1/2012  | 27.5 |
| 9/1/2013  | 19.7 |
| 9/1/2014  | 24.1 |
| 9/1/2015  | 27.2 |
| 9/25/2016 | 6.3  |
| 9/14/2017 | 12   |
| 9/12/2018 | 9.1  |
| 9/17/2019 | 5.1  |
| 9/1/2020  | 5.6  |
| 9/28/2021 | 12   |
| 9/20/2022 | 13   |
| 9/21/2023 | 11   |



## Attachment E5

### Interwell Prediction Limit Analysis Results – West

# Prediction Limit

Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 11:49 AM

| Constituent           | Well        | Upper Lim.  | Lower Lim. | Date             | Observ.     | Sig.       | Bg N      | Bg Wells                | Bg Mean      | Std. Dev.    | %NDs         | ND Adj.     | Transform    | Alpha            | Method                       |
|-----------------------|-------------|-------------|------------|------------------|-------------|------------|-----------|-------------------------|--------------|--------------|--------------|-------------|--------------|------------------|------------------------------|
| Arsenic (ug/L)        | MW-19       | 1.60        | n/a        | 9/21/2023        | 0.53ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 56.52        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Arsenic (ug/L)        | MW-21       | 1.60        | n/a        | 9/21/2023        | 0.92J       | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 56.52        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Arsenic (ug/L)        | MW-3        | 1.60        | n/a        | 9/21/2023        | 0.65J       | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 56.52        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| <b>Arsenic (ug/L)</b> | <b>MW-4</b> | <b>1.60</b> | <b>n/a</b> | <b>9/21/2023</b> | <b>2.6</b>  | <b>Yes</b> | <b>23</b> | <b>MW-13,MW-8,MW-14</b> | <b>n/a</b>   | <b>n/a</b>   | <b>56.52</b> | <b>n/a</b>  | <b>n/a</b>   | <b>0.003168</b>  | <b>NP Inter (NDs) 1 of 2</b> |
| Arsenic (ug/L)        | MW-5        | 1.60        | n/a        | 9/21/2023        | 0.72J       | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 56.52        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Arsenic (ug/L)        | MW-7        | 1.60        | n/a        | 9/20/2023        | 0.53ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 56.52        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Barium (ug/L)         | MW-19       | 163         | n/a        | 9/21/2023        | 120         | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Barium (ug/L)         | MW-21       | 163         | n/a        | 9/21/2023        | 130         | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Barium (ug/L)         | MW-3        | 163         | n/a        | 9/21/2023        | 150         | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Barium (ug/L)         | MW-4        | 163         | n/a        | 9/21/2023        | 94          | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Barium (ug/L)         | MW-5        | 163         | n/a        | 9/21/2023        | 120         | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Barium (ug/L)         | MW-7        | 163         | n/a        | 9/20/2023        | 110         | No         | 23        | MW-13,MW-14,MW-8        | 96.69        | 28.68        | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Beryllium (ug/L)      | MW-19       | 0.330       | n/a        | 9/21/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Beryllium (ug/L)      | MW-21       | 0.330       | n/a        | 9/21/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Beryllium (ug/L)      | MW-3        | 0.330       | n/a        | 9/21/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Beryllium (ug/L)      | MW-4        | 0.330       | n/a        | 9/21/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Beryllium (ug/L)      | MW-5        | 0.330       | n/a        | 9/21/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Beryllium (ug/L)      | MW-7        | 0.330       | n/a        | 9/20/2023        | 0.33ND      | No         | 23        | MW-13,MW-8,MW-14        | n/a          | n/a          | 95.65        | n/a         | n/a          | 0.003168         | NP Inter (NDs) 1 of 2        |
| Boron (ug/L)          | MW-19       | 1340        | n/a        | 9/21/2023        | 38ND        | No         | 23        | MW-13,MW-14,MW-8        | 4.676        | 1.099        | 13.04        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Boron (ug/L)          | MW-21       | 1340        | n/a        | 9/21/2023        | 1300        | No         | 23        | MW-13,MW-14,MW-8        | 4.676        | 1.099        | 13.04        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Boron (ug/L)          | MW-3        | 1340        | n/a        | 9/21/2023        | 1300        | No         | 23        | MW-13,MW-14,MW-8        | 4.676        | 1.099        | 13.04        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| <b>Boron (ug/L)</b>   | <b>MW-4</b> | <b>1340</b> | <b>n/a</b> | <b>9/21/2023</b> | <b>3400</b> | <b>Yes</b> | <b>23</b> | <b>MW-13,MW-14,MW-8</b> | <b>4.676</b> | <b>1.099</b> | <b>13.04</b> | <b>None</b> | <b>ln(x)</b> | <b>0.0005787</b> | <b>Param Inter 1 of 2</b>    |
| Boron (ug/L)          | MW-5        | 1340        | n/a        | 9/21/2023        | 420         | No         | 23        | MW-13,MW-14,MW-8        | 4.676        | 1.099        | 13.04        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Boron (ug/L)          | MW-7        | 1340        | n/a        | 9/20/2023        | 110         | No         | 23        | MW-13,MW-14,MW-8        | 4.676        | 1.099        | 13.04        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Chloride (mg/L)       | MW-19       | 51.9        | n/a        | 9/21/2023        | 19          | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Chloride (mg/L)       | MW-21       | 51.9        | n/a        | 9/21/2023        | 18          | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Chloride (mg/L)       | MW-3        | 51.9        | n/a        | 9/21/2023        | 14          | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Chloride (mg/L)       | MW-4        | 51.9        | n/a        | 9/21/2023        | 12          | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Chloride (mg/L)       | MW-5        | 51.9        | n/a        | 9/21/2023        | 4.5J        | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Chloride (mg/L)       | MW-7        | 51.9        | n/a        | 9/20/2023        | 19          | No         | 74        | MW-13,MW-14,MW-8        | n/a          | n/a          | 40.54        | n/a         | n/a          | 0.0003516        | NP Inter (normality) ...     |
| Cobalt (ug/L)         | MW-19       | 3.58        | n/a        | 9/21/2023        | 0.085ND     | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Cobalt (ug/L)         | MW-21       | 3.58        | n/a        | 9/21/2023        | 1           | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Cobalt (ug/L)         | MW-3        | 3.58        | n/a        | 9/21/2023        | 0.75        | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Cobalt (ug/L)         | MW-4        | 3.58        | n/a        | 9/21/2023        | 0.9         | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Cobalt (ug/L)         | MW-5        | 3.58        | n/a        | 9/21/2023        | 0.53        | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Cobalt (ug/L)         | MW-7        | 3.58        | n/a        | 9/20/2023        | 0.31J       | No         | 23        | MW-13,MW-14,MW-8        | -0.9294      | 0.9591       | 8.696        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-19       | 5220        | n/a        | 9/21/2023        | 18ND        | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-21       | 5220        | n/a        | 9/21/2023        | 730         | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-3        | 5220        | n/a        | 9/21/2023        | 430         | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-4        | 5220        | n/a        | 9/21/2023        | 1900        | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-5        | 5220        | n/a        | 9/21/2023        | 360         | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Iron (ug/L)           | MW-7        | 5220        | n/a        | 9/20/2023        | 54J         | No         | 23        | MW-13,MW-14,MW-8        | 5.438        | 1.358        | 4.348        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-19       | 2.55        | n/a        | 9/21/2023        | 0.24ND      | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-21       | 2.55        | n/a        | 9/21/2023        | 1.4         | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-3        | 2.55        | n/a        | 9/21/2023        | 0.68        | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-4        | 2.55        | n/a        | 9/21/2023        | 0.28J       | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-5        | 2.55        | n/a        | 9/21/2023        | 0.6         | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Lead (ug/L)           | MW-7        | 2.55        | n/a        | 9/20/2023        | 0.24ND      | No         | 23        | MW-13,MW-14,MW-8        | -1.083       | 0.8793       | 17.39        | None        | ln(x)        | 0.0005787        | Param Inter 1 of 2           |
| Magnesium (ug/L)      | MW-19       | 27600       | n/a        | 9/21/2023        | 18000       | No         | 23        | MW-13,MW-14,MW-8        | 20317        | 3178         | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |
| Magnesium (ug/L)      | MW-21       | 27600       | n/a        | 9/21/2023        | 20000       | No         | 23        | MW-13,MW-14,MW-8        | 20317        | 3178         | 0            | None        | No           | 0.0005787        | Param Inter 1 of 2           |

# Prediction Limit

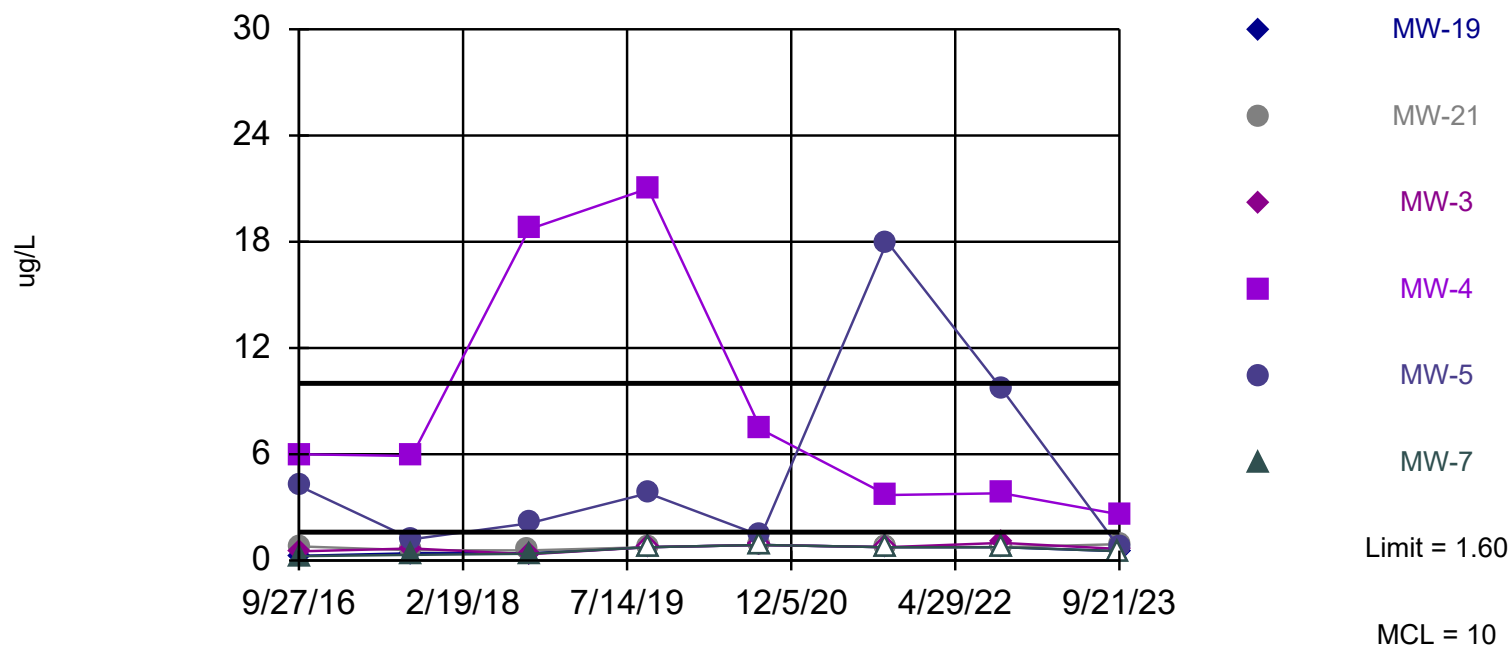
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 11:49 AM

| Constituent             | Well        | Upper Lim.  | Lower Lim. | Date             | Observ.     | Sig.       | Bg N      | Bg Wells                       | Bg Mean       | Std. Dev.    | %NDs        | ND Adj.      | Transform | Alpha            | Method                    |
|-------------------------|-------------|-------------|------------|------------------|-------------|------------|-----------|--------------------------------|---------------|--------------|-------------|--------------|-----------|------------------|---------------------------|
| Magnesium (ug/L)        | MW-3        | 27600       | n/a        | 9/21/2023        | 18000       | No         | 23        | MW-13,MW-14,MW-8 20317         | 3178          | 0            | None        | No           |           | 0.0005787        | Param Inter 1 of 2        |
| Magnesium (ug/L)        | MW-4        | 27600       | n/a        | 9/21/2023        | 17000       | No         | 23        | MW-13,MW-14,MW-8 20317         | 3178          | 0            | None        | No           |           | 0.0005787        | Param Inter 1 of 2        |
| Magnesium (ug/L)        | MW-5        | 27600       | n/a        | 9/21/2023        | 13000       | No         | 23        | MW-13,MW-14,MW-8 20317         | 3178          | 0            | None        | No           |           | 0.0005787        | Param Inter 1 of 2        |
| Magnesium (ug/L)        | MW-7        | 27600       | n/a        | 9/20/2023        | 18000       | No         | 23        | MW-13,MW-14,MW-8 20317         | 3178          | 0            | None        | No           |           | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-19       | 637         | n/a        | 9/21/2023        | 5J          | No         | 23        | MW-13,MW-14,MW-8 3.782         | 1.164         | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-21       | 637         | n/a        | 9/21/2023        | 160         | No         | 23        | MW-13,MW-14,MW-8 3.782         | 1.164         | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-3        | 637         | n/a        | 9/21/2023        | 78          | No         | 23        | MW-13,MW-14,MW-8 3.782         | 1.164         | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| <b>Manganese (ug/L)</b> | <b>MW-4</b> | <b>637</b>  | <b>n/a</b> | <b>9/21/2023</b> | <b>1200</b> | <b>Yes</b> | <b>23</b> | <b>MW-13,MW-14,MW-8 3.782</b>  | <b>1.164</b>  | <b>0</b>     | <b>None</b> | <b>ln(x)</b> |           | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Manganese (ug/L)        | MW-5        | 637         | n/a        | 9/21/2023        | 18          | No         | 23        | MW-13,MW-14,MW-8 3.782         | 1.164         | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-7        | 637         | n/a        | 9/20/2023        | 17          | No         | 23        | MW-13,MW-14,MW-8 3.782         | 1.164         | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Selenium (ug/L)         | MW-19       | 3.49        | n/a        | 9/21/2023        | 2.4J        | No         | 23        | MW-13,MW-14,MW-8 0.1055        | 0.4985        | 43.48        | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Selenium (ug/L)         | MW-21       | 3.49        | n/a        | 9/21/2023        | 3.8J        | No         | 23        | MW-13,MW-14,MW-8 0.1055        | 0.4985        | 43.48        | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| <b>Selenium (ug/L)</b>  | <b>MW-3</b> | <b>3.49</b> | <b>n/a</b> | <b>9/21/2023</b> | <b>7.4</b>  | <b>Yes</b> | <b>23</b> | <b>MW-13,MW-14,MW-8 0.1055</b> | <b>0.4985</b> | <b>43.48</b> | <b>None</b> | <b>ln(x)</b> |           | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Selenium (ug/L)         | MW-4        | 3.49        | n/a        | 9/21/2023        | 1.4ND       | No         | 23        | MW-13,MW-14,MW-8 0.1055        | 0.4985        | 43.48        | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| <b>Selenium (ug/L)</b>  | <b>MW-5</b> | <b>3.49</b> | <b>n/a</b> | <b>9/21/2023</b> | <b>54</b>   | <b>Yes</b> | <b>23</b> | <b>MW-13,MW-14,MW-8 0.1055</b> | <b>0.4985</b> | <b>43.48</b> | <b>None</b> | <b>ln(x)</b> |           | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Selenium (ug/L)         | MW-7        | 3.49        | n/a        | 9/20/2023        | 2.3J        | No         | 23        | MW-13,MW-14,MW-8 0.1055        | 0.4985        | 43.48        | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-19       | 175         | n/a        | 9/21/2023        | 25          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-21       | 175         | n/a        | 9/21/2023        | 38          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-3        | 175         | n/a        | 9/21/2023        | 96          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-4        | 175         | n/a        | 9/21/2023        | 57          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-5        | 175         | n/a        | 9/21/2023        | 28          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |
| Sulfate (mg/L)          | MW-7        | 175         | n/a        | 9/20/2023        | 25          | No         | 74        | MW-13,MW-14,MW-8 3.707         | 0.7077        | 0            | None        | ln(x)        |           | 0.0005787        | Param Inter 1 of 2        |

Exceeds Limit: MW-4

## Arsenic

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 49%. Limit is highest of 23 background values. 56.52% NDs. Annual per-constituent alpha = 0.04041. Individual comparison alpha = 0.003168 (1 of 2). Comparing 6 points to limit. Assumes 7 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

# Prediction Limit

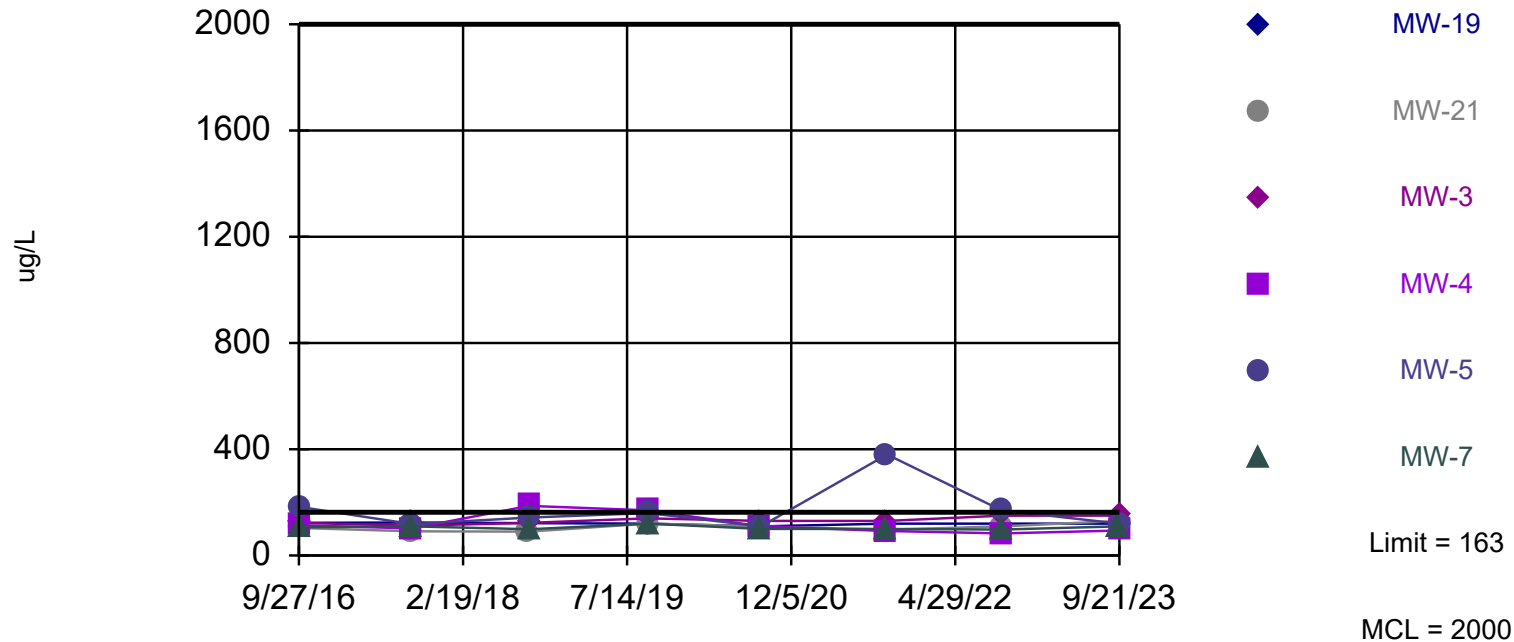
Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 11:49 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-8 (bg) | MW-4 | MW-7      | MW-19     | MW-3     | MW-21    | MW-5     |
|-----------|------------|------------|-----------|------|-----------|-----------|----------|----------|----------|
| 9/25/2016 | 0.38 (J)   |            |           |      |           |           |          |          |          |
| 9/26/2016 |            | 0.64 (J)   | 0.63 (J)  |      |           |           |          |          |          |
| 9/27/2016 |            |            |           | 6    | 0.25 (J)  | 0.26 (J)  |          |          |          |
| 9/28/2016 |            |            |           |      |           |           | 0.52 (J) | 0.8 (J)  | 4.2      |
| 9/13/2017 | 0.16 (J)   |            | 0.29 (J)  | 5.9  | 0.32 (J)  |           |          |          |          |
| 9/14/2017 |            | 1.6        |           |      |           | 0.41 (J)  | 0.68 (J) | 0.58 (J) | 1.2      |
| 9/11/2018 | 0.33 (J)   |            |           |      |           |           |          | 0.57 (J) |          |
| 9/12/2018 |            | 0.38 (J)   | 0.55 (J)  | 18.7 |           | 0.41 (J)  |          |          | 2.1      |
| 9/13/2018 |            |            |           |      | 0.38 (J)  |           | 0.35 (J) |          |          |
| 9/16/2019 | <0.75      | <0.75      |           |      |           |           |          |          |          |
| 9/17/2019 |            |            | <0.75     | 21   | <0.75     | <0.75     | <0.75    | 0.75 (J) | 3.8      |
| 9/1/2020  |            | <0.88      | <0.88     |      | <0.88     |           |          |          |          |
| 9/2/2020  | <0.88      |            |           | 7.4  |           | <0.88     | <0.88    | <0.88    | 1.4 (J)  |
| 9/27/2021 | <0.75      | <0.75      |           |      |           |           |          |          |          |
| 9/28/2021 |            |            |           |      | <0.75     |           |          |          |          |
| 9/29/2021 |            |            |           | 3.7  |           | <0.75     | <0.75    | <0.75    | 18       |
| 9/20/2022 |            | <0.75      | <0.75     |      | <0.75     | <0.75     |          |          | 9.7      |
| 9/21/2022 | <0.75      |            |           |      |           |           | 1 (J)    |          |          |
| 9/22/2022 |            |            |           | 3.8  |           |           |          | <0.75    |          |
| 9/20/2023 | <0.53 (U)  | <0.53 (U)  |           |      | <0.53 (U) |           |          |          |          |
| 9/21/2023 |            |            | 0.55 (J)  | 2.6  |           | <0.53 (U) | 0.65 (J) | 0.92 (J) | 0.72 (J) |

Within Limit

## Barium

Interwell Parametric



Background Data Summary: Mean=96.69, Std. Dev.=28.68, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9343, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Prediction Limit

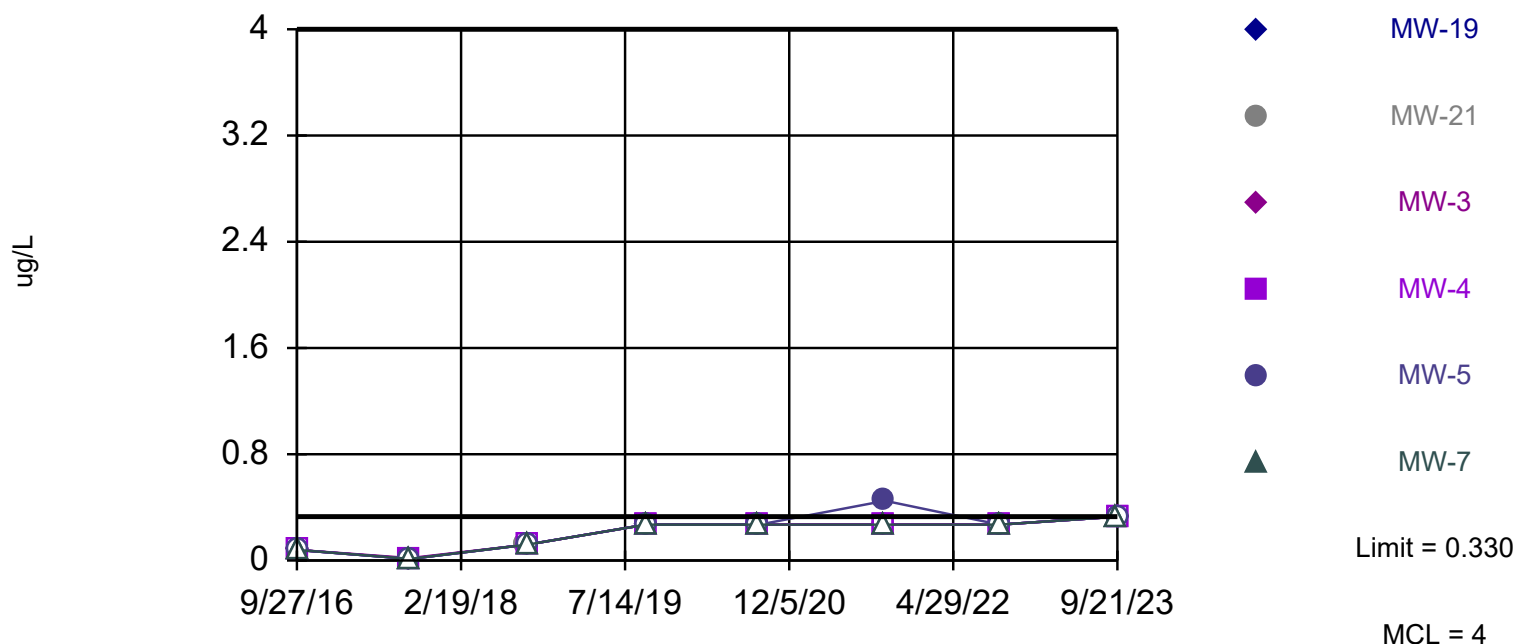
Constituent: Barium (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/25/2016 | 91.2       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 62.1       |       |       |      |      |      |      | 114       |
| 9/27/2016 |            |            | 123   |       |      | 114  |      | 106  |           |
| 9/28/2016 |            |            |       | 104   | 123  |      | 183  |      |           |
| 9/13/2017 | 101        |            |       |       |      | 102  |      | 110  | 135       |
| 9/14/2017 |            | 108        | 124   | 91.3  | 112  |      | 118  |      |           |
| 9/11/2018 | 90.4       |            |       | 89.8  |      |      |      |      |           |
| 9/12/2018 |            | 55.1       | 122   |       |      | 187  | 143  |      | 118       |
| 9/13/2018 |            |            |       |       | 123  |      |      | 98.9 |           |
| 9/16/2019 | 97         | 56         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 120   | 120   | 140  | 170  | 160  | 120  | 150       |
| 9/1/2020  |            | 67         |       |       |      |      |      | 100  | 140       |
| 9/2/2020  | 96         |            | 110   | 110   | 130  | 110  | 110  |      |           |
| 9/27/2021 | 100        | 62         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 100  |           |
| 9/29/2021 |            |            | 120   | 97    | 130  | 92   | 380  |      |           |
| 9/20/2022 |            | 59         | 120   |       |      |      | 170  | 98   | 110       |
| 9/21/2022 | 110        |            |       |       | 150  |      |      |      |           |
| 9/22/2022 |            |            |       | 110   |      | 83   |      |      |           |
| 9/20/2023 | 110        | 62         |       |       |      |      |      | 110  |           |
| 9/21/2023 |            |            | 120   | 130   | 150  | 94   | 120  |      | 130       |

