



2025 Annual Water Quality Report

**John Deere Dubuque Works Landfill
Dubuque, Iowa**

January 2026

Permit No. 31-SDP-01-75C

Prepared For:

John Deere Dubuque Works
Dubuque, Iowa

Prepared By:

TRC
999 Fourier Dr., Suite 101
Madison, Wisconsin 53717

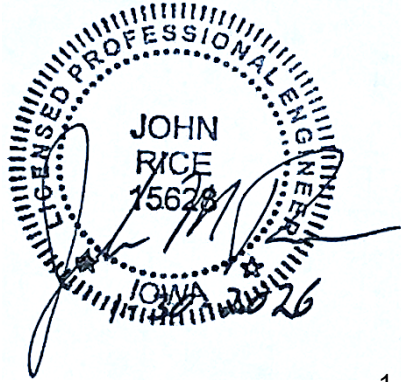
A handwritten signature in blue ink, reading "Erica Lawson".

Erica Lawson
Senior Project Manager

A handwritten signature in blue ink, reading "Lydia Auner".

Lydia Auner
Project Geologist

CERTIFICATION AND PROJECT SUMMARY

	I hereby certify that this engineering document was prepared by me, or under my direct supervision, and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.	
		
	John M. Rice, P.E.	1-30-2026 Date
	License number: <u>P15628</u>	
	My license renewal date is: <u>12/31/2026</u>	
Pages or sheets covered by this seal: <u>Entire document</u>		

Project title: 2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Dubuque, Iowa

Authorized contact: John Deere Dubuque Works
18600 South John Deere Road
Dubuque, Iowa 52001
James Hensley
Telephone: (563) 589-5998
E-mail: HensleyJamesM@JohnDeere.com

Consultant: TRC Environmental Corporation
999 Fourier Drive, Suite 101
Madison, Wisconsin 53717
Project Manager: Erica Lawson
Telephone: (608) 566-4957
E-mail: ELawson@trccompanies.com

Site location: North ½ of the Southwest ¼ of Section 27, Township 90
North, Range 2 East, Dubuque County, Iowa

EXECUTIVE SUMMARY

This 2025 Annual Water Quality Report (AWQR) was prepared by TRC Environmental Corporation (TRC) on behalf of the John Deere Dubuque Works (JDDW) industrial waste landfill in Dubuque, Iowa. The purpose of this report is to evaluate the effect of the facility on groundwater quality and describe the general post closure conditions of the landfill. The report is based upon the results of semiannual sampling, semiannual site inspections, and monthly leachate system monitoring. The annual leachate collection system performance evaluation (LCSPE) is included as a supplement to the AWQR.

Period of Report Coverage

This 2025 AWQR is for the period of November 2024 to October 2025. Semiannual groundwater and leachate sampling events occurred in April 2025 and October 2025. In addition, monthly leachate system monitoring occurred during the period of report coverage.

Report Priority

There are not currently any actions or activities on hold pending Iowa Department of Natural Resources (IDNR) review or comment.

Site Status and Applicable Rules

The JDDW industrial waste landfill is permanently closed and no longer receives waste. Landfill operations began in 1974 and the final cover construction was completed in 2012. The landfill waste stream consisted primarily of powerhouse ash generated by JDDW and the landfill was developed in two phases, which are identified as Stage 1 and Stage 2.

This AWQR was prepared in accordance with the requirements of Chapters 567 Iowa Administrative Code (IAC) 115.26(8)(d), 567 IAC 115.26(14), and the special requirements of the Closure Permit No. 31-SDP-01-75C, which was issued by the IDNR on May 24, 2012 and amended most recently on August 17, 2023 (IDNR, 2023).

Recent Changes to Groundwater and Leachate Monitoring

The following changes to the groundwater and leachate monitoring were implemented within the 2023 reporting period (refer to report text for further details):

- As required by the Closure Permit amendment dated August 17, 2023 (IDNR, 2023), additional parameters were added for groundwater monitoring starting in Fall 2023.
- The same additional parameters were also added for the leachate and underliner sampling starting in Fall 2023, following a request from the IDNR for the leachate to be sampled for the same parameters as the underliner and groundwater monitoring points in their response letter to the 2022 AWQR.
- Additional sample points for the leachate and underliner liquid were included starting in Fall 2023.
- Leachate system monitoring procedures were revised during 2023.

Past Changes to Report Format and Statistical Methods

Starting with the 2021 AWQR, the statistical methods for evaluating groundwater results were revised and the report format was updated, as requested by the IDNR. Due to the updated statistical methods, the municipal landfill report template was used; however, some adjustments were made to the report format based on the site-specific monitoring plan and permit requirements.

TABLE OF CONTENTS

CERTIFICATION AND PROJECT SUMMARY	i
EXECUTIVE SUMMARY	ii
ACRONYMS AND ABBREVIATIONS	vi
1.0 SITE BACKGROUND AND MONITORING PROGRAM	1
1.1 Site Location and Facility Information	1
1.2 Hydrogeology and Monitoring Well Network	1
1.2.1 Monitoring Well Top of Casing Elevations	1
1.3 Groundwater Monitoring Program	2
1.4 Leachate Collection System Overview	3
1.5 Leachate and Underliner Sampling	3
2.0 SITE INSPECTION AND SURFACE WATER QUALITY	4
2.1 Current Site Conditions	4
2.2 Potential Impacts on Surface Water	4
3.0 MONITORING WELL PERFORMANCE EVALUATION	5
3.1 Water Levels and Flow Direction	5
3.2 Well Depths	5
3.3 Recharge Rates	5
3.4 Conclusions	6
4.0 GROUNDWATER MONITORING STAGES AND STATISTICAL METHODS	7
4.1 Background Levels and Identification of SSIs	7
4.2 Groundwater Protection Standards and Identification of SSLs	8
5.0 LEACHATE COLLECTION SYSTEM PERFORMANCE EVALUATION	9
5.1 Monthly Monitoring Procedures	9
5.2 System Conditions	9
5.3 System Maintenance	10
5.4 System Monitoring Results	10
5.5 Conclusions and Recommendations	11
6.0 GROUNDWATER AND LEACHATE SYSTEM SAMPLING AND RESULTS	12
6.1 Groundwater and Leachate Sampling	12
6.2 Quality Assurance/Quality Control Summary	12
6.2.1 Turbidity	12
6.3 Groundwater Results	13
6.3.1 Exceedances of Background Without Immediately Preceding SSIs	13
6.3.2 SSIs	13
6.3.3 SSLs	13
6.3.4 Phenols and VOCs	13
6.3.5 Parameters Added in October 2023	14
6.4 Discussion of Leachate, Underliner, and Groundwater Results	14
6.5 Conclusions and Recommendations	15
7.0 REFERENCES	16

TABLES

Table 1:	Monitoring Program Summary
Table 2:	Monitoring Program Implementation Schedule
Table 3:	Monitoring Well Maintenance and Performance Reevaluation Schedule
Table 4a:	Monitoring Well Maintenance and Performance Summary
Table 4b:	Monthly Groundwater Elevation Measurements
Table 5:	Background and GWPS Summary
Table 6:	Summary of Detections with No Immediately Preceding SSIs
Table 7:	Summary of Ongoing and Newly Identified SSIs
Table 8:	Summary of Ongoing and Newly Identified SSLs (Not Applicable)
Table 9a:	MW-1 Groundwater Monitoring Results
Table 9b:	MW-2 Groundwater Monitoring Results
Table 9c:	MW-3 Groundwater Monitoring Results
Table 9d:	Underliner Monitoring Results
Table 9e:	Combined Leachate Monitoring Results
Table 9f:	2025 Monitoring Results
Table 10:	Historic SSI and SSL since January 1, 2021
Table 11:	Corrective Action Trend Analysis (Not Applicable)
Table 12:	Leachate Management Summary
Table 13:	Gas Monitoring Summary (Not Applicable)

FIGURES

Figure 1:	Site Location Map
Figure 2:	Potentiometric Surface Map – April 2025
Figure 3:	Potentiometric Surface Map – October 2025

APPENDICES

Appendix A:	Correspondence
Appendix B:	Field Notes
Appendix C:	Background Levels
Appendix D:	Laboratory Reports
Appendix E:	Groundwater Results Graphs
Appendix F:	Data Validation
Appendix G:	Leachate Collection System Evaluation Graphs

ACRONYMS AND ABBREVIATIONS

AWQR	Annual Water Quality Report
GWPS	Groundwater protection standard
HMSP	Hydrologic Monitoring System Plan
IAC	Iowa Administrative Code
IDNR	Iowa Department of Natural Resources
JDDW	John Deere Dubuque Works
MCL	USEPA Maximum Contaminant Level
RCRA	Resource Conservation and Recovery Act
RL	Reporting limit
SSI	Statistically significant increase above background
SSL	Statistically significant level above groundwater protection standard
USEPA	United States Environmental Protection Agency

1.0 Site Background and Monitoring Program

1.1 Site Location and Facility Information

The JDDW industrial waste landfill covers approximately 12 acres and is located in the North $\frac{1}{2}$ of the Southwest $\frac{1}{4}$ of Section 27, Township 90 North, Range 2 East in Dubuque County, Iowa (Figure 1). The facility began operations in 1974 and is owned and operated by JDDW. The landfill was developed in two phases, which are identified as Stage 1 and Stage 2. The landfill waste stream consisted primarily of powerhouse ash generated by JDDW. The landfill is permanently closed and no longer receives waste, with the final cover construction completed in 2012.

1.2 Hydrogeology and Monitoring Well Network

A hydrogeologic investigation report titled "Hydrogeologic Investigation at the John Deere Dubuque Works Sanitary Landfill" was prepared in February 1990 by James Montgomery Associates (JMA) (JMA, 1990). Select descriptions of the site geology from the hydrogeologic investigation report are provided below:

"...the upland area is covered with silty clay material approximately 18 feet thick. This layer thins to the southwest where only three feet of cover material is found. Underlying the silty clay material are carbonate rocks of Ordovician age..."

"The uppermost bedrock unit at the landfill site is the Ordovician-aged Galena Group of the Decorah Formation. This unit is composed of uniformly bedded carbonate rocks (limestones and dolomites) and is the principal source of potable water in the area."

The approved groundwater monitoring well network at the JDDW closed industrial waste landfill consists of one upgradient groundwater monitoring well (MW-1) and two downgradient wells (MW-2 and MW-3), as shown on Figure 2. The wells were installed in 1989 and the boring logs and well construction forms are included in Appendices B and C, respectively, of the hydrogeologic investigation report (JMA, 1990) (see discussion of top of casing elevations below). The wells were originally referred to as piezometers named PZ-1, PZ-2, and PZ-3.

Based on the boring logs, the monitoring wells are installed in bedrock described as dolomite with increasing shale content with depth. The wells are installed to total depths of approximately 124 to 196 feet below ground surface and are constructed with 30-foot screens. The well screens are fully submerged; groundwater elevations are typically at least 15 feet higher than the top of screen elevations based on measurements collected since 1991. A slug test was performed for MW-1 (referred to as PZ-1 at the time), and the hydraulic conductivity calculated from the slug test was 5.76×10^{-6} feet per second (JMA, 1990).

1.2.1 Monitoring Well Top of Casing Elevations

The monitoring wells were resurveyed during Fall 2023, as reported and discussed in the 2023 AWQR. The elevations from the Fall 2023 survey are used in this report. In addition, it has been assumed that the total depths of the monitoring wells are the same as the depths used prior to the Fall 2023 resurvey.

The top of casing elevations used prior to the Fall 2023 survey differed from those on the well construction forms included in the hydrogeologic investigation report due to (1) a reduction in top of casing elevation by 0.02 ft for each well when the dedicated pumps were removed in early October 2017, and (2) different top of casing elevations noted for MW-2 between different sources of information. Prior to the October 2017 removal of the dedicated pumps, a top of casing elevation of 848.77 feet was used for calculating the groundwater elevations for MW-2, consistent with the well diagrams included in previous AWQRs at least as early as 1995. However, the top of casing elevation for MW-2 was noted as 848.78 feet on Table 2-1 of the hydrogeologic investigation report, and as 848.98 feet on the well construction form included in the hydrogeologic investigation report.

1.3 Groundwater Monitoring Program

Groundwater monitoring is performed in accordance with the revised Closure Permit (IDNR, 2023), which was most recently amended on August 17, 2023 to include supplemental sampling and analysis of monitoring points MW-1, MW-2, and MW-3 for additional parameters (sulfate, total dissolved solids [TDS], total boron, total calcium, total lithium, and total molybdenum). The groundwater monitoring program is summarized in the table below. The monitoring program is described in more detail in the Hydrologic Monitoring System Plan (HMSP), which was updated in April 2024 (TRC, 2024). An overview of the monitoring program is provided in Table 1, and the monitoring program implementation schedule is summarized in Table 2.

JDDW Landfill Groundwater Monitoring Program

Semi-Annual (April and October)		
pH	Nitrates, as Nitrogen	Barium (total) ⁽¹⁾
Conductivity	Ammonia, as Nitrogen	Iron (total) ⁽¹⁾
Temperature	Fluoride	Magnesium (total) ⁽¹⁾
Color	Chloride	Boron (total) ⁽⁴⁾
Odor	Chemical Oxygen Demand	Calcium (total) ⁽⁴⁾
Turbidity (visual and measured) ⁽²⁾	Sulfate ⁽⁴⁾	Lithium (total) ⁽⁴⁾
	Total Dissolved Solids (TDS) ⁽⁴⁾	Molybdenum (total) ⁽⁴⁾
Annual (October)		
Total phenols		
Every 5 Years (October 2018, 2023, etc.)		
Volatile Organic Compounds (VOCs) ⁽³⁾		

Notes:

- ⁽¹⁾ The analysis of metals (barium, iron, and magnesium) at the site historically included only dissolved-phase concentrations. Following review of the 2016 AWQR, the IDNR requested that JDDW test for total (unfiltered) metals rather than dissolved (filtered) metals. Analysis of total metals began in October 2017. In May 2018, the IDNR approved the variance requested for the analysis of total metals instead of dissolved metals. Because trends in groundwater quality had been primarily based on dissolved metals, JDDW continued to collect both filtered and unfiltered samples until a statistically significant correlation was determined between these two data sets in October 2019. The collection of dissolved (filtered) metals samples was discontinued after the October 2019 sampling event. As of the 2019 AWQR, background levels for metals have been calculated based on total metals results.
- ⁽²⁾ The April 2024 HMSP was updated to include measured values for turbidity, as requested by the IDNR in their review of the 2020 AWQR.
- ⁽³⁾ Annual sampling for Total Organic Halogens (TOX) was previously completed for the landfill. In May 2018, IDNR approved removing TOX from the sampling program, and replacing TOX with analysis for VOCs every 5 years.
- ⁽⁴⁾ Parameter added starting in Fall 2023 based on the revised Closure Permit (IDNR, 2023).

1.4 Leachate Collection System Overview

The leachate collection system consists of leachate collection piping and a 10,000-gallon underground leachate collection tank. The piping includes an 8-inch-diameter vertical perforated standpipe surrounded by crushed rock located within Stage 1 and a similar standpipe design in Stage 2. Each standpipe functions as a leachate collection well and is connected to a separate, solid 4-inch-diameter gravity drain line that discharges to the leachate collection tank. In addition, a 4-inch-diameter perforated underliner gravity drain pipe is laid within the underliner (one pipe for each stage) and is connected to a solid pipe that conveys liquid collected within the underliner to the leachate collection tank. The leachate drain lines drain freely while the leachate collection system wet valves are open, as during typical operation of the leachate collection system. The underliner drain lines were designed to drain freely at all times as a secondary leachate collection system. The leachate collection tank contains a submersible pump that pumps leachate to the pond adjacent to building X-18 farther southeast of the landfill for discharge through NPDES Outfall #008 to the Little Maquoketa River.

1.5 Leachate and Underliner Sampling

Prior to Fall 2023, the semiannual sampling typically included one sample referred to as “Combined Leachate” collected from the leachate collection tank (which receives liquid from the leachate drain lines and underliner drain lines from Stages 1 and 2) and one sample from the Stage 1 underliner drain line (while the leachate drain valves are open, as during typical operating conditions), which has often been referred to previously as “Underliner.” The Stage 2 underliner drain line had not been sampled as there has been no record of flow observed from the line while the leachate valves are open (as during typical operation).

To better understand the composition of the leachate and underliner liquid from Stage 1 and Stage 2, TRC proposed to collect samples from additional sampling points starting in Fall 2023, which has been continued through 2025. The current sampling of leachate and underliner liquids includes the following:

- Stage 1 and Stage 2 leachate drain lines while the leachate drain valves are open (as during typical operating conditions)
- Stage 1 and Stage 2 underliner drain lines while the leachate drain valves are open, if flowing. (Note, the Stage 2 underliner drain line does not typically have flow while the leachate valves are open and has not been sampled.)
- Stage 1 and Stage 2 underliner drain lines after the leachate valves have been closed (which prevents leachate from draining via the leachate drain lines and allows leachate levels to back up into the standpipe within each stage).
- Liquid from the leachate collection tank, which receives liquid from the leachate drain lines and underliner drain lines from Stages 1 and 2. This sample is referred to as “Combined Leachate.”

The leachate and underliner liquid samples collected in 2025 were analyzed for the same parameters as the groundwater monitoring points. In their response letter to the 2022 AWQR, the IDNR requested that leachate be sampled for the same parameters as the underliner and groundwater monitoring points.

2.0 Site Inspection and Surface Water Quality

A documentation report titled “Closure Compliance Report” was submitted to the IDNR by IIW, P.C. on November 13, 2012 (IIW, 2012). On January 13, 2013, the IDNR approved the closure of the landfill. The final grades within the limits of the landfill were constructed per the requirements of the landfill closure plan. The final cover configuration includes a 2-foot thick compacted clay layer and a 2-foot thick cover soil layer to support vegetative growth. The final cover was designed to promote surface water runoff from the facility and to minimize infiltration through the cover.

2.1 Current Site Conditions

The semi-annual facility inspection reports for April and October 2025 are included in Appendix B. Inspection findings include the following:

- The landfill cover is in good condition and does not display significant signs of erosion or rutting. During the April and October inspections, small animal burrows were noted at various locations across the landfill cap.
- Standing water was not present during the April or October inspection.
- The fence and gates surrounding the landfill are in good working condition with a working lock and signs are present along the perimeter.
- The gravel road leading to the pump house is in good condition.
- The Stage 1 and Stage 2 leachate standpipe covers need to be replaced.

2.2 Potential Impacts on Surface Water

The closure permit for the landfill (no. 31-SDP-01-75C) does not require surface water monitoring to be performed¹. However, the permit does require that the final cover be maintained to minimize erosion, and that JDDW repair areas of erosion or damage (if any) to the cover that are noted during site inspections. Erosion was not observed during the April or October 2025 inspections.

¹ It is the understanding of TRC that JDDW completes monitoring for the entire facility in accordance with their storm water pollution prevention plan (SWPPP).

3.0 Monitoring Well Performance Evaluation

Monitoring well performance is evaluated in accordance with Chapter 567 IAC 115.21(2) and the revised Closure Permit (IDNR, 2023). This evaluation is intended to confirm that the site monitoring wells are adequately functioning and can provide data useable in assessing the groundwater flow and groundwater quality near the site.

The monitoring well maintenance and performance reevaluation schedule is summarized in Table 3.

3.1 Water Levels and Flow Direction

The revised Closure Permit (IDNR, 2023) Section X, Paragraph 4, Item I requires the collection of monthly water level measurements for each monitoring well. Additionally, Chapter 567 IAC 115.21(2)"a" and "b" require:

- 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.
- 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.

Groundwater elevations measured during the semiannual groundwater monitoring events are presented in Table 4a. Monthly groundwater elevations are provided in Table 4b. The groundwater elevations have remained above the screened portion of each monitoring well. Potentiometric contour maps based on groundwater elevations measured by TRC in April 2025 and October 2025 are shown on Figures 2 and 3, respectively. The direction of groundwater flow is toward the southeast from MW-1 to MW-2 and MW-3, which is consistent with previous observations.

3.2 Well Depths

Chapter 567 IAC 115.21(2)"c" requires annual measurement of well depths to ensure that wells are physically intact and not filling with sediment. Well depths were measured during the Spring and Fall 2025 monitoring events (Table 4a), and the depths were within the expected measurement tolerance given the depths of the wells.

3.3 Recharge Rates

In accordance with the variance granted December 20, 2021, the permit holder is authorized to evaluate well recharge rates (i.e., low flow purge rates during groundwater sampling) in lieu of the in-situ permeability testing required by 567 IAC 115.21(2)"d" to determine if well deterioration is occurring.

Low flow purge rates were documented in the field notes during both semiannual sampling events (Appendix B). Low flow sampling methods were first implemented in October 2017 following the removal of dedicated pumps from the monitoring wells. The purge rates from October 2025 are

compared to baseline purge rates from October 2017 in Table 4a. The October 2025 purge rates are consistent with proper well function.

3.4 Conclusions

Based on this evaluation, the monitoring well network is performing adequately and can provide data usable in assessing the groundwater flow and groundwater quality near the site. No changes are recommended for the monitoring well network.

4.0 Groundwater Monitoring Stages and Statistical Methods

Historically, groundwater results from the downgradient wells were compared to upper control limits calculated as the mean plus two standard deviations of the upgradient (background) well results, as required by the closure permit (Section X, Paragraph 4[n]) and specified in 567 IAC 115.26(6)².

Although the control limit calculation methods are still specified in the closure permit and 567 IAC 115, the IDNR recommended in their 2020 AWQR response letter that “more aggressive statistics” be implemented to evaluate the groundwater results. For statistical method examples, the IDNR letter referred to the U.S. Environmental Protection Agency Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (USEPA, 2009) and the municipal solid waste regulations under IAC 567—113.10(455B).

The USEPA Unified Guidance provides statistical methods for the following stages of monitoring: detection monitoring, assessment monitoring, and corrective action monitoring. During detection monitoring, if at least one parameter indicates a statistically significant increase (SSI) above background levels, the facility moves into compliance/assessment monitoring. Compliance/assessment monitoring is intended to assess the extent of contamination and evaluate compliance with groundwater protection standards (GWPS). If groundwater results indicate a statistically significant level (SSL) above a GWPS, the facility is subject to corrective action and monitoring is used to track the progress of remedial activities.

As of the 2021 AWQR, the evaluation of groundwater results at this site was revised to follow the stages of monitoring outlined in the USEPA Unified Guidance. Additionally, the statistical methods used for establishing background levels were updated starting with the 2021 Annual Report, as described below. Background levels and groundwater protection standards (GWPS) are presented in Table 5.

4.1 Background Levels and Identification of SSIs

The background levels used for this 2025 Annual Report are based on groundwater results through October 2024, as described below and documented in Appendix C. Interwell background levels were developed based on the groundwater results from upgradient well MW-1. The USEPA Unified Guidance recommends using a minimum of 8 to 10 independent background samples temporarily until additional background sampling can be conducted and provides an overall recommendation to establish background sample sizes as large as feasible (USEPA, 2009). For most parameters, the most recent 20 results as of October 2024 were used to evaluate background levels. For metals, all available total metals results as of October 2024 were used, amounting to 15 rounds. The methods used to calculate background levels are noted in Table 5 and detailed documentation of the background level evaluation is provided in Appendix C. These background levels will be updated for the 2027 Annual Report, after two years of use. Background levels will be established for the new parameters added in Fall 2023 once a minimum of 8 to 10 independent background sample results are available, per the USEPA Unified Guidance (USEPA, 2009).