Within Limit

## Beryllium

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 49%. Limit is highest of 23 background values. 95.65% NDs. Annual per-constituent alpha = 0.04041. Individual comparison alpha = 0.003168 (1 of 2). Comparing 6 points to limit. Assumes 7 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

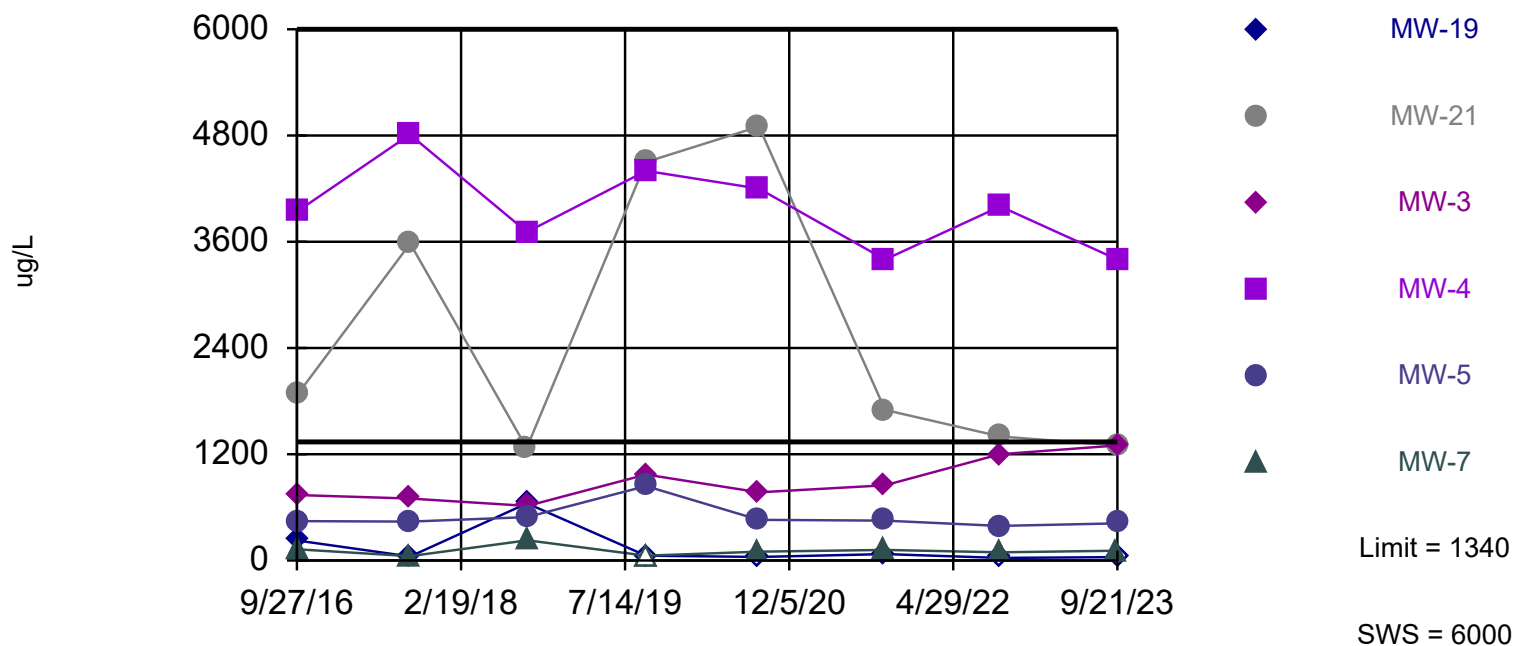
Constituent: Beryllium (ug/L) Analysis Run 10/30/2023 11:50 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-8 (bg) | MW-4      | MW-7      | MW-19     | MW-3      | MW-21     | MW-5      |
|-----------|------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 9/25/2016 | <0.08      |            |           |           |           |           |           |           |           |
| 9/26/2016 |            | <0.08      | <0.08     |           |           |           |           |           |           |
| 9/27/2016 |            |            |           | <0.08     | <0.08     | <0.08     |           |           |           |
| 9/28/2016 |            |            |           |           |           |           | <0.08     | <0.08     | <0.08     |
| 9/13/2017 | <0.012     |            | <0.012    | 0.012 (J) | <0.012    |           |           |           |           |
| 9/14/2017 |            | 0.15 (J)   |           |           |           | <0.012    | 0.018 (J) | 0.015 (J) | <0.012    |
| 9/11/2018 | <0.12      |            |           |           |           |           |           | <0.12     |           |
| 9/12/2018 |            | <0.12      | <0.12     | <0.12     |           | <0.12     |           |           | <0.12     |
| 9/13/2018 |            |            |           |           | <0.12     |           | <0.12     |           |           |
| 9/16/2019 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/17/2019 |            |            | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     | <0.27     |
| 9/1/2020  |            | <0.27      | <0.27     |           | <0.27     |           |           |           |           |
| 9/2/2020  | <0.27      |            |           | <0.27     |           | <0.27     | <0.27     | <0.27     | <0.27     |
| 9/27/2021 | <0.27      | <0.27      |           |           |           |           |           |           |           |
| 9/28/2021 |            |            |           |           | <0.27     |           |           |           |           |
| 9/29/2021 |            |            |           | <0.27     |           | <0.27     | <0.27     | <0.27     | 0.45 (J)  |
| 9/20/2022 |            | <0.27      | <0.27     |           | <0.27     | <0.27     |           |           | <0.27     |
| 9/21/2022 | <0.27      |            |           |           |           |           | <0.27     |           |           |
| 9/22/2022 |            |            |           | <0.27     |           |           |           | <0.27     |           |
| 9/20/2023 | <0.33 (U)  | <0.33 (U)  |           |           | <0.33 (U) |           |           |           |           |
| 9/21/2023 |            |            | <0.33 (U) | <0.33 (U) |           | <0.33 (U) | <0.33 (U) | <0.33 (U) | <0.33 (U) |

Exceeds Limit: MW-4

## Boron

### Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=4.676, Std. Dev.=1.099, n=23, 13.04% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9707, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

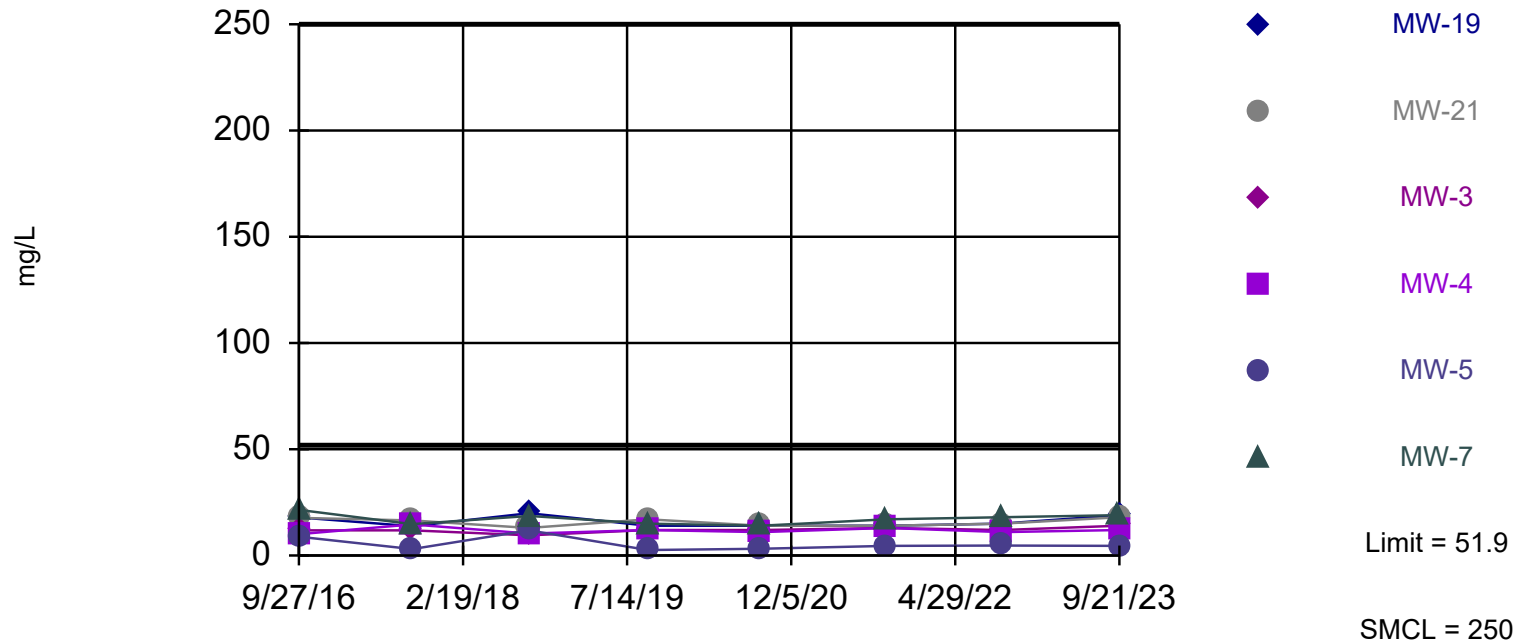
Constituent: Boron (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19    | MW-21 | MW-3 | MW-4 | MW-5 | MW-7   | MW-8 (bg) |
|-----------|------------|------------|----------|-------|------|------|------|--------|-----------|
| 9/25/2016 | 50.2 (J)   |            |          |       |      |      |      |        |           |
| 9/26/2016 |            | 282        |          |       |      |      |      |        | <50       |
| 9/27/2016 |            |            | 226      |       |      | 3940 |      | 126    |           |
| 9/28/2016 |            |            |          | 1870  | 740  |      | 444  |        |           |
| 9/13/2017 | 48.6 (J)   |            |          |       |      | 4810 |      | 49 (J) | 37.6 (J)  |
| 9/14/2017 |            | 169        | 44.7 (J) | 3580  | 700  |      | 440  |        |           |
| 9/11/2018 | 41.4 (J)   |            |          | 1270  |      |      |      |        |           |
| 9/12/2018 |            | 651        | 645      |       |      | 3710 | 490  |        | <12.5     |
| 9/13/2018 |            |            |          |       | 616  |      |      | 228    |           |
| 9/16/2019 | 130 (J)    | 360        |          |       |      |      |      |        |           |
| 9/17/2019 |            |            | <110     | 4500  | 970  | 4400 | 840  | <110   | 160 (J)   |
| 9/1/2020  |            | 450        |          |       |      |      |      | 100    | <80       |
| 9/2/2020  | 88 (J)     |            | <80      | 4900  | 770  | 4200 | 460  |        |           |
| 9/27/2021 | 110        | 280        |          |       |      |      |      |        |           |
| 9/28/2021 |            |            |          |       |      |      |      | 120    |           |
| 9/29/2021 |            |            | 72 (J)   | 1700  | 850  | 3400 | 450  |        |           |
| 9/20/2022 |            | 500        | <58      |       |      |      | 390  | 92 (J) | 76 (J)    |
| 9/21/2022 | 94 (J)     |            |          |       | 1200 |      |      |        |           |
| 9/22/2022 |            |            |          | 1400  |      | 4000 |      |        |           |
| 9/20/2023 | 120        | 220        |          |       |      |      |      | 110    |           |
| 9/21/2023 |            |            | <76 (U)  | 1300  | 1300 | 3400 | 420  |        | 81 (J)    |

Within Limit

## Chloride

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 74 background values. 40.54% NDs. Annual per-constituent alpha = 0.004561. Individual comparison alpha = 0.0003516 (1 of 2). Comparing 6 points to limit. Assumes 7 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

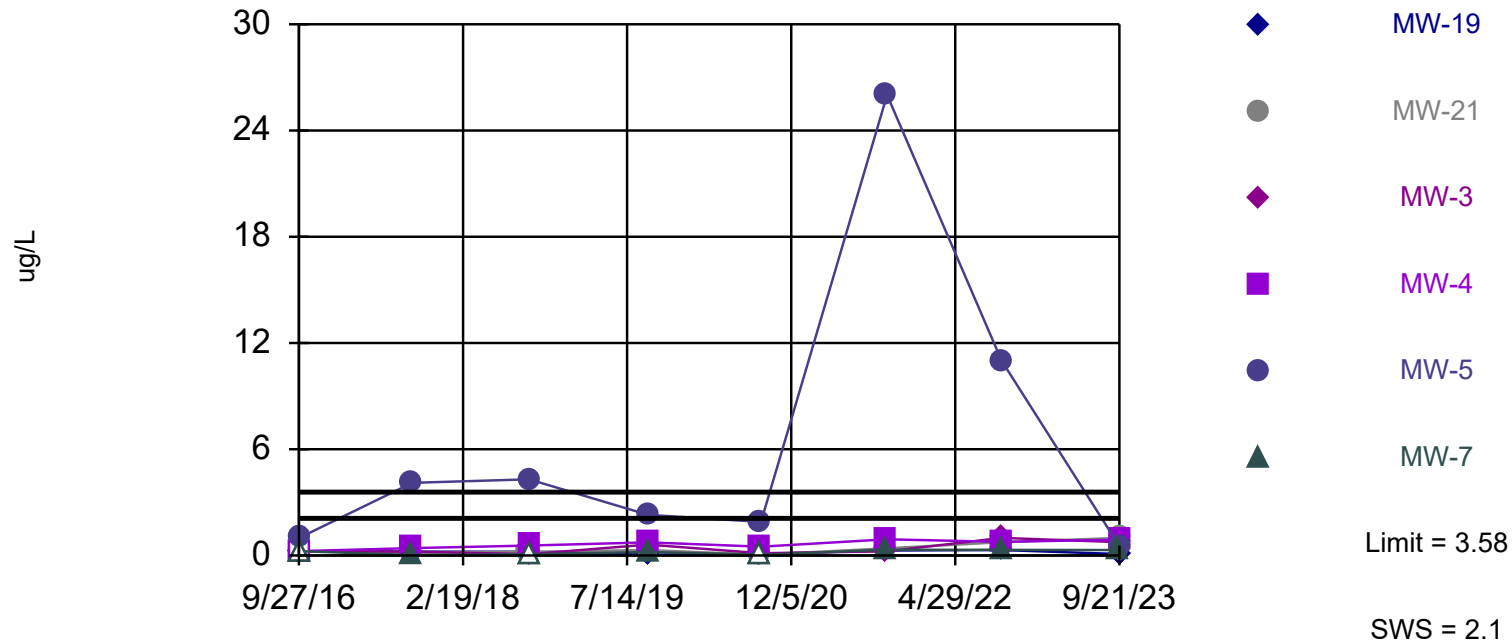
Constituent: Chloride (mg/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-8 (bg) | MW-7   | MW-19  | MW-4   | MW-21  | MW-5      | MW-3   |
|-----------|------------|------------|-----------|--------|--------|--------|--------|-----------|--------|
| 9/1/1999  | <5         | <5         | 46        |        |        |        |        |           |        |
| 9/1/2000  | <5         | <5         | 19.5      |        |        |        |        |           |        |
| 9/1/2001  | 5.9        | 5.9        | 18.3      |        |        |        |        |           |        |
| 9/1/2002  | <5         | <5         | 11.9      |        |        |        |        |           |        |
| 9/1/2003  | <5         | <5         | 14.5      |        |        |        |        |           |        |
| 9/1/2004  | <5         | <5         | 27.1      |        |        |        |        |           |        |
| 9/1/2005  | <5         | <5         | 18.5      |        |        |        |        |           |        |
| 9/1/2006  | <5         | <5         | 14.6      |        |        |        |        |           |        |
| 9/1/2007  | <5         | <5         | 40.6      |        |        |        |        |           |        |
| 9/1/2008  | <5         | <5         | 51.9      |        |        |        |        |           |        |
| 9/1/2009  | <5         | <5         | 43.4      |        |        |        |        |           |        |
| 9/1/2010  | <1         | <2         | 44.5      |        |        |        |        |           |        |
| 9/1/2011  | <5         | <2         | 30        |        |        |        |        |           |        |
| 9/1/2012  | <5         | <5         | 33        |        |        |        |        |           |        |
| 9/1/2013  | 1.4        | 1.6        | 19.7      |        |        |        |        |           |        |
| 9/1/2014  | <1         | <1         | 41.3      |        |        |        |        |           |        |
| 9/1/2015  | 1.1        | <1         | 26.1      |        |        |        |        |           |        |
| 9/25/2016 | 2.8        |            |           |        |        |        |        |           |        |
| 9/26/2016 |            | 1.3        | 30.1      |        |        |        |        |           |        |
| 9/27/2016 |            |            |           | 21.5   | 17.9   | 10     |        |           |        |
| 9/28/2016 |            |            |           |        |        |        | 17.7   | 8.8       | 11.8   |
| 9/13/2017 | 4          |            | 19.8      | 14.8   |        | 14.6   |        |           |        |
| 9/14/2017 |            | 1.7        |           |        | 13.8   |        | 16.5   | 3         | 11.8   |
| 9/11/2018 | 3.2        |            |           |        |        |        | 13     |           |        |
| 9/12/2018 |            | 2.2        | 27.4      |        | 19.9   | 10.3   |        | 11.8      |        |
| 9/13/2018 |            |            |           | 18.6   |        |        |        |           | 9.5    |
| 9/16/2019 | 1.9 (J,B)  | 2.1 (J,B)  |           |        |        |        |        |           |        |
| 9/17/2019 |            |            | 17 (B)    | 15 (B) | 14 (B) | 12 (B) | 17 (B) | 2.6 (J,B) | 12 (B) |
| 9/1/2020  |            | 3.3 (J,B)  | 15 (B)    | 14 (B) |        |        |        |           |        |
| 9/2/2020  | 2.4 (J,B)  |            |           |        | 14 (B) | 11 (B) | 14 (B) | 3.2 (J,B) | 12 (B) |
| 9/27/2021 | 3.1 (J)    | 3.9 (J)    |           |        |        |        |        |           |        |
| 9/28/2021 |            |            |           | 17     |        |        |        |           |        |
| 9/29/2021 |            |            |           |        | 14     | 13     | 14     | 4.5 (J)   | 13     |
| 9/20/2022 |            | 3.6 (J)    | 17        | 18     | 15     |        |        | 4.7 (J)   |        |
| 9/21/2022 | 2.7 (J)    |            |           |        |        |        |        |           | 12     |
| 9/22/2022 |            |            |           |        |        | 11     | 15     |           |        |
| 9/20/2023 | <2.3 (U)   | 3.6 (J)    |           | 19     |        |        |        |           |        |
| 9/21/2023 |            |            | 20        |        | 19     | 12     | 18     | 4.5 (J)   | 14     |

Within Limit

## Cobalt

### Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.9294, Std. Dev.=0.9591, n=23, 8.696% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9822, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

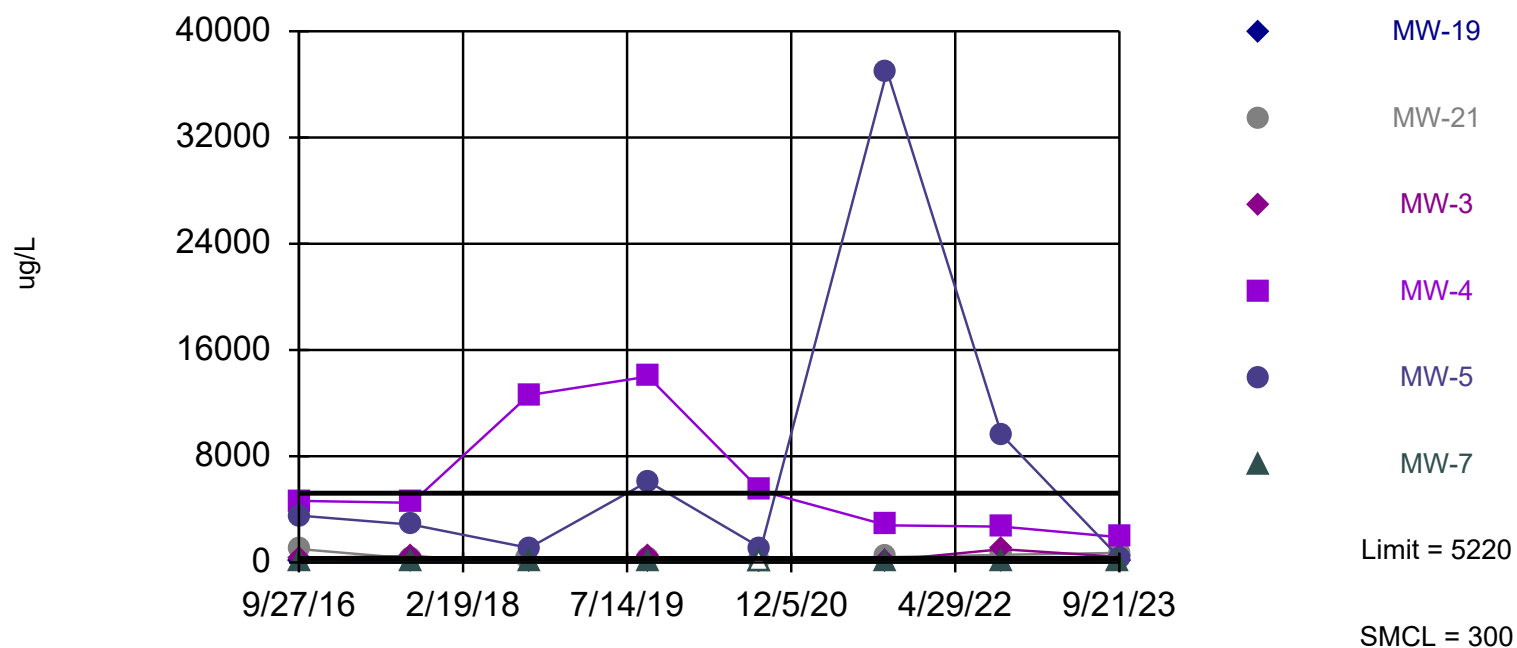
Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4     | MW-5 | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|----------|------|-----------|-----------|
| 9/25/2016 | 1.2        |            |           |          |          |          |      |           |           |
| 9/26/2016 |            | 1.3        |           |          |          |          |      |           | <0.5      |
| 9/27/2016 |            |            | <0.5      |          |          | <0.5     |      | <0.5      |           |
| 9/28/2016 |            |            |           | <0.5     | <0.5     |          | 1    |           |           |
| 9/13/2017 | 0.15 (J)   |            |           |          |          | 0.42 (J) |      | 0.027 (J) | 0.051 (J) |
| 9/14/2017 |            | 3          | 0.22 (J)  | 0.16 (J) | 0.22 (J) |          | 4.1  |           |           |
| 9/11/2018 | 0.52 (J)   |            |           | 0.21 (J) |          |          |      |           |           |
| 9/12/2018 |            | 0.5 (J)    | 0.21 (J)  |          |          | 0.56 (J) | 4.3  |           | 0.15 (J)  |
| 9/13/2018 |            |            |           |          | <0.15    |          |      | <0.15     |           |
| 9/16/2019 | 0.16 (J)   | 0.17 (J)   |           |          |          |          |      |           |           |
| 9/17/2019 |            |            | <0.091    | 0.31 (J) | 0.62     | 0.74     | 2.3  | 0.2 (J)   | 0.51      |
| 9/1/2020  |            | 0.37 (J)   |           |          |          |          |      | <0.091    | 0.62      |
| 9/2/2020  | 0.53       |            | 0.094 (J) | <0.091   | 0.13 (J) | 0.5      | 1.9  |           |           |
| 9/27/2021 | <0.19      | 0.39 (J)   |           |          |          |          |      |           |           |
| 9/28/2021 |            |            |           |          |          |          |      | 0.33 (J)  |           |
| 9/29/2021 |            |            | 0.28 (J)  | 0.41 (J) | 0.24 (J) | 0.91     | 26   |           |           |
| 9/20/2022 |            | 0.59       | 0.31 (J)  |          |          |          | 11   | 0.32 (J)  | 0.37 (J)  |
| 9/21/2022 | 0.73       |            |           |          | 1        |          |      |           |           |
| 9/22/2022 |            |            |           | 0.75     |          | 0.77     |      |           |           |
| 9/20/2023 | 0.2 (J)    | 0.44 (J)   |           |          |          |          |      | 0.31 (J)  |           |
| 9/21/2023 |            |            | <0.17 (U) | 1        | 0.75     | 0.9      | 0.53 |           | 1.7       |

Within Limit

## Iron

### Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=5.438, Std. Dev.=1.358, n=23, 4.348% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9762, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

## Prediction Limit

Constituent: Iron (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LFs  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

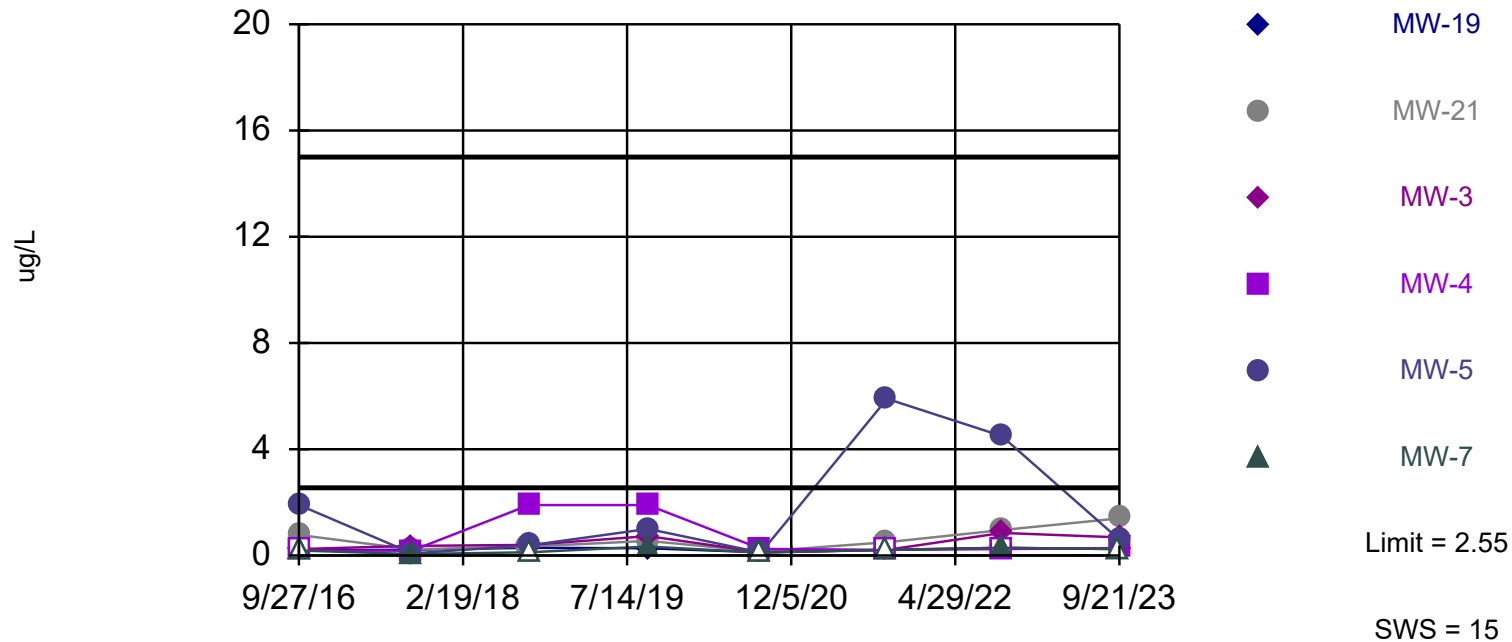
|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3     | MW-4  | MW-5  | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|-------|----------|-------|-------|----------|-----------|
| 9/25/2016 | 1240       |            |         |       |          |       |       |          |           |
| 9/26/2016 |            | 1770       |         |       |          |       |       |          | 820       |
| 9/27/2016 |            |            | <12.8   |       |          | 4640  |       | 51.9     |           |
| 9/28/2016 |            |            |         | 1010  | 362      |       | 3530  |          |           |
| 9/13/2017 | 162        |            |         |       |          | 4500  |       | 11.9 (J) | 18.7 (J)  |
| 9/14/2017 |            | 4440       | 162     | 297   | 475      |       | 2850  |          |           |
| 9/11/2018 | 289        |            |         | 195   |          |       |       |          |           |
| 9/12/2018 |            | 267        | 101     |       |          | 12600 | 1100  |          | 45.2 (J)  |
| 9/13/2018 |            |            |         |       | 42.2 (J) |       |       | 41.7 (J) |           |
| 9/16/2019 | 76 (J)     | 130        |         |       |          |       |       |          |           |
| 9/17/2019 |            |            | <66     | 320   | 390      | 14000 | 6100  | 95 (J)   | 200       |
| 9/1/2020  |            | 130        |         |       |          |       |       | <50      | 520       |
| 9/2/2020  | 230        |            | <50     | 110   | 72 (J)   | 5400  | 1100  |          |           |
| 9/27/2021 | <36        | 140        |         |       |          |       |       |          |           |
| 9/28/2021 |            |            |         |       |          |       |       | 110      |           |
| 9/29/2021 |            |            | 130     | 400   | 170      | 2800  | 37000 |          |           |
| 9/20/2022 |            | 240        | 170     |       |          |       | 9600  | 90 (J)   | 270       |
| 9/21/2022 | 440        |            |         |       | 1000     |       |       |          |           |
| 9/22/2022 |            |            |         | 580   |          | 2700  |       |          |           |
| 9/20/2023 | 78 (J)     | 120        |         |       |          |       |       | 54 (J)   |           |
| 9/21/2023 |            |            | <36 (U) | 730   | 430      | 1900  | 360   |          | 1200      |

ND substitution: RL or RL/2 if <15% NDs.

Within Limit

Lead

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-1.083, Std. Dev.=0.8793, n=23, 17.39% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9302, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

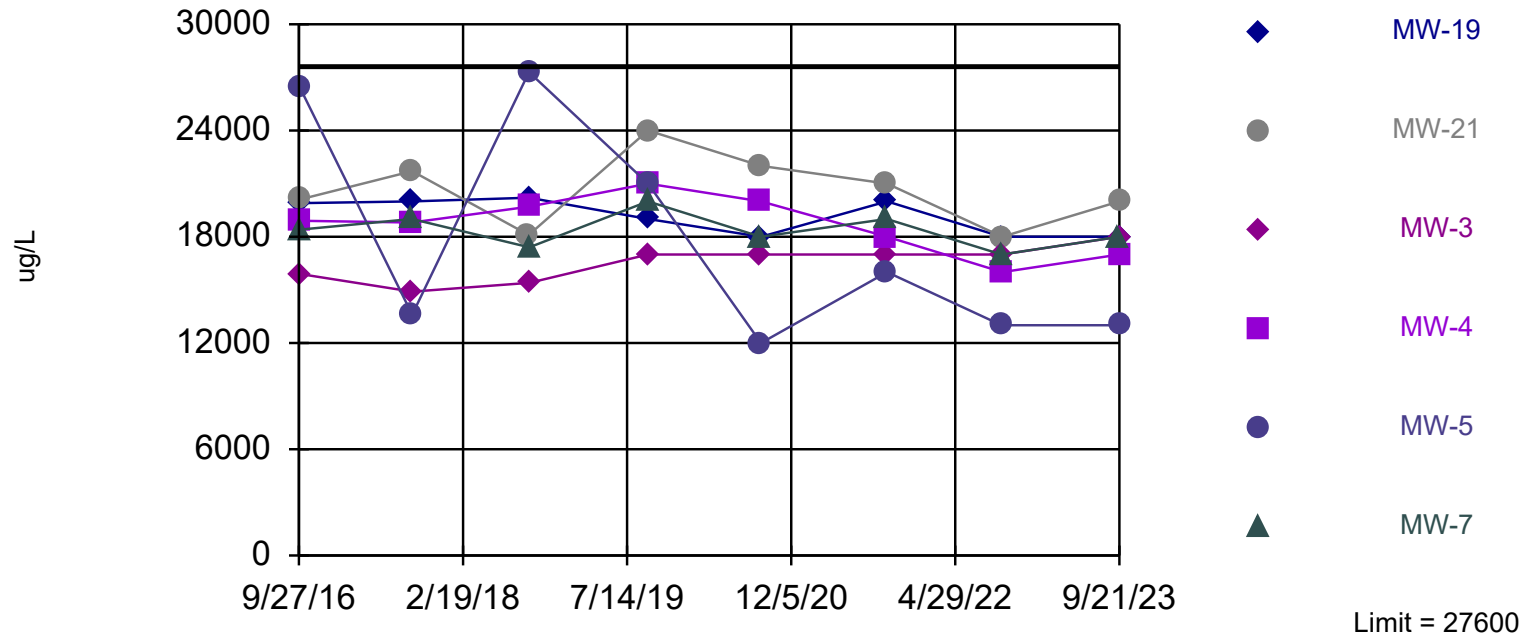
Constituent: Lead (ug/L)   Analysis Run 10/30/2023 11:50 AM   View: West Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19     | MW-21    | MW-3     | MW-4     | MW-5     | MW-7      | MW-8 (bg) |
|-----------|------------|------------|-----------|----------|----------|----------|----------|-----------|-----------|
| 9/25/2016 | 0.71 (J)   |            |           |          |          |          |          |           |           |
| 9/26/2016 |            | 0.98 (J)   |           |          |          |          |          |           | 0.42 (J)  |
| 9/27/2016 |            |            | <0.19     |          |          | <0.19    |          | <0.19     |           |
| 9/28/2016 |            |            |           | 0.77 (J) | 0.24 (J) |          | 1.9      |           |           |
| 9/13/2017 | 0.13 (J)   |            |           |          |          | 0.18 (J) |          | 0.056 (J) | 0.053 (J) |
| 9/14/2017 |            | 1.9        | 0.22 (J)  | 0.23 (J) | 0.36 (J) |          | 0.08 (J) |           |           |
| 9/11/2018 | 0.39 (J)   |            |           | 0.34 (J) |          |          |          |           |           |
| 9/12/2018 |            | 0.42 (J)   | 0.29 (J)  |          |          | 1.9      | 0.38 (J) |           | 0.14 (J)  |
| 9/13/2018 |            |            |           |          | 0.4 (J)  |          |          | <0.12     |           |
| 9/16/2019 | <0.27      | 0.39 (J)   |           |          |          |          |          |           |           |
| 9/17/2019 |            |            | <0.27     | 0.55     | 0.73     | 1.9      | 1        | 0.34 (J)  | 0.29 (J)  |
| 9/1/2020  |            | 0.22 (J)   |           |          |          |          |          | <0.11     | 0.16 (J)  |
| 9/2/2020  | 0.29 (J)   |            | 0.12 (J)  | 0.15 (J) | 0.12 (J) | 0.25 (J) | 0.11 (J) |           |           |
| 9/27/2021 | <0.21      | <0.21      |           |          |          |          |          |           |           |
| 9/28/2021 |            |            |           |          |          |          |          | <0.21     |           |
| 9/29/2021 |            |            | <0.21     | 0.5      | <0.21    | <0.21    | 5.9      |           |           |
| 9/20/2022 |            | 0.4 (J)    | 0.29 (J)  |          |          |          | 4.5      | 0.29 (J)  | 0.31 (J)  |
| 9/21/2022 | 0.47 (J)   |            |           |          | 0.85     |          |          |           |           |
| 9/22/2022 |            |            |           | 0.96     |          | <0.24    |          |           |           |
| 9/20/2023 | <0.24 (U)  | 0.26 (J)   |           |          |          |          |          | <0.24 (U) |           |
| 9/21/2023 |            |            | <0.24 (U) | 1.4      | 0.68     | 0.28 (J) | 0.6      |           | 3.5       |

Within Limit

## Magnesium

Interwell Parametric



Background Data Summary: Mean=20317, Std. Dev.=3178, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8853, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Prediction Limit

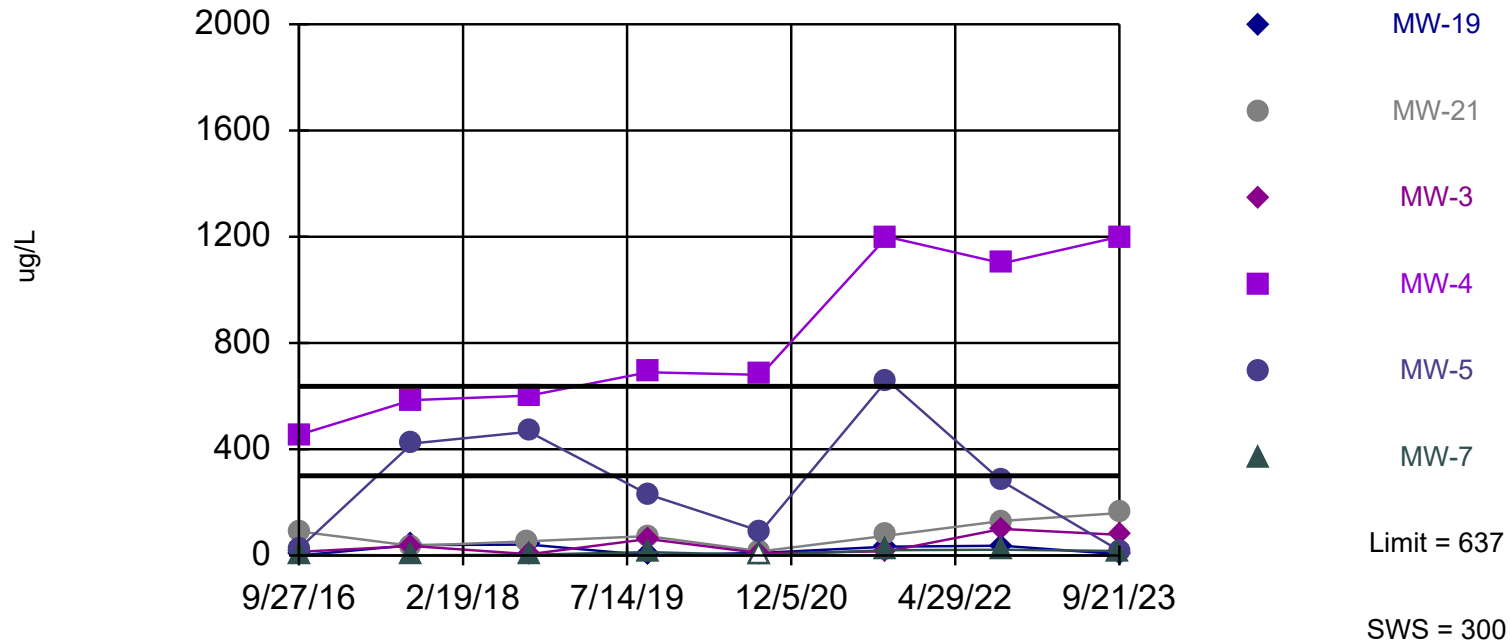
Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3  | MW-4  | MW-5  | MW-7  | MW-8 (bg) |
|-----------|------------|------------|-------|-------|-------|-------|-------|-------|-----------|
| 9/25/2016 | 19000      |            |       |       |       |       |       |       |           |
| 9/26/2016 |            | 25000      |       |       |       |       |       |       | 19600     |
| 9/27/2016 |            |            | 19900 |       |       | 18900 |       | 18400 |           |
| 9/28/2016 |            |            |       | 20100 | 15900 |       | 26500 |       |           |
| 9/13/2017 | 17900      |            |       |       |       | 18800 |       | 19000 | 22400     |
| 9/14/2017 |            | 29800      | 20000 | 21700 | 14900 |       | 13600 |       |           |
| 9/11/2018 | 17600      |            |       | 18100 |       |       |       |       |           |
| 9/12/2018 |            | 21600      | 20200 |       |       | 19700 | 27300 |       | 17400     |
| 9/13/2018 |            |            |       |       | 15400 |       |       | 17400 |           |
| 9/16/2019 | 16000      | 22000      |       |       |       |       |       |       |           |
| 9/17/2019 |            |            | 19000 | 24000 | 17000 | 21000 | 21000 | 20000 | 23000     |
| 9/1/2020  |            | 22000      |       |       |       |       |       | 18000 | 22000     |
| 9/2/2020  | 18000      |            | 18000 | 22000 | 17000 | 20000 | 12000 |       |           |
| 9/27/2021 | 19000      | 23000      |       |       |       |       |       |       |           |
| 9/28/2021 |            |            |       |       |       |       |       | 19000 |           |
| 9/29/2021 |            |            | 20000 | 21000 | 17000 | 18000 | 16000 |       |           |
| 9/20/2022 |            | 19000      | 18000 |       |       |       | 13000 | 17000 | 18000     |
| 9/21/2022 | 18000      |            |       |       | 17000 |       |       |       |           |
| 9/22/2022 |            |            |       | 18000 |       | 16000 |       |       |           |
| 9/20/2023 | 18000      | 22000      |       |       |       |       |       | 18000 |           |
| 9/21/2023 |            |            | 18000 | 20000 | 18000 | 17000 | 13000 |       | 17000     |

Exceeds Limit: MW-4

## Manganese

### Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=3.782, Std. Dev.=1.164, n=23. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9654, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

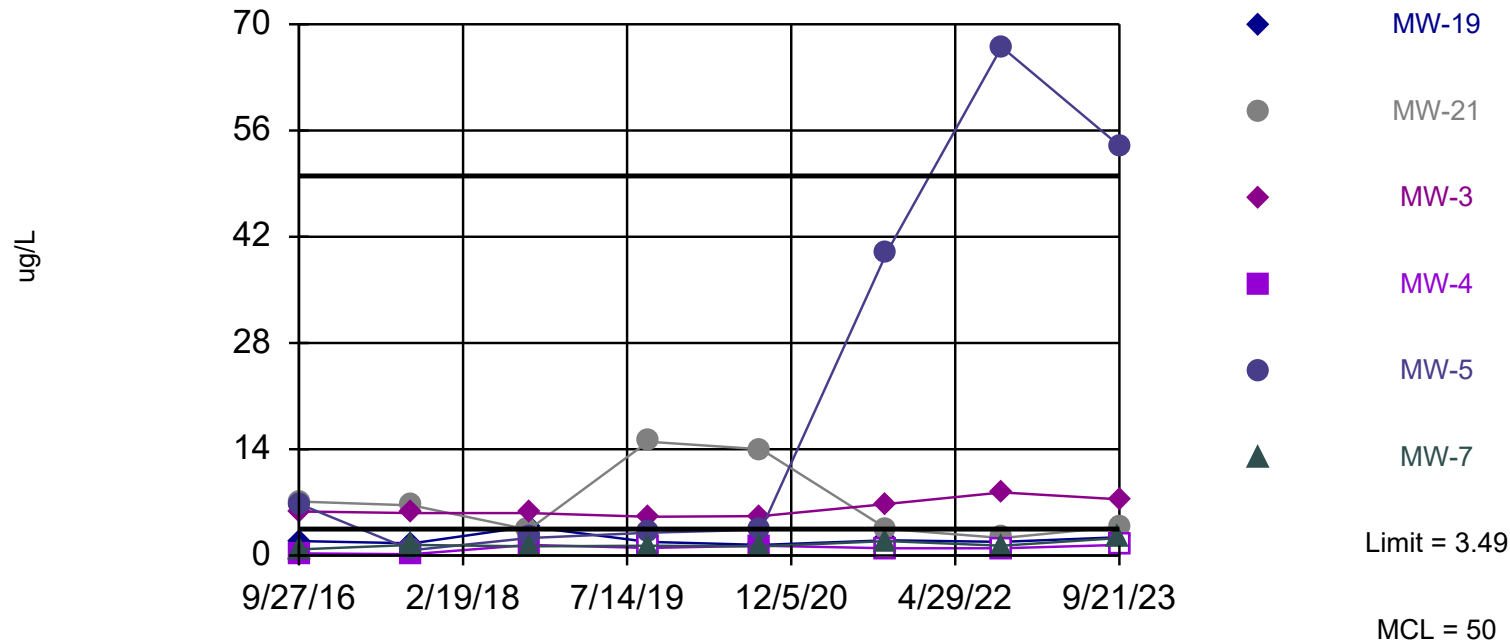
Constituent: Manganese (ug/L) Analysis Run 10/30/2023 11:50 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21 | MW-3    | MW-4 | MW-5 | MW-7     | MW-8 (bg) |
|-----------|------------|------------|---------|-------|---------|------|------|----------|-----------|
| 9/25/2016 | 148        |            |         |       |         |      |      |          |           |
| 9/26/2016 |            | 118        |         |       |         |      |      |          | 51.6      |
| 9/27/2016 |            |            | 0.3 (J) |       |         | 454  |      | 2.6      |           |
| 9/28/2016 |            |            |         | 90.3  | 13.7    |      | 26.6 |          |           |
| 9/13/2017 | 14.6       |            |         |       |         | 585  |      | 0.78 (J) | 4.3       |
| 9/14/2017 |            | 407        | 39.1    | 36.1  | 35.8    |      | 422  |          |           |
| 9/11/2018 | 59.8       |            |         | 53.6  |         |      |      |          |           |
| 9/12/2018 |            | 64.9       | 40.9    |       |         | 602  | 466  |          | 6.6       |
| 9/13/2018 |            |            |         |       | 5.2     |      |      | 2.9      |           |
| 9/16/2019 | 15         | 27         |         |       |         |      |      |          |           |
| 9/17/2019 |            |            | <2.5    | 73    | 62      | 690  | 230  | 13       | 51        |
| 9/1/2020  |            | 27         |         |       |         |      |      | <4       | 150       |
| 9/2/2020  | 110        |            | 10      | 16    | 8.6 (J) | 680  | 91   |          |           |
| 9/27/2021 | 5.7 (J)    | 36         |         |       |         |      |      |          |           |
| 9/28/2021 |            |            |         |       |         |      |      | 20       |           |
| 9/29/2021 |            |            | 33      | 75    | 16      | 1200 | 660  |          |           |
| 9/20/2022 |            | 71         | 37      |       |         |      | 280  | 22       | 27        |
| 9/21/2022 | 79         |            |         |       | 100     |      |      |          |           |
| 9/22/2022 |            |            |         | 130   |         | 1100 |      |          |           |
| 9/20/2023 | 21         | 120        |         |       |         |      |      | 17       |           |
| 9/21/2023 |            |            | 5 (J)   | 160   | 78      | 1200 | 18   |          | 140       |

Exceeds Limit: MW-3, MW-5

## Selenium

### Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=0.1055, Std. Dev.=0.4985, n=23, 43.48% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9051, critical = 0.881. Kappa = 2.298 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

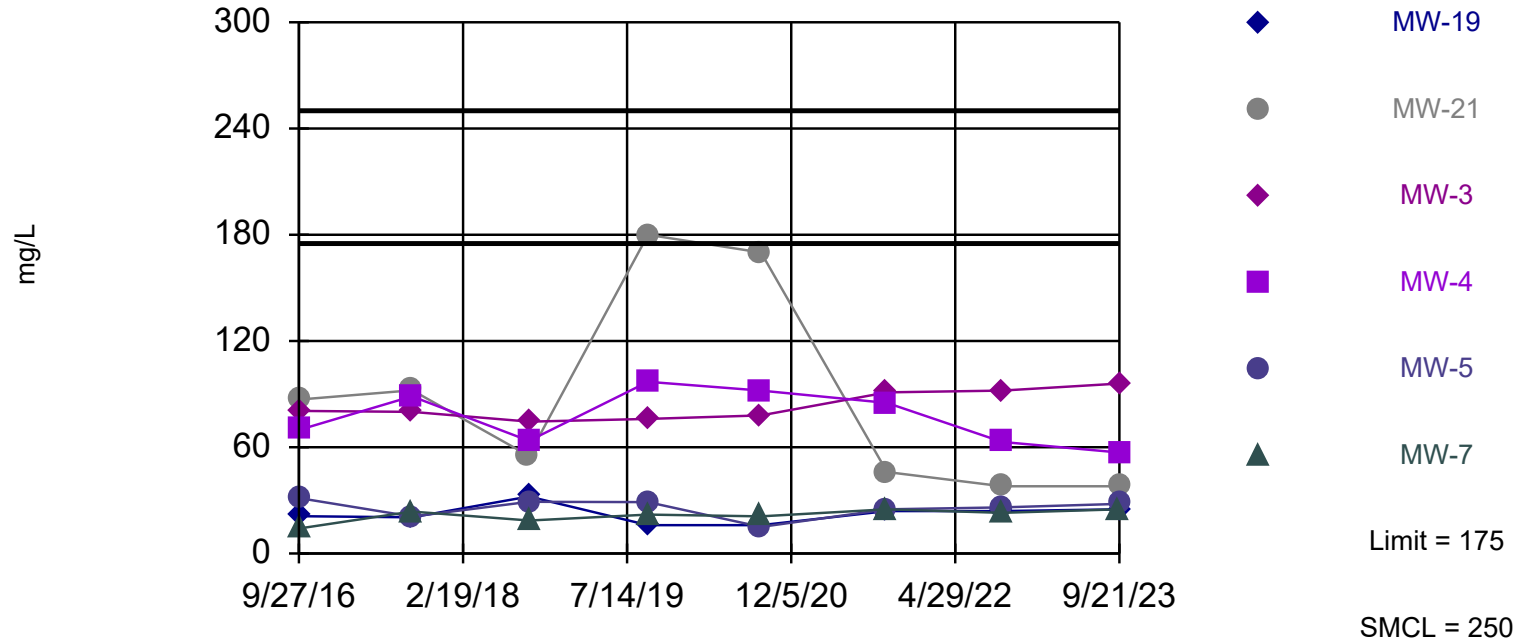
Constituent: Selenium (ug/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19   | MW-21   | MW-3 | MW-4     | MW-5     | MW-7    | MW-8 (bg) |
|-----------|------------|------------|---------|---------|------|----------|----------|---------|-----------|
| 9/25/2016 | 1.1        |            |         |         |      |          |          |         |           |
| 9/26/2016 |            | 1.7        |         |         |      |          |          |         | 0.41 (J)  |
| 9/27/2016 |            |            | 1.9     |         |      | 0.27 (J) |          | 0.8 (J) |           |
| 9/28/2016 |            |            |         | 7.1     | 5.8  |          | 6.8      |         |           |
| 9/13/2017 | 1          |            |         |         |      | 0.17 (J) |          | 1.4     | 1         |
| 9/14/2017 |            | 0.63 (J)   | 1.6     | 6.6     | 5.6  |          | 0.69 (J) |         |           |
| 9/11/2018 | 1.3        |            |         | 3.4     |      |          |          |         |           |
| 9/12/2018 |            | 4          | 3.8     |         |      | 1.4      | 2.3      |         | 0.34 (J)  |
| 9/13/2018 |            |            |         |         | 5.6  |          |          | 1.2     |           |
| 9/16/2019 | 1.1 (J)    | 1.7 (J)    |         |         |      |          |          |         |           |
| 9/17/2019 |            |            | 1.8 (J) | 15      | 5.1  | <1       | 3 (J)    | 1.3 (J) | <1        |
| 9/1/2020  |            | 1.9 (J)    |         |         |      |          |          | 1.2 (J) | <1        |
| 9/2/2020  | <1         |            | 1.4 (J) | 14      | 5.2  | 1.3 (J)  | 3.4 (J)  |         |           |
| 9/27/2021 | <0.96      | <0.96      |         |         |      |          |          |         |           |
| 9/28/2021 |            |            |         |         |      |          |          | 1.9 (J) |           |
| 9/29/2021 |            |            | 2 (J)   | 3.5 (J) | 6.8  | <0.96    | 40       |         |           |
| 9/20/2022 |            | 1.6 (J)    | 1.8 (J) |         |      |          | 67       | 1.3 (J) | <0.96     |
| 9/21/2022 | <0.96      |            |         |         | 8.3  |          |          |         |           |
| 9/22/2022 |            |            |         | 2.3 (J) |      | <0.96    |          |         |           |
| 9/20/2023 | <1.4 (U)   | <1.4 (U)   |         |         |      |          |          | 2.3 (J) |           |
| 9/21/2023 |            |            | 2.4 (J) | 3.8 (J) | 7.4  | <1.4 (U) | 54       |         | <1.4 (U)  |

Within Limit

## Sulfate

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=3.707, Std. Dev.=0.7077, n=74. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9703, critical = 0.956. Kappa = 2.057 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 6 points to limit. Assumes 7 future values.