² Field measurements of pH were compared to both upper and lower control limits, calculated as the mean plus or minus two standard deviations, respectively, of the upgradient well measurements.

The background levels are used for direct comparison of the results from the two downgradient monitoring wells (MW-2 and MW-3). If a downgradient result exceeds the background value, resampling may be conducted to confirm the exceedance as a statistically significant increase (SSI) above background. The proposed resampling scheme is a 1-of-2 plan, meaning that a groundwater result above background will qualify as an SSI if the next sample result also exceeds the background level. If the resampling result is below the background level, the original exceedance of background is not considered an SSI. If the downgradient result exceeding the background value is within its normal range, resampling is not required. Per a conversation with the IDNR in December 2021, if the result exceeding background is suspected to be due to sampling error or lab error, resampling must be conducted within 90 days of the original sampling. If the exceedance is not thought to be due to such an error, the result from the next semiannual sampling event may be used to confirm or disconfirm the exceedance as an SSI.

4.2 Groundwater Protection Standards and Identification of SSLs

The groundwater protection standards applicable to the site are MCLs, if established, or Iowa's statewide standards for protected groundwater sources. GWPS are established for seven constituents in the current monitoring program: fluoride, ammonia, nitrate, barium, lithium, molybdenum, and boron. The GWPS for these constituents are summarized in Table 5 and are greater than the background levels for the parameters with established background levels. Graphs of the background levels and groundwater protection standards are provided in Appendix C for the parameters with established background levels.

If an SSI is identified for a constituent for which a GWPS is established, additional evaluation must be conducted to determine whether the constituent is detected at a statistically significant level (SSL) above the GWPS. If no individual results for that constituent and well exceed the GWPS, then further statistical evaluation is not required. If at least one individual result exceeds the GWPS, the lower confidence limit of the data must be calculated and compared to the GWPS. If the lower confidence limit of the result is greater than the GWPS, the result is considered to be an SSL and the facility may be subject to corrective action.

5.0 Leachate Collection System Performance Evaluation

5.1 Monthly Monitoring Procedures

Origin Design (formerly known as IIW, P.C.) of Dubuque, Iowa completes monthly monitoring of the landfill's leachate collection system, including measurements of leachate discharge volume, flow rates, and leachate levels in the Stage 1 and Stage 2 leachate standpipes.

During the 2023 reporting period, TRC worked with Origin Design to gain a better understanding of the leachate collection system maintenance and monthly monitoring procedures performed. As a result, several changes were made to the monthly leachate collection system monitoring protocols and data collection during the 2023 reporting period, as summarized below:

- **Leachate levels in standpipes**
 - The leachate standpipes are an extension of the leachate collection system and are not able to be used for measuring the head of leachate on the liner. When the leachate valves are turned off and leachate is allowed to back up in the standpipes and levels equilibrate, the elevation of the leachate in the standpipe is understood to reflect the elevation of the saturated waste and is now recorded as such on the monthly monitoring forms. (These measurements were previously recorded as leachate elevations and were used to calculate reported head on liner, but they do not actually represent the leachate head on the liner.)
 - It was recommended that the leachate valves be turned off the day prior to measuring the leachate levels in the standpipes ("elevation of saturated waste" measurements) to allow sufficient time for levels to equilibrate. In addition, it was recommended that equilibration of the leachate levels be confirmed prior to recording a measurement. These changes were implemented by July 2023.
- **Underliner flow rates:** Starting in June 2023, monthly flow measurements were also made for the underliner drain line flow rates in Stage 1 and Stage 2, both while the leachate valves were open and after they had been closed the day prior.

5.2 System Conditions

Existing known issues with the leachate collection system include:

- A blockage is present within the Stage 1 standpipe at a depth of approximately 80-81 feet below the top of the standpipe. Based on televising of the standpipe performed on April 11, 2023, by Superior Jetting, Inc., the blockage appeared to be gravel, which is thought to be gravel used as the gravel pack around the standpipe, presumably which has entered the standpipe by way of a breach in the standpipe. Future jetting of the Stage 1 standpipe is not recommended due to this potential for additional damage to occur to the standpipe.
- "Debris or damaged pipe" was noted in the Stage 1 leachate drain line during the video inspection on April 11, 2023.

5.3 System Maintenance

Leachate collection system maintenance performed during the 2025 reporting period is summarized below. Televising was not performed during the 2025 reporting period.

- February 2, 2025: The leachate discharge pump stopped working on February 2, 2025. While the pump was not operating, leachate continued to be collected from the landfill into the leachate collection tank but could not be discharged to the outfall. During this time, an estimated volume of 99,550 gallons of leachate was pumped from the leachate tank and trucked to John Deere's industrial wastewater treatment plant in March 2025. A new pump was installed and began operating on April 4, 2025.
- April 14, 2025: Jetting of the Stage 1 and Stage 2 leachate drains and underliner drains and the Stage 2 standpipe.

5.4 System Monitoring Results

The monthly elevations of saturated waste, leachate drain line flow rates, and underliner drain line flow rates are summarized in Table 12. The leachate monitoring data is also presented with the total monthly precipitation on the graphs in Appendix G.

The monthly volume of leachate pumped to the NPDES Outfall #008 is summarized in Table 12. A total of approximately 1,642,146 gallons were discharged between October 2024 and October 2025, which equates to an annual average discharge rate of approximately 3 gpm. Additionally, an estimated volume of 99,550 gallons of leachate was trucked to John Deere's industrial wastewater treatment plant in March 2025, while the leachate discharge pump was not operating.

The elevation of saturated waste in Stage 1 was generally stable throughout the monitoring period. The Stage 1 leachate flow rate was also relatively stable during the monitoring period. The Stage 1 underliner flow rate while the leachate drain valves were open was consistently low (less than 0.2 gpm). The Stage 1 underliner flow rate when the valves were closed was similarly low during some months (February through June) and higher during other months.

The elevation of saturated waste measurements for Stage 2 fluctuated throughout the year and did not appear to correlate with precipitation. The Stage 2 leachate flow rates were fairly consistent during the monitoring period and also do not appear to correlate with precipitation. Consistent with previous observations, the Stage 2 underliner drain line did not have any observed flow while the leachate drain valve was open (as during normal operating conditions), but did have flow when the leachate valve was closed. The Stage 2 underliner flow rates measured when the leachate valve was closed were similar to the leachate flow rates. The presence of flow in the underliner drain line only when the leachate valve is closed may indicate a connection between the underdrain and leachate collection system. However, regardless of the valve setting, it appears that both leachate and underliner liquid are being effectively collected. Note that the leachate valves are typically open during normal operating conditions, and the underliner drain lines were designed to be a secondary leachate collection system for the landfill.

The leachate flow measurements from both Stage 1 and Stage 2 show that during normal operating conditions (where the leachate valves are open, allowing leachate to drain), leachate is draining and minimal or no flow occurs from the underliner drain, indicating that the system is operating as designed.

5.5 Conclusions and Recommendations

Based on the results of current and historical studies and monthly system monitoring, the leachate collection system meets the requirements in the facility closure permit and 567 IAC 115.26 (12)(b)(2).

Video inspection (televising) of the Stage 1 and Stage 2 standpipes is recommended to be completed as needed, e.g., if repeated monthly measurements indicate potential debris or blockages, to identify potential blockages and/or structural issues. Televising of the remainder of the system (leachate drain lines and underliner drain lines) and jetting is also recommended as needed, such as if video inspection or field observations indicate debris or blockages, or if flow rates decrease significantly and are suspected to be due to blockages. However, jetting is not recommended for the Stage 1 standpipe due to the potential that additional jetting may impact the structural integrity of the standpipe.

6.0 Groundwater and Leachate System Sampling and Results

6.1 Groundwater and Leachate Sampling

Semiannual groundwater and leachate sampling was completed at the JDDW Landfill in the Spring and Fall of 2025 by TRC. The Spring sampling was completed during April 1 and 2, 2025, and the Fall sampling was completed during October 15 and 16, 2025. The groundwater and leachate sampling forms for both semiannual sampling events are included in Appendix B. Samples were analyzed by Eurofins Cedar Falls. The laboratory reports are included in Appendix D. Summary tables of results for each monitoring point sampled historically are included in Tables 9a through 9e, and a summary of the results from 2025 is included in Table 9f. Graphs of the groundwater results for the historical parameters are included in Appendix E.

6.2 Quality Assurance/Quality Control Summary

TRC completed a limited data validation of the laboratory results for the groundwater samples, leachate samples, and equipment blanks collected during the semiannual sampling events. The data were found to be usable with qualification, as described in the data validation reviews (Appendix F).

Samples collected for quality assurance and quality control included one duplicate sample and one equipment blank for each semiannual sampling event. The April and October 2025 duplicate samples were collected from MW-2. An equipment blank was collected during both sampling events to assess whether pump decontamination procedures between wells was adequate. Target analytes were not detected in the equipment blank samples.

6.2.1 Turbidity

Following review of the 2020 AWQR, the IDNR requested that turbidity measurements be included in future reports and requested an evaluation of the effect that turbidity may have on metals results that exceed background. During both semiannual sampling events, turbidity measurements were made for each groundwater sample using a turbidity meter, and visual observations of turbidity were also recorded on the groundwater sampling field forms (Appendix B). No visual turbidity was observed for the groundwater samples collected in April or October 2025. Sample turbidity measurements from April and October 2025 indicated low turbidity values ranging from 1.8 to 18 nephelometric turbidity units (NTU).

The metals in the monitoring program with established background levels include total barium, total iron, and total magnesium. Of these constituents, only total magnesium in MW-3 has routinely been detected at concentrations greater than the background level. Given that the results for total and dissolved magnesium in MW-3 are generally similar, including during the five rounds of monitoring when both dissolved and total magnesium were analyzed, it is unlikely that turbidity has a significant effect on the magnesium results.

6.3 Groundwater Results

6.3.1 *Exceedances of Background Without Immediately Preceding SSIs*

There were two exceedances of background levels without immediately preceding SSIs during the reporting period: chloride and specific conductance in MW-2 in April 2025. The chloride background exceedance was confirmed as an SSI by the October 2025 sampling, but the specific conductance exceedance was not confirmed as an SSI as the October 2025 result was below the background level. Table 6 provides a summary of constituents detected or measured in the most recent sampling event (October 2025) that do not have immediately preceding SSIs.

6.3.2 *SSIs*

Table 7 summarizes the SSIs identified during the most recent sampling event (October 2025). A summary of the historic SSIs starting in 2021 is shown in Table 10. Due to the change in statistical methods starting with the 2021 AWQR, SSIs were not evaluated for prior to 2021. The SSIs identified in October 2025 include the following constituents:

- Chloride (MW-2 and MW-3)
- Nitrate (MW-2 and MW-3)
- Total magnesium (MW-3)
- Specific conductance (MW-3)

The concentrations of these constituents are generally consistent with results from recent years (see concentration vs. time graphs in Appendix E). Of the constituents with SSIs in 2025, only nitrate has an applicable health-based GWPS (MCL or statewide standard). The nitrate results do not exceed the health-based GWPS, so calculation of a lower confidence limit is not necessary. Due to the identified SSIs, wells MW-2 and MW-3 are still considered to be in assessment monitoring.

6.3.3 *SSLs*

No SSLs above GWPS were identified during the 2025 sampling events.

6.3.4 *Phenols and VOCs*

The Closure Permit requires annual sampling for total phenols and sampling every five years for VOCs.³ Samples were most recently collected for total phenols during the October 2025 event and for VOCs during the October 2023 event. Neither VOCs nor phenols were detected in the monitoring wells or in the leachate when sampled most recently. The absence of VOCs and phenols in groundwater and leachate continues to support the conceptual model that these are not constituents of concern from the waste disposed in the landfill.

³ VOCs were sampled for in 2023 and are due to be sampled again in 2028.

6.3.5 Parameters Added in October 2023

As discussed previously, the following parameters were added to the monitoring program in Fall 2023, as required by the updated Closure Permit (IDNR, 2023): sulfate, TDS, boron (total), calcium (total), lithium (total), and molybdenum (total). Groundwater sample results from the 2025 sampling are included in Table 9f along with the 2025 sample results from the leachate collection system and underliner drains. Groundwater results for these newer parameters were below the GWPS, where applicable. Sulfate, TDS, and calcium were detected in groundwater samples from each of the three monitoring wells. GWPS are not established for these parameters. Boron was detected in MW-3 at concentrations below the GWPS and was not detected in MW-1 or MW-2. Lithium and molybdenum were not detected in the groundwater samples. The concentrations of sulfate, TDS, and boron detected in MW-3 appear to be elevated relative to background (MW-1) concentrations.

6.4 Discussion of Leachate, Underliner, and Groundwater Results

A discussion of groundwater, leachate, and underliner results is provided below. The 2025 sample results for leachate, underliner, and groundwater are summarized in Table 9f.

The results for leachate and underliner samples collected from the same stage are generally similar for most parameters, which indicates that the underliner liquid from each stage is primarily composed of leachate from that stage. Additionally, the Stage 1 underliner sample results were generally similar for most parameters whether the leachate valves were open (allowing leachate to drain freely) or closed (causing leachate to back up in the collection system), indicating that the composition of the Stage 1 underliner liquid does not vary much based on whether the leachate is draining freely. Because the Stage 2 underliner drain typically does not have any flow during normal operating conditions (leachate valves open and leachate draining freely), the Stage 2 underliner has only been sampled after the leachate valves have been closed.

In general, higher concentrations of the target analytes were detected in the Stage 2 leachate and underliner samples than in the Stage 1 leachate or underliner samples, including analytes indicative of fly ash such as sulfate and boron.

Groundwater results from MW-3 included SSIs for several parameters in 2025, including chloride, nitrate, magnesium, and specific conductance. Additionally, several of the parameters added in Fall 2023 were detected in MW-3 at concentrations higher than those from upgradient well MW-1 (for example, TDS, boron, and sulfate); however, background levels have not yet been established for these newer parameters. In general, the parameters detected at elevated levels in MW-3 are also present in the landfill leachate and underliner samples at similar or higher concentrations, especially in comparison to the Stage 2 leachate. For example, boron was detected at concentrations of approximately 2.2 mg/L in MW-3 in 2025, compared to concentrations of approximately 21 mg/L in the Stage 2 leachate and underliner samples.

Groundwater results from MW-2 have indicated SSIs for nitrate since Fall 2022. During the 2025 reporting period, SSIs were also identified for chloride in MW-2 and MW-3. Given that nitrate levels in MW-2 are slightly higher than those in MW-3 despite MW-3 having generally higher concentrations of other parameters, and results for other analytes in MW-2 do not seem to be indicative of impacts from the landfill (for example, boron was not detected and sulfate concentrations were lower than those in background well MW-1), the elevated levels of nitrate may be due to a source other than the landfill fill materials.

6.5 Conclusions and Recommendations

The results of the semi-annual monitoring and inspection indicate that the landfill groundwater monitoring network continues to provide usable data. Groundwater results are below the GWPS for the parameters for which they are established. Most constituents detected at elevated concentrations in groundwater from downgradient monitoring well MW-3 are consistent with those reported in the leachate and underliner samples. The elevated nitrate concentrations detected in MW-2 may be related to a source other than the landfill fill materials. No changes to groundwater monitoring are proposed at this time.

The purpose of the additional sampling points for leachate and underliner added in Fall 2023 was to better understand the composition of the leachate and underliner liquid from both stages of the landfill. The results for leachate and underliner samples collected from the same stage have been similar for most parameters, which indicates that the underliner liquid from each stage is primarily composed of leachate from that stage. As such, it is not considered necessary to continue sampling the underliner in addition to the leachate. It is therefore recommended that the underliner sampling be discontinued at this time. The leachate sample results will continue to be used for comparing to groundwater sample results in the evaluation of groundwater quality impacts from the landfill.

7.0 References

- IIW, P.C. 2012. John Deere Dubuque Works Sanitary Landfill Closure Compliance Report. November 13.
- Iowa Department of Natural Resources (IDNR). 2023. Sanitary Disposal Project Closure Permit, Permit Number 31-SDP-01-75C. August 17 (revised issuance date for Amendment #5).
- James Montgomery and Associates (JMA). 1990. Hydrogeological Investigation at the John Deere Dubuque Works Sanitary Landfill. February.
- TRC. 2024. Hydrologic Monitoring System Plan (HMSP), John Deere Dubuque Works Landfill, Dubuque, Iowa. April.
- U. S. Environmental Protection Agency (USEPA). 2009. Statistical Analysis of Groundwater Monitoring at RCRA Facilities Unified Guidance. EPA 530/R-09-007. March.

Table 1: Monitoring Program Summary
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Monitoring Well	Formation	Current Monitoring Program	Change for Next Sampling Event	Constituents w/ SSI during Reporting Period	Constituents w/ SSL during Reporting Period	Total # of Samples in Each Monitoring Program Starting April 2021 ⁽¹⁾		
						Detection	Assessment	Corrective Action
MW-1	Dolomite with shale	Background	-	-	-	-	-	-
MW-2	Dolomite with shale	Assessment	-	Chloride, nitrate as nitrogen	-	1	9	0
MW 3	Dolomite with shale	Assessment	-	Chloride, nitrate as nitrogen, total magnesium, specific conductance	-	1	9	0

Notes:

SSI = statistically significant increase above background level
SSL = statistically significant level above groundwater protection standard
- = None or not applicable

Updated by: L. Auner, 1/9/2026

Checked by: M. Holicky 1/15/2025

Footnotes:

1. The total # of samples in each monitoring program includes only the results since April 2021 as they are the first results evaluated using the updated statistical methods.

Table 2: Monitoring Program Implementation Schedule
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Monitoring Well	Recent Sampling Dates and Constituents			Upcoming Sampling Dates and Constituents		Volatile Organic Compounds (VOCs)	
	October 2024	April 2025	October 2025	April 2026	October 2026	Previously Collected	Next Event
MW-1	List A+B, total phenols	List A+B	List A+B, total phenols	List A+B	List A+B, total phenols	October 2023	October 2028
MW-2	List A+B, total phenols	List A+B	List A+B, total phenols	List A+B	List A+B, total phenols	October 2023	October 2028
MW-3	List A+B, total phenols	List A+B	List A+B, total phenols	List A+B	List A+B, total phenols	October 2023	October 2028

Notes:

List A (semi-annual): ammonia as nitrogen, total barium, chemical oxygen demand, chloride, conductivity, fluoride, total iron, total magnesium, nitrates as nitrogen, pH, temperature, turbidity

List B (additional parameters per IDNR request, starting in October 2023): sulfate, total dissolved solids, total boron, total calcium, total lithium, total molybdenum

Updated by: L. Auner, 12/11/2025

Checked by: E. Lawson, 1/19/2026

Table 3: Monitoring Well Maintenance and Performance Reevaluation Schedule
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Compliance with:	Monitoring Calendar Years				
	2024	2025	2026	2027	2028
Monthly water level measurements (Closure Permit, Section X, Paragraph 4[i])	Completed	Completed	Scheduled	Scheduled	Scheduled
567 IAC 115.21(2)"a" high and low water levels (biennial)	Completed	Completed	Scheduled ¹	Scheduled	Scheduled ¹
567 IAC 115.21(2)"b" changes in the hydrologic setting and flow paths (biennial)	Completed	Completed	Scheduled ¹	Scheduled	Scheduled ¹
567 IAC 115.21(2)"c" well depths (annual)	Completed	Completed	Scheduled	Scheduled	Scheduled
Documentation of purge rates during low flow sampling (Closure Permit, Section X, Paragraph 4[m])	Completed	Completed	Scheduled	Scheduled	Scheduled

Footnotes:

1. Evaluation of high and low water levels and changes in the hydrologic setting and flow paths are only required biennially; however, these are typically evaluated annually.

Updated by: L. Auner, 12/11/2025

Checked by: E. Lawson, 1/19/2026

Table 4a: Monitoring Well Maintenance and Performance Summary
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Well Construction Information				Description	Date of Measurements		Maximum Depth Discrepancy (ft)	Low Flow Sampling Purge Rate Comparison		
	Top of Casing Elevation (ft MSL) ⁽¹⁾	Top of Screen Elevation (ft MSL) ⁽²⁾	Bottom of Screen Elevation (ft MSL) ⁽²⁾	Total Depth (ft btoc) ⁽³⁾		4/1/2025	10/15/2025		Baseline Purge Rate (mL/min), 10/16/2017	Most Recent Purge Rate (mL/min), 10/15/2025	% Change
MW-1	842.05	673.27	643.27	198.78	Depth to Water (ft btoc)	134.49	134.6	0.03	125	175	40%
					Groundwater Elevation (ft MSL)	707.56	707.45				
					Depth to Bottom (ft btoc)	198.75	198.75				
					Submerged Screen (Y/N)	Y	Y				
MW-2	848.49	681.77	651.77	196.72	Depth to Water (ft btoc)	149.81	150.4	0.02	115	150	30%
					Groundwater Elevation (ft MSL)	698.68	698.09				
					Depth to Bottom (ft btoc)	196.70	196.70				
					Submerged Screen (Y/N)	Y	Y				
MW-3	774.06	677.00	647.00	127.06	Depth to Water (ft btoc)	74.7	74.29	0.13	200	200	0%
					Groundwater Elevation (ft MSL)	699.36	699.77				
					Depth to Bottom (ft btoc)	127.10	126.93				
					Submerged Screen (Y/N)	Y	Y				

Notes:

ft MSL = feet above mean sea level

Y/N = Yes/No

Updated by: L. Auner, 12/11/2025

Checked by: M. Holicky 1/15/2025

Footnotes:

1. Top of casing elevations were resurveyed on 9/26/2023.
2. Top and bottom of screen elevations were adjusted based on 9/26/2023 top of casing surveyed elevations (assuming total depth of well and screen length has not changed).
3. Total well depths assumed to be the same as prior to 9/26/2023 resurvey.