Prediction Limit Analysis Run 10/30/2023 11:36 AM View: West Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

Prediction Limit

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 11:50 AM    View: West Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-14 (bg) | MW-19 | MW-21 | MW-3 | MW-4 | MW-5 | MW-7 | MW-8 (bg) |
|-----------|------------|------------|-------|-------|------|------|------|------|-----------|
| 9/1/1999  | 56         | 64         |       |       |      |      |      |      | 25        |
| 9/1/2000  | 110        | 48         |       |       |      |      |      |      | 33        |
| 9/1/2001  | 76         | 56         |       |       |      |      |      |      | 23        |
| 9/1/2002  | 110        | 60         |       |       |      |      |      |      | 21        |
| 9/1/2003  | 100        | 32         |       |       |      |      |      |      | 27        |
| 9/1/2004  | 100        | 64         |       |       |      |      |      |      | 29        |
| 9/1/2005  | 120        | 80         |       |       |      |      |      |      | 28        |
| 9/1/2006  | 60.5       | 81.2       |       |       |      |      |      |      | 22.4      |
| 9/1/2007  | 106        | 86.9       |       |       |      |      |      |      | 23.5      |
| 9/1/2008  | 86.5       | 60         |       |       |      |      |      |      | 10.9      |
| 9/1/2009  | 80.2       | 56.5       |       |       |      |      |      |      | 10.5      |
| 9/1/2010  | 69.2       | 54.5       |       |       |      |      |      |      | 5.7       |
| 9/1/2011  | 70.5       | 51.8       |       |       |      |      |      |      | 14.3      |
| 9/1/2012  | 72.6       | 54.2       |       |       |      |      |      |      | 22.5      |
| 9/1/2013  | 69.3       | 50         |       |       |      |      |      |      | 26.5      |
| 9/1/2014  | 33.6       | 38.7       |       |       |      |      |      |      | 14        |
| 9/1/2015  | 68.9       | 49         |       |       |      |      |      |      | 11.1      |
| 9/25/2016 | 59.7       |            |       |       |      |      |      |      |           |
| 9/26/2016 |            | 40         |       |       |      |      |      |      | 9.9       |
| 9/27/2016 |            |            | 21.1  |       |      | 69.8 |      | 14.1 |           |
| 9/28/2016 |            |            |       | 86.9  | 80.5 |      | 31.3 |      |           |
| 9/13/2017 | 67.6       |            |       |       |      | 88.7 |      | 23.7 | 21.3      |
| 9/14/2017 |            | 45.1       | 20.4  | 92.2  | 80   |      | 20.9 |      |           |
| 9/11/2018 | 51.6       |            |       | 55.2  |      |      |      |      |           |
| 9/12/2018 |            | 30.7       | 32.2  |       |      | 63.6 | 29.2 |      | 13.6      |
| 9/13/2018 |            |            |       |       | 74.5 |      |      | 18.6 |           |
| 9/16/2019 | 48         | 32         |       |       |      |      |      |      |           |
| 9/17/2019 |            |            | 16    | 180   | 76   | 97   | 29   | 22   | 17        |
| 9/1/2020  |            | 28         |       |       |      |      |      | 21   | 16        |
| 9/2/2020  | 42         |            | 16    | 170   | 78   | 92   | 15   |      |           |
| 9/27/2021 | 110        | 42         |       |       |      |      |      |      |           |
| 9/28/2021 |            |            |       |       |      |      |      | 25   |           |
| 9/29/2021 |            |            | 24    | 46    | 91   | 85   | 25   |      |           |
| 9/20/2022 |            | 30         | 24    |       |      |      | 26   | 23   | 20        |
| 9/21/2022 | 120        |            |       |       | 92   |      |      |      |           |
| 9/22/2022 |            |            |       | 38    |      | 63   |      |      |           |
| 9/20/2023 | 120        | 35         |       |       |      |      |      | 25   |           |
| 9/21/2023 |            |            | 25    | 38    | 96   | 57   | 28   |      | 16        |



## Attachment E6

### Interwell Prediction Limit Analysis Results - East

# Prediction Limit

Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 2:58 PM

| Constituent             | Well           | Upper Lim.   | Lower Lim. | Date             | Observ.      | Sig.       | Bg N      | Bg Wells                      | Bg Mean      | Std. Dev.   | %NDs        | ND Adj.      | Transform    | Alpha            | Method                    |
|-------------------------|----------------|--------------|------------|------------------|--------------|------------|-----------|-------------------------------|--------------|-------------|-------------|--------------|--------------|------------------|---------------------------|
| Arsenic (ug/L)          | MW-11AR        | 1.60         | n/a        | 9/21/2023        | 0.89J        | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 62.5        | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Arsenic (ug/L)          | MW-18          | 1.60         | n/a        | 9/20/2023        | 0.53ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 62.5        | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Arsenic (ug/L)          | MW-20          | 1.60         | n/a        | 9/20/2023        | 0.96J        | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 62.5        | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Arsenic (ug/L)          | MW-22          | 1.60         | n/a        | 9/2/2020         | 0.88ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 62.5        | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Arsenic (ug/L)          | MW-23          | 1.60         | n/a        | 9/18/2023        | 0.53ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 62.5        | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Barium (ug/L)           | MW-11AR        | 205          | n/a        | 9/21/2023        | 49           | No         | 32        | MW-10,MW-13,MW-14,17.8        | 39.73        | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Barium (ug/L)           | MW-18          | 205          | n/a        | 9/20/2023        | 150          | No         | 32        | MW-10,MW-13,MW-14,17.8        | 39.73        | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Barium (ug/L)           | MW-20          | 205          | n/a        | 9/20/2023        | 93           | No         | 32        | MW-10,MW-13,MW-14,17.8        | 39.73        | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Barium (ug/L)           | MW-22          | 205          | n/a        | 9/2/2020         | 54           | No         | 32        | MW-10,MW-13,MW-14,17.8        | 39.73        | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Barium (ug/L)           | MW-23          | 205          | n/a        | 9/18/2023        | 120          | No         | 32        | MW-10,MW-13,MW-14,17.8        | 39.73        | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Beryllium (ug/L)        | MW-11AR        | 0.330        | n/a        | 9/21/2023        | 0.33ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 90.63       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Beryllium (ug/L)        | MW-18          | 0.330        | n/a        | 9/20/2023        | 0.33ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 90.63       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Beryllium (ug/L)        | MW-20          | 0.330        | n/a        | 9/20/2023        | 0.33ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 90.63       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Beryllium (ug/L)        | MW-22          | 0.330        | n/a        | 9/2/2020         | 0.27ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 90.63       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Beryllium (ug/L)        | MW-23          | 0.330        | n/a        | 9/18/2023        | 0.33ND       | No         | 32        | MW-10,MW-13,MW-9,n/a          | n/a          | 90.63       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (NDs) 1 of 2     |
| Boron (ug/L)            | MW-11AR        | 815          | n/a        | 9/21/2023        | 420          | No         | 32        | MW-10,MW-13,MW-14,47          | 1.019        | 37.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Boron (ug/L)            | MW-18          | 815          | n/a        | 9/20/2023        | 130          | No         | 32        | MW-10,MW-13,MW-14,47          | 1.019        | 37.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| <b>Boron (ug/L)</b>     | <b>MW-20</b>   | <b>815</b>   | <b>n/a</b> | <b>9/20/2023</b> | <b>3800</b>  | <b>Yes</b> | <b>32</b> | <b>MW-10,MW-13,MW-14,47</b>   | <b>1.019</b> | <b>37.5</b> | <b>None</b> | <b>ln(x)</b> | <b>ln(x)</b> | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| <b>Boron (ug/L)</b>     | <b>MW-22</b>   | <b>815</b>   | <b>n/a</b> | <b>9/2/2020</b>  | <b>2300</b>  | <b>Yes</b> | <b>32</b> | <b>MW-10,MW-13,MW-14,47</b>   | <b>1.019</b> | <b>37.5</b> | <b>None</b> | <b>ln(x)</b> | <b>ln(x)</b> | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Boron (ug/L)            | MW-23          | 815          | n/a        | 9/18/2023        | 89J          | No         | 32        | MW-10,MW-13,MW-14,47          | 1.019        | 37.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Chloride (mg/L)         | MW-11AR        | 46.0         | n/a        | 9/21/2023        | 21           | No         | 100       | MW-13,MW-14,MW-9,n/a          | n/a          | 45          | n/a         | n/a          | n/a          | 0.000193         | NP Inter (normality) ...  |
| Chloride (mg/L)         | MW-18          | 46.0         | n/a        | 9/20/2023        | 4.4J         | No         | 100       | MW-13,MW-14,MW-9,n/a          | n/a          | 45          | n/a         | n/a          | n/a          | 0.000193         | NP Inter (normality) ...  |
| Chloride (mg/L)         | MW-20          | 46.0         | n/a        | 9/20/2023        | 19           | No         | 100       | MW-13,MW-14,MW-9,n/a          | n/a          | 45          | n/a         | n/a          | n/a          | 0.000193         | NP Inter (normality) ...  |
| Chloride (mg/L)         | MW-22          | 46.0         | n/a        | 9/2/2020         | 20           | No         | 100       | MW-13,MW-14,MW-9,n/a          | n/a          | 45          | n/a         | n/a          | n/a          | 0.000193         | NP Inter (normality) ...  |
| Chloride (mg/L)         | MW-23          | 46.0         | n/a        | 9/18/2023        | 2.6J         | No         | 100       | MW-13,MW-14,MW-9,n/a          | n/a          | 45          | n/a         | n/a          | n/a          | 0.000193         | NP Inter (normality) ...  |
| Cobalt (ug/L)           | MW-11AR        | 4.95         | n/a        | 9/21/2023        | 0.8          | No         | 32        | MW-10,MW-13,MW-140.7991       | 1.093        | 12.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Cobalt (ug/L)           | MW-18          | 4.95         | n/a        | 9/20/2023        | 0.085ND      | No         | 32        | MW-10,MW-13,MW-140.7991       | 1.093        | 12.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Cobalt (ug/L)           | MW-20          | 4.95         | n/a        | 9/20/2023        | 0.085ND      | No         | 32        | MW-10,MW-13,MW-140.7991       | 1.093        | 12.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Cobalt (ug/L)           | MW-22          | 4.95         | n/a        | 9/2/2020         | 0.3J         | No         | 32        | MW-10,MW-13,MW-140.7991       | 1.093        | 12.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Cobalt (ug/L)           | MW-23          | 4.95         | n/a        | 9/18/2023        | 0.085ND      | No         | 32        | MW-10,MW-13,MW-140.7991       | 1.093        | 12.5        | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Iron (ug/L)             | MW-11AR        | 3520         | n/a        | 9/21/2023        | 580          | No         | 32        | MW-10,MW-13,MW-14,323         | 1.296        | 9.375       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Iron (ug/L)             | MW-18          | 3520         | n/a        | 9/20/2023        | 18ND         | No         | 32        | MW-10,MW-13,MW-14,323         | 1.296        | 9.375       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Iron (ug/L)             | MW-20          | 3520         | n/a        | 9/20/2023        | 18ND         | No         | 32        | MW-10,MW-13,MW-14,323         | 1.296        | 9.375       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Iron (ug/L)             | MW-22          | 3520         | n/a        | 9/2/2020         | 240          | No         | 32        | MW-10,MW-13,MW-14,323         | 1.296        | 9.375       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Iron (ug/L)             | MW-23          | 3520         | n/a        | 9/18/2023        | 18ND         | No         | 32        | MW-10,MW-13,MW-14,323         | 1.296        | 9.375       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Lead (ug/L)             | MW-11AR        | 1.90         | n/a        | 9/21/2023        | 1.2          | No         | 32        | MW-9,MW-10,MW-13,n/a          | n/a          | 43.75       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (normality) ...  |
| Lead (ug/L)             | MW-18          | 1.90         | n/a        | 9/20/2023        | 0.24ND       | No         | 32        | MW-9,MW-10,MW-13,n/a          | n/a          | 43.75       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (normality) ...  |
| Lead (ug/L)             | MW-20          | 1.90         | n/a        | 9/20/2023        | 0.24J        | No         | 32        | MW-9,MW-10,MW-13,n/a          | n/a          | 43.75       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (normality) ...  |
| Lead (ug/L)             | MW-22          | 1.90         | n/a        | 9/2/2020         | 0.64         | No         | 32        | MW-9,MW-10,MW-13,n/a          | n/a          | 43.75       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (normality) ...  |
| Lead (ug/L)             | MW-23          | 1.90         | n/a        | 9/18/2023        | 0.24ND       | No         | 32        | MW-9,MW-10,MW-13,n/a          | n/a          | 43.75       | n/a         | n/a          | n/a          | 0.001728         | NP Inter (normality) ...  |
| <b>Magnesium (ug/L)</b> | <b>MW-11AR</b> | <b>27400</b> | <b>n/a</b> | <b>9/21/2023</b> | <b>34000</b> | <b>Yes</b> | <b>32</b> | <b>MW-10,MW-13,MW-14,9750</b> | <b>3483</b>  | <b>0</b>    | <b>None</b> | <b>No</b>    | <b>No</b>    | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Magnesium (ug/L)        | MW-18          | 27400        | n/a        | 9/20/2023        | 21000        | No         | 32        | MW-10,MW-13,MW-14,9750        | 3483         | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Magnesium (ug/L)        | MW-20          | 27400        | n/a        | 9/20/2023        | 20000        | No         | 32        | MW-10,MW-13,MW-14,9750        | 3483         | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| <b>Magnesium (ug/L)</b> | <b>MW-22</b>   | <b>27400</b> | <b>n/a</b> | <b>9/2/2020</b>  | <b>30000</b> | <b>Yes</b> | <b>32</b> | <b>MW-10,MW-13,MW-14,9750</b> | <b>3483</b>  | <b>0</b>    | <b>None</b> | <b>No</b>    | <b>No</b>    | <b>0.0005787</b> | <b>Param Inter 1 of 2</b> |
| Magnesium (ug/L)        | MW-23          | 27400        | n/a        | 9/18/2023        | 20000        | No         | 32        | MW-10,MW-13,MW-14,9750        | 3483         | 0           | None        | No           | No           | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-11AR        | 3050         | n/a        | 9/21/2023        | 86           | No         | 32        | MW-10,MW-13,MW-14,092         | 1.792        | 3.125       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-18          | 3050         | n/a        | 9/20/2023        | 7.5J         | No         | 32        | MW-10,MW-13,MW-14,092         | 1.792        | 3.125       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-20          | 3050         | n/a        | 9/20/2023        | 1.8ND        | No         | 32        | MW-10,MW-13,MW-14,092         | 1.792        | 3.125       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-22          | 3050         | n/a        | 9/2/2020         | 21           | No         | 32        | MW-10,MW-13,MW-14,092         | 1.792        | 3.125       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |
| Manganese (ug/L)        | MW-23          | 3050         | n/a        | 9/18/2023        | 5.8J         | No         | 32        | MW-10,MW-13,MW-14,092         | 1.792        | 3.125       | None        | ln(x)        | ln(x)        | 0.0005787        | Param Inter 1 of 2        |

# Prediction Limit

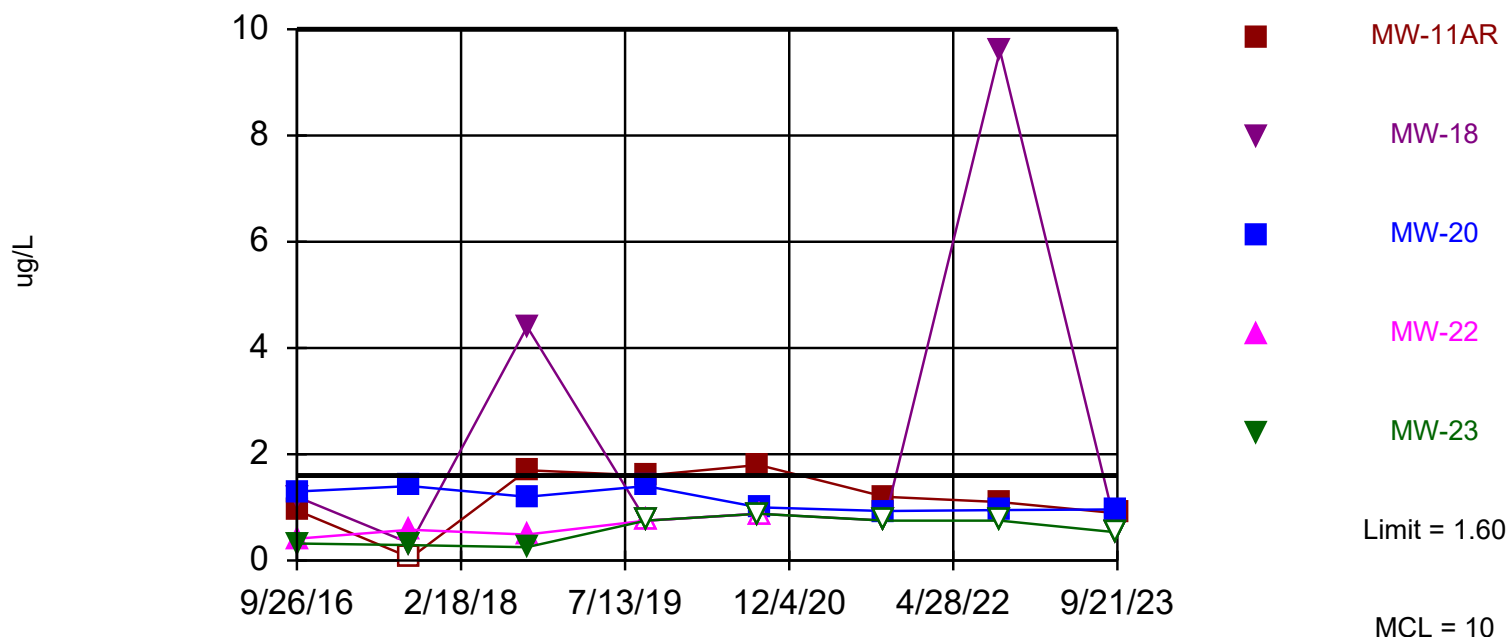
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input Printed 10/30/2023, 2:58 PM

| <u>Constituent</u>     | <u>Well</u>  | <u>Upper Lim.</u> | <u>Lower Lim.</u> | <u>Date</u>      | <u>Observ.</u> | <u>Sig.</u> | <u>Bg N</u> | <u>Bg Wells</u>             | <u>Bg Mean</u> | <u>Std. Dev.</u> | <u>%NDs</u> | <u>ND Adj.</u> | <u>Transform</u> | <u>Alpha</u>    | <u>Method</u>                   |
|------------------------|--------------|-------------------|-------------------|------------------|----------------|-------------|-------------|-----------------------------|----------------|------------------|-------------|----------------|------------------|-----------------|---------------------------------|
| Selenium (ug/L)        | MW-11AR      | 4.00              | n/a               | 9/21/2023        | 2.2J           | No          | 32          | MW-9,MW-14,MW-10,n/a        | n/a            | 56.25            | n/a         | n/a            | n/a              | 0.001728        | NP Inter (NDs) 1 of 2           |
| Selenium (ug/L)        | MW-18        | 4.00              | n/a               | 9/20/2023        | 1.4ND          | No          | 32          | MW-9,MW-14,MW-10,n/a        | n/a            | 56.25            | n/a         | n/a            | n/a              | 0.001728        | NP Inter (NDs) 1 of 2           |
| <b>Selenium (ug/L)</b> | <b>MW-20</b> | <b>4.00</b>       | <b>n/a</b>        | <b>9/20/2023</b> | <b>23</b>      | <b>Yes</b>  | <b>32</b>   | <b>MW-9,MW-14,MW-10,n/a</b> | <b>n/a</b>     | <b>56.25</b>     | <b>n/a</b>  | <b>n/a</b>     | <b>n/a</b>       | <b>0.001728</b> | <b>NP Inter (NDs) 1 of 2</b>    |
| <b>Selenium (ug/L)</b> | <b>MW-22</b> | <b>4.00</b>       | <b>n/a</b>        | <b>9/2/2020</b>  | <b>11</b>      | <b>Yes</b>  | <b>32</b>   | <b>MW-9,MW-14,MW-10,n/a</b> | <b>n/a</b>     | <b>56.25</b>     | <b>n/a</b>  | <b>n/a</b>     | <b>n/a</b>       | <b>0.001728</b> | <b>NP Inter (NDs) 1 of 2</b>    |
| Selenium (ug/L)        | MW-23        | 4.00              | n/a               | 9/18/2023        | 1.4ND          | No          | 32          | MW-9,MW-14,MW-10,n/a        | n/a            | 56.25            | n/a         | n/a            | n/a              | 0.001728        | NP Inter (NDs) 1 of 2           |
| Sulfate (mg/L)         | MW-11AR      | 120               | n/a               | 9/21/2023        | 97             | No          | 100         | MW-9,MW-10,MW-14,n/a        | n/a            | 0                | n/a         | n/a            | n/a              | 0.000193        | NP Inter (normality) ...        |
| Sulfate (mg/L)         | MW-18        | 120               | n/a               | 9/20/2023        | 64             | No          | 100         | MW-9,MW-10,MW-14,n/a        | n/a            | 0                | n/a         | n/a            | n/a              | 0.000193        | NP Inter (normality) ...        |
| <b>Sulfate (mg/L)</b>  | <b>MW-20</b> | <b>120</b>        | <b>n/a</b>        | <b>9/20/2023</b> | <b>140</b>     | <b>Yes</b>  | <b>100</b>  | <b>MW-9,MW-10,MW-14,n/a</b> | <b>n/a</b>     | <b>0</b>         | <b>n/a</b>  | <b>n/a</b>     | <b>n/a</b>       | <b>0.000193</b> | <b>NP Inter (normality) ...</b> |
| <b>Sulfate (mg/L)</b>  | <b>MW-22</b> | <b>120</b>        | <b>n/a</b>        | <b>9/2/2020</b>  | <b>150</b>     | <b>Yes</b>  | <b>100</b>  | <b>MW-9,MW-10,MW-14,n/a</b> | <b>n/a</b>     | <b>0</b>         | <b>n/a</b>  | <b>n/a</b>     | <b>n/a</b>       | <b>0.000193</b> | <b>NP Inter (normality) ...</b> |
| Sulfate (mg/L)         | MW-23        | 120               | n/a               | 9/18/2023        | 65             | No          | 100         | MW-9,MW-10,MW-14,n/a        | n/a            | 0                | n/a         | n/a            | n/a              | 0.000193        | NP Inter (normality) ...        |

Within Limit

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 49%. Limit is highest of 32 background values. 62.5% NDs. Annual per-constituent alpha = 0.02223. Individual comparison alpha = 0.001728 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Arsenic   Analysis Run 10/30/2023 2:57 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# Prediction Limit

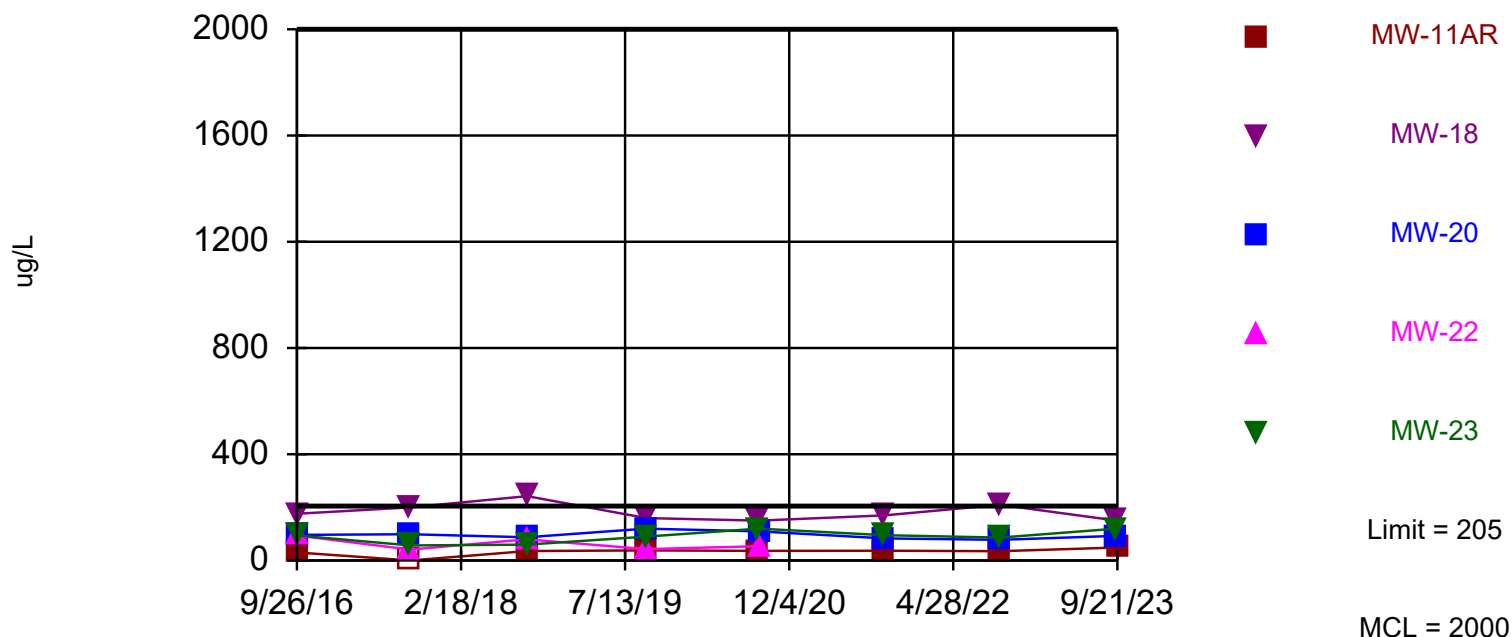
Constituent: Arsenic (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-9 (bg) | MW-14 (bg) | MW-18     | MW-20    | MW-22    | MW-11AR  | MW-10 (bg) | MW-23     |
|-----------|------------|-----------|------------|-----------|----------|----------|----------|------------|-----------|
| 9/25/2016 | 0.38 (J)   | 0.55 (J)  |            |           |          |          |          |            |           |
| 9/26/2016 |            |           | 0.64 (J)   | 1.2       | 1.3      | 0.41 (J) |          |            |           |
| 9/27/2016 |            |           |            |           |          |          | 0.94 (J) | 0.14 (J)   |           |
| 9/28/2016 |            |           |            |           |          |          |          |            | 0.32 (J)  |
| 9/13/2017 | 0.16 (J)   |           |            |           | 1.4      | 0.58 (J) |          |            | 0.29 (J)  |
| 9/14/2017 |            | 0.26 (J)  | 1.6        | 0.32 (J)  |          |          | <0.052   |            |           |
| 9/15/2017 |            |           |            |           |          |          |          | 0.17 (J)   |           |
| 9/11/2018 | 0.33 (J)   |           |            |           | 1.2      | 0.49 (J) |          |            | 0.25 (J)  |
| 9/12/2018 |            | 0.3 (J)   | 0.38 (J)   | 4.4       |          |          | 1.7      | 0.36 (J)   |           |
| 9/16/2019 | <0.75      |           | <0.75      |           | 1.4 (J)  | <0.75    |          |            | <0.75     |
| 9/17/2019 |            | <0.75     |            | <0.75     |          |          | 1.6 (J)  | <0.75      |           |
| 9/1/2020  |            | <0.88     | <0.88      | <0.88     |          |          | 1.8 (J)  |            | <0.88     |
| 9/2/2020  | <0.88      |           |            |           | 1 (J)    | <0.88    |          |            |           |
| 4/29/2021 |            |           |            |           |          |          |          | <0.75      |           |
| 9/27/2021 | <0.75      |           | <0.75      |           | 0.93 (J) |          |          |            | <0.75     |
| 9/28/2021 |            | <0.75     |            | <0.75     |          |          | 1.2 (J)  | <0.75      |           |
| 9/20/2022 |            | <0.75     | <0.75      |           |          |          |          | <0.75      |           |
| 9/21/2022 | <0.75      |           |            | 9.6       | 0.95 (J) |          | 1.1 (J)  |            | <0.75     |
| 9/18/2023 |            |           |            |           |          |          |          | <0.53 (U)  | <0.53 (U) |
| 9/20/2023 | <0.53 (U)  |           | <0.53 (U)  | <0.53 (U) | 0.96 (J) |          |          |            |           |
| 9/21/2023 |            | <0.53 (U) |            |           |          |          | 0.89 (J) |            |           |