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
10/16/1991	132.85	711.82	147.92	700.85	72.45	701.60
11/13/1991	132.72	711.95	147.83	700.94	73.64	700.41
12/18/1991	132.86	711.81	147.93	700.84	74.26	699.79
1/15/1992	132.61	712.06	147.63	701.14	73.52	700.53
2/12/1992	132.77	711.90	147.76	701.01	73.61	700.44
3/21/1992	132.73	711.94	147.71	701.06	73.56	700.49
4/15/1992	132.62	712.05	148.39	700.38	74.02	700.03
5/15/1992	132.79	711.88	148.56	700.21	74.16	699.89
6/11/1992	132.87	711.80	148.75	700.02	74.29	699.76
7/17/1992	132.39	712.28	148.77	700.00	74.11	699.94
8/22/1992	132.75	711.92	149.06	699.71	74.25	699.80
9/23/1992	132.96	711.71	149.14	699.63	75.25	698.80
10/8/1992	132.73	711.94	149.14	699.63	74.06	699.99
11/17/1992	133.02	711.65	148.76	700.01	74.09	699.96
12/26/1992	133.28	711.39	148.92	699.85	74.23	699.82
1/19/1993	133.47	711.20	149.10	699.67	74.36	699.69
2/19/1993	133.43	711.24	148.98	699.79	74.30	699.75
3/19/1993	133.56	711.11	141.25	707.52	74.50	699.55
4/8/1993	134.16	710.51	149.66	699.11	74.87	699.18
5/15/1993	133.55	711.12	149.25	699.52	74.66	699.39
6/16/1993	133.54	711.13	149.35	699.42	74.75	699.30
7/9/1993	133.65	711.02	149.52	699.25	74.76	699.29
8/20/1993	133.71	710.96	149.73	699.04	74.74	699.31
9/10/1993	133.83	710.84	149.78	698.99	74.75	699.30
10/14/1993	134.29	710.38	150.11	698.66	75.01	699.04
4/13/1994	134.55	710.12	150.30	698.47	75.16	698.89
9/15/1994	133.75	710.92	149.65	699.12	74.71	699.34
3/16/1995	133.67	711.00	148.96	699.81	74.26	699.79
9/14/1995	133.16	711.51	148.87	699.90	73.71	700.34
3/16/1996	133.51	711.16	149.03	699.74	74.03	700.02
9/17/1996	133.15	711.52	148.82	699.95	74.10	699.95
3/21/1997	134.33	710.34	150.22	698.55	75.20	698.85
9/18/1997	133.70	710.97	150.49	698.28	75.08	698.97
10/15/1997	133.28	711.39	150.07	698.70	74.93	699.12
10/31/1997	133.54	711.13	150.32	698.45	75.07	698.98
12/13/1997	133.34	711.33	149.90	698.87	75.00	699.05
1/14/1998	133.91	710.76	150.33	698.44	75.29	698.76
2/20/1998	134.20	710.47	150.48	698.29	75.35	698.70
3/19/1998	134.22	710.45	150.42	698.35	75.30	698.75
4/15/1998	134.02	710.65	150.13	698.64	75.05	699.00
5/14/1998	134.25	710.42	150.29	698.48	75.15	698.90
6/17/1998	134.40	710.27	150.51	698.26	75.28	698.77
7/17/1998	134.05	710.62	150.47	698.30	75.16	698.89
8/22/1998	133.98	710.69	150.48	698.29	75.02	699.03
9/22/1998	133.97	710.70	150.47	698.30	74.91	699.14
10/14/1998	133.11	711.56	149.98	698.79	74.60	699.45
11/6/1998	132.95	711.72	149.87	698.90	74.55	699.50
12/17/1998	133.65	711.02	149.55	699.22	74.17	699.88
1/13/1999	134.33	710.34	150.00	698.77	74.45	699.60
2/13/1999	134.23	710.44	149.82	698.95	74.40	699.65
3/13/1999	134.32	710.35	149.87	698.90	74.45	699.60

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
4/14/1999	133.75	710.92	149.40	699.37	74.21	699.84
5/14/1999	134.18	710.49	149.78	698.99	74.50	699.55
6/11/1999	134.10	710.57	149.78	698.99	74.48	699.57
7/13/1999	134.25	710.42	149.96	698.81	74.65	699.40
8/14/1999	134.35	710.32	150.10	698.67	74.75	699.30
9/14/1999	134.38	710.29	150.22	698.55	74.81	699.24
10/28/1999	133.70	710.97	149.88	698.89	74.62	699.43
11/13/1999	133.86	710.81	149.90	698.87	74.69	699.36
12/14/1999	133.70	710.97	149.85	698.92	74.60	699.45
1/14/2000	134.22	710.45	150.26	698.51	74.91	699.14
2/16/2000	134.20	710.47	150.40	698.37	75.05	699.00
3/15/2000	134.36	710.31	150.31	698.46	74.95	699.10
4/11/2000	134.09	710.58	150.23	698.54	75.01	699.04
5/12/2000	133.91	710.76	150.13	698.64	74.86	699.19
6/6/2000	133.85	710.82	150.16	698.61	74.86	699.19
7/19/2000	133.38	711.29	150.08	698.69	74.51	699.54
8/22/2000	133.18	711.49	149.82	698.95	74.15	699.90
9/21/2000	133.26	711.41	149.61	699.16	73.98	700.07
10/25/2000	132.53	712.14	149.03	699.74	73.70	700.35
11/11/2000	132.79	711.88	149.08	699.69	73.81	700.24
11/16/2000	132.40	712.27	148.83	699.94	73.61	700.44
12/16/2000	132.85	711.82	148.94	699.83	73.78	700.27
2/21/2001	133.22	711.45	149.02	699.75	73.93	700.12
3/14/2001	133.40	711.27	149.07	699.70	73.98	700.07
5/16/2001	132.91	711.76	148.83	699.94	73.96	700.09
6/15/2001	133.30	711.37	149.11	699.66	74.14	699.91
8/24/2001	133.42	711.25	149.01	699.76	74.33	699.72
9/22/2001	133.76	710.91	149.29	699.48	74.53	699.52
11/20/2001	133.61	711.06	149.30	699.47	74.47	699.58
12/12/2001	134.08	710.59	149.67	699.10	74.70	699.35
1/18/2002	133.48	711.19	149.18	699.59	74.93	699.12
2/21/2002	134.29	710.38	149.98	698.79	74.83	699.22
3/21/2002	134.29	710.38	150.06	698.71	75.03	699.02
4/17/2002	134.28	710.39	149.99	698.78	74.95	699.10
5/18/2002	134.44	710.23	150.27	698.50	75.10	698.95
6/18/2002	134.69	709.98	150.53	698.24	75.23	698.82
7/18/2002	134.94	709.73	150.71	698.06	75.34	698.71
8/22/2002	135.06	709.61	150.86	697.91	75.44	698.61
9/18/2002	135.09	709.58	151.06	697.71	75.55	698.50
10/17/2002	134.78	709.89	150.75	698.02	75.46	698.59
11/15/2002	134.81	709.86	150.72	698.05	75.44	698.61
12/13/2002	134.68	709.99	150.59	698.18	75.31	698.74
1/23/2003	135.42	709.25	151.09	697.68	75.72	698.33
2/20/2003	135.51	709.16	151.17	697.60	75.71	698.34
3/19/2003	135.72	708.95	151.43	697.34	75.92	698.13
4/18/2003	135.58	709.09	151.38	697.39	75.87	698.18
5/23/2003	135.59	709.08	151.44	697.33	75.77	698.28
6/18/2003	135.68	708.99	151.60	697.17	75.82	698.23
7/19/2003	135.89	708.78	151.82	696.95	75.92	698.13
8/15/2003	135.78	708.89	151.76	697.01	75.87	698.18
9/18/2003	135.77	708.90	151.77	697.00	75.79	698.26

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
10/23/2003	135.32	709.35	151.41	697.36	75.69	698.36
11/14/2003	135.10	709.57	151.24	697.53	75.50	698.55
12/17/2003	134.74	709.93	150.80	697.97	75.16	698.89
1/14/2004	134.98	709.69	150.86	697.91	75.11	698.94
2/4/2004	134.95	709.72	150.91	697.86	75.19	698.86
3/12/2004	134.16	710.51	150.35	698.42	74.79	699.26
4/20/2004	133.63	711.04	150.20	698.57	73.92	700.13
5/20/2004	131.82	712.85	149.19	699.58	71.54	702.51
6/16/2004	130.53	714.14	148.02	700.75	70.59	703.46
7/13/2004	128.58	716.09	145.72	703.05	69.91	704.14
8/11/2004	127.89	716.78	144.73	704.04	70.06	703.99
9/17/2004	127.95	716.72	144.77	704.00	70.47	703.58
10/23/2004	127.06	717.61	144.43	704.34	70.36	703.69
11/19/2004	127.47	717.20	144.83	703.94	70.55	703.50
12/15/2004	127.80	716.87	145.01	703.76	70.49	703.56
1/21/2005	127.93	716.74	145.33	703.44	70.59	703.46
2/19/2005	128.65	716.02	146.04	702.73	71.02	703.03
3/16/2005	127.83	716.84	145.71	703.06	70.91	703.14
4/2/2005	128.02	716.65	145.95	702.82	71.10	702.95
5/6/2005	127.99	716.68	146.02	702.75	71.22	702.83
6/3/2005	128.69	715.98	146.49	702.28	71.52	702.53
7/14/2005	128.96	715.71	146.69	702.08	71.56	702.49
8/12/2005	129.45	715.22	147.11	701.66	71.87	702.18
9/9/2005	129.67	715.00	147.37	701.40	72.03	702.02
10/23/2005	129.24	715.43	147.03	701.74	71.90	702.15
11/10/2005	129.61	715.06	147.27	701.50	72.04	702.01
12/2/2005	129.50	715.17	147.19	701.58	71.81	702.24
1/14/2006	130.03	714.64	147.46	701.31	71.90	702.15
2/10/2006	130.03	714.64	147.36	701.41	71.70	702.35
3/4/2006	130.24	714.43	147.49	701.28	71.85	702.20
4/6/2006	129.88	714.79	147.09	701.68	71.50	702.55
5/25/2006	130.09	714.58	146.36	702.41	70.99	703.06
6/22/2006	128.71	715.96	146.01	702.76	70.73	703.32
7/14/2006	128.38	716.29	145.72	703.05	70.63	703.42
8/12/2006	127.28	717.39	144.89	703.88	69.69	704.36
9/9/2006	127.88	716.79	144.35	704.42	69.71	704.34
10/12/2006	126.83	717.84	144.32	704.45	70.08	703.97
11/11/2006	126.41	718.26	144.04	704.73	69.35	704.70
12/8/2006	126.22	718.45	143.88	704.89	69.95	704.10
1/13/2007	127.56	717.11	144.47	704.30	70.43	703.62
2/13/2007	127.45	717.22	145.13	703.64	70.80	703.25
3/15/2007	127.64	717.03	145.34	703.43	70.72	703.33
4/13/2007	128.18	716.49	145.90	702.87	70.98	703.07
5/12/2007	127.09	717.58	145.58	703.19	70.76	703.29
6/5/2007	127.30	717.37	145.73	703.04	70.74	703.31
7/14/2007	127.89	716.78	146.31	702.46	71.05	703.00
8/10/2007	128.25	716.42	146.63	702.14	71.20	702.85
9/7/2007	129.18	715.49	147.53	701.24	71.90	702.15
10/6/2007	128.42	716.25	146.73	702.04	71.12	702.93
11/9/2007	128.12	716.55	146.13	702.64	71.05	703.00
12/7/2007	128.46	716.21	146.35	702.42	71.21	702.84

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
1/4/2008	128.55	716.12	146.32	702.45	71.25	702.80
1/31/2008	129.14	715.53	146.83	701.94	71.51	702.54
3/13/2008	129.21	715.46	146.82	701.95	71.43	702.62
4/11/2008	128.93	715.74	146.52	702.25	71.62	702.43
5/14/2008	129.11	715.56	146.67	702.10	71.69	702.36
6/25/2008	129.78	714.89	147.21	701.56	72.06	701.99
7/17/2008	129.95	714.72	147.30	701.47	72.09	701.96
8/14/2008	130.28	714.39	147.53	701.24	72.28	701.77
9/13/2008	130.73	713.94	147.87	700.90	72.62	701.43
10/15/2008	130.03	714.64	147.09	701.68	72.22	701.83
11/26/2008	130.95	713.72	147.77	701.00	72.91	701.14
12/20/2008	131.40	713.27	148.23	700.54	73.24	700.81
1/17/2009	131.17	713.50	147.93	700.84	73.07	700.98
2/17/2009	131.23	713.44	148.11	700.66	73.22	700.83
3/27/2009	132.18	712.49	148.81	699.96	73.71	700.34
4/19/2009	131.94	712.73	148.53	700.24	73.83	700.22
5/19/2009	131.39	713.28	148.05	700.72	71.48	702.57
6/16/2009	131.67	713.00	148.25	700.52	71.68	702.37
7/18/2009	131.51	713.16	148.26	700.51	71.51	702.54
8/21/2009	131.84	712.83	148.63	700.14	72.16	701.89
9/15/2009	132.16	712.51	148.79	699.98	72.55	701.50
10/27/2009	131.84	712.83	148.43	700.34	72.87	701.18
11/27/2013	131.95	712.72	148.48	700.29	73.02	701.03
12/18/2013	132.51	712.16	148.97	699.80	73.53	700.52
1/24/2014	132.78	711.89	149.23	699.54	73.74	700.31
2/26/2014	132.24	712.43	148.75	700.02	73.61	700.44
3/26/2014	132.42	712.25	148.80	699.97	73.60	700.45
4/22/2014	132.42	712.25	148.80	699.97	73.60	700.45
5/21/2014	132.47	712.20	148.85	699.92	73.31	700.74
6/20/2014	132.76	711.91	149.06	699.71	73.50	700.55
7/24/2014	132.92	711.75	149.29	699.48	72.79	701.26
8/27/2014	132.93	711.74	149.31	699.46	72.96	701.09
9/24/2014	132.97	711.70	149.35	699.42	73.21	700.84
10/23/2014	132.41	712.26	148.80	699.97	73.32	700.73
11/12/2014	132.92	711.75	149.12	699.65	73.65	700.40
12/9/2014	132.93	711.74	149.16	699.61	73.73	700.32
1/20/2015	132.93	711.74	149.20	699.57	73.80	700.25
2/25/2015	132.83	711.84	149.04	699.73	73.74	700.31
3/25/2015	133.21	711.46	149.48	699.29	74.08	699.97
4/23/2015	133.19	711.48	149.30	699.47	74.19	699.86
5/18/2015	133.38	711.29	149.37	699.40	74.26	699.79
6/26/2015	133.59	711.08	149.54	699.23	74.38	699.67
7/22/2015	133.78	710.89	149.73	699.04	74.48	699.57
8/26/2015	134.12	710.55	150.06	698.71	74.67	699.38
9/23/2015	134.27	710.40	150.17	698.60	74.73	699.32
10/20/2015	133.96	710.71	149.37	699.40	74.75	699.30
11/24/2015	134.47	710.20	149.74	699.03	75.07	698.98
12/7/2015	134.32	710.35	149.61	699.16	74.97	699.08
1/13/2016	134.32	710.35	149.61	699.16	74.97	699.08
2/24/2016	134.91	709.76	150.21	698.56	75.17	698.88
3/28/2016	134.98	709.69	150.38	698.39	74.91	699.14

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
4/27/2016	134.54	710.13	149.74	699.03	74.56	699.49
5/25/2016	134.62	710.05	149.76	699.01	74.48	699.57
6/21/2016	134.69	709.98	149.80	698.97	74.51	699.54
7/25/2016	134.78	709.89	149.86	698.91	74.57	699.48
8/22/2016	134.83	709.84	149.93	698.84	74.49	699.56
9/20/2016	134.74	709.93	149.85	698.92	74.41	699.64
10/24/2016	134.14	710.53	149.52	699.25	74.41	699.64
11/22/2017	134.05	710.60	149.08	699.67	73.73	700.30
12/22/2017	133.81	710.84	148.85	699.90	73.67	700.36
1/19/2018	133.49	711.16	148.65	700.10	73.59	700.44
2/22/2018	134.08	710.57	149.07	699.68	74.02	700.01
3/15/2018	133.65	711.00	148.91	699.84	73.90	700.13
4/25/2018	133.84	710.81	149.14	699.61	74.08	699.95
5/18/2018	133.84	710.81	149.19	699.56	74.15	699.88
6/20/2018	133.86	710.79	149.25	699.50	74.21	699.82
7/23/2018	133.92	710.73	149.44	699.31	74.32	699.71
8/20/2018	133.94	710.71	149.43	699.32	74.31	699.72
9/18/2018	134.04	710.61	149.65	699.10	74.19	699.84
10/18/2018	134.24	710.41	149.81	698.94	72.78	701.25
11/19/2018	133.52	711.13	149.16	699.59	72.27	701.76
12/17/2018	133.44	711.21	148.98	699.77	72.42	701.61
1/18/2019	133.26	711.39	148.73	700.02	72.63	701.40
2/18/2019	133.27	711.38	148.63	700.12	72.14	701.89
3/21/2019	133.45	711.20	147.92	700.83	71.28	702.75
4/18/2019	131.60	713.05	146.36	702.39	72.78	701.25
4/18/2019	131.71	712.94	147.46	701.29	71.06	702.97
5/16/2019	131.42	713.23	147.16	701.59	70.95	703.08
6/20/2019	131.02	713.63	147.01	701.74	70.94	703.09
7/16/2019	130.80	713.85	146.83	701.92	70.89	703.14
8/12/2019	130.64	714.01	146.74	702.01	70.95	703.08
9/20/2019	130.52	714.13	146.80	701.95	71.05	702.98
10/22/2019	129.47	715.18	146.06	702.69	70.06	703.97
10/29/2019	129.61	715.04	146.05	702.70	70.03	704.00
11/21/2019	128.71	715.94	145.18	703.57	70.18	703.85
12/18/2019	128.81	715.84	145.36	703.39	70.64	703.39
1/13/2020	128.45	716.20	145.32	703.43	70.61	703.42
2/18/2020	128.20	716.45	145.45	703.30	70.78	703.25
3/17/2020	128.09	716.56	145.48	703.27	70.70	703.33
4/16/2020	128.07	716.58	145.66	703.09	70.62	703.41
5/7/2020	127.66	716.99	145.41	703.34	70.43	703.60
6/11/2020	127.65	717.00	145.58	703.17	70.68	703.35
7/15/2020	127.11	717.54	145.28	703.47	70.31	703.72
8/21/2020	126.85	717.80	145.17	703.58	70.37	703.66
9/14/2020	127.19	717.46	145.46	703.29	70.60	703.43
10/21/2020	127.11	717.54	145.54	703.21	70.67	703.36
11/17/2020	127.79	716.86	146.07	702.68	71.01	703.02
12/16/2020	127.41	717.24	145.79	702.96	70.72	703.31
1/19/2021	128.04	716.61	146.32	702.43	70.71	703.32
2/16/2021	127.98	716.67	146.31	702.44	71.04	702.99
3/16/2021	128.12	716.53	146.49	702.26	71.06	702.97
4/27/2021	128.46	716.19	146.71	702.04	71.07	702.96

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
5/17/2021	128.81	715.84	147.00	701.75	71.27	702.76
6/14/2021	129.14	715.51	147.24	701.51	71.48	702.55
7/14/2021	129.34	715.31	147.26	701.49	71.54	702.49
8/13/2021	129.81	714.84	147.56	701.19	71.84	702.19
9/14/2021	129.74	714.91	147.47	701.28	71.84	702.19
10/11/2021	129.89	714.76	147.54	701.21	71.94	702.09
11/22/2021	130.56	714.09	148.06	700.69	72.54	701.49
12/13/2021	130.76	713.89	148.21	700.54	72.73	701.30
1/17/2022	130.63	714.02	148.13	700.62	72.70	701.33
2/15/2022	131.22	713.43	148.49	700.26	73.13	700.90
3/16/2022	131.17	713.48	148.46	700.29	73.14	700.89
4/28/2022	131.57	713.08	148.77	699.98	73.46	700.57
5/19/2022	131.48	713.17	148.71	700.04	73.41	700.62
6/13/2022	131.84	712.81	148.91	699.84	73.59	700.44
7/11/2022	131.89	712.76	149.01	699.74	73.68	700.35
8/22/2022	132.46	712.19	149.37	699.38	73.98	700.05
9/27/2022	132.70	711.95	149.58	699.17	73.17	700.86
10/31/2022	132.68	711.97	149.53	699.22	74.17	699.86
11/15/2022	133.04	711.61	149.77	698.98	74.38	699.65
12/8/2022	133.35	711.30	149.95	698.80	74.49	699.54
1/11/2023	133.16	711.49	149.88	698.87	74.47	699.56
2/15/2023	133.34	711.31	150.15	698.60	74.68	699.35
3/29/2023	133.97	710.68	150.49	698.26	74.84	699.19
4/18/2023	133.93	710.72	150.48	698.27	74.74	699.29
5/18/2023	133.93	710.72	150.43	698.32	74.73	699.30
6/20/2023	134.22	710.43	150.68	698.07	74.84	699.19
7/18/2023	134.30	710.35	150.69	698.06	74.86	699.17
8/18/2023	134.49	710.16	150.78	697.97	74.92	699.11
9/19/2023	134.50	710.15	150.77	697.98	74.92	699.11
10/20/2023	134.46	707.59	150.61	697.88	74.91	699.15
11/27/2023	134.88	707.17	150.95	697.54	75.20	698.86
12/20/2023	138.40	703.65	154.32	694.17	78.64	695.42
1/22/2024	138.40	703.65	154.35	694.14	78.59	695.47
2/15/2024	138.59	703.46	154.48	694.01	78.78	695.28
3/25/2024	138.31	703.74	154.25	694.24	78.65	695.41
4/22/2024	138.52	703.53	154.42	694.07	78.75	695.31
5/23/2024	135.31	706.74	151.20	697.29	78.56	695.50
6/10/2024	135.43	706.62	151.21	697.28	74.75	699.31
7/9/2024	135.28	706.77	151.18	697.31	74.45	699.61
8/28/2024	135.17	706.88	150.75	697.74	74.18	699.88
9/27/2024	134.92	707.13	150.36	698.13	74.15	699.91
10/7/2024	135.06	706.99	150.38	698.11	74.25	699.81
11/22/2024	135.00	707.05	150.11	698.38	74.15	699.91
12/20/2024	134.92	707.13	150.36	698.13	74.55	699.51
1/17/2025	134.35	707.70	149.90	698.59	74.19	699.87
2/24/2025	134.35	707.70	149.81	698.68	74.27	699.79
3/27/2025	134.72	707.33	150.05	698.44	74.57	699.49
4/24/2025	134.57	707.48	150.00	698.49	74.46	699.60
5/22/2025	134.67	707.38	150.10	698.39	74.50	699.56
6/26/2025	134.60	707.45	150.13	698.36	74.48	699.58
7/11/2025	134.51	707.54	150.04	698.45	74.45	699.61

Table 4b: Monthly Groundwater Elevation Measurements
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1		MW-2		MW-3	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
8/21/2025	134.64	707.41	150.24	698.25	74.45	699.61
9/19/2025	134.47	707.58	150.17	698.32	74.20	699.86
10/22/2025	134.48	707.57	150.10	698.39	74.25	699.81
11/13/2025	134.41	707.64	149.90	698.59	74.20	699.86
12/10/2025	134.40	707.65	149.88	698.61	74.28	699.78
Average	132.58	711.48	148.91	699.80	73.39	700.65

Notes:

1. The monitoring wells were resurveyed 9/26/2023. The new top of casing elevations were used for groundwater elevation calculations starting in October 2023.
2. Depth to groundwater measurements from April 2019 to present are based on the monthly reports from IIW or Origin Design. The source of earlier measurements is not confirmed.

Updated By: L. Auner, 12/11/2025

Checked By: M . Holicky 1/15/2026

Table 5: Background and GWPS Summary
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Constituent Type	Constituent	Units	Background Data Set ⁽¹⁾					Background Level	Statistical Test for Background Level	GWPS	Source of GWPS ⁽²⁾
			# Samples	# Detections	Min Detection	Max Detection	Mean Detection				
Field Parameters	pH	SU	20*	20	7.0	7.8	7.3	6.8 - 7.9	95% LPL - 95% UPL (k=8)	-	-
	Specific conductance	µmhos	20	20	304	730	583	730	95% USL	-	-
Non-metal Inorganics	Chloride	mg/L	20	1	2.48	6.69	4.74	6.69	95% USL	-	-
	Fluoride	mg/L	20	5	0.101	0.251	0.149	0.251	Max Detected	4	MCL
	Nitrate, as nitrogen	mg/L	20*	0	-	-	-	0.5	DQR at max PQL	10	MCL
	Sulfate	mg/L	--	--	--	--	--	--	--	-	-
	Ammonia, as nitrogen	mg/L	20	0	-	-	-	0.2	DQR at PQL	30	SS
	Chemical oxygen demand	mg/L	20	5	6.37	13.5	9.69	13.5	Max Detected	-	-
	Total dissolved solids (TDS)	mg/L	--	--	--	--	--	--	--	-	-
Metals	Barium, total	mg/L	15	15	0.057	0.104	0.083	0.117	95% UPL (k=8)	2	MCL
	Boron, total	mg/L	--	--	--	--	--	--	--	6	SS
	Calcium, total	mg/L	--	--	--	--	--	--	--	-	-
	Iron, total	mg/L	15	1	0.521	0.521	0.521	0.521	Max Detected	-	-
	Lithium, total	mg/L	--	--	--	--	--	--	--	0.014	SS
	Magnesium, total	mg/L	15	15	37.9	48.5	41.9	50.0	95% UPL (k=8)	-	-
	Molybdenum, total	mg/L	--	--	--	--	--	--	--	0.04	SS
Organics	Phenols	mg/L	20	0	-	-	-	0.02	DQR at max PQL	-	-

Notes:

- = not established or not applicable

* = excluding outlier

UPL = upper prediction limit

LPL = lower prediction limit

KM = Kaplan-Meier

DQR = double quantification rule

PQL = practical quantitation limit

k = number of future comparisons for UPL calculation

GWPS = groundwater protection standard

MCL = EPA maximum contaminant level

SS = statewide standard

-- = parameter added in October 2023, not enough data yet for background evaluation

Prepared by: L. Auner, 1/13/2026

Checked by: M. Holicky 1/15/2026

Footnotes:

1. The data set used for background calculations consisted of the most recent results through October 2024. Background levels will be updated for the 2027 Annual Report, after two years of use.

2. MCLs from <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

SSs from <https://programs.iowadnr.gov/riskcalc/home/statewidestandards> (used most protective standard for groundwater)

The SS listed for ammonia as nitrogen is the standard established for ammonia.

Table 6: Summary of Detections with No Immediately Preceding SSIs
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Constituent	Units	Most Recent Result (October 2025)	Background Level
MW-2	Barium, total	mg/L	0.0959	0.117
	Chemical oxygen demand	mg/L	5.13	13.5
	Magnesium, total	mg/L	46.8	50.0
	pH	SU	7.6	6.8 - 7.9
	Specific conductance	µmhos	727.1	730
	TDS	mg/L	414.0	-
	Calcium, total	mg/L	108	-
	Sulfate	mg/L	20.6	-
MW-3	Barium, total	mg/L	0.0521	0.117
	Chemical oxygen demand	mg/L	5.46	13.5
	pH	SU	7.41	6.8 - 7.9
	TDS	mg/L	726	-
	Boron, total	mg/L	2.23	-
	Calcium, total	mg/L	126	-
	Sulfate	mg/L	116	-

Notes:

Background exceedances from the spring sampling event that weren't confirmed as SSIs are discussed in the report text.

Data is for downgradient wells only.

- = Background level has not yet been established (parameter was added in October 2023)

Prepared by: L. Auner, 1/9/2026

Checked by: M. Holicky 1/15/2026

Table 7: Summary of Ongoing and Newly Identified SSIs
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Constituent	Units	Most Recent Result (October 2025)	Background Level	Lower Confidence Limit	GWPS	Sample Dates	
							Initial Exceedance	Verification Sample
MW-2	Chloride	mg/L	7.54	6.69	-	-	4/1/2025	10/15/2025
MW-2	Nitrate, as nitrogen	mg/L	1.96	0.5	-	10	10/26/2022	4/24/2023
MW-3	Chloride	mg/L	76.6	6.69	-	-	4/26/2021	10/7/2021
	Nitrate, as nitrogen	mg/L	1.42	0.5	-	10	4/27/2022	10/26/2022
	Magnesium, total	mg/L	58.7	50.0	-	-	4/26/2021	10/7/2021
	Specific conductance	µmhos	1132.5	730	-	-	4/26/2021	10/7/2021

Notes:

- = Not applicable

GWPS = groundwater protection standard

Lower confidence limits were not calculated because GWPS were not exceeded by individual results.

Prepared by: L. Auner, 1/9/2026

Checked by: M. Holicky 1/15/2025

Table 8: Summary of Ongoing and Newly Identified SSLs
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Constituent	Units	Most Recent Result	Upper Confidence Limit	GWPS	Initial Exceedance	Consecutive Compliance Dates		
							1st Occurrence	Most Recent	Duration
NA									

Notes:

NA - Table not applicable; SSLs have not been identified.

Table 9a: MW-1 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Conductance (field) µmhos	Temperature (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	TCE mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 1991	7.1	750	53	0.1	4.5	12	0.10		0.029	0.023	16		< 0.0005					
Jul. 1991	7.2	410	62	< 0.1	2.5	12	< 0.02		0.019	0.004	22		< 0.0005					
Oct. 1991	7.2	430	62	< 0.1	1.5	< 1	< 0.02		0.023	0.060	32		< 0.0005					
Jan. 1992	9.6	550	50	< 0.1	1.0	10	< 0.02		< 0.010	0.005	28		< 0.0005					
Apr. 1992	7.8	460	53	< 0.2	< 5.0	5	< 0.10		< 0.01	< 0.005	29		< 0.001					
Oct. 1992	9.5	440	56	< 0.2	< 5.0	5	0.30		< 0.010	< 0.005	27		< 0.001					
Mar. 1993	9.1	500	56	< 0.2	< 5.0	< 5	< 0.10		< 0.010	< 0.005	29		< 0.001	< 0.005				
Sep. 1993	7.0	1250*	53	< 0.2	1000*	16*	2.7*		1.54*	< 0.005	160*		< 0.002	< 0.005				
Mar. 1994	7.4	600	56	< 0.2	23.0	< 5	0.12		0.024	0.008	41		< 0.001	< 0.005				
Sep. 1994	7.8	550	51	< 0.2	6.0	< 5	< 0.10		0.041	< 0.020								
Mar. 1995	7.9	540	46	< 0.2	< 5.0	< 5	< 0.10		0.018	< 0.020								
Sep. 1995	8.0	460	57	< 0.2	17.0	5	< 0.10		0.170	< 0.020								
Apr. 1996	8.8	570	47	< 0.2	5.4	< 5	< 0.10		0.012	< 0.020								
Oct. 1996	8.4	630	45	< 0.2	5.2	< 5	0.24		0.016	< 0.020								
Apr. 1997	8.5	560	52	< 0.2	< 5.0	< 5	0.15		0.014	< 0.020								
Oct. 1997	8.1	570	55	< 0.2	< 5.0	< 5	0.34		< 0.010	< 0.020								
Apr. 1998	8.0	540	54	< 0.2	8.8	< 5	0.92		< 0.010	< 0.020								
Sep. 1998	8.2	520	57	< 0.2	< 5.0	< 5	0.22		0.068	< 0.020								
Mar. 1999	8.4	590	54	< 0.2	6.2	5	1.70		0.085	< 0.020								
Sep. 1999	7.9	510	54	< 0.2	< 5.0	< 5	0.37		< 0.010	< 0.020								
Mar. 2000	7.9	560	51	< 0.2	< 5.0	< 5	0.24		< 0.010	< 0.020								
Sep. 2000	7.8	510	56	< 0.2	< 5.0	< 5	0.19		0.044	< 0.020								
Mar. 2001	8.1	530	53	< 0.2	5.3	5.5	0.30		0.062	< 0.020								
Sep. 2001	8.1	520	55	< 0.2	5.5	5.1	0.40		< 0.010	< 0.020								
Mar. 2002	8.7	580	52	< 0.2	< 5.0	< 5	0.25		0.011	< 0.020								
Sep. 2002	8.3	580	54	< 0.2	< 5.0	12.0	0.14		0.048	< 0.020								
Mar. 2003	8.5	590	52	< 0.2	< 5.0	7.9	< 0.10		0.056	< 0.020								
Oct. 2003	8.2	570	52	< 0.2	< 5.0	18.0	0.11		0.047	< 0.020								
Mar. 2004	8.7	520	53	< 0.2	< 5.0	7.1	< 0.10		0.037	< 0.020								
Oct. 2004	8.9	600	52	< 0.2	< 5.0	< 5.0	< 0.10		0.044	< 0.020								
Mar. 2005	8.4	740	50	< 0.2	< 5.0	5.6	0.14		0.043	< 0.020								
Oct. 2005	7.8	600	53	< 0.2	< 5.0	5.0	< 0.10		0.051	< 0.020								
Mar. 2006	7.9	660	52	< 0.2	< 5.0	5.4	< 0.10		0.023	< 0.020								
Oct. 2006	7.6	670	54	< 0.2	< 5.0	< 5.0	< 0.10		0.044	< 0.020								
Mar. 2007	7.9	650	51	0.2	< 5.0	5.7	< 0.10		0.055	< 0.020								
Oct. 2007	7.4	690	54	< 0.2	< 5.0	< 5.0	< 0.10		0.041	< 0.020								
Mar. 2008	7.6	660	53	< 0.2	< 5.0	7.3	< 0.10		0.040	< 0.020								
Sep. 2008	7.3	610	52	< 0.2	< 5.0	< 5.0	< 0.10		0.042	< 0.020								
Mar. 2009	7.6	650	51	< 0.2	< 5.0	< 5.0	< 0.10		0.036	< 0.020								
Oct. 2009	7.5	610	52	< 0.2	< 5.0	< 5.0	< 0.10		0.029	< 0.018								
Apr. 2010	7.3	600	53	< 0.2	< 5.0	< 5.0	< 0.10		0.034	< 0.018	41				0.10	0.0734		< 0.100
Oct. 2010	7.3	620	51	< 0.2	< 5.0	9.8	< 0.10		0.032	< 0.018	39				0.11	0.0760		< 0.100
Apr. 2011	7.4	600	53	< 0.2	< 5.0	< 5.0	< 0.10		0.036	< 0.020	39				0.12	0.0757		< 0.100
Oct. 2011	7.4	620	52	< 0.2	< 5.0	< 5.0	< 0.10		0.025	< 0.018	42				0.13	0.0724		< 0.100
Apr. 2012	7.3	630	53	< 0.2	< 5.0	6.4	< 0.10		0.032	< 0.020	44				< 0.50	0.0706		< 0.100
Oct. 2012	7.3	610	52	< 0.2	< 5.0	< 5.0	< 0.10		0.028	< 0.020	38				< 0.20	0.0718		< 0.100
Apr. 2013	7.4	630	52	< 0.2	< 5.0	< 5.0	< 0.10		< 0.030	< 0.020	42				< 0.50	0.0853		< 0.100
Oct. 2013	7.7	620	52	< 0.2	< 5.0	< 5.0	< 0.10		0.203*	< 0.019	41				< 0.10	0.0709		< 0.100
Jan. 2014									0.0317									
Feb. 2014									0.0318									
Apr. 2014	7.6	610	51	< 0.200	< 5.00	< 5.00	< 0.100		< 0.0300	< 0.0196	41.5				< 0.100	0.0708		< 0.100
May. 2014									< 0.0300									
Oct. 2014	7.6	610	52	< 0.200	< 5.00	< 5.00	< 0.100		0.0482	< 0.0196	42.2				< 0.100	0.0698		< 0.100
Apr. 2015	6.1*	636	51	< 0.200	2.66	< 5.00	< 0.100				42.9			< 0.150	< 0.100	0.0770		< 0.100

Table 9a: MW-1 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Conductance (field) µmhos	Temperature (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	TCE mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Oct. 2015	7.0	560	54	< 0.200	2.93	< 5.00	< 0.100		0.0447	< 0.0204	40.7				< 0.100	0.0809		< 0.100
Apr. 2016	7.3	304	52	< 0.200	2.48	< 5.00	< 0.100		< 0.0620		38.7				0.101	0.0773		< 0.100
Oct. 2016	7.1	562	55	< 0.200	6.69	13.50	< 0.100		0.0470	< 0.0184	40.6				< 0.100	0.0615		< 0.100
Apr. 2017	7.2	472	55	< 0.200	2.50	< 5.00	< 0.500				40.3				< 0.100	0.0703		< 0.100
Oct. 2017	7.3	564	58	< 0.200	< 5.00	< 5.00	< 0.500	< 0.500	0.054	< 0.0188	43.1	43.9			< 0.500	0.0566	0.0569	3.76*
Apr. 2018	7.6	730	42	< 0.200	4.61	< 5.00	< 0.500	0.521			42.8	42.8			0.164	0.0693	0.0747	< 0.100
Oct. 2018	7.8	580	68	< 0.200	5.43	< 10.00	< 0.500	< 0.500		< 0.0196	44.0	40.9			0.117	0.0753	0.0747	< 0.100
Apr. 2019	7.2	665	51	< 0.200	5.35	< 5.00	< 0.500	< 0.500			40.6	40.6			< 0.100	0.0620	0.0814	< 0.100
Oct. 2019	7.1	625	42	< 0.200	5.38	< 5.00	< 0.500	< 0.500		< 0.0200	36.6	39.2			0.251	0.0687	0.0741	< 0.100
Apr. 2020	7.4	609	48	< 0.200	5.04	< 5.00		< 0.500				41.4			< 0.100		0.0831	< 0.500
Oct. 2020	7.2	614	57	< 0.200	5.31	< 5.00		< 0.500		< 0.0184		41.1			< 0.100		0.0874	< 0.100
Apr. 2021	7.4	604	56	< 0.200	4.77	9.86		< 0.500		< 0.0188		43.0			0.113		0.0890	
Oct. 2021	7.4	639	60	< 0.200	5.60	6.42		< 0.500		< 0.0200		40.2			< 0.100		0.0853	< 0.100
Apr. 2022	7.4	631	53	< 0.200	5.36	< 5.00		< 0.500				45.4			< 0.100		0.1040	< 0.100
Oct. 2022	7.0	646	55	< 0.200	5.16	< 5.00		< 0.500		< 0.0200		43.1			< 0.100		0.0796	< 0.100
Apr. 2023	7.5	412	54	< 0.200	5.45	6.37		< 0.500				48.5			< 0.100		0.1010	< 0.200
Oct. 2023	7.6	601	62	< 0.200	4.78	< 5.00		< 0.500		< 0.0200		42.3			< 0.200		0.0894	< 0.200
Apr. 2024	7.4	571	55	< 0.200	5.68	< 5.00		< 0.500				38.5			< 0.200		0.0770	< 0.200
Oct. 2024	7.4	630	54	< 0.200	4.82	12.3		< 0.500		< 0.0200		37.9			< 0.200		0.0853	< 0.200
Apr. 2025	7.4	597	41	< 0.500	6.54	6.75		< 0.500				35.0			< 1.000		0.0786	< 0.100
Oct. 2025	7.8	587	57	< 0.200	4.95	7.12		< 0.500		< 0.0200		39.8			0.213		0.0893	< 0.200

Notes:
* Outlier or erroneous measurement, excluded from use in background level calculations.
Qualifiers not included in table.

Updated By: L. Auner, 12/11/2025
Checked By: M. Holicky 1/15/2026

Table 9b: MW-2 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Cond. (field) µmhos	Temp. (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	TCE mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 1991	7.0	1,150	53	< 0.100	110.0	8.00	< 0.020		< 0.0100	0.0020	51.0		0.0017					
Jul. 1991	7.1	1,180	58	< 0.100	140.0	22.00	< 0.020		< 0.0100	< 0.0020	49.0		0.0015					
Oct. 1991	7.2	1,120	54	< 0.100	130.0	36.00	< 0.020		0.0230	< 0.0020	56.0		0.0012					
Jan. 1992	7.8	1,210	53	< 0.100	130.0	25.00	< 0.020		0.0190	< 0.0020	50.0		0.0014					
Apr. 1992	7.8	1,280	55	< 0.200	140.0	8.00	< 0.100		0.0200	< 0.0050	51.0		< 0.025					
Oct. 1992	7.8	1,280	55	< 0.200	34.0	8.00	< 0.100		< 0.0100	< 0.0050	55.0		< 0.001					
Mar. 1993	7.1	1,270	54	< 0.200	150.0	< 5.00	< 0.100		0.0110	< 0.0050	60.0		< 0.001	< 0.005				
Sep. 1993	7.8	830	54	< 0.200	170.0	< 5.00	< 0.100		< 0.0100	0.0220	65.0		< 0.001	< 0.005				
Mar. 1994	7.2	1,200	56	< 0.200	150.0	< 5.00	< 0.100		< 0.0100	< 0.0050	59.0		0.001	< 0.005				
Sep. 1994	7.5	1,180	53	< 0.200	140.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 1995	7.8	1,100	45	< 0.200	110.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 1995	7.8	950	56	< 0.200	100.0	< 5.00	< 0.100		0.0220	< 0.0200								
Apr. 1996	8.2	1,090	48	0.310	99.0	< 5.00	< 0.100		0.0400	< 0.0200								
Oct. 1996	7.6	1,030	47	< 0.200	81.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Apr. 1997	8.5	1,080	52	< 0.200	71.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 1997	8.0	920	53	< 0.200	52.0	< 5.00	< 0.100		< 0.0100	0.0220								
Apr. 1998	8.5	750	58	< 0.200	51.0	< 5.00	< 0.100		< 0.0100	0.0295								
Sep. 1998	8.1	750	56	< 0.200	52.0	< 5.00	< 0.100		< 0.0200	< 0.0200								
Mar. 1999	7.8	950	53	< 0.200	48.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 1999	7.5	830	56	< 0.200	46.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2000	8.2	860	53	< 0.200	49.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 2000	7.5	830	54	< 0.200	47.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2001	8.1	850	52	< 0.200	33.1	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 2001	8.0	900	50	< 0.200	26.1	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2002	8.7	940	53	< 0.200	28.8	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 2002	8.3	890	54	< 0.200	37.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2003	9.2	880	50	< 0.200	25.8	5.20	< 0.100		< 0.0100	< 0.0200								
Oct. 2003	7.8	900	52	< 0.200	21.5	< 5.00	< 0.100		< 0.0100	0.0210								
Mar. 2004	7.6	760	54	< 0.200	23.1	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 2004	8.9	930	52	< 0.200	19.7	< 5.00	< 0.100		< 0.0100	0.0210								
Mar. 2005	7.4	1,090	50	< 0.200	19.2	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 2005	7.4	860	54	< 0.200	24.3	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2006	7.2	990	51	< 0.200	25.2	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 2006	7.3	910	52	< 0.200	27.8	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2007	7.2	930	50	< 0.200	27.2	7.50	< 0.100		< 0.0100	< 0.0200								
Oct. 2007	7.1	990	54	< 0.200	28.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2008	7.2	900	50	< 0.200	27.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 2008	7.0	890	52	< 0.200	30.6	< 5.00	< 0.100		0.0410	< 0.0180								
Mar. 2009	7.1	870	53	< 0.200	26.4	5.70	< 0.100		< 0.0100	< 0.0200								
Oct. 2009	7.2	870	51	< 0.200	25.6	< 5.00	< 0.100		0.0131	< 0.0180								
Apr. 2010	7.1	830	53	< 0.200	24.8	< 5.00	< 0.100		< 0.0100	< 0.0180	49.2				0.139	0.0946		0.730
Oct. 2010	7.1	860	52	< 0.200	24.9	< 5.00	< 0.100		< 0.0100	< 0.0180	32.9				0.169	0.0644		0.930
Apr. 2011	7.1	840	52	< 0.200	24.7	6.10	< 0.100		< 0.0100	< 0.0180	43.8				0.156	0.0877		0.700
Oct. 2011	7.1	820	52	< 0.200	22.3	< 5.00	< 0.100		< 0.0100	< 0.0200	46.5				0.217	0.0873		0.590
Apr. 2012	7.1	820	52	< 0.200	23.6	< 5.00	< 0.100		0.0105	< 0.0200	48.5				< 0.500	0.0873		0.590
Oct. 2012	7.0	820	53	< 0.200	24.7	< 5.00	< 0.100		0.0114	< 0.0200	45.5				< 0.200	0.0931		0.582
Apr. 2013	7.0	830	51	< 0.200	20.8	5.10	< 0.100		< 0.0300	< 0.0200	44.2				< 0.500	0.1040		0.631
Oct. 2013	7.4	820	52	< 0.200	20.7	6.70	< 0.100		0.233	< 0.0204	43.2				0.166	0.0878		0.317
Jan. 2014									< 0.0300									
Feb. 2014									< 0.0300									
Apr. 2014	7.4	800	51	< 0.200	17.3	< 5.00	< 0.100		< 0.0300	< 0.0200	45.3				0.146	0.0942		0.607
May. 2014									< 0.0300									
Oct. 2014	7.6	760	53	< 0.200	13.4	< 5.00	< 0.100		< 0.0300	< 0.0208	43.4				0.173	0.0876		0.728

Table 9b: MW-2 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Cond. (field) µmhos	Temp. (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	TCE mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 2015	6.49*	711	51	< 0.200	16.6	< 5.00	< 0.100				42.2			< 0.150	0.156	0.0849		0.440
Oct. 2015	7.0	687	53	< 0.200	15.7	< 5.00	< 0.100		0.0261	< 0.0180	47.2				0.142	0.0883		0.439
Apr. 2016	7.1	694	51	< 0.200	16.2	< 5.00	< 0.100		0.0350		40.6				0.177	0.0822		0.413
Oct. 2016	7.0	766	55	< 0.200	15.6	6.69	< 0.100		< 0.0250	< 0.0188	42.5				0.109	0.0864		0.577
Apr. 2017	7.0	681	53	< 0.200	15.0	< 5.00	< 0.500				43.2				0.155	0.0801		0.599
Oct. 2017	7.0	629	59	< 0.200	11.6	< 5.00	< 0.500	< 0.500	0.122	< 0.0196	43.3	44.4			0.222	0.0814	0.0805	0.845
Apr. 2018	7.3	801	44	< 0.200	10.2	< 5.00	< 0.500	< 0.500			45.3	44.0			0.192	0.0804	0.0841	0.823
Oct. 2018	7.4	695	75	< 0.200	12.1	< 5.00	< 0.500	< 0.500		< 0.0192	45.5	44.6			0.292	0.0791	0.0788	0.780
Apr. 2019	7.1	760	51	< 0.200	10.1	< 5.00	< 0.500	< 0.500			41.3	43.6			0.108	0.0692	0.0881	0.802
Oct. 2019	7.1	736	43	< 0.200	9.6	< 5.00	< 0.500	< 0.500		< 0.0180	42.0	36.5			0.190	0.0832	0.0734	0.950
Apr. 2020	7.2	749	47	< 0.200	9.4	< 5.00		< 0.500				46.1			< 0.100		0.0900	0.909
Oct. 2020	7.0	736	56	< 0.200	10.6	< 5.00		< 0.500		< 0.0188		44.3			0.165		0.0890	0.316
Apr. 2021	7.2	710	56	< 0.200	8.1	6.44		< 0.500		< 0.0184		45.1			< 0.100		0.0896	
Oct. 2021	7.2	780	61	< 0.200	9.4	5.36		< 0.500		< 0.0192		44.3			< 0.100		0.0886	0.250
Apr. 2022	7.2	774	53	< 0.200	9.3	14.60		< 0.500				46.3			< 0.100		0.1040	0.488
Oct. 2022	6.9	802	54	< 0.200	8.7	< 5.00		< 0.500		< 0.0200		45.7			0.208		0.0818	1.06
Apr. 2023	7.8	627	53	< 0.200	7.8	< 5.00		< 5.000				51.3			< 0.200		0.107	1.23
Oct. 2023	7.3	737	65	< 0.200	7.9	7.07		< 5.000		< 0.0204		44.2			< 0.200		0.0915	2.88
Apr. 2024	7.2	694	59	< 0.200	8.3	< 5.00		< 5.000				41.6			< 0.200		0.0825	1.39
Oct. 2024	7.1	783	55	< 0.200	7.58	< 5.00		< 5.000		< 0.0216		42.1			< 0.200		0.0857	1.52
Apr. 2025	7.2	742	41	< 0.500	8.7	< 5.00		< 0.500				39.8			< 1.000		0.0829	1.56
Oct. 2025	7.6	727	58	< 0.200	7.54	5.13		< 0.500		< 0.0200		46.8			< 0.200		0.0959	1.96

Notes:
* Erroneous measurement
Qualifiers not included in table.