Within Limit

## Prediction Limit

Interwell Parametric



Background Data Summary: Mean=117.8, Std. Dev.=39.73, n=32. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9135, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Barium    Analysis Run 10/30/2023 2:57 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Prediction Limit

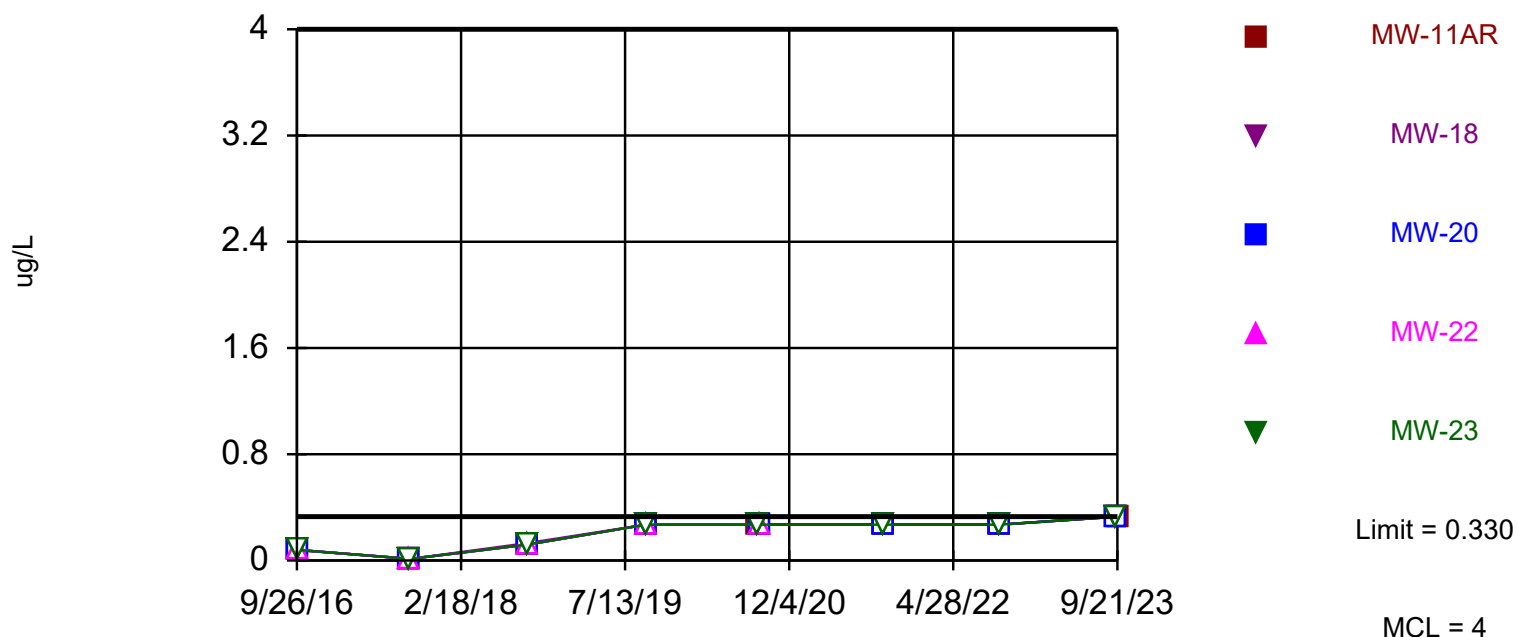
Constituent: Barium (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 91.2       |            |       |       |       |       | 158       |
| 9/26/2016 |            |         |            | 62.1       | 176   | 96.5  | 93.8  |       |           |
| 9/27/2016 | 151        | 30.1    |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 94.2  |           |
| 9/13/2017 |            |         | 101        |            |       | 99.1  | 40.9  | 57    |           |
| 9/14/2017 |            | <0.095  |            | 108        | 200   |       |       |       | 138       |
| 9/15/2017 | 149        |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 90.4       |            |       | 87.3  | 79.6  | 60    |           |
| 9/12/2018 | 131        | 35.6    |            | 55.1       | 242   |       |       |       | 157       |
| 9/16/2019 |            |         | 97         | 56         |       | 120   | 43    | 90    |           |
| 9/17/2019 | 140        | 38      |            |            | 160   |       |       |       | 170       |
| 9/1/2020  |            | 36      |            | 67         | 150   |       |       | 120   | 150       |
| 9/2/2020  |            |         | 96         |            |       | 110   | 54    |       |           |
| 4/29/2021 | 160        |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 100        | 62         |       | 83    |       | 95    |           |
| 9/28/2021 | 140        | 37      |            |            | 170   |       |       |       | 170       |
| 9/20/2022 | 130        |         |            | 59         |       |       |       |       | 160       |
| 9/21/2022 |            | 35      | 110        |            | 210   | 78    |       | 86    |           |
| 9/18/2023 | 160        |         |            |            |       |       |       | 120   |           |
| 9/20/2023 |            |         | 110        | 62         | 150   | 93    |       |       |           |
| 9/21/2023 |            | 49      |            |            |       |       |       |       | 180       |

Within Limit

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 49%. Limit is highest of 32 background values. 90.63% NDs. Annual per-constituent alpha = 0.02223. Individual comparison alpha = 0.001728 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Beryllium    Analysis Run 10/30/2023 2:57 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Prediction Limit

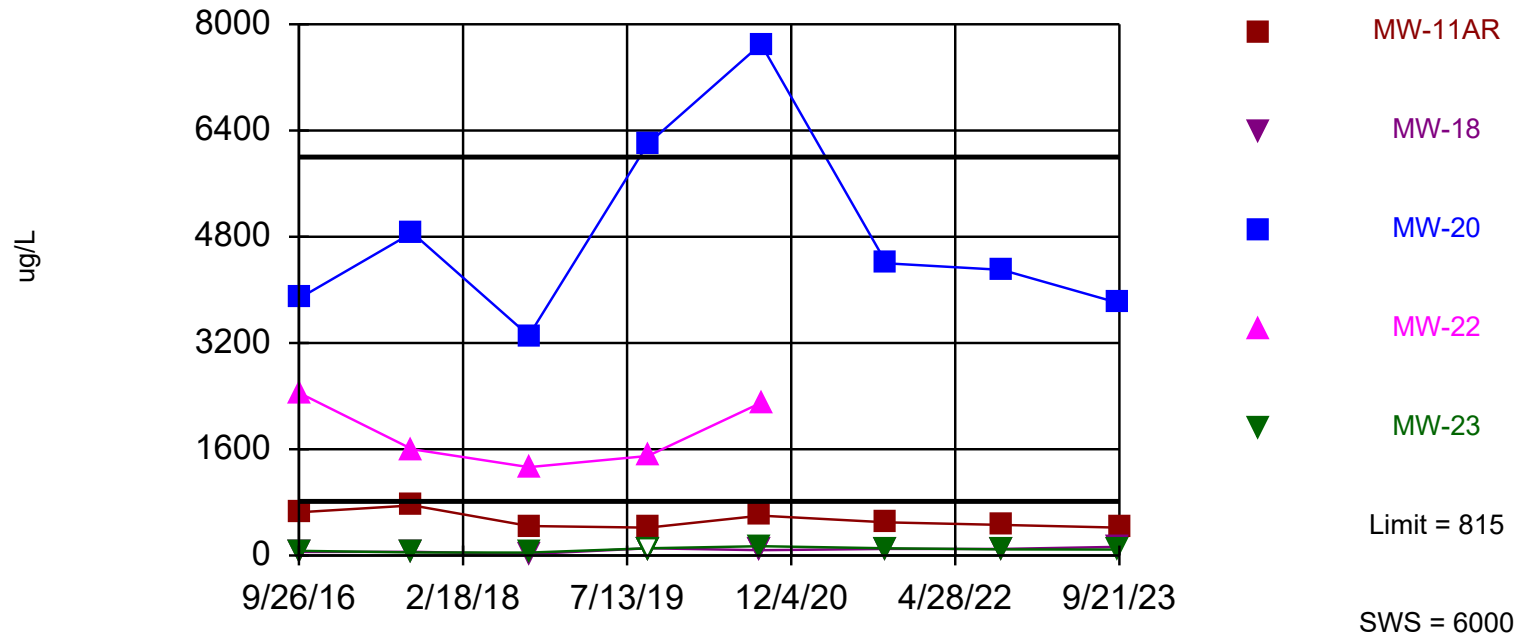
Constituent: Beryllium (ug/L) Analysis Run 10/30/2023 2:58 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-9 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22  | MW-11AR   | MW-10 (bg) | MW-23     |
|-----------|------------|-----------|------------|-----------|-----------|--------|-----------|------------|-----------|
| 9/25/2016 | <0.08      | <0.08     |            |           |           |        |           |            |           |
| 9/26/2016 |            |           | <0.08      | <0.08     | <0.08     | <0.08  |           |            |           |
| 9/27/2016 |            |           |            |           |           |        | <0.08     | <0.08      |           |
| 9/28/2016 |            |           |            |           |           |        |           |            | <0.08     |
| 9/13/2017 | <0.012     |           |            |           | <0.012    | <0.012 |           |            | <0.012    |
| 9/14/2017 |            | 0.02 (J)  | 0.15 (J)   | <0.012    |           |        | <0.012    |            |           |
| 9/15/2017 |            |           |            |           |           |        |           | <0.012     |           |
| 9/11/2018 | <0.12      |           |            |           | <0.12     | <0.12  |           |            | <0.12     |
| 9/12/2018 |            | <0.12     | <0.12      | 0.13 (J)  |           |        | <0.12     | 0.17 (J)   |           |
| 9/16/2019 | <0.27      |           | <0.27      |           | <0.27     | <0.27  |           |            | <0.27     |
| 9/17/2019 |            | <0.27     |            | <0.27     |           |        | <0.27     | <0.27      |           |
| 9/1/2020  |            | <0.27     | <0.27      | <0.27     |           |        | <0.27     |            | <0.27     |
| 9/2/2020  | <0.27      |           |            |           | <0.27     | <0.27  |           |            |           |
| 4/29/2021 |            |           |            |           |           |        |           | <0.27      |           |
| 9/27/2021 | <0.27      |           | <0.27      |           | <0.27     |        |           |            | <0.27     |
| 9/28/2021 |            | <0.27     |            | <0.27     |           |        | <0.27     | <0.27      |           |
| 9/20/2022 |            | <0.27     | <0.27      |           |           |        |           | <0.27      |           |
| 9/21/2022 | <0.27      |           |            | <0.27     | <0.27     |        | <0.27     |            | <0.27     |
| 9/18/2023 |            |           |            |           |           |        |           | <0.33 (U)  | <0.33 (U) |
| 9/20/2023 | <0.33 (U)  |           | <0.33 (U)  | <0.33 (U) | <0.33 (U) |        |           |            |           |
| 9/21/2023 |            | <0.33 (U) |            |           |           |        | <0.33 (U) |            |           |

Exceeds Limit: MW-20, MW-22

## Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=4.47, Std. Dev.=1.019, n=32, 37.5% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9535, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Boron Analysis Run 10/30/2023 2:57 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

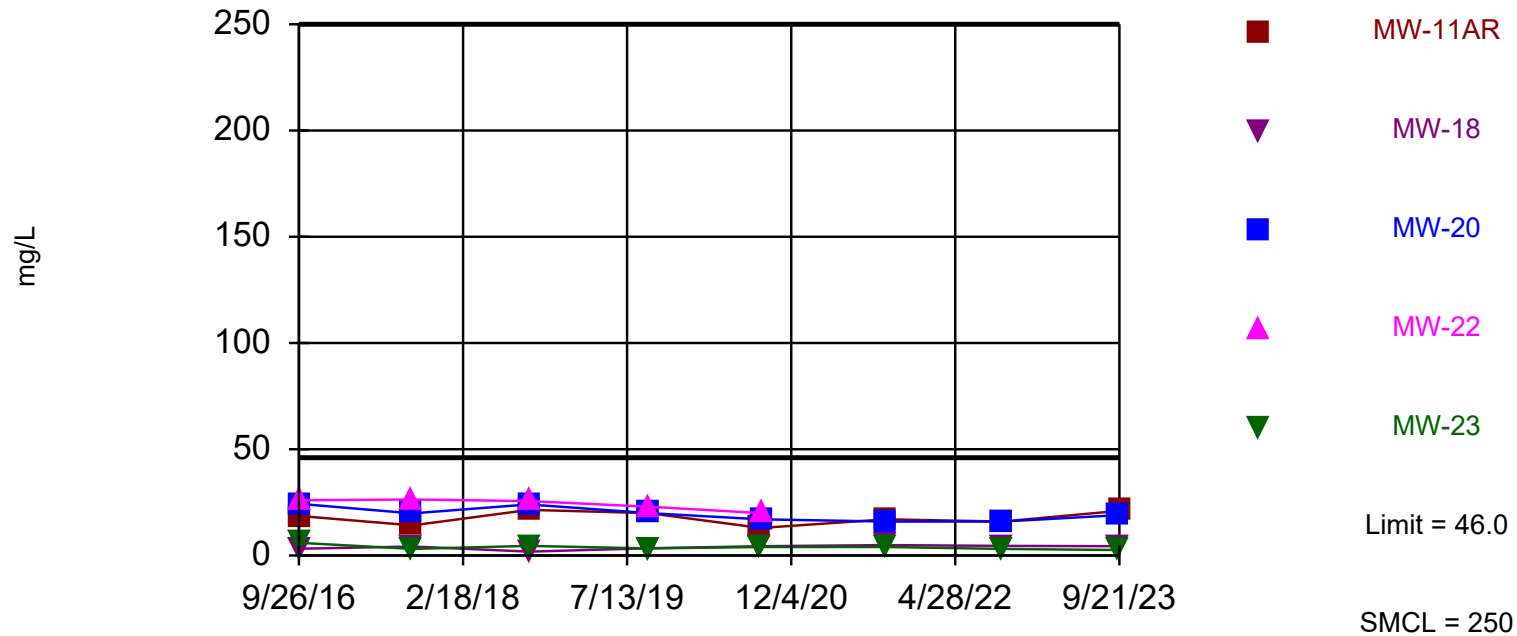
Constituent: Boron (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18    | MW-20 | MW-22 | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|----------|-------|-------|----------|-----------|
| 9/25/2016 |            |         | 50.2 (J)   |            |          |       |       |          | <50       |
| 9/26/2016 |            |         |            | 282        | 53.8 (J) | 3870  | 2450  |          |           |
| 9/27/2016 | <50        | 650     |            |            |          |       |       |          |           |
| 9/28/2016 |            |         |            |            |          |       |       | 70.1 (J) |           |
| 9/13/2017 |            |         | 48.6 (J)   |            |          | 4860  | 1600  | 47 (J)   |           |
| 9/14/2017 |            | 755     |            | 169        | 57 (J)   |       |       |          | 17.2 (J)  |
| 9/15/2017 | 14.1 (J)   |         |            |            |          |       |       |          |           |
| 9/11/2018 |            |         | 41.4 (J)   |            |          | 3310  | 1330  | 42.9 (J) |           |
| 9/12/2018 | <12.5      | 443     |            | 651        | 21.6 (J) |       |       |          | <12.5     |
| 9/16/2019 |            |         | 130 (J)    | 360        |          | 6200  | 1500  | <110     |           |
| 9/17/2019 | <110       | 420     |            |            | <110     |       |       |          | <110      |
| 9/1/2020  |            | 600     |            | 450        | <80      |       |       | 140      | <80       |
| 9/2/2020  |            |         | 88 (J)     |            |          | 7700  | 2300  |          |           |
| 4/29/2021 | <58        |         |            |            |          |       |       |          |           |
| 9/27/2021 |            |         | 110        | 280        |          | 4400  |       | 110      |           |
| 9/28/2021 | 74 (J)     | 500     |            |            | 100      |       |       |          | 77 (J)    |
| 9/20/2022 | <58        |         |            | 500        |          |       |       |          | <58       |
| 9/21/2022 |            | 460     | 94 (J)     |            | 100      | 4300  |       | 92 (J)   |           |
| 9/18/2023 | <76 (U)    |         |            |            |          |       |       | 89 (J)   |           |
| 9/20/2023 |            |         | 120        | 220        | 130      | 3800  |       |          |           |
| 9/21/2023 |            | 420     |            |            |          |       |       |          | <76 (U)   |

Within Limit

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 100 background values. 45% NDs. Annual per-constituent alpha = 0.002506. Individual comparison alpha = 0.000193 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Chloride Analysis Run 10/30/2023 2:57 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

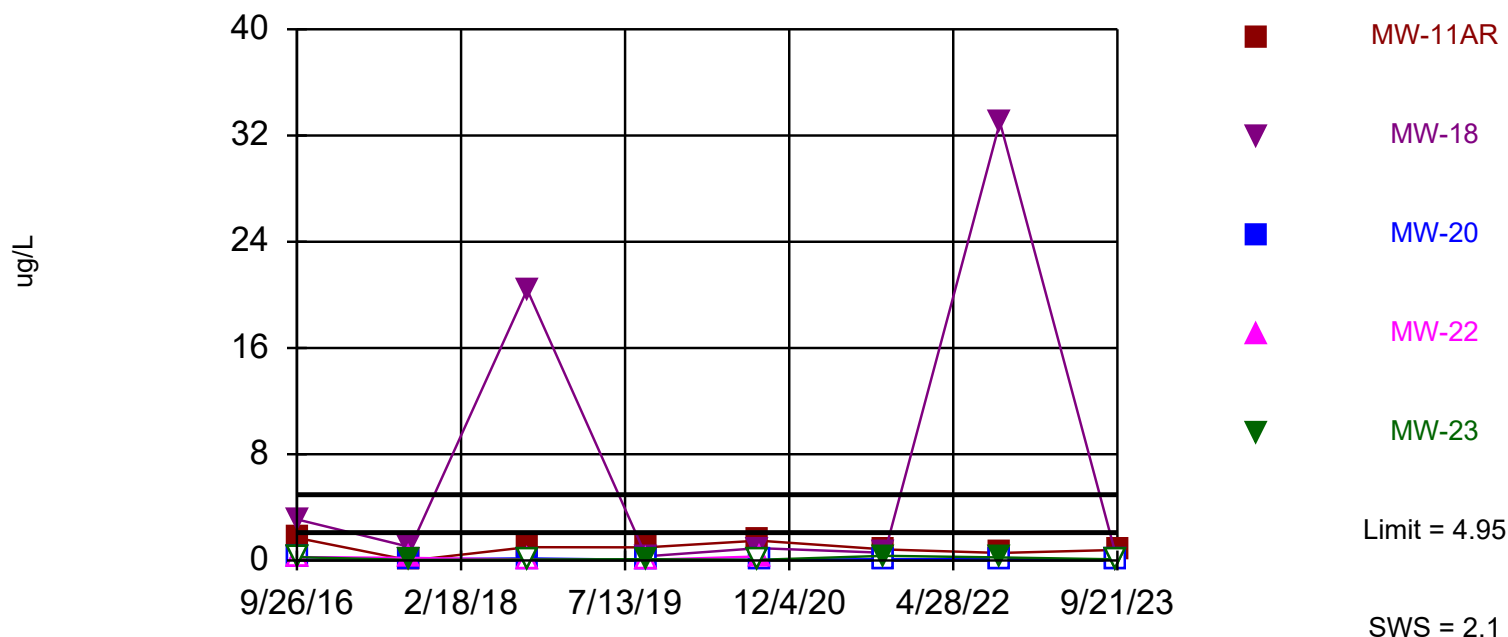
Constituent: Chloride (mg/L) Analysis Run 10/30/2023 2:58 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-13 (bg) | MW-14 (bg) | MW-9 (bg) | MW-22  | MW-20  | MW-18     | MW-11AR | MW-23     |
|-----------|------------|------------|------------|-----------|--------|--------|-----------|---------|-----------|
| 9/1/1999  | 12         | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2000  | 12         | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2001  | 13.8       | 5.9        | 5.9        | <5        |        |        |           |         |           |
| 9/1/2002  | 12.8       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2003  | 14.8       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2004  | 18.9       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2005  | 18.7       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2006  | 20.5       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2007  | 16.4       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2008  | 7.31       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2009  | 8.21       | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2010  | 2.76       | <1         | <2         | 1.25      |        |        |           |         |           |
| 9/1/2011  | 3.81       | <5         | <2         | <2        |        |        |           |         |           |
| 9/1/2012  | <5         | <5         | <5         | <5        |        |        |           |         |           |
| 9/1/2013  | 3.1        | 1.4        | 1.6        | 29.9      |        |        |           |         |           |
| 9/1/2014  | 2.5        | <1         | <1         | 46        |        |        |           |         |           |
| 9/1/2015  | 1.3        | 1.1        | <1         | 18.9      |        |        |           |         |           |
| 9/25/2016 |            | 2.8        |            | 2.6       |        |        |           |         |           |
| 9/26/2016 |            |            | 1.3        |           | 26     | 24.3   | 3.2       |         |           |
| 9/27/2016 | 1.9        |            |            |           |        |        |           | 18.6    |           |
| 9/28/2016 |            |            |            |           |        |        |           |         | 6         |
| 9/13/2017 |            | 4          |            |           | 26.4   | 19.8   |           |         | 3.1       |
| 9/14/2017 |            |            | 1.7        | 4         |        |        | 4.2       | 14.2    |           |
| 9/15/2017 | 2.4        |            |            |           |        |        |           |         |           |
| 9/11/2018 |            | 3.2        |            |           | 25.6   | 24     |           |         | 4.5       |
| 9/12/2018 | 1.5        |            | 2.2        | 3         |        |        | 1.8       | 21.5    |           |
| 9/16/2019 |            | 1.9 (J,B)  | 2.1 (J,B)  |           | 23 (B) | 20 (B) |           |         | 3.3 (J,B) |
| 9/17/2019 | 1.7 (J,B)  |            |            | 2 (J,B)   |        |        | 3.4 (J,B) | 20 (B)  |           |
| 9/1/2020  |            |            | 3.3 (J,B)  | 3.1 (J,B) |        |        | 4.4 (J,B) | 13 (B)  | 4 (J,B)   |
| 9/2/2020  |            | 2.4 (J,B)  |            |           | 20 (B) | 17 (B) |           |         |           |
| 4/29/2021 | <2.2       |            |            |           |        |        |           |         |           |
| 9/27/2021 |            | 3.1 (J)    | 3.9 (J)    |           |        | 16     |           |         | 4 (J)     |
| 9/28/2021 | 4 (J)      |            |            | 5.7       |        |        | 4.9 (J)   | 17      |           |
| 9/20/2022 | 2.9 (J)    |            | 3.6 (J)    | 15        |        |        |           |         |           |
| 9/21/2022 |            | 2.7 (J)    |            |           |        | 16     | 4.5 (J)   | 16      | 3.1 (J)   |
| 9/18/2023 | 2.3 (J)    |            |            |           |        |        |           |         | 2.6 (J)   |
| 9/20/2023 |            | <2.3 (U)   | 3.6 (J)    |           |        | 19     | 4.4 (J)   |         |           |
| 9/21/2023 |            |            |            | 17        |        |        |           | 21      |           |

Within Limit

## Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=-0.7991, Std. Dev.=1.093, n=32, 12.5% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9685, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Cobalt    Analysis Run 10/30/2023 2:57 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Prediction Limit

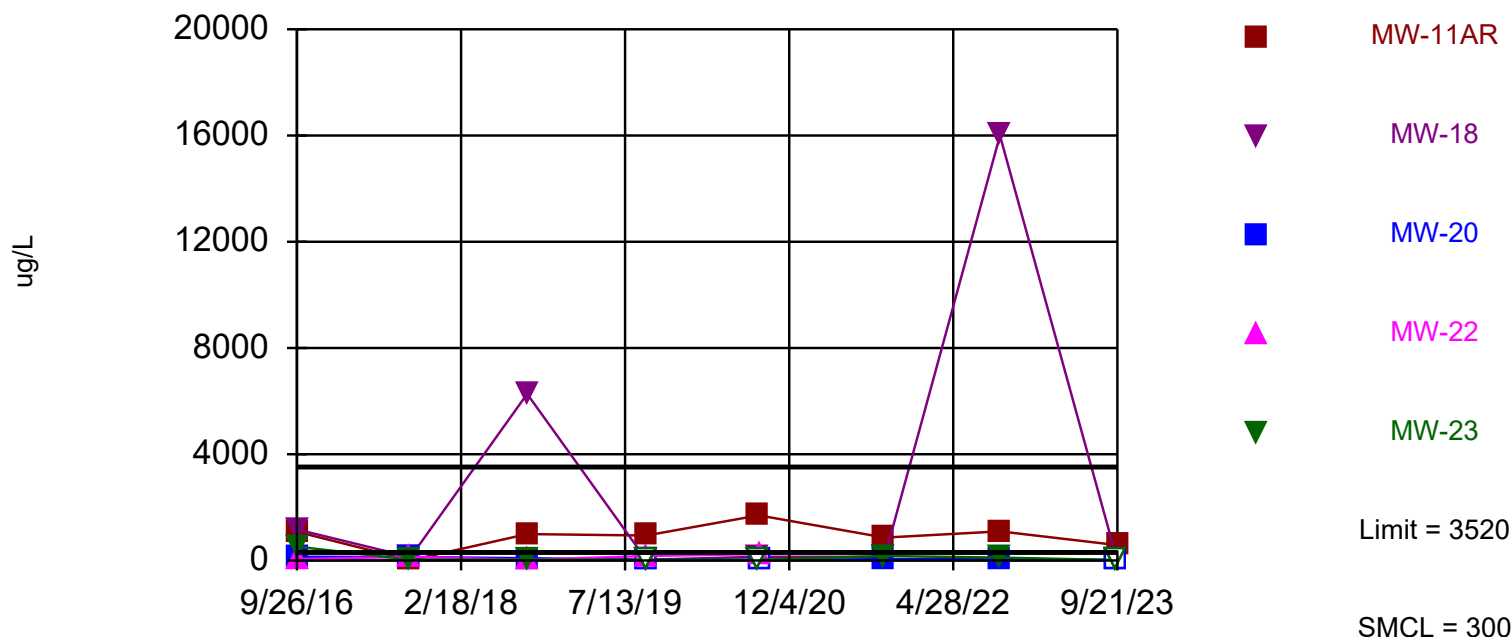
Constituent: Cobalt (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18     | MW-20     | MW-22    | MW-23     | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-----------|-----------|----------|-----------|-----------|
| 9/25/2016 |            |         | 1.2        |            |           |           |          |           | 2         |
| 9/26/2016 |            |         |            | 1.3        | 3.1       | <0.5      | <0.5     |           |           |
| 9/27/2016 | <0.5       | 1.7     |            |            |           |           |          |           |           |
| 9/28/2016 |            |         |            |            |           |           |          | <0.5      |           |
| 9/13/2017 |            |         | 0.15 (J)   |            |           | 0.09 (J)  | 0.19 (J) | 0.036 (J) |           |
| 9/14/2017 |            | <0.014  |            | 3          | 1         |           |          |           | 0.43 (J)  |
| 9/15/2017 | 0.05 (J)   |         |            |            |           |           |          |           |           |
| 9/11/2018 |            |         | 0.52 (J)   |            |           | 0.16 (J)  | <0.15    | <0.15     |           |
| 9/12/2018 | 0.76 (J)   | 1       |            | 0.5 (J)    | 20.4      |           |          |           | 1.4       |
| 9/16/2019 |            |         | 0.16 (J)   | 0.17 (J)   |           | <0.091    | <0.091   | 0.094 (J) |           |
| 9/17/2019 | 0.11 (J)   | 0.99    |            |            | 0.32 (J)  |           |          |           | 2.6       |
| 9/1/2020  |            | 1.5     |            | 0.37 (J)   | 0.93      |           |          | <0.091    | 2.5       |
| 9/2/2020  |            |         | 0.53       |            |           | <0.091    | 0.3 (J)  |           |           |
| 4/29/2021 | 1.3        |         |            |            |           |           |          |           |           |
| 9/27/2021 |            |         | <0.19      | 0.39 (J)   |           | <0.19     |          | 0.35 (J)  |           |
| 9/28/2021 | <0.19      | 0.83    |            |            | 0.58      |           |          |           | 1.3       |
| 9/20/2022 | 0.3 (J)    |         |            | 0.59       |           |           |          |           | 0.49 (J)  |
| 9/21/2022 |            | 0.57    | 0.73       |            | 33        | <0.19     |          | 0.23 (J)  |           |
| 9/18/2023 | <0.17 (U)  |         |            |            |           |           |          | <0.17 (U) |           |
| 9/20/2023 |            |         | 0.2 (J)    | 0.44 (J)   | <0.17 (U) | <0.17 (U) |          |           |           |
| 9/21/2023 |            | 0.8     |            |            |           |           |          |           | 0.35 (J)  |