Updated By: L. Auner, 12/11/2025
Checked By: M. Holicky 1/15/2026

Table 9c: MW-3 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Cond. (field) μmhos	Temp. (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	TCE mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 1991	7.7	500	53	< 0.100	28.0	< 1.00	0.020		0.0150	0.0040	36.0		< 0.0005					
Jul. 1991	7.3	730	66	< 0.100	28.0	14.00	< 0.020		0.0110	< 0.0020	39.0		< 0.0005					
Oct. 1991	7.6	510	53	< 0.100	26.0	< 1.00	< 0.020		0.0330	< 0.0020	44.0		< 0.0005					
Jan. 1992	8.1	820	54	< 0.100	28.0	10.00	< 0.020		< 0.0100	< 0.0020	42.0		< 0.0005					
Apr. 1992	7.6	700	55	< 0.200	24.0	< 5.00	< 0.100		< 0.0100	< 0.0050	38.0		< 0.005					
Oct. 1992	7.7	680	55	< 0.200	26.0	< 5.00	< 0.100		< 0.0100	< 0.0050	33.0		< 0.001					
Mar. 1993	7.3	790	55	< 0.200	36.0	< 5.00	0.170		< 0.0100	< 0.0050	43.0		< 0.001	< 0.005				
Sep. 1993	6.8	790	53	< 0.200	37.0	< 5.00	0.120		< 0.0100	< 0.0050	48.0		< 0.001	< 0.005				
Mar. 1994	7.7	810	55	< 0.200	61.0	< 5.00	0.120		< 0.0100	< 0.0050	48.0		< 0.001	< 0.005				
Sep. 1994	7.6	780	51	< 0.200	37.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 1995	8.1	580	47	< 0.200	43.0	< 5.00	0.180		< 0.0100	< 0.0200								
Sep. 1995	8.4	780	54	< 0.200	56.0	< 5.00	0.160		< 0.0100	< 0.0200								
Apr. 1996	8.7	880	49	0.270	57.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 1996	7.8	910	43	< 0.200	56.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Apr. 1997	8.5	1,030	50	< 0.200	53.0	5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 1997	8.2	840	53	< 0.200	49.0	< 5.00	0.110		< 0.0100	< 0.0200								
Apr. 1998	8.1	700	55	< 0.200	53.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 1998	8.1	750	56	< 0.200	49.0	< 5.00	< 0.100		< 0.0200	< 0.0200								
Mar. 1999	8.4	840	52	< 0.200	55.0	< 5.00	0.180		0.0120	< 0.0200								
Sep. 1999	7.7	810	57	< 0.200	57.0	< 5.00	0.330		< 0.0100	< 0.0200								
Mar. 2000	7.9	860	52	< 0.200	58.0	< 5.00	0.400		< 0.0100	< 0.0200								
Sep. 2000	7.6	840	54	< 0.200	72.0	< 5.00	0.240		< 0.0100	< 0.0200								
Mar. 2001	8.6	810	51	< 0.200	69.4	< 5.00	0.200		< 0.0100	< 0.0200								
Sep. 2001	8.3	800	54	4.620	77.7	< 5.00	0.180		< 0.0100	< 0.0200								
Mar. 2002	8.8	900	49	< 0.200	79.9	6.50	0.180		< 0.0100	< 0.0200								
Sep. 2002	7.8	890	53	< 0.200	75.9	8.30	0.170		< 0.0100	< 0.0200								
Mar. 2003	8.9	990	51	< 0.200	84.9	7.00	< 0.100		< 0.0100	< 0.0200								
Oct. 2003	7.8	970	52	< 0.200	87.5	< 5.00	0.160		< 0.0100	< 0.0200								
Mar. 2004	12.3	1,030	54	< 0.200	116	6.30	< 0.100		< 0.0100	< 0.0200								
Oct. 2004	9.0	1,120	52	< 0.200	105	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2005	7.7	1,210	50	< 0.200	80.6	6.10	< 0.100		< 0.0100	< 0.0200								
Oct. 2005	7.5	1,100	53	< 0.200	97.0	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2006	7.4	1,360	52	< 0.200	107	6.10	< 0.100		< 0.0100	< 0.0200								
Oct. 2006	7.5	1,150	52	< 0.200	97.5	< 5.00	0.168		< 0.0100	< 0.0200								
Mar. 2007	7.3	1,260	50	< 0.200	107	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 2007	7.1	1,319	54	< 0.200	111	9.20	< 0.100		< 0.0100	< 0.0200								
Mar. 2008	7.2	1,280	50	< 0.200	116	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 2008	7.1	5,400	51	< 0.200	114	< 5.00	< 0.100		0.0450	< 0.0200								
Mar. 2009	7.2	1,140	50	< 0.200	91.7	7.80	< 0.100		< 0.0100	< 0.0200								
Oct. 2009	7.2	1,100	51	< 0.200	90.3	< 5.00	< 0.100		0.0119	< 0.0200								
Apr. 2010	7.0	1,100	52	< 0.200	102	< 5.00	< 0.100		< 0.0100	< 0.0200	52.7			0.119	0.0690		0.140	
Oct. 2010	7.0	1,140	51	< 0.200	107	< 5.00	< 0.100		< 0.0123	< 0.0180	50.5			0.134	0.0672		0.130	
Apr. 2011	7.1	1,070	52	< 0.200	99.7	< 5.00	< 0.100		< 0.0120	< 0.0200	44.5			0.152	0.0657		< 0.100	
Oct. 2011	7.1	1,140	52	< 0.200	112	6.40	< 0.100		< 0.0123	< 0.0180	55.6			0.189	0.7930		0.130	
Apr. 2012	7.1	1,150	52	< 0.200	115	5.40	< 0.100		< 0.0100	< 0.0200	54.8			< 0.500	0.0729		< 0.100	
Oct. 2012	7.1	1,100	52	< 0.200	105	< 5.00	0.114		0.0128	< 0.0200	49.4			< 0.200	0.0718		< 0.100	
Apr. 2013	7.2	1,150	52	< 0.200	103	< 5.00	< 0.100		< 0.0300	< 0.0192	52.6			< 0.500	0.0841		0.101	
Oct. 2013	7.4	1,270	52	< 0.200	128	11.90	< 0.100		8.0100	< 0.0192	55.0			0.123	0.708		< 0.100	
Jan. 2014									0.0570									
Feb. 2014									< 0.0300									
Apr. 2014	7.5	1,220	52	< 0.200	114	< 5.00	< 0.100		< 0.0300	< 0.0196	52.5			0.120	0.0646		< 0.100	
May. 2014									< 0.0300									
Oct. 2014	7.4	1,320	52	< 0.200	137	< 5.00	< 0.100		< 0.0300	< 0.0208	59.4			0.132	0.0653		0.162	
Apr. 2015	6.11*	1,081	51	< 0.200	111	< 5.00	< 0.100				56.2			< 0.150	0.119	0.0822		< 0.100

Table 9c: MW-3 Groundwater Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field)	Specific Cond. (field)	Temp. (field)	Ammonia Nitrogen	Chloride	Chemical Oxygen Demand	Iron (dissolved)	Iron (total)	Total Organic Halogen	Phenols	Magnesium (dissolved)	Magnesium (total)	TCE	Selenium (dissolved)	Fluoride	Barium (dissolved)	Barium (total)	Nitrate
	Standard Units	µmhos	°F	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Oct. 2015	7.1	1,219	53	< 0.200	122	< 5.00	< 0.100		0.1100	< 0.0180	55.3				< 0.500	0.0652		0.275
Apr. 2016	7.0	1,229	51	< 0.200	126	< 5.00	< 0.100		0.0540		55.6				0.122	0.0691		< 0.100
Oct. 2016	7.6	1,442	54	< 0.200	138.0	13.50	< 0.100		0.0320	< 0.0188	60.6				< 0.100	0.0583		0.342
Apr. 2017	7.4	1,374	52	< 0.200	121	6.65	< 0.500				59.9				< 0.100	0.0644		0.142
Oct. 2017	6.9	1,370	54	< 0.200	139	34.6	< 0.500	< 0.500	< 0.010	< 0.0196	65.4	62.2			< 0.100	0.0479	0.0490	1.17
Apr. 2018	7.2	1,530	48	< 0.200	115	< 5.00	< 0.500	< 0.500			65.2	63.4			< 0.100	0.0470	0.0524	1.18
Oct. 2018	7.2	1,420	61	< 0.200	115	< 5.00	< 0.500	< 0.500		< 0.0196	65.3	59.9			< 0.100	0.0478	0.0475	1.17
Apr. 2019	7.0	1,463	50	< 0.200	114	< 5.00	< 0.500	< 0.500			59.1	58.6			< 0.100	0.0397	0.0527	1.27
Oct. 2019	7.0	1,375	51	< 0.200	111	7.72	< 0.500	< 0.500		< 0.0184	56.0	56.8			< 0.100	0.0477	0.0493	1.30
Apr. 2020	6.4	1,190	50	< 0.200	95	< 5.00		< 0.500				55.7			0.102		0.0635	0.46
Oct. 2020	7.0	1,121	56	< 0.200	107	< 5.00		< 0.500		< 0.0188		54.0			< 0.140		0.0687	0.20
Apr. 2021	7.1	1,198	56	< 0.200	94	9.86		< 0.500		< 0.0192		58.2			0.358		0.0595	
Oct. 2021	7.0	1,363	59	< 0.200	102	5.36		< 0.500		< 0.0208		60.0			< 0.100		0.0516	0.21
Apr. 2022	7.0	1,384	52	< 0.200	102	< 5.00		< 0.500				68.0			< 0.100		0.0634	0.57
Oct. 2022	6.8	1,374	53	< 0.200	92	5.20		< 0.500		< 0.0200		62.4			< 0.100		0.0472	0.96
Apr. 2023	7.3	1,286	52	< 0.200	100	9.74		< 0.500				67.4			< 0.200		0.0858	0.63
Oct. 2023	7.3	1,244	59	< 0.200	76	5.70		< 0.500		< 0.0200		58.6			< 0.200		0.0534	0.94
Apr. 2024	7.2	1,192	53	< 0.200	81	5.56		< 0.500				55.6			< 0.200		0.0455	0.64
Oct. 2024	7.1	1,426	52	< 0.200	112	< 10.00		< 0.500		< 0.0200		59.2			< 0.200		0.0628	0.782
Apr. 2025	7.0	1,220	43	< 0.500	76.4	6.75		< 0.500				57.1			< 1.000		0.0520	1.03
Oct. 2025	7.4	1,133	57	< 0.200	76.6	5.46		< 0.500		< 0.0200		58.7			< 0.200		0.0521	1.42

Notes:
* Erroneous measurement
Qualifiers not included in table.

Updated By: L. Auner, 12/11/2025
Checked By: M. Holicky 1/15/2026

Table 9d: Stage 1 Underliner Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field)	Specific Conductance (field) μmhos	Temperature (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	Trichloroethylene mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 1991	7.0	1,150	53	< 0.100	110.00	8.00	< 0.020		< 0.0100	0.0020	16.0		< 0.0005					
Jul. 1991	7.1	1,180	58	< 0.100	140.00	22.00	< 0.020		< 0.0100	< 0.0020	22.0		< 0.0005					
Oct. 1991	7.2	1,120	54	< 0.100	130.00	36.00	< 0.020		0.0230	< 0.0020	32.0		< 0.0005					
Jan. 1992	7.8	1,210	53	< 0.100	130.00	25.00	< 0.020		0.0190	< 0.0020	28.0		< 0.0005					
Apr. 1992	7.8	1,280	55	< 0.200	140.00	8.00	< 0.100		0.0200	< 0.0050	29.0		< 0.0010					
Oct. 1992	7.8	1,280	55	< 0.200	34.00	8.00	< 0.100		< 0.0100	< 0.0050	27.0		< 0.0010					
Mar. 1993	7.1	1,270	54	< 0.200	150.00	< 5.00	< 0.100		0.0110	< 0.0050	29.0		< 0.0010	< 0.0050				
Sep. 1993	7.8	830	54	< 0.200	170.00	< 5.00	< 0.100		< 0.0100	0.0220	160.0		< 0.0020	< 0.0050				
Mar. 1994	7.2	1,200	56	< 0.200	150.00	< 5.00	< 0.100		< 0.0100	< 0.0050	41.0		< 0.0010	< 0.0050				
Sep. 1994	7.5	1,180	53	< 0.200	140.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 1995	7.8	1,100	45	< 0.200	110.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 1995	7.8	950	56	< 0.200	100.00	< 5.00	< 0.100		0.0220	< 0.0200								
Apr. 1996	8.2	1,090	48	0.310	99.00	< 5.00	< 0.100		0.0400	< 0.0200								
Oct. 1996	7.6	1,030	47	< 0.200	81.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Apr. 1997	8.5	1,080	52	< 0.200	71.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 1997	8.0	920	53	< 0.200	52.00	< 5.00	< 0.100		< 0.0100	0.0220								
Apr. 1998	7.3	>1000	61	4.300	420.00	44.00	0.120		0.1880	<0.020								
Sep. 1998	8.0	>999	64	< 0.200	360.00	54.00	13.000		0.1270	< 0.0200								
Mar. 1999	7.7	>999	58	4.700	390.00	44.00	0.300		0.0670	< 0.0200								
Sep. 1999	8.1	>1000	63	0.440	390.00	30.00	< 0.100		< 0.0100	< 0.0200								
Mar. 2000	6.7	>1000	58	0.940	560.00	50.00	< 0.100		0.0700	< 0.0200								
Sep. 2000	7.4	>1000	64	< 0.200	630.00	< 5.00	< 0.100		0.0730	< 0.0200								
Mar. 2001	8.3	>1000	54	< 0.200	567.00	39.00	< 0.100		0.0650	< 0.0200								
Sep. 2001	7.9	950	62	4.510	454.00	62.00	5.300		0.0660	< 0.0200								
Mar. 2002	8.5	>1000	57	4.800	514.00	60.00	5.300		0.0670	< 0.0200								
Sep. 2002	7.5	>1000	62	5.810	406.00	72.00	9.500		0.0910	0.0460								
Mar. 2003	7.7	>1000	57	5.600	415.00	63.00	0.310		0.0840	< 0.0200								
Oct. 2003	7.6	>1000	60	5.040	500.00	66.00	1.060		0.0900	< 0.0200								
Mar. 2004	7.9	>1000	62	1.170	405.00	52.00	< 0.100		0.0680	< 0.0200								
Oct. 2004	9.1	>1000	64	5.270	452.00	63.00	2.500		0.0830	0.0250								
Mar. 2005	7.7	1,210	50	< 0.200	414.00	86.00	15.000		0.0960	0.0290								
Oct. 2005	8.2	>1000	63	8.230	508.00	83.00	16.000		0.1050	0.0200								
Mar. 2006	7.3	>1000	56	8.370	488.00	91.70	13.600		0.0821	< 0.0200								
Oct. 2006	7.1	>1000	59	7.320	372.00	57.30	11.600		0.0579	< 0.0200								
Mar. 2007	7.1	3,400	55	6.520	385.00	60.60	8.460		0.0575	0.0200								
Oct. 2007	7.0	3,760	62	6.820	374.00	68.40	14.500		0.0640	< 0.0180								
Mar. 2008	6.9	2,800	59	5.480	262.00	55.70	8.980		0.0545	< 0.0200								
Sep. 2008	7.0	3,500	60	6.560	392.00	75.50	1.510		0.2400	< 0.0180								
Mar. 2009	7.8	3,000	57	6.700	321.00	54.70	8.980		0.0847	< 0.0200								
Oct. 2009	7.3	3,400	58	2.210	380.00	41.20	< 0.100		0.0530	< 0.0180								
Apr. 2010	7.8	2,600	59	3.770	202.00	35.10	< 0.100		0.0524	< 0.0180	49.9				0.746	0.337		< 0.100
Oct. 2010	7.0	3,000	59	6.920	294.00	75.80	0.874		< 0.5000	< 0.0180	44.9				1.01	0.376		< 0.100
Apr. 2011	7.3	2,700	58	6.830	294.00	47.40	< 0.100		0.1360	< 0.0180	32.2				1.14	0.273		0.720
Oct. 2011	7.1	2,700	59	7.050	250.00	57.00	13.500		0.0943	< 0.0180	46.5				1.05	0.273		< 0.100
Apr. 2012	7.1	2,700	57	9.610	252.00	66.00	11.100		0.0644	< 0.0200	43.9				1.06	0.788		< 0.100
Oct. 2012	7.1	2,500	57	7.070	248.00	31.80	0.175		0.0647	< 0.0200	43.9				0.834	0.513		0.394
Apr. 2013	7.3	2,500	57	5.810	248.00	44.60	< 0.100		0.0995	< 0.0200	45.7				0.577	0.717		0.371
Oct. 2013	7.5	2,300	58	6.480	206.00	44.60	13.900		20.0000	< 0.0184	38.2				0.890	0.708		0.175
Jan. 2014									0.147									
Feb. 2014									0.0770									
Apr. 2014	8.2	2,400	52	< 0.200	244	32.4	< 0.100		0.152	0.0216	39.5				0.760	0.337		2.92
May. 2014									0.0840									
Oct. 2014	7.3	1,860	57	5.28	160	37.1	4.90		0.0786	< 0.0216	37.5				0.791	0.475		< 0.100
Apr. 2015	6.4	2,331	52	< 0.200	193	28.6	< 0.100				40.6			< 0.150	0.689	0.263		4.33

Table 9d: Stage 1 Underliner Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field)	Specific Conductance (field)	Temperature (field)	Ammonia Nitrogen	Chloride	Chemical Oxygen Demand	Iron (dissolved)	Iron (total)	Total Organic Halogen	Phenols	Magnesium (dissolved)	Magnesium (total)	Trichloroethylene	Selenium (dissolved)	Fluoride	Barium (dissolved)	Barium (total)	Nitrate
	Standard Units	μmhos	°F	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Oct. 2015	8.0	2,468	66	< 0.200	158	24.6	< 0.100		0.1220	< 0.0200	41.2				< 0.500	0.505		3.67
Apr. 2016	8.3	2,391	66	0.499	133	31.8	< 0.100		0.0900		39.9				0.516	0.627		2.18
Oct. 2016	8.1	1,871	62	1.48	127	40.3	< 0.100		0.0890	< 0.0196	46.2				0.649	0.706		2.04
Apr. 2017	8.2	2,391	62	0.802	123	16.5	< 0.500				35.8				< 0.500	0.490		2.35
Oct. 2017	7.0	1,200	61	8.12	188	56.2	< 0.500	1.34	0.063	0.0215	72.4	70.2			1.02	0.200	0.203	< 0.100
Apr. 2018	8.6	1,690	51	< 0.200	153	23.9	< 0.500	< 0.500			41.1	40.7			0.595	0.375	0.389	2.930
Oct. 2018	7.2	1,590	66	2.14	141	21.7	< 0.500	3.66		< 0.0192	46.6	42.8			0.631	0.750	0.800	1.13
Apr. 2019	7.9	1,951	55	4.15	189	42.1	< 0.500	3.24			45.0	46.1			0.423	0.631	0.880	0.23
Oct. 2019	7.2	1,865	52	4.24	117	36.4	1.520	1.97		< 0.0192	38.3	40.7			0.547	0.790	0.863	< 0.100
Apr. 2020	6.8	1,782	56	4.97	124	40.4		20.90				41.4			0.614		0.916	< 0.100
Oct. 2020	6.9	1,829	69	4.74	118	35.5		15.30		< 0.0184		43.9			< 0.100		1.180	< 0.100
Apr. 2021	7.3	1,785	61	5.18	99.6	41.7		2.02		< 0.0184		42.5			1.05		0.675	
Oct. 2021	7.2	1,831	64	4.23	103	31.2		0.75		< 0.0184		38.6			0.274		0.829	< 0.100
Apr. 2022	7.1	1,535	63	0.85	99	21.1		< 0.50				44.4			0.283		1.080	2.400
Oct. 2022	6.6	1,627	63	4.14	91	19.1		11.10		< 0.0200		42.4			< 0.100		0.932	< 0.100
Apr. 2023				3.69	85.1	32.2		3.59				47.8			0.305		0.872	< 0.200
Oct. 2023	8.2	1,135.3	61	< 0.500	76.3	22.1		2.96		< 0.0200		39.6			0.472		0.662	3.80
Apr. 2024	7.6	1,154.7	56	< 0.500	80.9	17.7		< 0.500				42.6			0.311		0.696	2.97
Oct. 2024	7.3	1,211.7	59	< 0.500	60.2	18.8		< 0.500		< 0.0212		38.0			0.456		0.642	2.54
Apr. 2025	8.8	1,016.0	45	< 0.500	58.0	17.6		< 0.500				37.1			< 1.000		0.471	2.95
Oct. 2025	8.2	1,179.5	63	< 0.500	75.9	20.0		< 0.500		< 0.0200		40.4			< 0.200		0.662	3.01

Notes:
Qualifiers not included in table.
Stage 1 underliner samples displayed in this table were collected while the leachate collection system wet valves were open.