Within Limit

## Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=5.323, Std. Dev.=1.296, n=32, 9.375% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9722, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Iron Analysis Run 10/30/2023 2:57 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

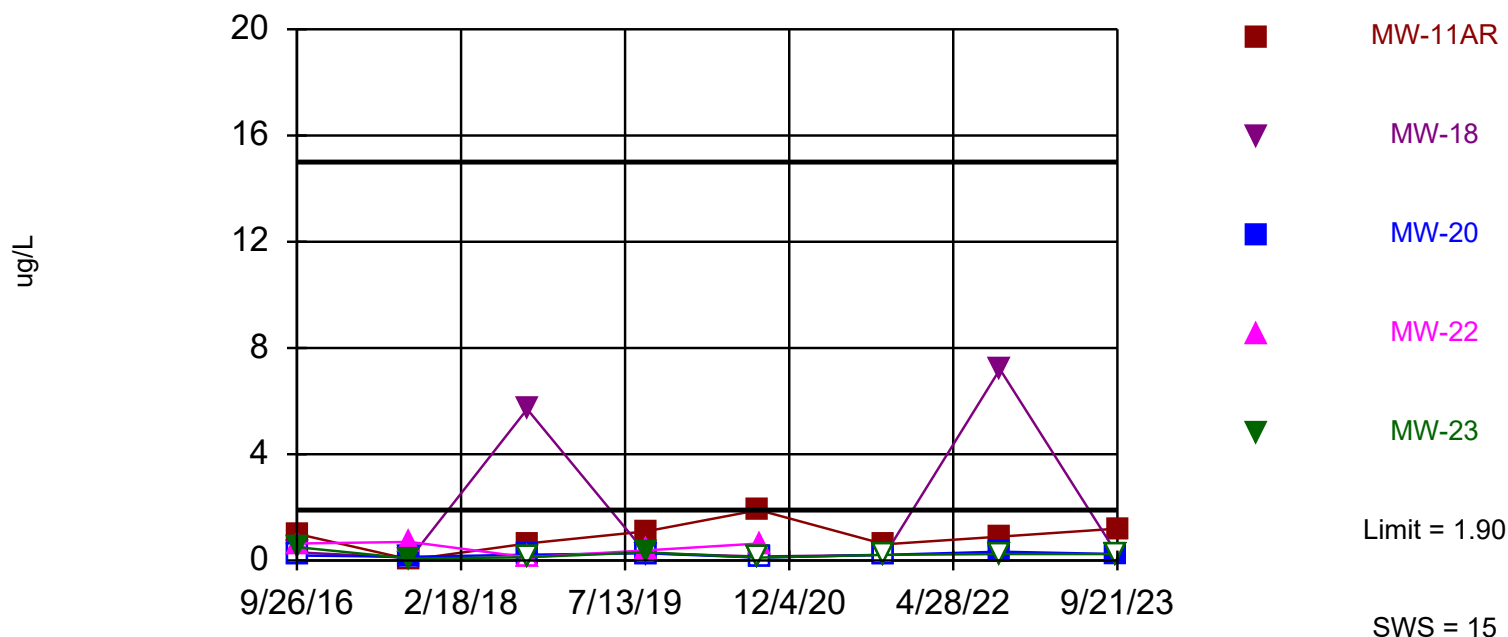
Constituent: Iron (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20   | MW-22    | MW-23    | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|---------|----------|----------|-----------|
| 9/25/2016 |            |         | 1240       |            |         |         |          |          | 55.7      |
| 9/26/2016 |            |         |            | 1770       | 1170    | 140     | 54.6     |          |           |
| 9/27/2016 | 126        | 1080    |            |            |         |         |          |          |           |
| 9/28/2016 |            |         |            |            |         |         |          | 518      |           |
| 9/13/2017 |            |         | 162        |            |         | 135     | 139      | 30.3 (J) |           |
| 9/14/2017 |            | <9.6    |            | 4440       | 128     |         |          |          | 357       |
| 9/15/2017 | 93.1       |         |            |            |         |         |          |          |           |
| 9/11/2018 |            |         | 289        |            |         | 82.8    | 23.9 (J) | 34.3 (J) |           |
| 9/12/2018 | 344        | 993     |            | 267        | 6270    |         |          |          | 624       |
| 9/16/2019 |            |         | 76 (J)     | 130        |         | <66     | 170      | <66      |           |
| 9/17/2019 | 130        | 940     |            |            | <66     |         |          |          | 1400      |
| 9/1/2020  |            | 1700    |            | 130        | 140     |         |          | <50      | 810       |
| 9/2/2020  |            |         | 230        |            |         | <50     | 240      |          |           |
| 4/29/2021 | 220        |         |            |            |         |         |          |          |           |
| 9/27/2021 |            |         | <36        | 140        |         | 49 (J)  |          | 170      |           |
| 9/28/2021 | 52 (J)     | 860     |            |            | 140     |         |          |          | 620       |
| 9/20/2022 | 270        |         |            | 240        |         |         |          |          | 230       |
| 9/21/2022 |            | 1100    | 440        |            | 16000   | 67 (J)  |          | 110      |           |
| 9/18/2023 | <36 (U)    |         |            |            |         |         |          | <36 (U)  |           |
| 9/20/2023 |            |         | 78 (J)     | 120        | <36 (U) | <36 (U) |          |          |           |
| 9/21/2023 |            | 580     |            |            |         |         |          |          | <36 (U)   |

Within Limit

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 32 background values. 43.75% NDs. Annual per-constituent alpha = 0.02223. Individual comparison alpha = 0.001728 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Lead   Analysis Run 10/30/2023 2:57 PM   View: East Closed LF  
Marshalltown E and W Closed LFs   Client: SCS Engineers   Data: Marshal\_input

# Prediction Limit

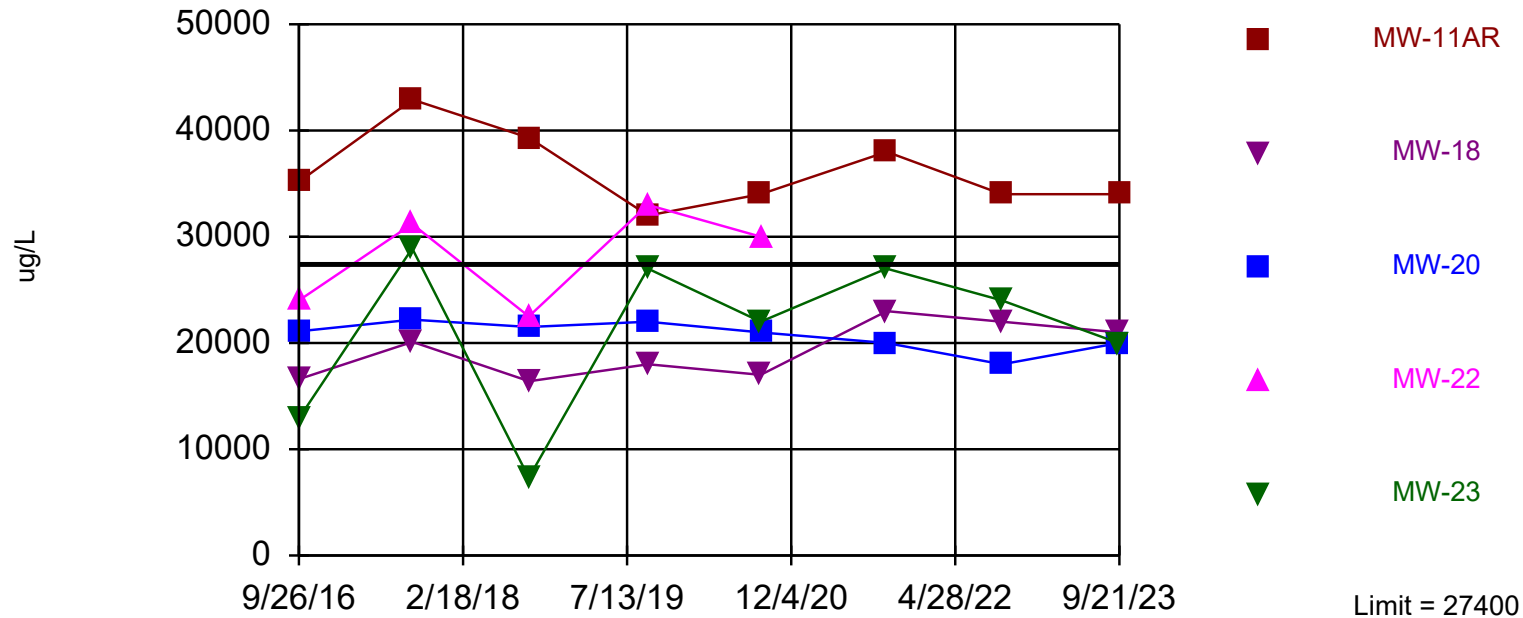
Constituent: Lead (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
 Marshelltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-13 (bg) | MW-9 (bg) | MW-14 (bg) | MW-18     | MW-20    | MW-22    | MW-11AR  | MW-10 (bg) | MW-23     |
|-----------|------------|-----------|------------|-----------|----------|----------|----------|------------|-----------|
| 9/25/2016 | 0.71 (J)   | <0.19     |            |           |          |          |          |            |           |
| 9/26/2016 |            |           | 0.98 (J)   | 0.31 (J)  | <0.19    | 0.64 (J) |          |            |           |
| 9/27/2016 |            |           |            |           |          |          | 1        | <0.19      |           |
| 9/28/2016 |            |           |            |           |          |          |          |            | 0.5 (J)   |
| 9/13/2017 | 0.13 (J)   |           |            |           | 0.14 (J) | 0.7 (J)  |          |            | 0.076 (J) |
| 9/14/2017 |            | 0.25 (J)  | 1.9        | 0.1 (J)   |          |          | <0.033   |            |           |
| 9/15/2017 |            |           |            |           |          |          |          | 0.12 (J)   |           |
| 9/11/2018 | 0.39 (J)   |           |            |           | 0.22 (J) | <0.12    |          |            | <0.12     |
| 9/12/2018 |            | <0.12     | 0.42 (J)   | 5.7       |          |          | 0.64 (J) | 0.55 (J)   |           |
| 9/16/2019 | <0.27      |           | 0.39 (J)   |           | <0.27    | 0.38 (J) |          |            | 0.31 (J)  |
| 9/17/2019 |            | <0.27     |            | <0.27     |          |          | 1.1      | <0.27      |           |
| 9/1/2020  |            | 0.23 (J)  | 0.22 (J)   | 0.15 (J)  |          |          | 1.9      |            | <0.11     |
| 9/2/2020  | 0.29 (J)   |           |            |           | <0.11    | 0.64     |          |            |           |
| 4/29/2021 |            |           |            |           |          |          |          | 0.23 (J)   |           |
| 9/27/2021 | <0.21      |           | <0.21      |           | <0.21    |          |          |            | <0.21     |
| 9/28/2021 |            | <0.21     |            | <0.21     |          |          | 0.61     | <0.21      |           |
| 9/20/2022 |            | 0.37 (J)  | 0.4 (J)    |           |          |          |          | <0.24      |           |
| 9/21/2022 | 0.47 (J)   |           |            | 7.2       | 0.33 (J) |          | 0.9      |            | <0.24     |
| 9/18/2023 |            |           |            |           |          |          |          | <0.24 (U)  | <0.24 (U) |
| 9/20/2023 | <0.24 (U)  |           | 0.26 (J)   | <0.24 (U) | 0.24 (J) |          |          |            |           |
| 9/21/2023 |            | <0.24 (U) |            |           |          |          | 1.2      |            |           |

Exceeds Limit: MW-11AR, MW-22

## Prediction Limit

Interwell Parametric



Background Data Summary: Mean=19750, Std. Dev.=3483, n=32. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9358, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Magnesium    Analysis Run 10/30/2023 2:57 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

Prediction Limit

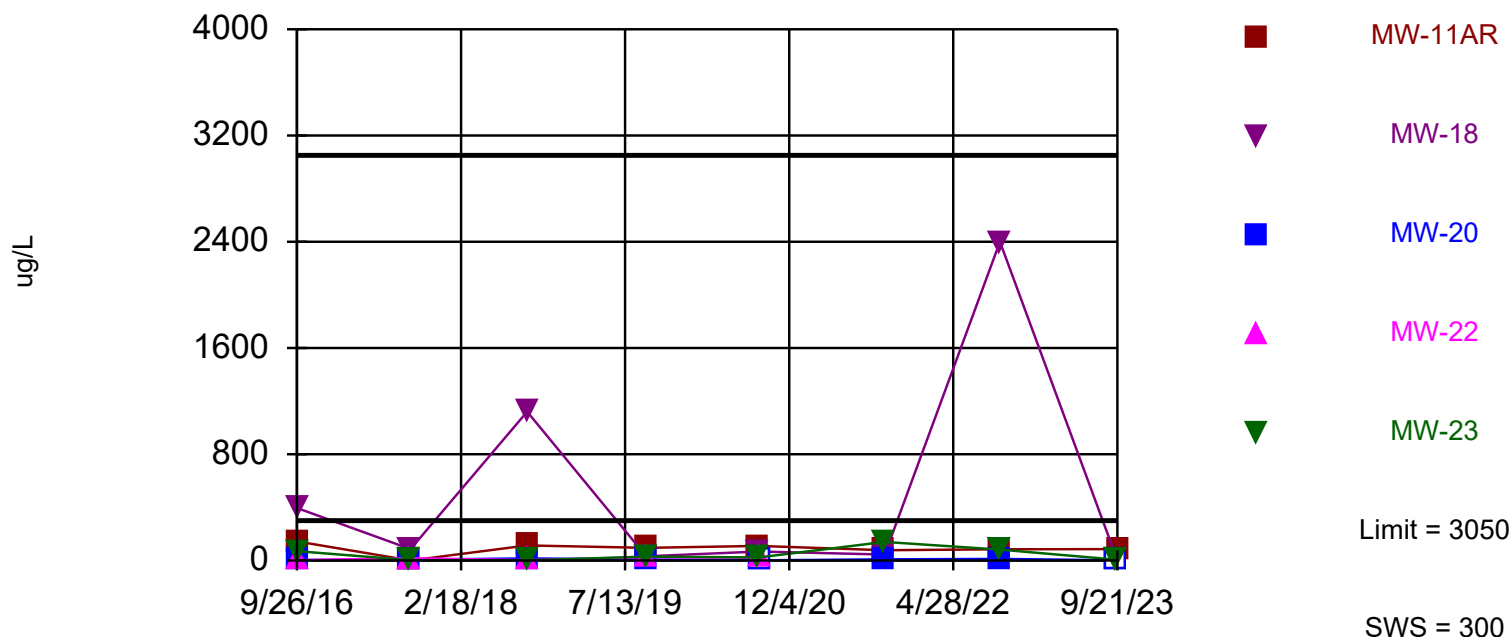
Constituent: Magnesium (ug/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18 | MW-20 | MW-22 | MW-23 | MW-9 (bg) |
|-----------|------------|---------|------------|------------|-------|-------|-------|-------|-----------|
| 9/25/2016 |            |         | 19000      |            |       |       |       |       | 16000     |
| 9/26/2016 |            |         |            | 25000      | 16600 | 21100 | 24000 |       |           |
| 9/27/2016 | 23400      | 35200   |            |            |       |       |       |       |           |
| 9/28/2016 |            |         |            |            |       |       |       | 13000 |           |
| 9/13/2017 |            |         | 17900      |            |       | 22200 | 31200 | 28900 |           |
| 9/14/2017 |            | 42900   |            | 29800      | 20100 |       |       |       | 14600     |
| 9/15/2017 | 23900      |         |            |            |       |       |       |       |           |
| 9/11/2018 |            |         | 17600      |            |       | 21500 | 22500 | 7320  |           |
| 9/12/2018 | 21200      | 39300   |            | 21600      | 16400 |       |       |       | 16000     |
| 9/16/2019 |            |         | 16000      | 22000      |       | 22000 | 33000 | 27000 |           |
| 9/17/2019 | 20000      | 32000   |            |            | 18000 |       |       |       | 16000     |
| 9/1/2020  |            | 34000   |            | 22000      | 17000 |       |       | 22000 | 15000     |
| 9/2/2020  |            |         | 18000      |            |       | 21000 | 30000 |       |           |
| 4/29/2021 | 24000      |         |            |            |       |       |       |       |           |
| 9/27/2021 |            |         | 19000      | 23000      |       | 20000 |       | 27000 |           |
| 9/28/2021 | 22000      | 38000   |            |            | 23000 |       |       |       | 18000     |
| 9/20/2022 | 18000      |         |            | 19000      |       |       |       |       | 16000     |
| 9/21/2022 |            | 34000   | 18000      |            | 22000 | 18000 |       | 24000 |           |
| 9/18/2023 | 23000      |         |            |            |       |       |       | 20000 |           |
| 9/20/2023 |            |         | 18000      | 22000      | 21000 | 20000 |       |       |           |
| 9/21/2023 |            | 34000   |            |            |       |       |       |       | 17000     |

Within Limit

## Prediction Limit

Interwell Parametric



Background Data Summary (based on natural log transformation): Mean=4.092, Std. Dev.=1.792, n=32, 3.125% NDs. Insufficient data to test for seasonality; not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9753, critical = 0.904. Kappa = 2.193 (c=14, w=13, 1 of 2, event alpha = 0.1). Report alpha = 0.007498. Individual comparison alpha = 0.0005787. Comparing 5 points to limit. Assumes 8 future values.

Constituent: Manganese Analysis Run 10/30/2023 2:57 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

# Prediction Limit

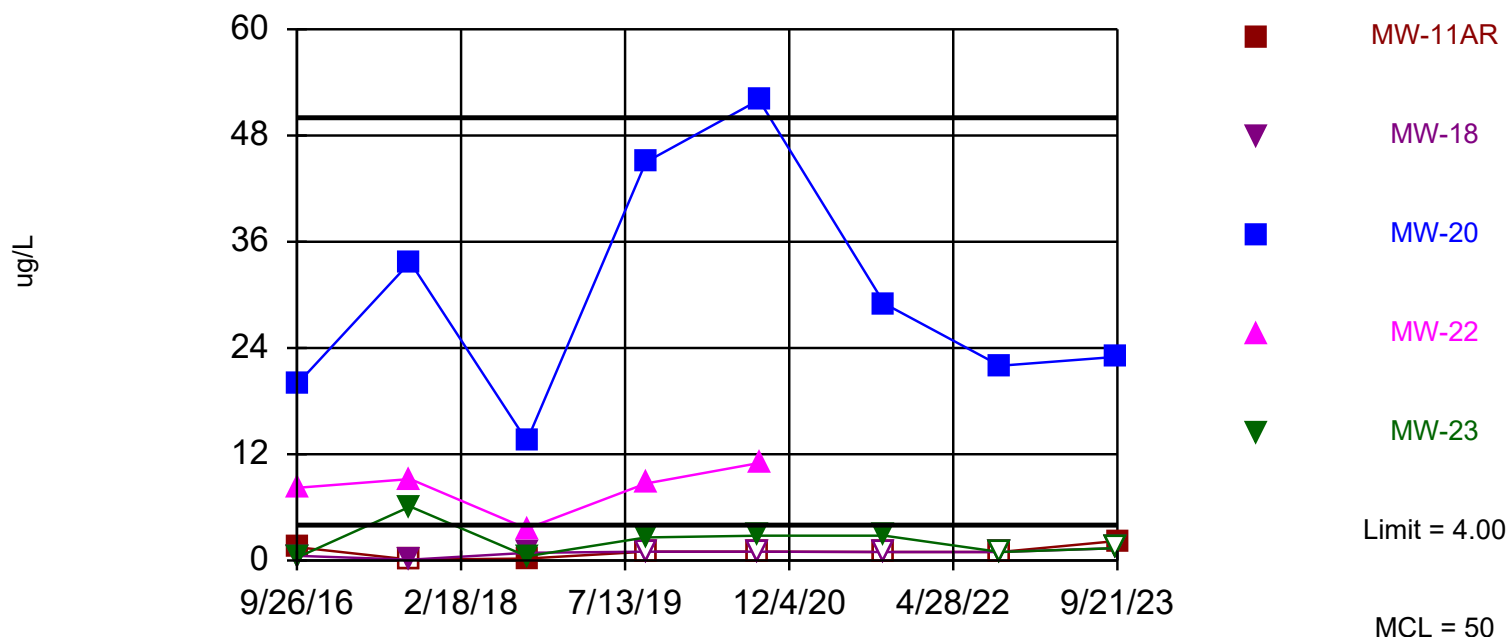
Constituent: Manganese (ug/L) Analysis Run 10/30/2023 2:58 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-10 (bg) | MW-11AR | MW-13 (bg) | MW-14 (bg) | MW-18   | MW-20    | MW-22 | MW-23   | MW-9 (bg) |
|-----------|------------|---------|------------|------------|---------|----------|-------|---------|-----------|
| 9/25/2016 |            |         | 148        |            |         |          |       |         | 515       |
| 9/26/2016 |            |         |            | 118        | 395     | 4.2      | 2.5   |         |           |
| 9/27/2016 | 6.1        | 144     |            |            |         |          |       |         |           |
| 9/28/2016 |            |         |            |            |         |          |       | 70      |           |
| 9/13/2017 |            |         | 14.6       |            |         | 6.3      | 17.2  | 2.2     |           |
| 9/14/2017 |            | <0.07   |            | 407        | 85.3    |          |       |         | 49.8      |
| 9/15/2017 | 3.2        |         |            |            |         |          |       |         |           |
| 9/11/2018 |            |         | 59.8       |            |         | 15.7     | 2.9   | 2       |           |
| 9/12/2018 | 54.9       | 114     |            | 64.9       | 1120    |          |       |         | 722       |
| 9/16/2019 |            |         | 15         | 27         |         | 7.3 (J)  | 26    | 29      |           |
| 9/17/2019 | 12         | 96      |            |            | 31      |          |       |         | 2100      |
| 9/1/2020  |            | 110     |            | 27         | 68      |          |       | 23      | 2000      |
| 9/2/2020  |            |         | 110        |            |         | <4       | 21    |         |           |
| 4/29/2021 | 77         |         |            |            |         |          |       |         |           |
| 9/27/2021 |            |         | 5.7 (J)    | 36         |         | 8.8 (J)  |       | 140     |           |
| 9/28/2021 | 4.9 (J)    | 77      |            |            | 45      |          |       |         | 1100      |
| 9/20/2022 | 33         |         |            | 71         |         |          |       |         | 98        |
| 9/21/2022 |            | 84      | 79         |            | 2400    | 12       |       | 82      |           |
| 9/18/2023 | <3.6 (U)   |         |            |            |         |          |       | 5.8 (J) |           |
| 9/20/2023 |            |         | 21         | 120        | 7.5 (J) | <3.6 (U) |       |         |           |
| 9/21/2023 |            | 86      |            |            |         |          |       |         | 220       |

Exceeds Limit: MW-20, MW-22

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 49%. Limit is highest of 32 background values. 56.25% NDs. Annual per-constituent alpha = 0.02223. Individual comparison alpha = 0.001728 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Selenium    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Prediction Limit