Updated By: L. Auner, 12/11/2025
Checked By: M. Holicky 1/15/2026

Table 9e: Combined Leachate Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Conductance (field) µmhos	Temperature (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	Trichloroethylene mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Apr. 1991	7.0	1,150	53	< 0.100	110.00	8.00	< 0.020		< 0.0100	0.0020	16.0		< 0.0005					
Jul. 1991	7.1	1,180	58	< 0.100	140.00	22.00	< 0.020		< 0.0100	< 0.0020	22.0		< 0.0005					
Oct. 1991	7.2	1,120	54	< 0.100	130.00	36.00	< 0.020		0.0230	< 0.0020	32.0		< 0.0005					
Jan. 1992	7.8	1,210	53	< 0.100	130.00	25.00	< 0.020		0.0190	< 0.0020	28.0		< 0.0005					
Apr. 1992	7.8	1,280	55	< 0.200	140.00	8.00	< 0.100		0.0200	< 0.0050	29.0		< 0.0010					
Oct. 1992	7.8	1,280	55	< 0.200	34.00	8.00	< 0.100		< 0.0100	< 0.0050	27.0		< 0.0010					
Mar. 1993	7.1	1,270	54	< 0.200	150.00	< 5.00	< 0.100		0.0110	< 0.0050	29.0		< 0.0010	< 0.0050				
Sep. 1993	7.8	830	54	< 0.200	170.00	< 5.00	< 0.100		< 0.0100	0.0220	160.0		< 0.0020	< 0.0050				
Mar. 1994	7.2	1,200	56	< 0.200	150.00	< 5.00	< 0.100		< 0.0100	< 0.0050	41.0		< 0.0010	< 0.0050				
Sep. 1994	7.5	1,180	53	< 0.200	140.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Mar. 1995	7.8	1,100	45	< 0.200	110.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Sep. 1995	7.8	950	56	< 0.200	100.00	< 5.00	< 0.100		0.0220	< 0.0200								
Apr. 1996	8.2	1,090	48	0.310	99.00	< 5.00	< 0.100		0.0400	< 0.0200								
Oct. 1996	7.6	1,030	47	< 0.200	81.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Apr. 1997	8.5	1,080	52	< 0.200	71.00	< 5.00	< 0.100		< 0.0100	< 0.0200								
Oct. 1997	8.0	920	53	< 0.200	52.00	< 5.00	< 0.100		< 0.0100	0.0220								
Apr. 1998	8.5	750	58	< 0.200	51.00	< 5.00	< 0.100		< 0.0100	0.0295								
Sep. 1998	8.1	750	56	< 0.200	52.00	< 5.00	< 0.100		< 0.0200	< 0.0200								
Mar. 1999	7.9	1,000	62	8.400	280.00	52.00	< 0.100		0.0470	< 0.0200								
Sep. 1999	8.1	999	68	8.300	280.00	76.00	< 0.100		0.0570	< 0.0200								
Mar. 2000	8.2	1,000	61	9.600	380.00	58.00	< 0.100		0.0330	< 0.0200								
Sep. 2000	7.7	1,000	68	9.250	320.00	< 5.00	< 0.100		0.0700	< 0.0200								
Mar. 2001	8.2	1,000	62	< 0.200	567.00	39.00	< 0.100		0.0650	< 0.0200								
Sep. 2001	8.5	1,000	66	10.800	278.00	84.00	0.500		0.0300	< 0.0200								
Mar. 2002	8.6	1,000	59	10.600	263.00	63.00	< 0.100	10.600	0.0420	< 0.0200								
Sep. 2002	8.2	1,000	63	9.770	270.00	68.00	0.120		0.0400	0.0320								
Mar. 2003	8.8	1,000	61	9.160	294.00	68.00	< 0.100		0.0460	< 0.0200								
Oct. 2003	8.3	1,000	63	7.280	351.00	62.00	< 0.100		0.0630	< 0.0200								
Mar. 2004	8.0	>1000	60	7.730	240.00	71.00	< 0.100		0.0320	< 0.0200								
Oct. 2004	8.7	>1000	60	10.000	281.00	61.00	< 0.100		0.0620	< 0.0200								
Mar. 2005	7.5	>1000	59	10.900	266.00	76.00	< 0.100	10.900	0.0450	< 0.0200								
Oct. 2005	7.4	>1000	61	10.900	293.00	74.00	< 0.100		0.0410	< 0.0200								
Mar. 2006	7.9	>1000	59	9.300	304.00	75.20	1.620		0.0351	< 0.0200								
Oct. 2006	8.2	>1000	63	9.130	274.00	63.00	0.100		0.0386	< 0.0200								
Mar. 2007	8.0	3,400	59	8.610	246.00	67.00	1.620		0.0308	< 0.0200								
Oct. 2007	7.6	3,650	66	9.170	245.00	64.60	0.147		0.0564	< 0.0180								
Mar. 2008	7.8	3,500	61	9.560	259.00	69.40	0.227		0.0321	< 0.0200								
Sep. 2008	7.3	3,700	64	11.400	327.00	105.00	0.111		0.2400	< 0.0180								
Mar. 2009	7.8	3,600	58	13.100	302.00	92.40	< 0.100		0.0126	< 0.0176								
Oct. 2009	7.5	3,600	62	13.000	253.00	65.70	0.112		0.0451	< 0.0200								
Apr. 2010	7.4	3,200	63	11.200	202.00	57.10	< 0.100		0.0517	< 0.0180	94.5				0.904	0.253		0.220
Oct. 2010	7.2	3,400	62	9.800	211.00	80.40	0.154	9.800	< 0.5000	< 0.0180	93.9				1.05	0.263		< 0.100
Apr. 2011	7.6	3,300	62	11.200	215.00	68.60	< 0.100		0.0541	< 0.0200	96.1				0.990	0.232		0.310
Oct. 2011	7.6	2,900	62	6.580	187.00	< 5.00	0.108		0.0682	< 0.0200	89.8				1.22	0.307		0.370
Apr. 2012	7.6	3,000	61	9.920	208.00	64.30	< 0.100		0.0722	< 0.0200	98.6				1.16	0.350		0.265
Oct. 2012	7.4	2,900	60	< 0.020	222.00	56.40	0.907		0.0722	< 0.0200	75.5				0.907	0.379		0.191
Apr. 2013	7.5	3,000	57	8.750	211.00	57.30	0.606		0.0824	< 0.0188	93.0				0.606	0.432		0.432
Oct. 2013	8.0	2,700	59	7.830	215.00	54.50	< 0.100		36.8000	< 0.0180	61.4				0.512	0.432		0.175
Jan. 2014									0.108									
Feb. 2014									0.0980									
Apr. 2014	8.0	2,800	57	6.46	221	48.4	0.121		0.113	< 0.0192	71.6				0.901	0.225		1.08
May. 2014									0.122									
Oct. 2014	8.1	2,500	58	6.43	191.00	38.40	< 0.100		0.109	< 0.0216	71.5				0.751	0.294		0.603
Apr. 2015	6.7	2,637	52	6.65	242.00	51.20	0.155				86.7			< 0.150	1.00	0.248		0.691

Table 9e: Combined Leachate Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Date	Parameters																	
	pH (field) Standard Units	Specific Conductance (field) µmhos	Temperature (field) °F	Ammonia Nitrogen mg/L	Chloride mg/L	Chemical Oxygen Demand mg/L	Iron (dissolved) mg/L	Iron (total) mg/L	Total Organic Halogen mg/L	Phenols mg/L	Magnesium (dissolved) mg/L	Magnesium (total) mg/L	Trichloroethylene mg/L	Selenium (dissolved) mg/L	Fluoride mg/L	Barium (dissolved) mg/L	Barium (total) mg/L	Nitrate mg/L
	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value	Value
Oct. 2015	8.2	1,642	60	2.21	167.00	45.10	0.220		0.185	< 0.0180	73.0				0.66	0.308		3.300
Apr. 2016	7.5	2,187	57	3.55	179	42.1	0.172		0.1200		62.7				0.793	0.373		1.15
Oct. 2016	7.5	2,441	55	3.49	174	54.9	< 0.100		0.0940	< 0.0196	61.4				0.675	0.368		1.13
Apr. 2017	7.5	2,168	56	4.06	157	15.5	< 0.500				53.6				0.729	0.365		1.20
Oct. 2017	7.5	1,900	61	5.52	144	27.2	< 0.500	2.49	0.053	< 0.0196	59.4	57.7			0.810	0.395	0.393	0.266
Apr. 2018	7.9	2,520	53	4.38	159	43.3	< 0.500	1.11			65.9	66.9			0.840	0.233	0.249	0.859
Oct. 2018	7.3	1,960	65	3.57	114	33.5	< 0.500	1.52		< 0.0192	62.5	57.4			0.675	0.255	0.260	0.906
Apr. 2019	7.1	2,342	57	3.30	174	49.6	< 0.500	1.28			67.7	66.2			1.060	0.233	0.286	2.35
Oct. 2019	7.0	2,582	53	5.81	130	48.8	< 0.500	2.86		< 0.0184	73.9	81.1			0.778	0.276	0.397	1.10
Apr. 2020	6.8	2,655	58	6.51	122	46.7		5.69				97.5			1.330		0.230	1.13
Oct. 2020	7.4	2,441	67	6.71	120	54.7		8.72		< 0.0184		88.2			1.460		0.523	< 0.10
Apr. 2021	7.5	2,514	62	6.69	116	54.7		5.04		< 0.0184		97.9			0.932		0.372	
Oct. 2021	7.4	2,448	63	7.08	112	49.2		2.27		< 0.0188		96.1			0.475		0.255	0.180
Apr. 2022	7.8	2,483	65	5.46	111	45.2		1.22				113.0			0.957		0.239	0.278
Oct. 2022	7.3	2,384	64	6.35	113	44.6		2.34		< 0.0200		93.6			< 0.100		0.319	0.258
Apr. 2023				6.98	114	56.6		< 2.50				90.9			0.906		0.350	0.554
Oct. 2023	7.9	2,234.7	63	5.79	108	53.1		2.14		< 0.0200		95.1			0.687		0.268	0.766
Apr. 2024	7.5	2,231.3	59	5.94	119	45.0		2.17				88.3			0.677		0.211	0.865
Oct. 2024	7.3	2,274.9	59	5.34	92	49.9		4.37		< 0.0208		93.3			1.020		0.317	0.894
Apr. 2025	7.6	2,023.8	64	5.49	82	46.5		3.31				88.3			< 1.000		0.197	0.668
Oct. 2025	8.1	2,100.0	65	5.44	90	41.2		1.42		< 0.0200		89.0			< 0.200		0.214	0.733

Notes:
Qualifiers not included in table.

Updated By: L. Auner, 12/11/2025
Checked By: M. Holicky 1/15/2026

Table 9f: 2025 Monitoring Results
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
Dubuque, Iowa

Sample Type			Stage 1 Leachate/Underliner Liquid						Stage 2 Leachate/Underliner Liquid				Combined Leachate/Underliner Liquid		Groundwater										Equipment Blanks	
Sample Location ID			S1 Leachate Open		S1 Underliner Open		S1 Underliner Closed		S2 Leachate Open		S2 Underliner Closed		Combined Leachate		MW-1		MW-2				MW-3		EB-01	EB-01		
Duplicate ID																	DUP-1			DUP-01						
Sample Date			4/1/2025	10/15/2025	4/1/2025	10/15/2025	4/2/2025	10/16/2025	4/1/2025	10/15/2025	4/2/2025	10/16/2025	4/1/2025	10/15/2025	4/1/2025	10/15/2025	4/1/2025	4/1/2025	10/15/2025	10/15/2025	4/1/2025	10/15/2025	4/1/2025	10/15/2025		
Parameter Group	Parameter	Units																								
Field Parameters	pH	SU	7.03	7.56	8.8	8.15	6.88	7.03	7.25	8.19	7.08	7.53	7.63	8.09	7.4	7.84	7.15	-	7.6	-	7.02	7.41	-	-		
	Specific conductance	umhos/cm	1485.5	1457.2	1016	1179.5	1094.8	1487.8	2839.2	2875.9	2782.3	3911.7	2023.8	2100	596.9	587	741.8	-	727.1	-	1220	1132.5	-	-		
General Chemistry and Anions	Chloride	mg/L	74.2	73.8	58.0	75.9	65.2	74.1	106	105	109	105	81.6	89.5	6.54	4.95	8.69	8.19	7.54	7.58	76.4	76.6	<1.00	<1.00		
	Fluoride	mg/L	<1.00	<0.200	<1.00	<0.200	<1.00	<0.200	<1.00	0.866	<1.00	0.910	<1.00	<0.200	<1.00	0.213	<1.00	<1.00	<0.200	<0.200	<1.00	<0.200	<0.200	<0.200		
	Nitrate as N	mg/L	<0.100	<0.200	2.95	3.01	2.51	0.362	0.110	0.407	1.21	1.54	0.668	0.733	<0.100	<0.200	1.56	1.64	1.96	2.35	1.03	1.42	<0.100	<0.200		
	Sulfate	mg/L	20.6	24.8	22.2	28.0	17.4	26.8	1160	1190	1140	1300	649	550	24.5	24.2	18.6	20.3	20.6	21.0	111	116	<1.00	<1.00		
	Ammonia as N	mg/L	3.44	4.21	<0.500	<0.500	<0.500	3.32	9.94	10.3	6.88 J+	7.67	5.49 J+	5.44	<0.500	<0.200	<0.500	<0.500	<0.200	<0.200	<0.500	<0.200	<0.500	<0.200		
	Chemical Oxygen Demand	mg/L	28.4	24.7	17.6	20.0	13.8	25.1	125	60.7	55.9	58.5	46.5	41.2	6.75	7.12	<5.00	<5.00	5.13	<5.00	6.75	5.46	<5.00	<5.00		
	Total Dissolved Solids	mg/L	886	838	610	678	712	810	2330	2070	2150	2230	1810	1420	338	336	410	402	414	400	738	726	<50.0	<50.0		
Metals	Barium, total	mg/L	0.716	0.701	0.471	0.662	0.654	1.44	0.0283	0.0291	0.0312	0.0312	0.197	0.214	0.0786	0.0893	0.0829	0.0857	0.0959	0.0887	0.0520	0.0521	<0.0100	<0.0100		
	Boron, total	mg/L	8.18	6.99	2.64	3.05	3.57	6.72	21.4	21.3	21.4	20.9	14.0	13.4	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	2.25	2.23	<0.200	<0.200		
	Calcium, total	mg/L	119	117	65.2	88.6	82.2	121	158	172	160	173	126	143	60.4	68.6	90.4	93.6	108	100	123	126	<1.00	<1.00		
	Iron, total	mg/L	2.67	1.86	<0.500	<0.500	<0.500	39.3	2.16	2.48	2.31	1.88	3.31	1.42	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500		
	Lithium, total	mg/L	0.206	0.187	0.0642	0.0731	0.0881	0.179	1.10	1.18	1.10	1.14	0.654	0.630	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500		
	Magnesium, total	mg/L	41.5	42.0	37.1	40.4	39.5	43.1	133	144	133	142	88.3	89.0	35.0	39.8	39.8	41.2	46.8	43.4	57.1	58.7	<1.00	<1.00		
	Molybdenum, total	mg/L	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.0524	0.0554	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500		
Organics	Phenols, total	mg/L	-	<0.0200	-	<0.0200	-	<0.0208	-	<0.0200	-	<0.0200	-	<0.0200	-	<0.0200	-	-	<0.0200	<0.0200	-	<0.0200	-	<0.0200		

Notes:
- = Not analyzed or not applicable
J+ = estimated with potential high bias

Prepared by: L. Auner, 1/13/2026
Checked by: M. Holicky 1/15/2026

Table 10: Historic SSI and SSL since January 1, 2021
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Constituent	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	Spring 2025	Fall 2025
MW-2	Chloride										
	Nitrate, as nitrogen										
	Specific conductance								^		
MW-3	Chloride										
	Nitrate, as nitrogen										
	Magnesium										
	Specific conductance										

Key:

SSI
SSL

- * Result was above background level. If next sample is also above background level, an SSI will be identified.
- ^ The Fall 2024 result is considered confirmed as an SSI by the Spring 2025 result if the Spring 2025 result is compared to the background level used for 2025, but not if compared to the background levels used for 2024.

Updated by: L. Auner, 1/9/2026
Checked by: M. Holicky 1/15/2026

Notes:

1. Evaluation of SSIs and SSLs began with the 2021 AWQR.

Table 11: Corrective Action Trend Analysis
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Current SSL	Trend	N	Projected Year to Completion
NA				

Notes:

N - Number of Samples

NA - Table not applicable; this facility is not under corrective action monitoring.

Table 12: Leachate Management Summary
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

First Day of Measurements for Event ⁽¹⁾	Elevation of Saturated Waste (ft)		Height of Saturated Waste above Liner (ft)		Leachate Drain Line Flow Rate (gpm)		Underliner Drain Line Flow Rate with LCS Valves Open (gpm)		Underliner Drain Line Flow Rate with LCS Valves Closed (gpm)		Volume of Leachate Discharged to NPDES #008 Since Last Measurement Date (gal)	Notes	Monthly Precipitation ⁽³⁾
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 ²	Stage 1	Stage 2			(in)
11/22/2024	788.98	791.42	1.88	10.62	0.85	1.15	0.14	0	0.60	1.10	260,849		4.65
12/19/2024	788.76	794.91	1.66	14.11	0.78	1.16	0.11	0	0.55	1.06	126,828		1.63
1/16/2025	788.75	794.21	1.65	13.41	0.72	1.14	0.10	0	0.46	1.10	126,289		0
2/24/2025	788.97	794.21	1.87	13.41	0.68	1.09	0.10	0	0.11	1.01	167,174	Pump failure, Stage 2 sludge-like blockage ⁽⁴⁾	0.06
3/26/2025	788.84	794.89	1.74	14.09	0.63	0.96	0.09	0	0.10	0.85	⁽⁵⁾	Pump still not operating	3.31
4/24/2025	789.04	794.78	1.94	13.98	0.68	1.02	0.12	0	0.15	0.98	79,904	Pump back on 4/4/2025. Jetting 4/14/2025 ⁽⁶⁾	1.96
5/22/2025	789.04	793.51	1.94	12.71	0.79	1.00	0.13	0	0.16	0.97	128,072		2.29
6/19/2025	789.04	793.51	1.94	12.71	0.83	1.07	0.13	0	0.20	1.03	129,479		4.88
7/11/2025	789.07	794.11	1.97	13.31	0.77	1.04	0.14	0	0.26	0.98	101,074		9.62
8/20/2025	789.25	794.72	2.15	13.92	0.66	0.99	0.14	0	0.50	0.93	203,558		5.09
9/18/2025	789.61	794	2.51	13.2	1.02	1.05	0.17	0	0.43	0.97	135,088		1.44
10/22/2025	789.69	795.16	2.59	14.36	1.02	1.05	0.16	0	0.95	1.01	183,831		1.83
Annual Total											1,642,146		36.76

Notes:
LCS = leachate collection system
- = not measured or not applicable

Prepared by: L. Auner, 1/2/2026
Checked by: M. Holicky 1/15/2026

Footnotes:

⁽¹⁾ Measurements were made over the course of two days. Measurements of leachate drain line flow rates, underliner drain line flow rates with LCS valves open, and volume of leachate discharged were made on Day 1. Other measurements were made on Day 2.

⁽²⁾ No flow was observed during monthly monitoring, consistent with historical observations.

⁽³⁾ Monthly precipitation based on calendar month (not aligned with leachate measurement dates).

⁽⁴⁾ Leachate discharge pump failed late in the day on 2/25/2025. Also, a sludge-like blockage was noted in the Stage 2 standpipe at a depth of 69.98 ft btoc.

⁽⁵⁾ An estimated volume of 99,550 gal of leachate was pumped from the leachate tank and trucked to Deere's industrial wastewater treatment plant during March per Dan Mai (Deere) on April 11, 2025.

⁽⁶⁾ Jetting on April 14, 2025 was performed for the leachate drain lines and the underliner drains for Stage 1 and Stage 2, and the Stage 2 standpipe.

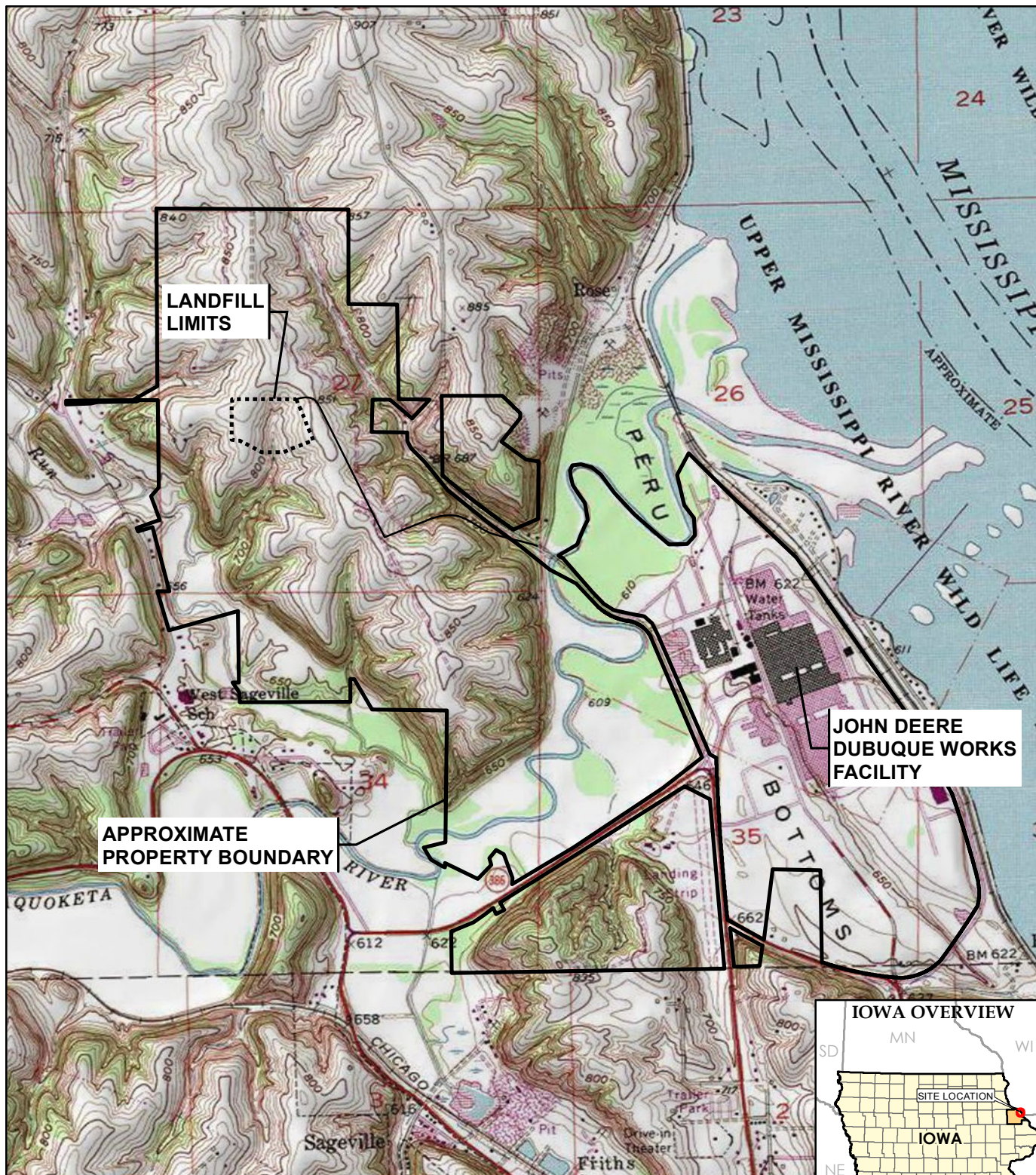
Table 13: Gas Monitoring Summary
2025 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Monitoring Points			Methane Results (% LEL)			
Name	Type	Description				
NA						

Notes:

NA - Table not applicable, gas monitoring is not conducted at this facility.

TRC - GIS



**JOHN DEERE
DUBUQUE WORKS
FACILITY**

**APPROXIMATE
PROPERTY BOUNDARY**

**LANDFILL
LIMITS**



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.



1" = 2,000'
1:24,000

0 2,000 4,000
FEET



999 Fourier Drive
Suite 101
Madison, WI 53717
Phone: 608.826.3663

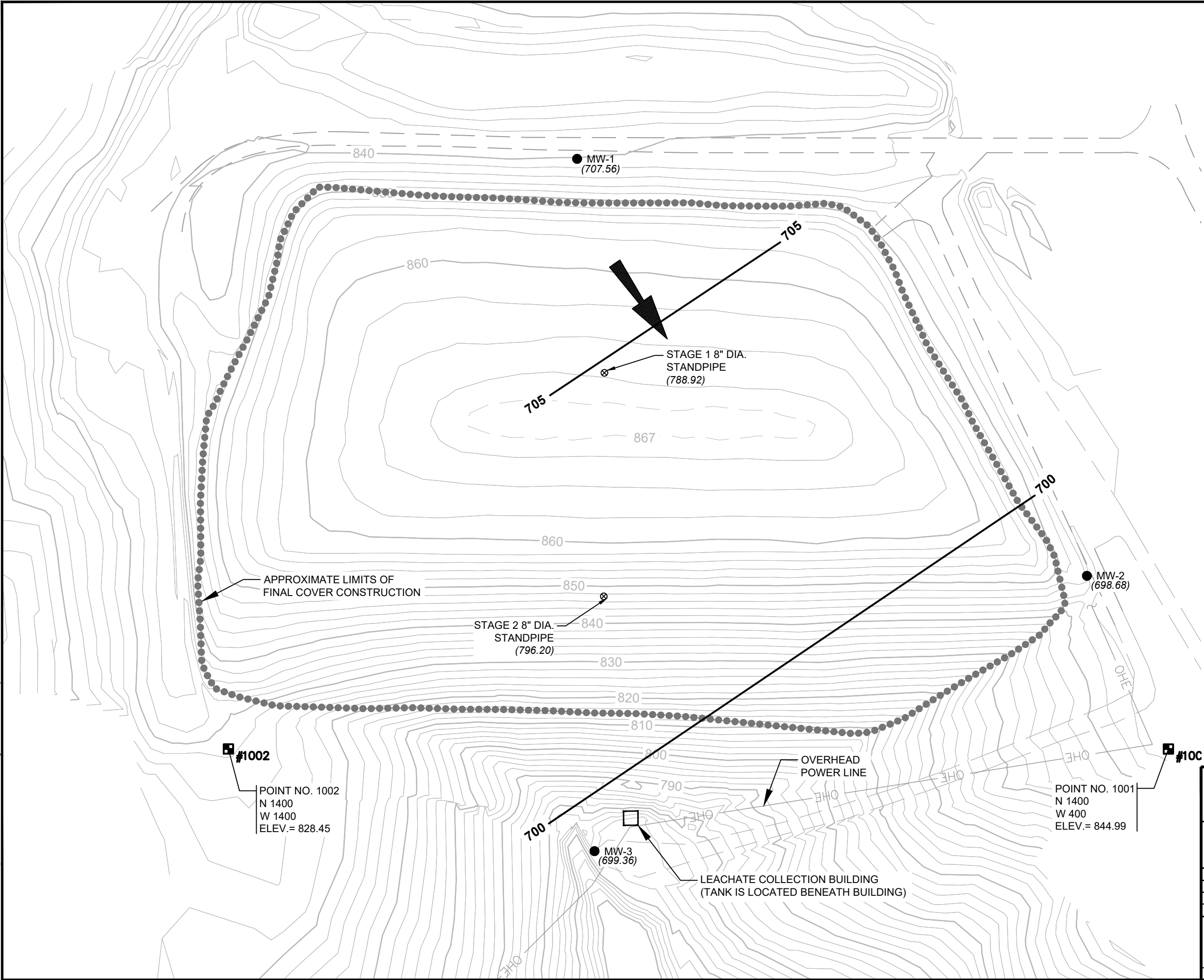
**JOHN DEERE DUBUQUE WORKS
DUBUQUE, IOWA**

SITE LOCATION MAP

DRAWN BY:	A. FOJTIK
APPROVED BY:	E. LAWSON
PROJECT NO:	701313
FILE NO.	701313-001slm.mxd
DATE:	JANUARY 2026

FIGURE 1

11x17 -- USER: ABecker -- ATTACHED REFS: basemap -- ATTACHED IMAGES: -- PLOT DATE: January 30, 2026 - 12:03PM -- LAYOUT: APRIL 25
DRAWING NAME: J:\John DeereDubuque\701313\0000\7013130000\7013130000.02.dwg



LEGEND

EXISTING PAVED ROAD

EXISTING UNPAVED ROAD

840

EXISTING 10' CONTOUR

EXISTING 2' CONTOUR

LIMITS OF FINAL COVER CONSTRUCTION

#1002

EXISTING SURVEY CONTROL MONUMENT

MW-3 (703.30)

EXISTING MONITORING WELL LOCATION AND WATER ELEVATION

(802.72)

LEACHATE STANDPIPE AND ELEVATION OF SATURATED WASTE

GROUNDWATER FLOW DIRECTION

705

GROUNDWATER CONTOUR (5' INTERVAL)

- NOTES**
1.

BASE MAP DEVELOPED FROM PLAN SHEET PROVIDED BY JOHN DEERE DUBUQUE WORKS. INFORMATION TO DEFINE THE PROJECT GRID SYSTEM AND DATE OF SURVEY WAS NOT AVAILABLE.
2.

WELL LOCATIONS ARE APPROXIMATE.
3.

GROUNDWATER ELEVATIONS MEASURED BY TRC ON APRIL 1, 2025.
4.

ELEVATIONS OF SATURATED WASTE MEASURED BY TRC ON APRIL 2, 2025.

PROJECT:

JOHN DEERE DUBUQUE WORKS LANDFILL
DUBUQUE, IOWA

TITLE:

POTENTIOMETRIC SURFACE MAP
(APRIL 2025)

DRAWN BY:

E. ALEXANDER

PROJ NO.:

701313.0000.0000

CHECKED BY:

L. AUNER

APPROVED BY:

E. LAWSON

DATE:

DECEMBER 2025

FIGURE 2

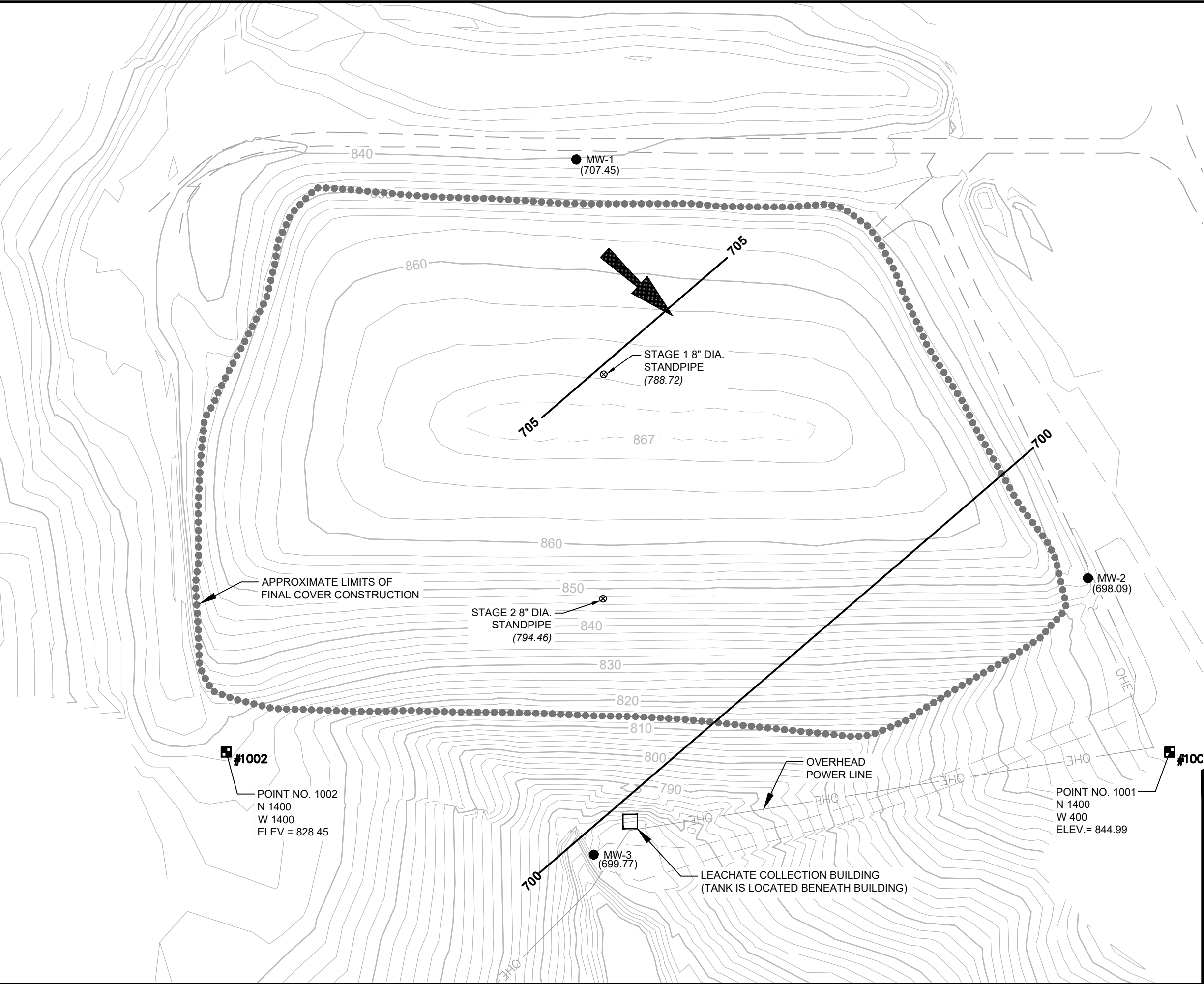
TRC

999 Fourier Drive
Suite 101
Madison, WI 53717
Phone: 608.826.3600

FILE NO.:

701313.0000.02.dwg

11x17 -- USER: ABecker -- ATTACHED REFS: basemap -- ATTACHED IMAGES: -- PLOT DATE: January 30, 2026 - 12:04PM -- LAYOUT: PSM OCT25
DRAWING NAME: J:\John DeereDubuque\701313.0000\701313.0000.03.dwg

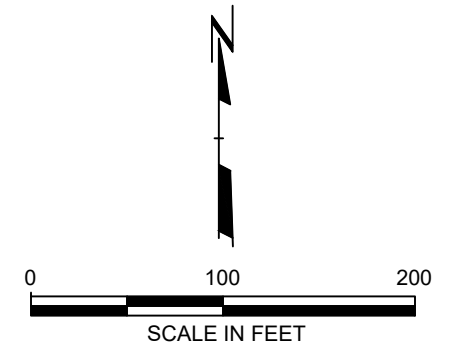


LEGEND

- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- 840 EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- LIMITS OF FINAL COVER CONSTRUCTION
- #1002 EXISTING SURVEY CONTROL MONUMENT
- MW-3 (703.30) EXISTING MONITORING WELL LOCATION AND WATER ELEVATION
- (793.17) LEACHATE STANDPIPE AND ELEVATION OF SATURATED WASTE
- GROUNDWATER FLOW DIRECTION
- 705 GROUNDWATER CONTOUR (5' INTERVAL)

NOTES

- BASE MAP DEVELOPED FROM PLAN SHEET PROVIDED BY JOHN DEERE DUBUQUE WORKS. INFORMATION TO DEFINE THE PROJECT GRID SYSTEM AND DATE OF SURVEY WAS NOT AVAILABLE.
- WELL LOCATIONS ARE APPROXIMATE.
- GROUNDWATER ELEVATIONS MEASURED BY TRC ON OCTOBER 15, 2025.
- ELEVATIONS OF SATURATED WASTE MEASURED BY TRC ON OCTOBER 16, 2025.



PROJECT: JOHN DEERE DUBUQUE WORKS LANDFILL DUBUQUE, IOWA			
TITLE: POTENTIOMETRIC SURFACE MAP (OCTOBER 2025)			
DRAWN BY:	E. ALEXANDER	PROJ NO.:	701313.0000.0000
CHECKED BY:	L. AUNER	FIGURE 3	
APPROVED BY:	E. LAWSON		
DATE:	DECEMBER 2025		
		999 Fourier Drive Suite 101 Madison, WI 53717 Phone: 608.826.3600	
		FILE NO.: 701313.0000.03.dwg	

Appendix A: Correspondence

April 24, 2025

DAN MAI
JOHN DEERE DUBUQUE WORKS
18600 SOUTH JOHN DEERE ROAD
DUBUQUE IA 52001

RE: John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C
2024 Annual Water Quality Report ([Document No. 112148](#))

Dear Mr. Mai:

The Iowa Department of Natural Resources (DNR) has reviewed the 2024 Annual Water Quality Report (AWQR), dated January 2025, as submitted by TRC Environmental Corporation (TRC). Our comments on the AWQR are below.

1. Report Priority Items

No priority items were requested in the report.

2. Groundwater Monitoring

- a. Statistically Significant Increases (SSI) were observed in MW-3 for chloride, nitrate, total magnesium, and specific conductivity and for nitrate in MW-2. While SSIs were observed only nitrate has applicable health-based groundwater protection standard (GWPS). Observed nitrate levels do not exceed GWPS. Wells MW-2 and MW-3 are considered to be in assessment monitoring.
- b. DNR acknowledges that there were two (2) exceedances of background levels without immediately preceding SSIs during the reporting period: chloride in MW-2 in April 2024, and specific conductance in MW-2 in October 2024. The chloride background exceedance in MW-2 in April 2024 was not confirmed as an SSI by the October 2024 sampling.
- c. No SSIs were above GWPS.
- d. DNR agrees with the report as written.

3. Leachate Control System

The leachate control system preformed as expected.

Feel free to contact me with any questions at (515) 415-1331 or by email at brad.davison@dnr.iowa.gov.

Sincerely,

Brad Davison
Environmental Specialist
Land Quality Bureau

copy: Erica Lawson
TRC Environmental Corporation
999 Fourier Drive, Suite 101
Madison, WI 53717

DNR Field Office #1 – Manchester

Appendix B: Field Notes

- Spring 2025 Sampling Forms and Facility Inspection Report
- Fall 2025 Sampling Forms and Facility Inspection Report

Sampling Forms and Facility Inspection Report Spring 2025



PROJECT NAME:	John Deere Dubuque Works
PROJECT NUMBER:	630113 Phase 4
PROJECT MANAGER:	Erica Lawson
SITE LOCATION:	Dubuque, Iowa
DATES OF FIELDWORK:	4/1/2025 - 4/2/2025
PURPOSE OF FIELDWORK:	Semiannual groundwater monitoring, leachate monitoring, and landfill cap inspection
WORK PERFORMED BY:	Maddie Holicky

Maddie Holicky 5/14/2025
SIGNED DATE

LA 12/11/25
CHECKED BY DATE



DAILY SUMMARY

PROJECT NAME: John Deere Dubuque Works	DATE: 4/1/2025	TIME ARRIVED: 8:15
PROJECT NUMBER: 630113 Phase 4	AUTHOR: Maddie Holicky	TIME LEFT: 16:00

WEATHER		
TEMPERATURE: <u>35</u> °F	WIND: <u>10</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
Gauge Stage 1 and Stage 2 standpipes		
Measure flow and collect samples from Stage 1 and Stage 2 leachate flow drains and Stage 1 Underliner		
Collect all groundwater samples using low flow stabilization from MW-1, MW-2, MW-3, field dup,		
and equipment blank		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
Unable to collect combined leachate sample using typical method (from sample tap) because leachate pump is not operating.	Inform Erica (PM), she confirms with John Rice (TRC, technical help) that it is okay to collect combined leachate using bailer at any time (before, after or during flow drain being off), plan to collect on 4/2/2025 when valves are closed
Problem with air compressor during purging of MW-3, had to pause purging.	Waited for parameters to stabilize after resuming purging, before sampling.

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica Lawson	TRC, PM	Various updates, how to collect combined leachate sample (as mentioned above)
Dan Mai	JDDW	Leachate pump replacement work expected to start tomorrow (see details on general notes page for 4/1/2025)

Maddie Holicky

SIGNED

5/14/2025

DATE

LA

CHECKED BY

12/11/25

DATE



DAILY SUMMARY

PROJECT NAME: John Deere Dubuque Works	DATE: 4/2/2025	TIME ARRIVED: 10:15
PROJECT NUMBER: 630113 Phase 4	AUTHOR: Maddie Holicky	TIME LEFT: 14:00

WEATHER		
TEMPERATURE: <u>45</u> °F	WIND: <u>10</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
Re-gauge Stage 1 and Stage 2 standpipes until leachate levels meet criteria for being stable.		
Collect Stage 1 and Stage 2 underliner samples and flow readings.		
Collect combined leachate sample from tank below drains in leachate building using bailer.		
Perform landfill cap inspection.		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
None	None

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica Lawson	TRC, PM	Various general updates

Maddie Holicky

SIGNED

5/14/2025

DATE

LA

12/11/25

CHECKED BY

DATE

PROJECT NAME:	John Deere Dubuque Works	DATE:	4/1/2025
PROJECT NUMBER:	630113 Phase 4	PREPARED BY:	Maddie Holicky

[illegible]

Maddie Holicky
PREPARED BY

5/14/2025

LA

12/11/25

DATE _____

PROJECT NAME:	John Deere Dubuque Works	DATE:	4/2/2025
PROJECT NUMBER:	630113 Phase 4	PREPARED BY:	Maddie Holicky

[illegible]

Maddie Holicky
PREPARED BY

5/14/2025

LA

12/11/25

DATE _____



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: John Deere Dubuque Works	MANUF: InSitu	MODEL: TRC	SAMPLER: Maddie Holicky
PROJECT NO.: 630113 Phase 4	OWNER: AquaTROLL 400	SER #: 822478	DATE: 4/1/25 - 4/2/25

PH METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
pH 4	pH 7	TIME	pH 4	pH 7	TIME	
☒ WITHIN RANGE	☒ WITHIN RANGE	10:13	4.02	7.12	16:14	4/1/25
☒ WITHIN RANGE	☒ WITHIN RANGE	11:03	4.18	7.14	14:14	4/2/25
☐ WITHIN RANGE	☐ WITHIN RANGE					
☐ WITHIN RANGE	☐ WITHIN RANGE					
☐ WITHIN RANGE	☐ WITHIN RANGE					

CONDUCTIVITY METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
STANDARD		TIME	CHECK	TEMP	TIME	
4490 µS/cm	☒ WITHIN RANGE	10:12	4725.9 µS/cm	25.00 °C	16:15	4/1/25
4490 µS/cm	☒ WITHIN RANGE	11:02	4425 µS/cm	25.00 °C	14:04	4/2/25
µS/cm	☐ WITHIN RANGE		µS/cm	°C		
µS/cm	☐ WITHIN RANGE		µS/cm	°C		
µS/cm	☐ WITHIN RANGE		µS/cm	°C		

DO METER				
CALIBRATION	TIME	POST SAMPLING CALIBRATION	TIME	DATE
☒ WITHIN RANGE	10:10	☒ WITHIN RANGE	15:45 pM	4/1/25
☒ WITHIN RANGE	11:00	☒ WITHIN RANGE	13:30 PM	4/2/25
☐ WITHIN RANGE		☐ WITHIN RANGE		
☐ WITHIN RANGE		☐ WITHIN RANGE		
☐ WITHIN RANGE		☐ WITHIN RANGE		

ORP METER					
CALIBRATION	TIME	POST SAMPLING CALIBRATION CHECK			DATE
		CHECK	TEMP	TIME	
☒ WITHIN RANGE	10:11	258.6 mV	5.00 °C	16:12	4/1/25
☒ WITHIN RANGE	11:01	216.0 mV	5.00 °C	14:12	4/2/25
☐ WITHIN RANGE		mV	°C		
☐ WITHIN RANGE		mV	°C		
☐ WITHIN RANGE		mV	°C		

TURBIDITY CALIBRATION CHECK								
METER TYPE:		Hach 2100P						
PRE-SAMPLING CALIBRATION CHECK								DATE
GEL 1 LABEL (NTU)	GEL 1 READING (NTU)	GEL 2 LABEL (NTU)	GEL 2 READING (NTU)	GEL 3 LABEL (NTU)	GEL 3 READING (NTU)	WITHIN 5%?	TIME	
5.51	5.56	51.7	51.6	515	520	y	10:15	4/1/25
5.44	5.55	52.2	52.1	519	518	y	11:00	4/2/25

Autocal Solution Lot#:	4GI1185	Exp Date:	9/1/2025
pH 7 Solution Lot#:	5GAO432	Exp Date:	6/1/2027
ORP Solution Lot#:	4GH1455	Exp Date:	5/1/2025

Parameters Calibrated: ☒ pH ☒ Conductivity
☒ Turbidity ☒ ORP ☒ Dissolved Oxygen

NOTES
See attached calibration files for details about pre-sampling calibration

DATE	PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS
	None	None
	None	

Maddie Holicky

SIGNED

5/14/2025

DATE

LA

Checked

12/11/25

DATE



WATER LEVEL DATA

[illegible]

**Remember to include the tape correction factor for depth to bottom measurements, if applicable.*

Maddie Holicky
SIGNED

5/14/2025
DATE

LA
CHECKED

12/11/25

DATE _____

[illegible]

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-1 Weather: Cloudy
 Date: 4/1/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 840.33
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 842.05
 Casing material: PVC Depth to top of screen (ft TOC): 168.78

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	134.49	134.9	134.9
Water Elevation (ft. MSL)	707.56	707.15	707.15

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	198.78	198.75	0.03

Well conditions commentary: Good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 184
 Flow Rate (mL/min): 150
 Volume purged (L): 3
 Volume sampled (L): 1.75
 Odor? (Y/N) None
 Color? (Y/N) None

Comments: _____

[illegible]

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-2 Weather: Cloudy
 Date: 4/1/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 846.71
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 848.49
 Casing material: PVC Depth to top of screen (ft TOC): 166.72

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	149.81	149.89	149.89
Water Elevation (ft. MSL)	698.68	698.6	698.6

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	196.72	196.70	0.02

Well conditions commentary: Good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 182
 Flow Rate (mL/min): 200
 Volume purged (L): 7
 Volume sampled (L): 3.5
 Odor? (Y/N) None
 Color? (Y/N) None