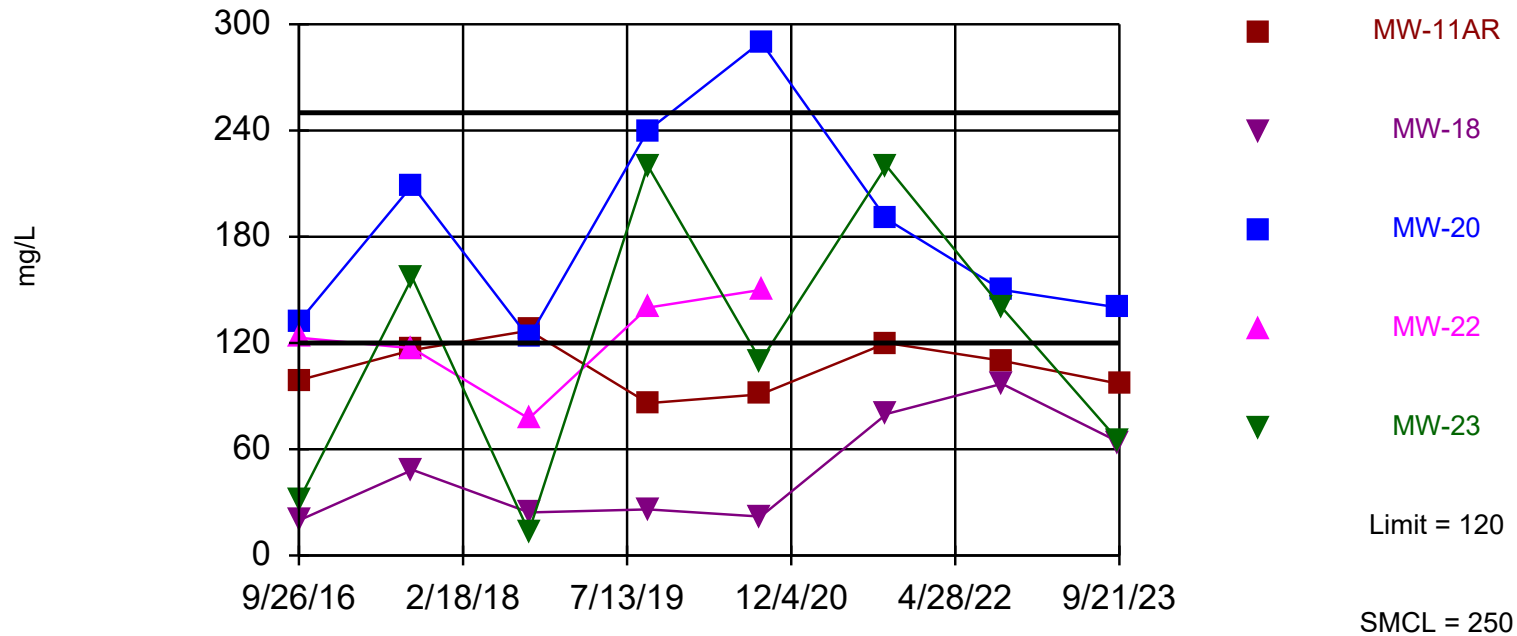
Constituent: Selenium (ug/L) Analysis Run 10/30/2023 2:58 PM View: East Closed LF  
Marshalltown E and W Closed LFs Client: SCS Engineers Data: Marshal\_input

|           | MW-13 (bg) | MW-9 (bg) | MW-14 (bg) | MW-18     | MW-20 | MW-22 | MW-11AR  | MW-10 (bg) | MW-23    |
|-----------|------------|-----------|------------|-----------|-------|-------|----------|------------|----------|
| 9/25/2016 | 1.1        | <0.18     |            |           |       |       |          |            |          |
| 9/26/2016 |            |           | 1.7        | 0.52 (J)  | 19.9  | 8.2   |          |            |          |
| 9/27/2016 |            |           |            |           |       |       | 1.5      | 0.68 (J)   |          |
| 9/28/2016 |            |           |            |           |       |       |          |            | 0.36 (J) |
| 9/13/2017 | 1          |           |            |           | 33.7  | 9.2   |          |            | 6.1      |
| 9/14/2017 |            | <0.086    | 0.63 (J)   | 0.094 (J) |       |       | <0.086   |            |          |
| 9/15/2017 |            |           |            |           |       |       |          | 0.66 (J)   |          |
| 9/11/2018 | 1.3        |           |            |           | 13.5  | 3.6   |          |            | 0.47 (J) |
| 9/12/2018 |            | <0.16     | 4          | 0.87 (J)  |       |       | 0.22 (J) | 0.71 (J)   |          |
| 9/16/2019 | 1.1 (J)    |           | 1.7 (J)    |           | 45    | 8.7   |          |            | 2.6 (J)  |
| 9/17/2019 |            | <1        |            | <1        |       |       | <1       | <1         |          |
| 9/1/2020  |            | <1        | 1.9 (J)    | <1        |       |       | <1       |            | 2.8 (J)  |
| 9/2/2020  | <1         |           |            |           | 52    | 11    |          |            |          |
| 4/29/2021 |            |           |            |           |       |       |          | 1.6 (J)    |          |
| 9/27/2021 | <0.96      |           | <0.96      |           | 29    |       |          |            | 2.8 (J)  |
| 9/28/2021 |            | <0.96     |            | <0.96     |       |       | <0.96    | <0.96      |          |
| 9/20/2022 |            | <0.96     | 1.6 (J)    |           |       |       |          | <0.96      |          |
| 9/21/2022 | <0.96      |           |            | <0.96     | 22    |       | <0.96    |            | <0.96    |
| 9/18/2023 |            |           |            |           |       |       |          | <1.4 (U)   | <1.4 (U) |
| 9/20/2023 | <1.4 (U)   |           | <1.4 (U)   | <1.4 (U)  | 23    |       |          |            |          |
| 9/21/2023 |            | <1.4 (U)  |            |           |       |       | 2.2 (J)  |            |          |

Exceeds Limit: MW-20, MW-22

## Prediction Limit

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Chi Squared normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 100 background values. Annual per-constituent alpha = 0.002506. Individual comparison alpha = 0.000193 (1 of 2). Comparing 5 points to limit. Assumes 8 future values. Insufficient data to test for seasonality; data will not be deseasonalized.

Constituent: Sulfate    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

# Prediction Limit

Constituent: Sulfate (mg/L)    Analysis Run 10/30/2023 2:58 PM    View: East Closed LF  
Marshalltown E and W Closed LFs    Client: SCS Engineers    Data: Marshal\_input

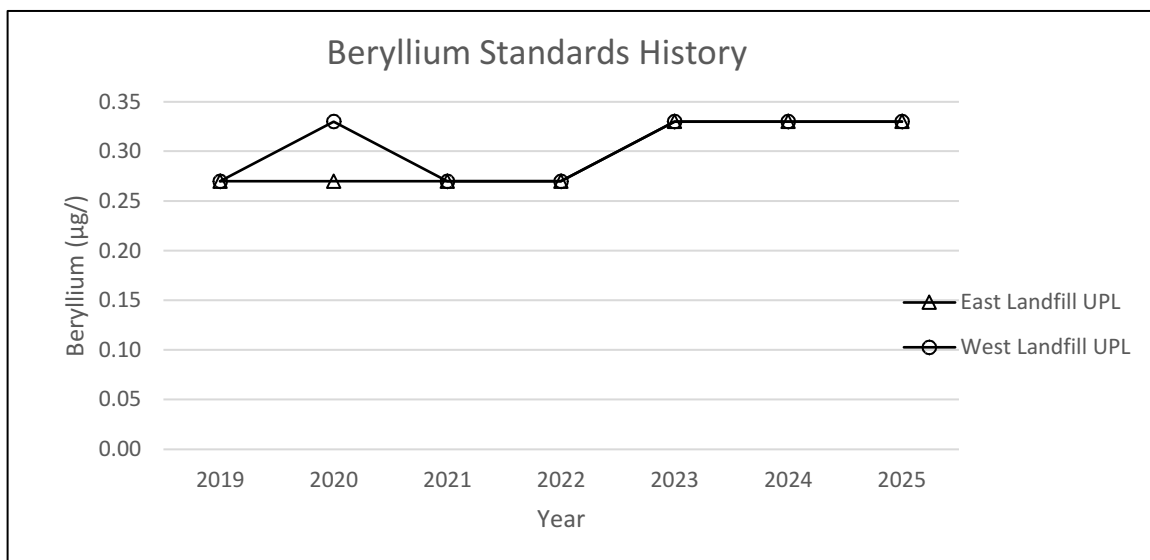
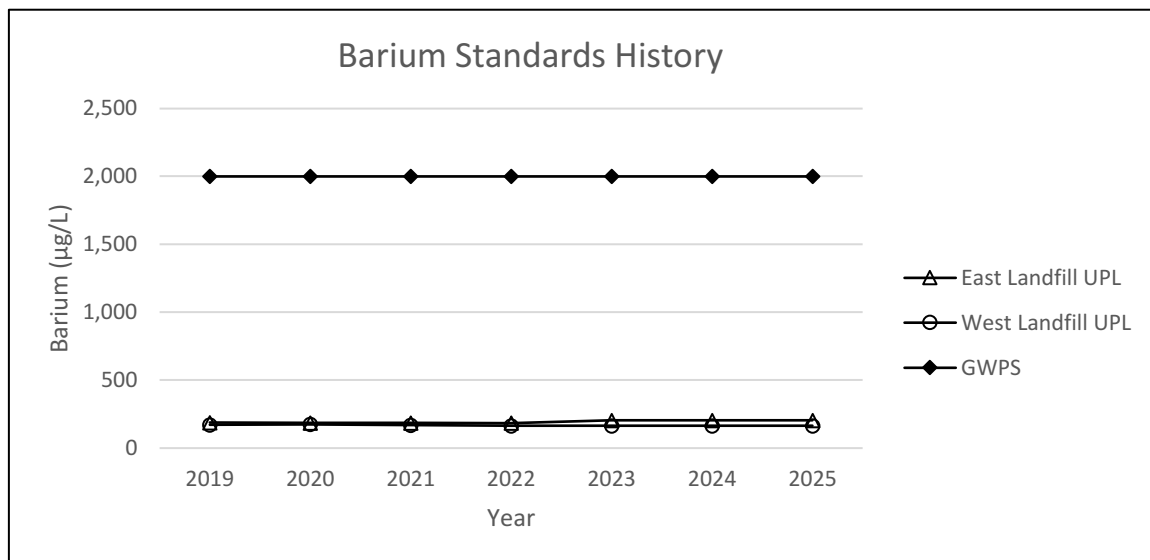
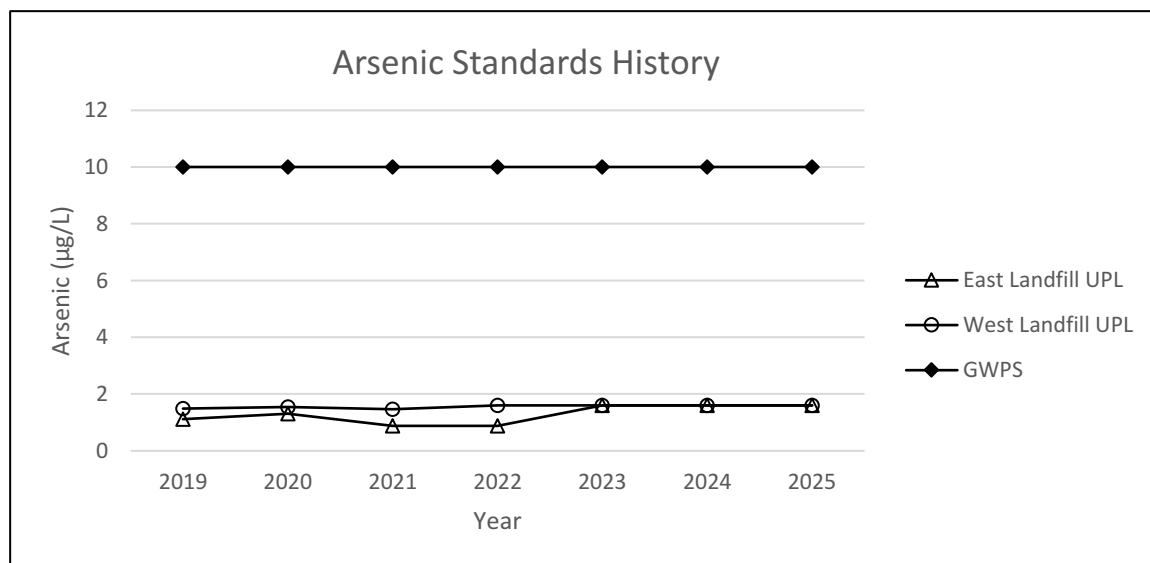
|           | MW-10 (bg) | MW-13 (bg) | MW-14 (bg) | MW-9 (bg) | MW-22 | MW-20 | MW-18 | MW-11AR | MW-23 |
|-----------|------------|------------|------------|-----------|-------|-------|-------|---------|-------|
| 9/1/1999  | 43         | 56         | 64         | 30        |       |       |       |         |       |
| 9/1/2000  | 28         | 110        | 48         | 35        |       |       |       |         |       |
| 9/1/2001  | 14         | 76         | 56         | 38        |       |       |       |         |       |
| 9/1/2002  | 19         | 110        | 60         | 36        |       |       |       |         |       |
| 9/1/2003  | 17         | 100        | 32         | 35        |       |       |       |         |       |
| 9/1/2004  | 31         | 100        | 64         | 39        |       |       |       |         |       |
| 9/1/2005  | 17         | 120        | 80         | 44        |       |       |       |         |       |
| 9/1/2006  | 14.7       | 60.5       | 81.2       | 42.7      |       |       |       |         |       |
| 9/1/2007  | 13.8       | 106        | 86.9       | 28.7      |       |       |       |         |       |
| 9/1/2008  | 8.48       | 86.5       | 60         | 35.2      |       |       |       |         |       |
| 9/1/2009  | 10.1       | 80.2       | 56.5       | 35.6      |       |       |       |         |       |
| 9/1/2010  | 7.17       | 69.2       | 54.5       | 25.6      |       |       |       |         |       |
| 9/1/2011  | 9.16       | 70.5       | 51.8       | 26        |       |       |       |         |       |
| 9/1/2012  | 11.6       | 72.6       | 54.2       | 27.5      |       |       |       |         |       |
| 9/1/2013  | 11.1       | 69.3       | 50         | 19.7      |       |       |       |         |       |
| 9/1/2014  | 10.5       | 33.6       | 38.7       | 24.1      |       |       |       |         |       |
| 9/1/2015  | 6.2        | 68.9       | 49         | 27.2      |       |       |       |         |       |
| 9/25/2016 |            | 59.7       |            | 6.3       |       |       |       |         |       |
| 9/26/2016 |            |            | 40         |           | 123   | 132   | 19.8  |         |       |
| 9/27/2016 | 7.8        |            |            |           |       |       |       | 99      |       |
| 9/28/2016 |            |            |            |           |       |       |       |         | 31.8  |
| 9/13/2017 |            | 67.6       |            |           | 117   | 209   |       |         | 157   |
| 9/14/2017 |            |            | 45.1       | 12        |       |       | 48.4  | 116     |       |
| 9/15/2017 | 8.4        |            |            |           |       |       |       |         |       |
| 9/11/2018 |            | 51.6       |            |           | 77.4  | 123   |       |         | 13.5  |
| 9/12/2018 | 7.8        |            | 30.7       | 9.1       |       |       | 24.3  | 127     |       |
| 9/16/2019 |            | 48         | 32         |           | 140   | 240   |       |         | 220   |
| 9/17/2019 | 5.2        |            |            | 5.1       |       |       | 26    | 86      |       |
| 9/1/2020  |            |            | 28         | 5.6       |       |       | 22    | 91      | 110   |
| 9/2/2020  |            | 42         |            |           | 150   | 290   |       |         |       |
| 4/29/2021 | 7          |            |            |           |       |       |       |         |       |
| 9/27/2021 |            | 110        | 42         |           |       | 190   |       |         | 220   |
| 9/28/2021 | 8.5        |            |            | 12        |       |       | 80    | 120     |       |
| 9/20/2022 | 7.7        |            | 30         | 13        |       |       |       |         |       |
| 9/21/2022 |            | 120        |            |           |       | 150   | 97    | 110     | 140   |
| 9/18/2023 | 8          |            |            |           |       |       |       |         | 65    |
| 9/20/2023 |            | 120        | 35         |           |       | 140   | 64    |         |       |
| 9/21/2023 |            |            |            | 11        |       |       |       | 97      |       |



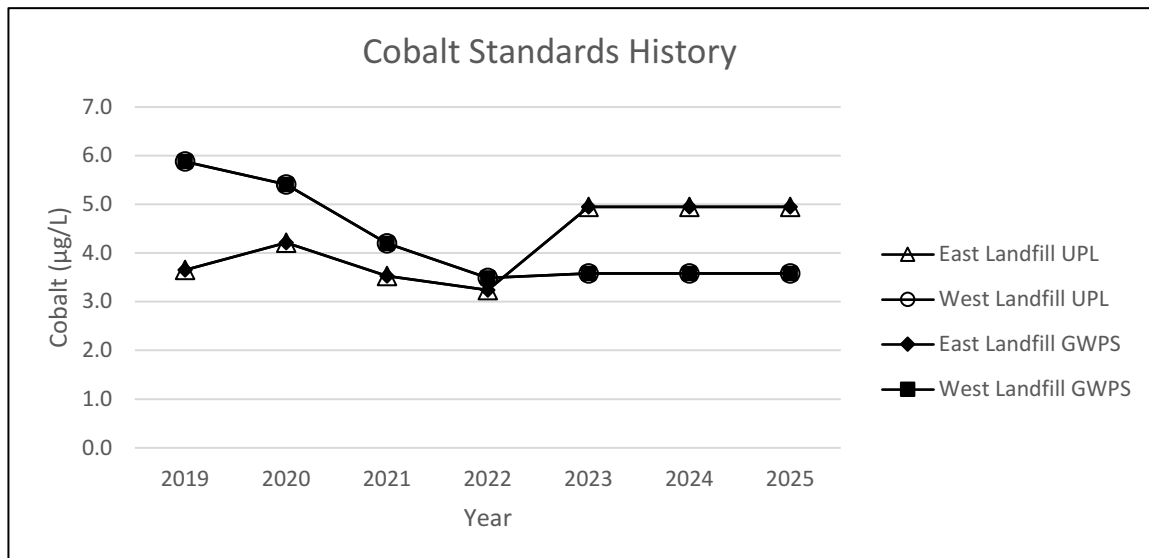
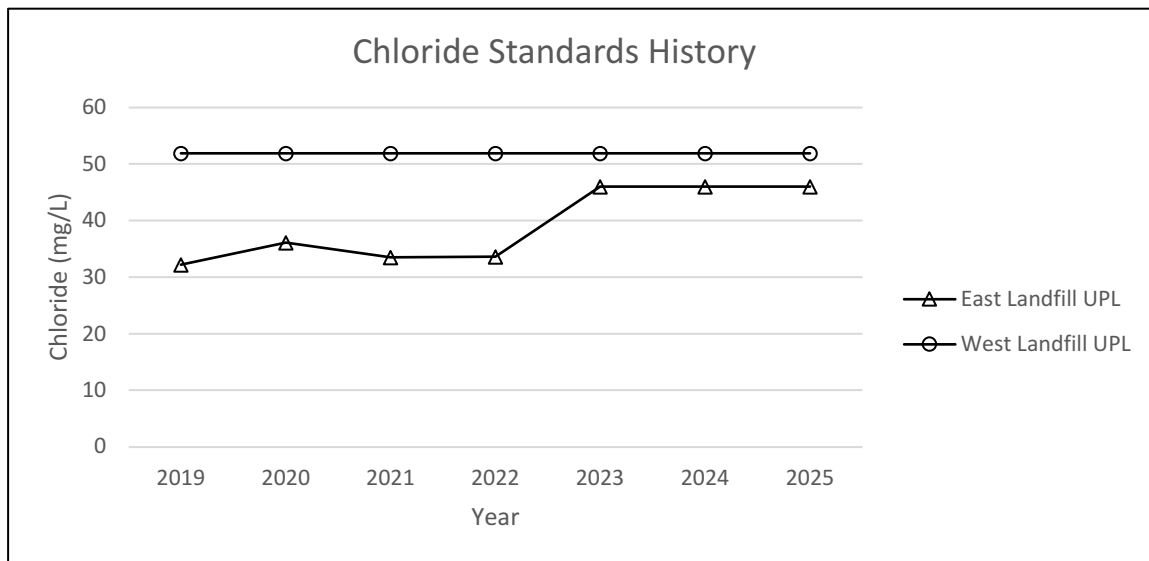
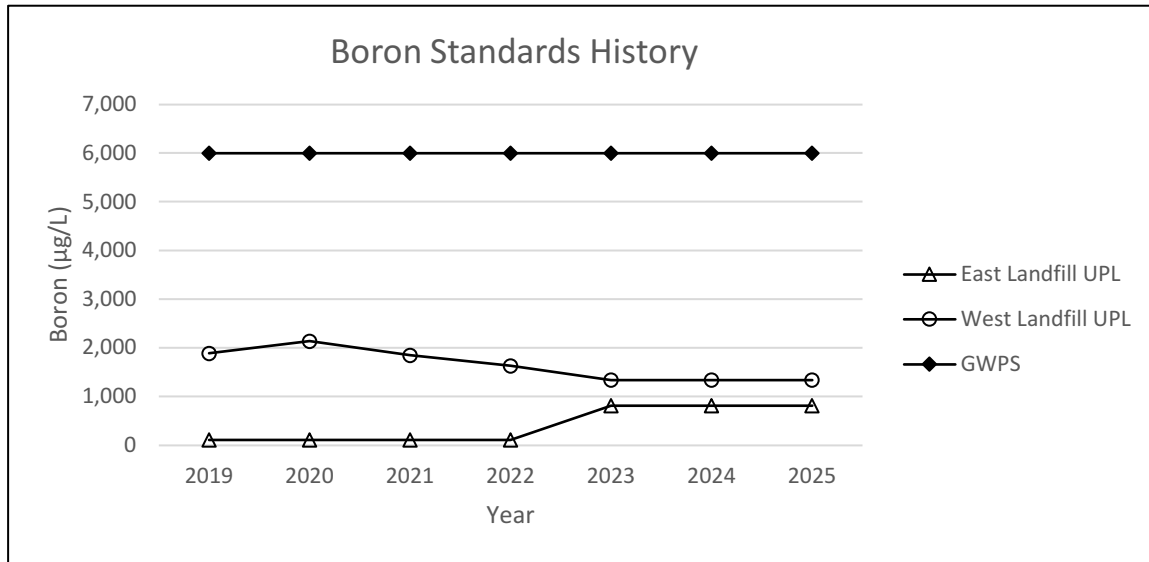
## Appendix F

### Standards History Graphs

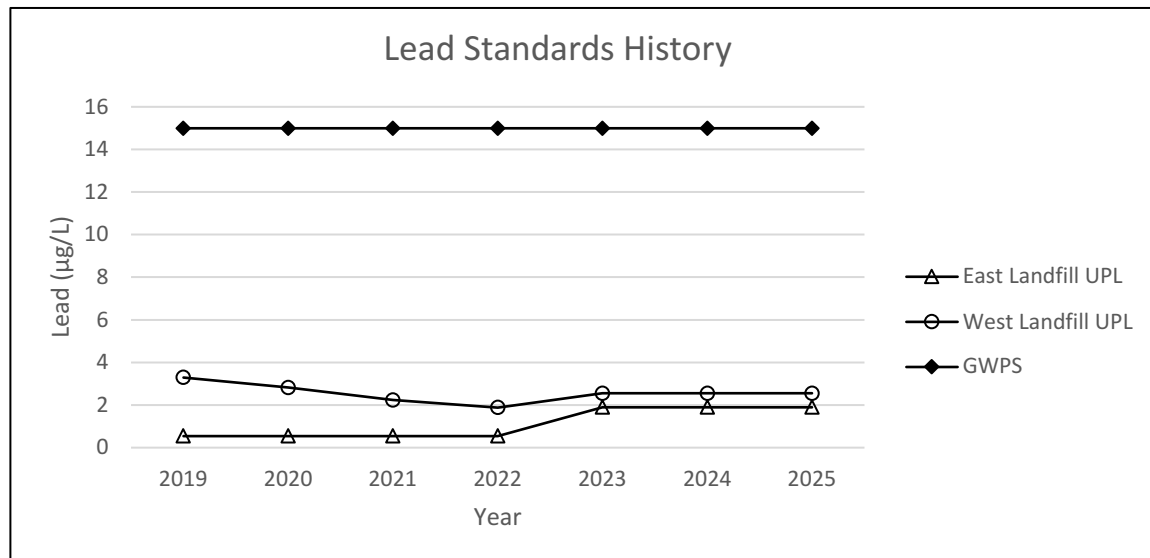
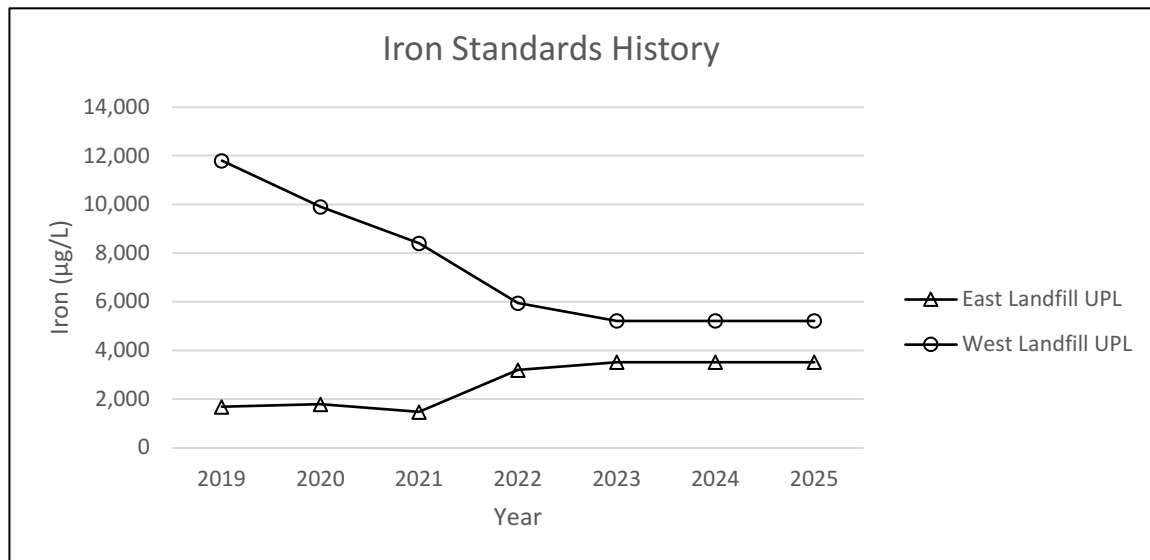
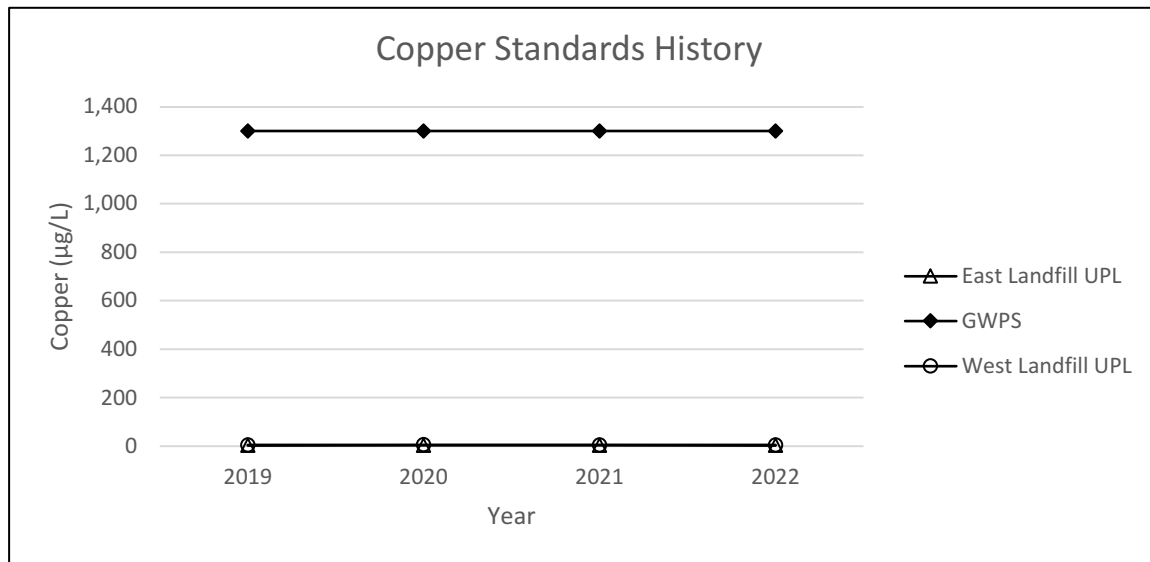
Marshalltown East and West Closed Landfills, Permit #64-SDP-5-91C and #64-SDP-3-90C  
Standards History Graphs



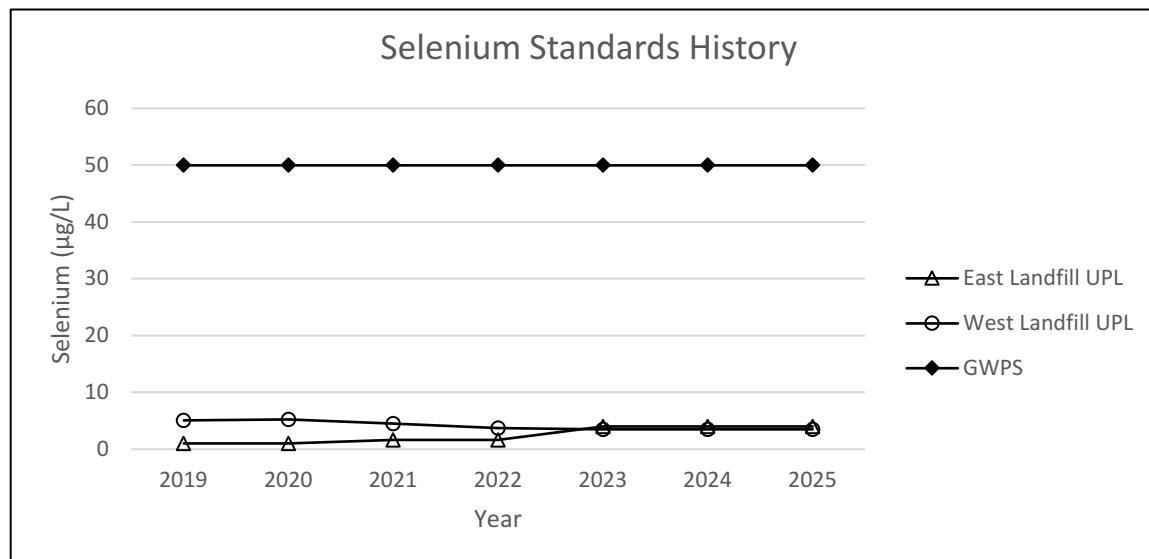
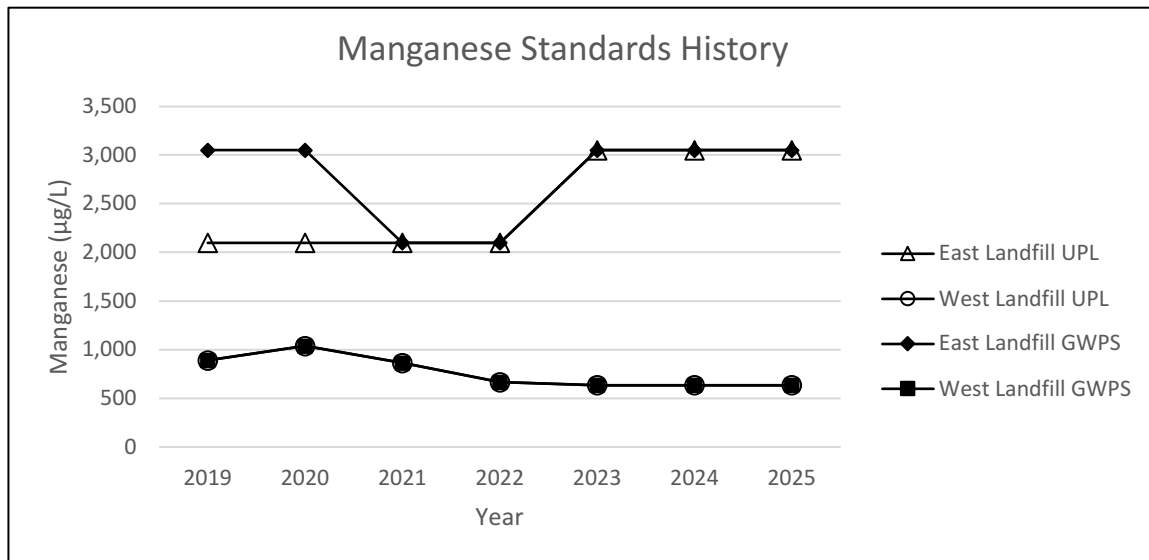
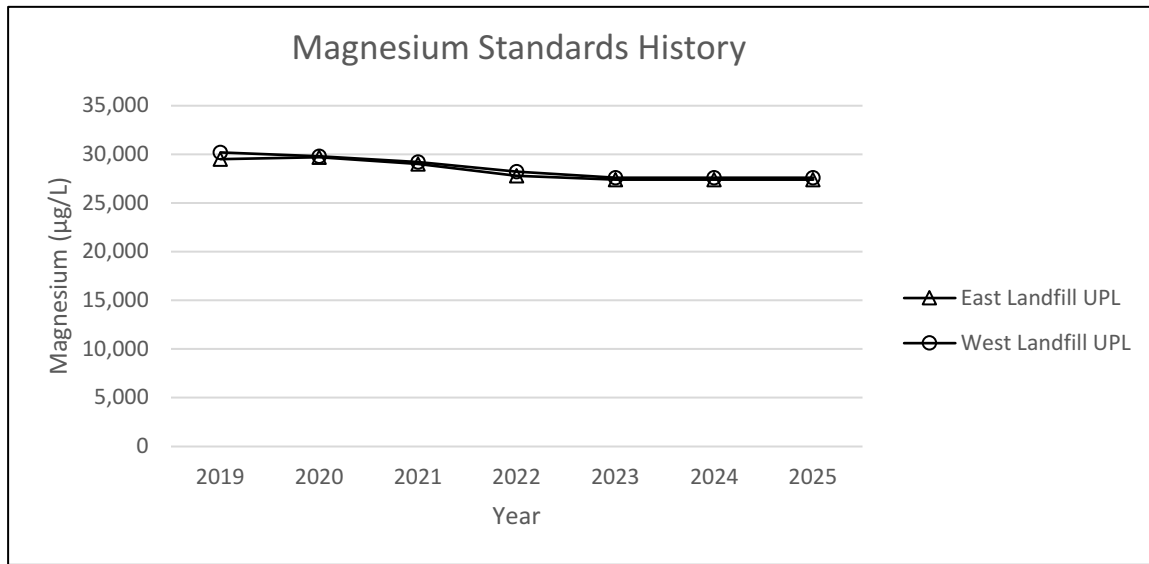
Marshalltown East and West Closed Landfills, Permit #64-SDP-5-91C and #64-SDP-3-90C  
Standards History Graphs



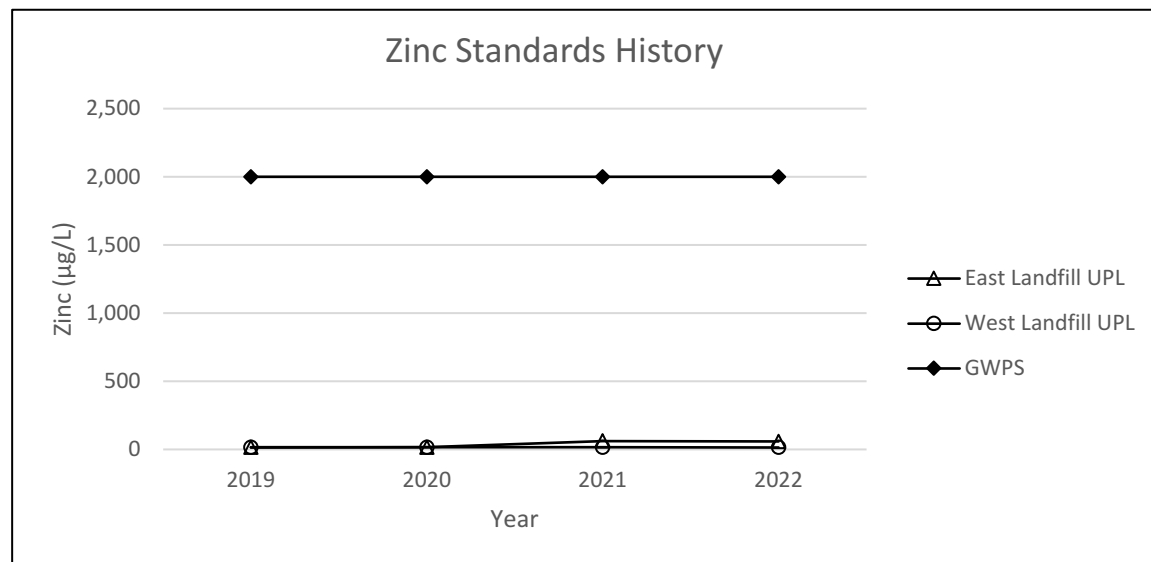
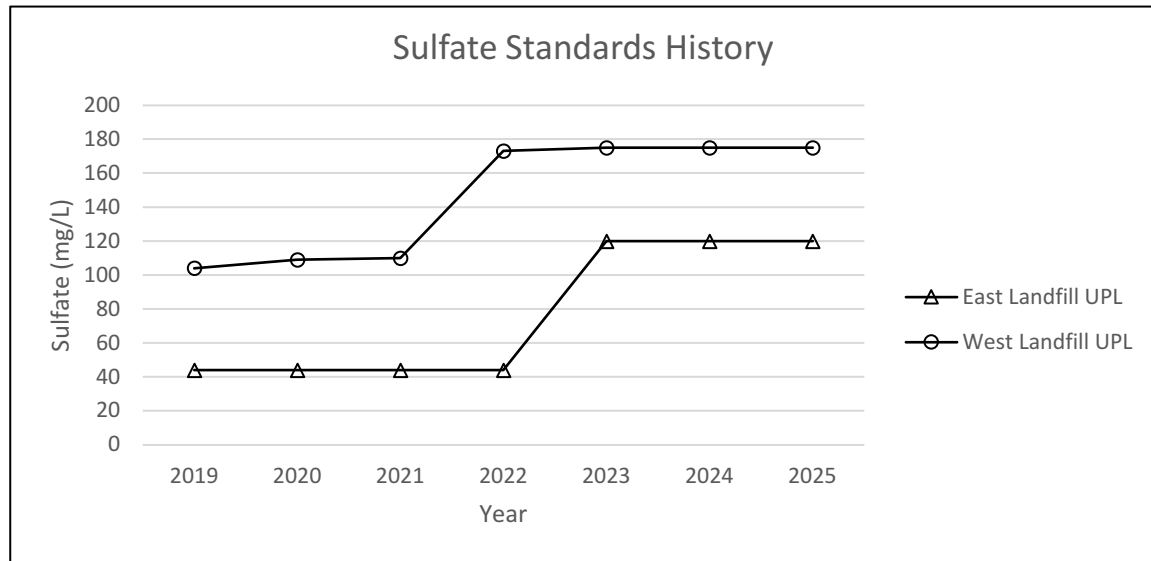
Marshalltown East and West Closed Landfills, Permit #64-SDP-5-91C and #64-SDP-3-90C  
Standards History Graphs



Marshalltown East and West Closed Landfills, Permit #64-SDP-5-91C and #64-SDP-3-90C  
Standards History Graphs



Marshalltown East and West Closed Landfills, Permit #64-SDP-5-91C and #64-SDP-3-90C  
Standards History Graphs





## Appendix G

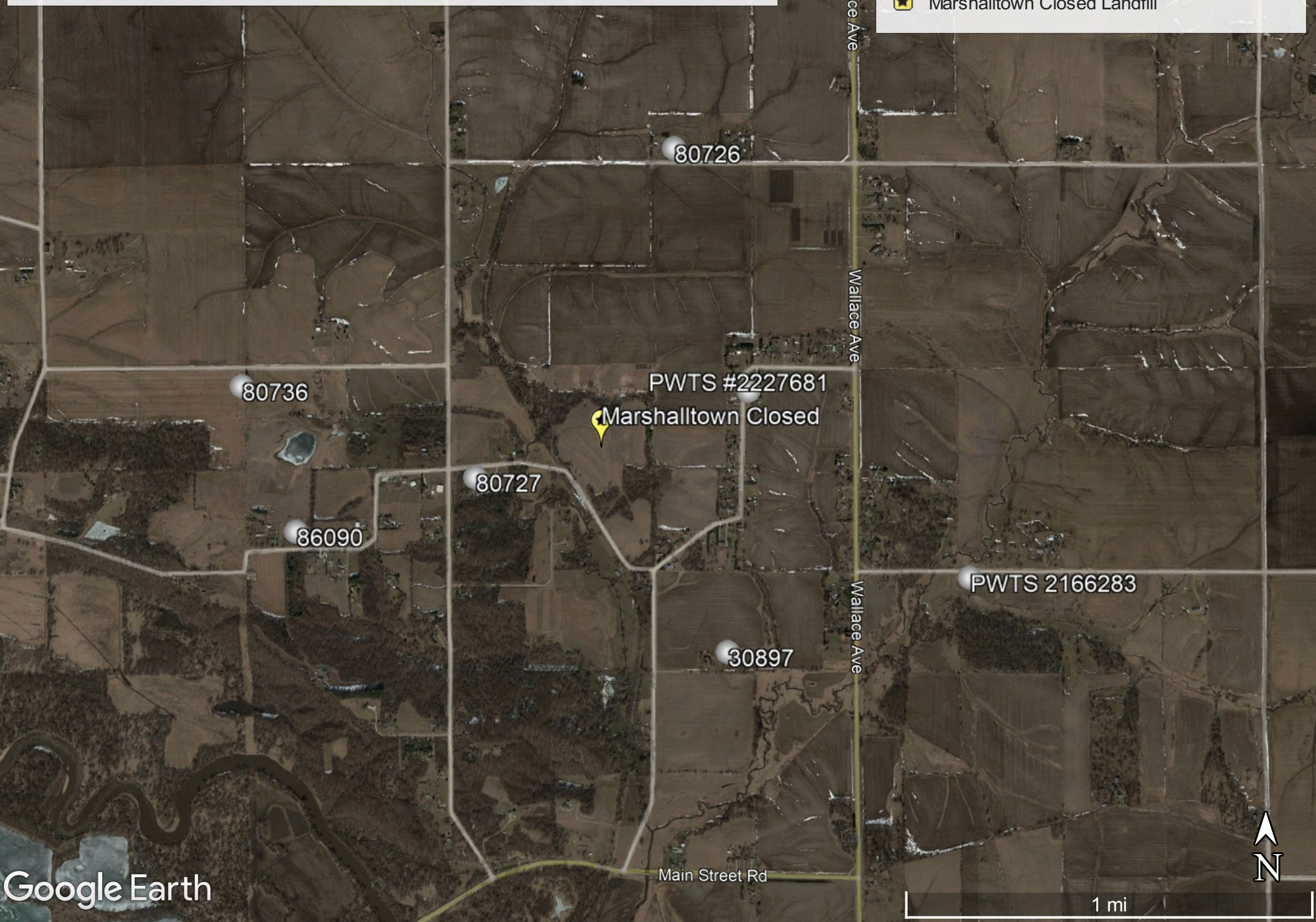
### Receptor Survey

# Marshalltown Closed Landfill 2024 Receptor Survey

GeoSAM and PWTS Wells Within 1 Mile of Site, Excluding Plugged Wells

## Legend

- GeoSAM or PWTS Well Within 1 Mile of Site
- Marshalltown Closed Landfill



**GeoSAM Search Results, Wells Within 1 Mile of Marshalltown Closed Landfill, October 2024**

|                   |                                                                                                                                                       |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>wnumber</b>    | <b>3521</b>                                                                                                                                           | <b>20901</b>                                                                                                                                            | <b>30897</b>                                                                                                                                            | <b>80726</b>                                                                                                                                            | <b>80727</b>                                                                                                                                            | <b>80736</b>                                                                                                                                            | <b>81172</b>                                                                                                                                            | <b>86090</b>                                                                                                                                            |
| <b>FID</b>        | 3487                                                                                                                                                  | 18131                                                                                                                                                   | 28485                                                                                                                                                   | 77548                                                                                                                                                   | 77550                                                                                                                                                   | 77569                                                                                                                                                   | 77818                                                                                                                                                   | 80819                                                                                                                                                   |
| <b>owner_name</b> | Jenkins, Ralph                                                                                                                                        | Reece, Floyd                                                                                                                                            | Thurston, George                                                                                                                                        | Hilsabeck, Bob                                                                                                                                          | Huff, Van                                                                                                                                               | Buffington, Richard                                                                                                                                     | Hansen, Harry                                                                                                                                           | Peterson, I.A.                                                                                                                                          |
| <b>alt_name</b>   | ROHWEDER, A.<br>(T)                                                                                                                                   |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |
| <b>pwts_id</b>    | 0                                                                                                                                                     | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       |
| <b>project</b>    | Unknown                                                                                                                                               | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 | Geologic Data Preservation                                                                                                                              | Geologic Data Preservation                                                                                                                              | Geologic Data Preservation                                                                                                                              | Geologic Data Preservation                                                                                                                              |                                                                                                                                                         |
| <b>operator</b>   | Unknown                                                                                                                                               | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |
| <b>county</b>     | Marshall                                                                                                                                              | Marshall                                                                                                                                                | Marshall                                                                                                                                                | Marshall                                                                                                                                                | Marshall                                                                                                                                                | Marshall                                                                                                                                                | Marshall                                                                                                                                                | Marshall                                                                                                                                                |
| <b>quad</b>       | Le Grand, Iowa                                                                                                                                        | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          | Le Grand, Iowa                                                                                                                                          |
| <b>township</b>   | T84N                                                                                                                                                  | T84N                                                                                                                                                    | T84N                                                                                                                                                    | T84N                                                                                                                                                    | T84N                                                                                                                                                    | T84N                                                                                                                                                    | T84N                                                                                                                                                    | T84N                                                                                                                                                    |
| <b>range</b>      | R17W                                                                                                                                                  | R17W                                                                                                                                                    | R17W                                                                                                                                                    | R17W                                                                                                                                                    | R17W                                                                                                                                                    | R17W                                                                                                                                                    | R17W                                                                                                                                                    | R17W                                                                                                                                                    |
| <b>section</b>    | 21                                                                                                                                                    | 28                                                                                                                                                      | 28                                                                                                                                                      | 16                                                                                                                                                      | 21                                                                                                                                                      | 20                                                                                                                                                      | 22                                                                                                                                                      | 20                                                                                                                                                      |
| <b>quarter</b>    | NE SE SE                                                                                                                                              |                                                                                                                                                         | NE NW SE                                                                                                                                                | SW SE                                                                                                                                                   | SW SW                                                                                                                                                   | SW NE                                                                                                                                                   | SW SW NW SW                                                                                                                                             | SE SW SE                                                                                                                                                |
| <b>latitude</b>   | 42.072025                                                                                                                                             | 42.056551                                                                                                                                               | 42.061107                                                                                                                                               | 42.079012                                                                                                                                               | 42.067327                                                                                                                                               | 42.070563                                                                                                                                               | 42.067532                                                                                                                                               | 42.065423                                                                                                                                               |
| <b>longitude</b>  | -92.826153                                                                                                                                            | -92.83444                                                                                                                                               | -92.830902                                                                                                                                              | -92.83348                                                                                                                                               | -92.842994                                                                                                                                              | -92.854114                                                                                                                                              | -92.823771                                                                                                                                              | -92.851466                                                                                                                                              |
| <b>ll_acc</b>     | Calc. +/- 470 ft.                                                                                                                                     | Calc. +/- 3730 ft.                                                                                                                                      | Calc. +/- 470 ft.                                                                                                                                       | Calc. +/- 930 ft.                                                                                                                                       | Calc. +/- 930 ft.                                                                                                                                       | Calc. +/- 930 ft.                                                                                                                                       | Calc. +/- 930 ft.                                                                                                                                       | Calc. +/- 470 ft.                                                                                                                                       |
| <b>utm_x</b>      | 514381                                                                                                                                                | 513699                                                                                                                                                  | 513991                                                                                                                                                  | 513774                                                                                                                                                  | 512989                                                                                                                                                  | 512069                                                                                                                                                  | 514579                                                                                                                                                  | 512289                                                                                                                                                  |
| <b>utm_y</b>      | 4657788                                                                                                                                               | 4656068                                                                                                                                                 | 4656575                                                                                                                                                 | 4658562                                                                                                                                                 | 4657263                                                                                                                                                 | 4657621                                                                                                                                                 | 4657289                                                                                                                                                 | 4657051                                                                                                                                                 |
| <b>elevation</b>  | 960                                                                                                                                                   | 862                                                                                                                                                     | 902                                                                                                                                                     | 946                                                                                                                                                     | 924                                                                                                                                                     | 972                                                                                                                                                     | 961                                                                                                                                                     | 1011                                                                                                                                                    |
| <b>elev_acc</b>   | Unknown                                                                                                                                               | Digital Elevation Model Accurate to 5 ft                                                                                                                | Altimeter Accurate to 5 ft                                                                                                                              | Digital Elevation Model Accurate to 10 ft                                                                                                               | Digital Elevation Model Accurate to 10 ft                                                                                                               | Digital Elevation Model Accurate to 10 ft                                                                                                               | Digital Elevation Model Accurate to 10 ft                                                                                                               | Topo Map Accurate to 2 ft                                                                                                                               |
| <b>field_loc</b>  | 0                                                                                                                                                     | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       |
| <b>site_type</b>  | Drilled hole                                                                                                                                          | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            | Drilled hole                                                                                                                                            |
| <b>position</b>   | Unknown                                                                                                                                               | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 | Upland                                                                                                                                                  | Unknown                                                                                                                                                 | Unknown                                                                                                                                                 |
| <b>dpth_br</b>    | 0                                                                                                                                                     | 23                                                                                                                                                      | 220                                                                                                                                                     | 55                                                                                                                                                      | 60                                                                                                                                                      | 0                                                                                                                                                       | 125                                                                                                                                                     | 291                                                                                                                                                     |
| <b>dpth_well</b>  | 645                                                                                                                                                   | 35                                                                                                                                                      | 436                                                                                                                                                     | 215                                                                                                                                                     | 85                                                                                                                                                      | 300                                                                                                                                                     | 233                                                                                                                                                     | 310                                                                                                                                                     |
| <b>dpth_tot</b>   | 645                                                                                                                                                   | 35                                                                                                                                                      | 436                                                                                                                                                     | 215                                                                                                                                                     | 85                                                                                                                                                      | 300                                                                                                                                                     | 233                                                                                                                                                     | 310                                                                                                                                                     |
| <b>drill_comp</b> | Hoeg & Ames (H.M. White)                                                                                                                              | Verwers Well Co.                                                                                                                                        | Shilhanek Well Drilling                                                                                                                                 | Hoeg & Ames (H.M. White)                                                                                                                                | Hoeg & Ames (H.M. White)                                                                                                                                | Hoeg & Ames (H.M. White)                                                                                                                                | Hoeg & Ames (H.M. White)                                                                                                                                | Shilhanek Well Drilling                                                                                                                                 |
| <b>icon</b>       | 3                                                                                                                                                     | 3                                                                                                                                                       | 3                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       |
| <b>drt_date</b>   | 31-Aug-48                                                                                                                                             | 8-Feb-68                                                                                                                                                | 10-Feb-41                                                                                                                                               | 20-Oct-80                                                                                                                                               | 13-Mar-78                                                                                                                                               | 2-Aug-79                                                                                                                                                | 4-May-70                                                                                                                                                | 13-Aug-41                                                                                                                                               |
| <b>aquifer</b>    |                                                                                                                                                       |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |
| <b>well_type</b>  | Private                                                                                                                                               | Private                                                                                                                                                 | Private                                                                                                                                                 | Private                                                                                                                                                 | Private                                                                                                                                                 | Private                                                                                                                                                 |                                                                                                                                                         |                                                                                                                                                         |
| <b>smpl_type</b>  | Chips                                                                                                                                                 | Chips                                                                                                                                                   |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |                                                                                                                                                         |
| <b>log_drlr</b>   | 1                                                                                                                                                     | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       | 1                                                                                                                                                       |
| <b>log_strp</b>   | 1                                                                                                                                                     | 1                                                                                                                                                       | 1                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       |
| <b>log_geop</b>   | 0                                                                                                                                                     | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       |
| <b>log_other</b>  | 0                                                                                                                                                     | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       | 0                                                                                                                                                       |
| <b>Hlink</b>      | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/3521/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/3521/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/20901/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/20901/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/30897/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/30897/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/80726/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/80726/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/80727/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/80727/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/80736/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/80736/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/81172/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/81172/general-information</a> | <a href="https://www.iihr.uiowa.edu/igs/geosam/well/86090/general-information">https://www.iihr.uiowa.edu/igs/geosam/well/86090/general-information</a> |
| <b>x</b>          | -10333360.08                                                                                                                                          | -10334282.59                                                                                                                                            | -10333888.74                                                                                                                                            | -10334175.72                                                                                                                                            | -10335234.82                                                                                                                                            | -10336472.69                                                                                                                                            | -10333094.92                                                                                                                                            | -10336177.91                                                                                                                                            |
| <b>y</b>          | 5171774.553095772                                                                                                                                     | 5169454.277317928                                                                                                                                       | 5170137.375906627                                                                                                                                       | 5172822.416299341                                                                                                                                       | 5171070.044                                                                                                                                             | 5171555.3067758465                                                                                                                                      | 5171100.784150807                                                                                                                                       | 5170784.535582815                                                                                                                                       |

### GeoSAM Search Results, Wells Within 1 Mile of Marshalltown Closed Landfill, October 2024

| PWTS ID                 | Permit # | Owner Name         | Other Name | Drill Date | Well Depth (ft) | PLSS           | Latitude | Longitude | Well Status |
|-------------------------|----------|--------------------|------------|------------|-----------------|----------------|----------|-----------|-------------|
| <a href="#">2227681</a> |          | roger<br>schroeder |            | 6/6/1972   | 175             | T84N R17 W S21 | 42.0704  | -92.82992 | Active      |
| 2166283                 | 38595    | rand pitkin        |            | 1/28/2013  | 196             | T84N R17 W S22 | 42.06375 | -92.81929 | Active      |