Comments: _____

PROJECT NAME: John Deere Dubuque Works				PREPARED				CHECKED			
PROJECT NUMBER: 630113 Phase 4				BY: MH		DATE: 4/1/25		BY: LA		DATE: 12/11/25	
SAMPLE ID: MW-3				WELL DIAMETER: 5 in							
WELL MATERIAL: ☒ PVC ☐ SS ☐ GS ☐ IRON ☐ OTHER:											
SAMPLE TYPE: ☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER:											
PURGING		TIME: 10:51		DATE: 04/01/25		SAMPLE:		TIME: 11:58		DATE: 04/01/25	
PUMP TYPE: BLADDER PUMP (Non-Dedicated)						PH: 7.02 SU		CONDUCTIVITY: 1220.0 umhos/cm			
STABILIZATION CRITERIA: EPA R5 (2021)						DO: 0.41 mg/l		ORP: 249.1 mV			
DEPTH TO WATER: 74.70 T/ PVC						TURBIDITY: 8.70 NTU					
DEPTH TO BOTTOM: 127.10 T/ PVC						☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY					
WELL VOLUME: 202.32 ☒ LITERS ☐ GALLONS						TEMPERATURE: 5.94 °C			OTHER: --		
VOLUME REMOVED: 8.3 ☒ LITERS ☐ GALLONS						COLOR: none			ODOR: None		
COLOR: None						ODOR: none			FILTRATE (0.45 um) ☐ YES ☐ NO		
TURBIDITY						FILT COLOR:			FILT ODOR:		
☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY						QC SAMPLE: ☐ MS/MSD ☐ DUP-					
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER						COMMENTS:					
TIME	PURGE RATE (mL/min)	TEMPERATURE (°C)	SPECIFIC CONDUCTIVITY (µs/cm)	D.O. (mg/L)	pH (SU)	ORP (mV)	TURBIDITY (NTU)	WATER LEVEL (ft btoc)	CUMULATIVE PURGE VOLUME (L)		
	Stabilization Criteria										
	100 mL/min-500 mL/min	None	3%	10% or 0.2 mg/L, whichever is greater (optional)	±0.1	±10 mV (optional)	within 10%, or <10 NTU	<0.1 ft			
10:51	150	6.71	1173.1	0.97	6.90	204.9	6.5	74.70	0.00		
10:56	150	6.75	1183.4	0.55	6.93	240.2	5.17	74.83	0.75		
11:01	150	6.34	1192.4	0.48	6.95	236.2	19.1	75.02	1.50		
11:06	150	6.56	1186.1	0.44	6.97	244.5	12.5	75.15	2.25		
11:11	150	6.56	1173.5	0.43	6.98	247.7	10.7	75.21	3.00		
11:16	150	6.65	1172.3	0.42	6.99	253.9	10.9	75.30	3.75		
11:21	150	6.56	1172.3	0.40	7.00	250.7	10.4	75.32	4.50		
11:26	150	6.14	1185.7	0.41	7.01	248.6	9.89	75.36	5.25		
11:31	150	Purging paused from 11:31-11:36 due to problem with air compressor for bladder pump.									
11:36	150	5.48	1187.2	0.41	7.03	249.1	9.9	75.38	5.25		
11:42	150	5.28	1146.4	0.64	7.04	216.5	10.1	75.10	6.00		
11:47	150	5.75	1222.4	0.36	7.01	254.2	8.66	75.20	6.75		
11:52	150	6.10	1213.0	0.43	7.02	252.1	7.47	75.25	7.50		
11:57	150	5.94	1220.0	0.41	7.02	249.1	8.7	75.35	8.25		
BOTTLES FILLED											
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250	CLR Plastic	None	☐ Y ☒ N	1	1000	CLR Plastic	None	☐ Y ☒ N		
1	250	CLR Plastic	H2SO4	☐ Y ☒ N					☐ Y ☐ N		
1	250	CLR Plastic	HNO3	☐ Y ☒ N					☐ Y ☐ N		
SHIPPING METHOD:				DATE SHIPPED:							
				SIGNATURE: Maddie Holicky				DATE SIGNED: 5/14/2025			

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-3 Weather: Cloudy
 Date: 4/1/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 772.26
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 774.06
 Casing material: PVC Depth to top of screen (ft TOC): 97.06

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	74.70	75.35	75.35
Water Elevation (ft. MSL)	699.36	698.71	698.71

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	127.06	127.10	-0.04

Well conditions commentary: Good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 112
 Flow Rate (mL/min): 150
 Volume purged (L): 8.25
 Volume sampled (L): 1.75
 Odor? (Y/N) None
 Color? (Y/N) none

Comments: Problem with air compressor, pause in purging from 11:31 to 11:36,
continued vu-situ log and waited for stabilization before sampling at MW-3



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque Works				PREPARED				CHECKED			
PROJECT NUMBER: 630113 Phase 4				BY: MH		DATE: 4/1/25		BY: LA		DATE: 12/1/25	
SAMPLE ID: EB-01				WELL DIAMETER: ____ in							
WELL MATERIAL: ☐ PVC ☐ SS ☐ GS ☐ IRON				☒ OTHER: Equipment Blank							
SAMPLE TYPE: ☐ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE				☒ OTHER: Equipment Blank							
PURGING START		TIME:		DATE: 04/01/25		SAMPLE:		TIME: 15:45		DATE: 04/01/25	
SAMPLE METHOD:	☒	PUMP	BLADDER PUMP (Non-Dedicated)			PH: NM SU		CONDUCTIVITY: NM umhos/cm			
	☐	BAILER				DO: NM mg/l		ORP: NM mV			
	☐	PASSIVE				TURBIDITY: NM NTU					
DEPTH TO WATER: T/ PVC				☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY							
DEPTH TO BOTTOM: T/ PVC				TEMPERATURE: NM °C				OTHER			
WELL VOLUME: ☐ LITERS ☐ GALLONS				COLOR: None				ODOR: None			
VOLUME REMOVED: ☐ LITERS ☐ GALLONS				FILTRATE (0.45 um) ☐ YES ☒ NO							
COLOR:				ODOR:				FILT COLOR: FILT ODOR:			
TURBIDITY ☐ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				QC SAMPLE: ☐ MS/MSD ☐ DUP-							
DISPOSAL METHOD: ☐ GROUND ☐ DRUM ☐ OTHER				Collected by pouring distilled water over bladder pump COMMENTS: following decontamination							
BOTTLES FILLED											
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	CLR PLST	None	☐ Y ☒ N		1	1 L	CLR PLST	None	☐ Y ☒ N	
1	250 mL	CLR PLST	HNO3	☐ Y ☒ N						☐ Y ☐ N	
1	250 mL	CLR PLST	H2SO4	☐ Y ☒ N						☐ Y ☐ N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 4/1/25							
				SIGNATURE: <i>Maddie Holicky</i>				DATE SIGNED: 5/14/2025			

JDDW Landfill - Leachate Flow and Standpipe Measurements

Recorded by: Maddie Holicky

Flow Totalizer Measurement		
Total gallons pumped to X-18 discharge	Date	Time
Not recorded, as pump is not operating.	4/1/2025	10:59

Flow Measurements - Leachate and Underliner Drains									
Leachate Drain Valve Status	Drain	Date	Start Time	Volume Filled (L)	Time to Fill (sec)			Avg. Time (sec)	Avg. Flow Rate (gpm)
					Test 1	Test 2	Test 3		
Open (Day 1)	Stage 1 Leachate	4/1/2025	1059	1.35	28	29	28	28.33	0.76
	Stage 2 Leachate	4/1/2025	1105	1.35	20	20	21	20.33	1.05
	Stage 1 Underliner	4/1/2025	1108	1.35	240	239	235	238.00	0.09
	Stage 2 Underliner	No flow	-	-	-	-	-	-	-
Closed (Day 2)	Stage 1 Underliner	4/2/2025	1310	1.35	209	206	207	207.33	0.10
	Stage 2 Underliner	4/2/2025	1330	1.35	24	25	25	24.67	0.87

Standpipe/Liner Information				Depth to Bottom (DTB) Measurements					
	Top of Standpipe Elevation (ft)	Synthetic Liner Elevation (ft)	Depth to liner (ft btoc)	Date	Time	DTB without TCF (ft btoc)	TCF (ft)	DTB (ft btoc)	Notes
Stage 1	869.32	787.1	82.22	4/1/2025	9:28	80.91	0.00	80.91	Obstruction
Stage 2	850.76	780.8	69.96	4/1/2025	9:39	72.70	0.00	72.70	

TCF = Tape correction factor

*Obstruction typically detected around 80 ft btoc in Stage 1 Standpipe.

Leachate Recovery Test							
Stage 1				Stage 2			
Date	Time	Depth to Leachate (ft btoc)	Notes	Date	Time	Depth to Leachate (ft btoc)	Notes
4/1/2025	9:28			4/1/2025	9:39	*	See note
	13:06	-	Close Valve		13:06	-	Close Valve
4/2/2025	10:45	80.45		4/2/2025	10:56	54.75	
	11:50	80.4			12:00	54.55	
					13:00	54.56	

Notes on leachate recovery test:

1. If change in depth to leachate is <0.1 ft after 1 hour, level is considered stable. If not <0.1 ft, remeasure at 1 hr intervals until change is <0.1
2. If obstruction is encountered, note that an obstruction was encountered and the depth to the obstruction.
3. If leachate not detected, enter ND under Depth to Leachate.

Notes:

* = False reading at 55.65 ft btoc noted in Stage 2 standpipe on 4/1/2025 at 9:39 (water level meter beeped, but not believed to be detecting leachate at that depth). This depth is similar to the depth that leachate rises to at end of leachate recovery test (typically ~55-60 ft btoc), so it seems possible that false readings could be related to residual sludge/moisture from the leachate.

Leachate and Underliner Sampling Summary

Site Name: John Deere Dubuque Works
 Permit No: 31-SDP-01-75
 Weather: Cloudy
 Sampler: Maddie Holicky

Project #: 630113 Phase 4
 Prepared by: MH Date: 4/1/2025
 Checked by: LA Date: 12/1/25

Sample Summary										
Sample ID	Sample Date	Sample Time	pH (SU)	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	Color	Odor
S1 Leachate Open	4/1/2025	12:15	7.03	1485.5	8	221.7	8.27	20.9	None	None
S2 Leachate Open	4/1/2025	12:18	7.25	2839.2	7.16	220.7	9.33	19.5	None	None
S1 Underliner Open	4/1/2025	12:20	8.8	1016	12.13	187.5	7.33	6.03	None	None
S2 Underliner Open	No Flow	-	-	-	-	-	-	-	-	-
S1 Underliner Closed	4/2/2025	1320	6.88	1094.8	8.19	226.6	16.64	4.83	None	None
S2 Underliner Closed	4/2/2025	1335	7.08	2782.3	8.44	222.2	17.52	11.6	None	None
Combined Leachate	4/2/2025	1350	7.63	2023.8	9.52	195.3	17.77	6.75	None	None

Notes on Sample IDs

S1 = Stage 1 Open = sample collected while leachate valves open
 S2 = Stage 2 Closed = sample collected while leachate valves closed

Typical Sampling Methods:	Stage 1 and Stage 2 leachate and underliner samples collected from drains in leachate building. Combined Leachate sample collected from combined leachate sample tap in leachate building.
Typical Equipment:	Stage 1 and Stage 2 leachate and underliner samples collected into new, disposable 1-gallon collapsible jugs prior to being poured into laboratory-provided sample containers. Combined Leachate sample collected directly from tap, no equipment used.
Decontamination	Not applicable, only disposable equipment used.

Bottles Filled for Each Sample					
Method(s)	Number	Size (mL)	Type	Preservative	Filtered?
EPA 9056A	1	250	CLR PLST	None	No
EPA 350.1	1	250	CLR PLST	H2SO4	No
EPA 6010C	1	250	CLR PLST	HNO3	No
EPA 2540C	1	1000	CLR PLST	None	No
Total sample volume (mL):		1750			

Additional Comments

The combined leachate sample was collected from the leachate tank by lowering a bailer into the tank (at the opening that the leachate and underliner drains drain into), as it could not be collected from the sample tap due to the leachate pump not currently operating.

Sampling Forms and Facility Inspection Report Fall 2025



PROJECT NAME:	John Deere Dubuque Works
PROJECT NUMBER:	631103
PROJECT MANAGER:	Erica Lawson
SITE LOCATION:	Dubuque, Iowa
DATES OF FIELDWORK:	10/15/2025 - 10/16/2025
PURPOSE OF FIELDWORK:	Semiannual groundwater monitoring, leachate monitoring, and landfill cap inspection
WORK PERFORMED BY:	Maddie Holicky

Maddie Holicky 01/16/2026
SIGNED DATE

LA 1/16/26
CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: John Deere Dubuque Works	DATE: 10/15/2025	TIME ARRIVED: 8:10
PROJECT NUMBER: 631103	AUTHOR: Maddie Holicky	TIME LEFT: 16:45

WEATHER		
TEMPERATURE: 40-55 °F	WIND: 10 SWS MPH	VISIBILITY: Clear
WORK / SAMPLING PERFORMED		
Gauge all monitoring wells and sample monitoring wells (MW-1, MW-2, and MW-3)		
Leachate and underliner flow measurements and sampling		
Gauge Stage 1 and Stage 2 leachate standpipes.		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
None	None

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica Lawson	TRC, PM	notify of arrival and departure

<u>Maddie Holicky</u>	<u>01/16/2026</u>	<u>LA</u>	<u>1/16/26</u>
SIGNED	DATE	CHECKED BY	DATE



GENERAL NOTES

PROJECT NAME: John Deere Dubuque Works	DATE: 10/16/2025	TIME ARRIVED: 8:00
PROJECT NUMBER: 631103	AUTHOR: Maddie Holicky	TIME LEFT: 14:00

WEATHER		
TEMPERATURE: 40-50 °F	WIND: 10 sws MPH	VISIBILITY: clear
WORK / SAMPLING PERFORMED		
Gauge Stage 1 and Stage 2 leachate standpipes.		
Measure flow rates for underliner and collect underliner samples.		
Complete landfill cap inspection.		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
None	None

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica Lawson	TRC, PM	notify of arrival and departure

Maddie Holicky 01/16/2026
 SIGNED DATE

LA 1/16/26
 CHECKED BY DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: John Deere Dubuque Work	MANUF: InSitu	MODEL: TRC	SAMPLER: Maddie Holicky
PROJECT NO.: 631103	OWNER: AquaTROLL 600	SER #: 1029046	DATE: 10/15/25 - 10/15/25

PH METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
pH 4	pH 7	TIME	pH 4	pH 7	TIME	
☒ WITHIN RANGE	☒ WITHIN RANGE	9:12	4.16	7.14	15:05	10/15/25
☒ WITHIN RANGE	☒ WITHIN RANGE	9:38	4.08	7.20	11:00	10/16/25
☐ WITHIN RANGE	☐ WITHIN RANGE					
☐ WITHIN RANGE	☐ WITHIN RANGE					
☐ WITHIN RANGE	☐ WITHIN RANGE					

CONDUCTIVITY METER					
CALIBRATION		TIME	POST SAMPLING CALIBRATION CHECK		
STANDARD			CHECK	TEMP	DATE
4490 µS/cm	☒ WITHIN RANGE	9:11	4445 µS/cm	17.01 °C	10/15/25
4490 µS/cm	☒ WITHIN RANGE	9:36	4531 µS/cm	18.99 °C	10/16/25
µS/cm	☐ WITHIN RANGE		µS/cm	°C	
µS/cm	☐ WITHIN RANGE		µS/cm	°C	
µS/cm	☐ WITHIN RANGE		µS/cm	°C	

DO METER				
CALIBRATION	TIME	CALIBRATION	TIME	DATE
☒ WITHIN RANGE	9:10	☒ WITHIN RANGE	15:00	10/15/25
☒ WITHIN RANGE	9:30	☒ WITHIN RANGE	11:00	10/16/25
☐ WITHIN RANGE		☐ WITHIN RANGE		
☐ WITHIN RANGE		☐ WITHIN RANGE		
☐ WITHIN RANGE		☐ WITHIN RANGE		

ORP METER					
CALIBRATION	TIME	POST SAMPLING CALIBRATION CHECK			DATE
		CHECK	TEMP	TIME	
☒ WITHIN RANGE	9:11	234.7 mV	16.21 °C	15:05	10/15/25
☒ WITHIN RANGE	9:35	234.7 mV	18.40 °C	11:00	10/16/25
☐ WITHIN RANGE		mV	°C		
☐ WITHIN RANGE		mV	°C		
☐ WITHIN RANGE		mV	°C		

TURBIDITY CALIBRATION CHECK								
METER TYPE:		Hach 2100P						
PRE-SAMPLING CALIBRATION CHECK								DATE
GEL 1 LABEL (NTU)	GEL 1 READING (NTU)	GEL 2 LABEL (NTU)	GEL 2 READING (NTU)	GEL 3 LABEL (NTU)	GEL 3 READING (NTU)	WITHIN 5%?	TIME	
5.07	5.27	53	52.7	503	504	Y	9:30	10/15/25
5.07	5.23	53	53.2	503	502	Y	15:00	10/15/25
5.07	5.31	53	54.7	503	511	Y	9:40	10/16/25
5.07	5.34	53	55	503	508	Y	11:00	10/16/25

Autocal Solution Lot#:	5GG1865	Exp Date:	May-26
pH 7 Solution Lot#:	5GC1678	Exp Date:	Sep-26
ORP Solution Lot#:	181258	Exp Date:	Jan-26
Parameters Calibrated:	☒ pH ☒ Conductivity ☐ Turbidity ☒ ORP ☒ Dissolved Oxygen		

NOTES

DATE	PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS


 01/16/2026
 SIGNED _____ DATE _____

LA
 Checked _____ 1/16/26
 _____ DATE _____

[illegible]

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-1 Weather: Rainy
 Date: 10/15/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 840.33
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 842.05
 Casing material: PVC Depth to top of screen (ft TOC): 168.78

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	134.60	135.3	135.3
Water Elevation (ft. MSL)	707.45	706.75	706.75

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	198.78	198.75	0.03

Well conditions commentary: Good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 184
 Flow Rate (mL/min): 175
 Volume purged (L): 5.25
 Volume sampled (L): 2.25
 Odor? (Y/N) None
 Color? (Y/N) None

Comments: _____

PROJECT NAME:						John Deere Dubuque Works							PREPARED								CHECKED																																																										
PROJECT NUMBER:										631103										BY:				MH				DATE:				10/15/25				BY:				L.A.				DATE:				1/16/26																															
SAMPLE ID:										MW-2										WELL DIAMETER: 5 in																																																											
WELL MATERIAL:										☒ PVC ☐ SS ☐ GS ☐ IRON										☐ OTHER:																																																											
SAMPLE TYPE:										☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE										☐ OTHER:																																																											
PURGING						TIME:						12:26						DATE:						10/15/25						SAMPLE:						TIME:						12:51						DATE:						10/15/25																									
PUMP TYPE:										BLADDER PUMP (Non-Dedicated)										PH:										7.60						SU						CONDUCTIVITY:										727.1						umhos/cm																					
STABILIZATION CRITERIA:										EPA R5 (2021)										DO:										3.19						mg/l						ORP:										43.5						mV																					
DEPTH TO WATER:										150.40										T/										PVC										TURBIDITY:										18.0										NTU																			
DEPTH TO BOTTOM:										196.70										T/										PVC										☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY																																							
WELL VOLUME:										178.77										☒ LITERS ☐ GALLONS										TEMPERATURE:										14.44										°C										OTHER:										--									
VOLUME REMOVED:										3.75										☒ LITERS ☐ GALLONS										COLOR:										None										ODOR:										None																			
COLOR:										None										ODOR:										None										FILTRATE (0.45 um) ☐ YES ☒ NO																																							
										TURBIDITY										FILT COLOR:																				FILT ODOR:																																							
☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY																				QC SAMPLE: ☐ MS/MSD ☒ DUP- 1																																																											
DISPOSAL METHOD:										☒ GROUND ☐ DRUM ☐ OTHER										COMMENTS:																																																											
TIME	PURGE RATE (mL/min)	TEMPERATURE ("C)	SPECIFIC CONDUCTIVITY (µS/cm)	D.O. (mg/L)	pH (SU)	ORP (mV)	TURBIDITY (NTU)	WATER LEVEL (ft bloc)	CUMULATIVE PURGE VOLUME (L)																																																																						
	Stabilization Criteria																																																																														
	100 mL/min- 500 mL/min	None	3%	10% or 0.2 mg/L, whichever is greater (optional)	±0.1	±10 mV (optional)	within 10%, or <10 NTU	<0.1 ft																																																																							
12:26	150	16.04	745.8	5.82	8.12	24.3	21.6	150.40	0.00																																																																						
12:31	150	15.00	744.9	11.00	7.71	34.1	19.8	150.45	0.75																																																																						
12:36	150	14.81	749.3	3.37	7.67	37.5	18.8	150.45	1.50																																																																						
12:41	150	14.75	740.9	3.17	7.62	40.8	18.7	150.45	2.25																																																																						
12:46	150	14.56	734.9	3.18	7.64	40.5	17.2	150.45	3.00																																																																						
12:51	150	14.44	727.1	3.19	7.60	43.5	18	150.45	3.75																																																																						
BOTTLES FILLED																																																																															
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED																																																																						
2	250 mL	CLR PLST	None	☐	No	2	500mL	AMB GLS	H2SO4	☐	No																																																																				
2	250 mL	CLR PLST	H2SO4	☐	No	2	1 L	CLR PLST	None	☐	No																																																																				
2	250 mL	CLR PLST	HNO3	☐	No					☐																																																																					
SHIPPING METHOD: FedEx					DATE SHIPPED: 10/15/25					DATE SIGNED: 01/16/2026																																																																					
					SIGNATURE: Maddie Holicky																																																																										

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-2 Weather: Rainy
 Date: 10/15/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 846.71
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 848.49
 Casing material: PVC Depth to top of screen (ft TOC): 166.72

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	150.40	150.45	150.45
Water Elevation (ft. MSL)	698.09	698.04	698.04

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	196.72	196.70	0.02

Well conditions commentary: good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 182
 Flow Rate (mL/min): 150
 Volume purged (L): 3.75
 Volume sampled (L): 4.75
 Odor? (Y/N) None
 Color? (Y/N) None

Comments: DUP-1 collected here

PROJECT NAME:						John Deere Dubuque Works							PREPARED				CHECKED																	
PROJECT NUMBER:						631103									BY:		MH			DATE:		10/15/25			BY:		<i>LA</i>			DATE:		<i>1/16/26</i>		
SAMPLE ID:						MW-3									WELL DIAMETER: 5 in																			
WELL MATERIAL:						☒ PVC ☐ SS ☐ GS ☐ IRON ☐ OTHER:																												
SAMPLE TYPE:						☒ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE ☐ OTHER:																												
PURGING			TIME:			9:45			DATE:			10/15/25			SAMPLE:			TIME:			10:15			DATE:			10/15/25							
PUMP TYPE:						BLADDER PUMP (Non-Dedicated)									PH:		7.41		SU		CONDUCTIVITY:		1132.5		umhos/cm									
STABILIZATION CRITERIA:						EPA R5 (2021)									DO:		0.23		mg/l		ORP:		132.8		mV									
DEPTH TO WATER:						74.29 T/ PVC									TURBIDITY:		5.91		NTU															
DEPTH TO BOTTOM:						126.93 T/ PVC									☒ NONE		☐ SLIGHT		☐ MODERATE		☐ VERY													
WELL VOLUME:						203.25 ☒ LITERS ☐ GALLONS									TEMPERATURE:		13.80		°C		OTHER:		--											
VOLUME REMOVED:						6.0 ☒ LITERS ☐ GALLONS									COLOR:		None				ODOR:		None											
COLOR:						None									ODOR:		None																	
															FILTRATE (0.45 um)		☐ YES		☒ NO															
															TUBRIDITY																			
☒ NONE						☐ SLIGHT ☐ MODERATE ☐ VERY									FILT COLOR:																			
															FILT ODOR:																			
DISPOSAL METHOD:						☒ GROUND ☐ DRUM ☐ OTHER									QC SAMPLE:		☐ MS/MSD		☒ DUP-		None													
COMMENTS:																																		
TIME		PURGE RATE (mL/min)	TEMPERATURE (°C)	SPECIFIC CONDUCTIVITY (µS/cm)	D.O. (mg/L)	pH (SU)	ORP (mV)	TURBIDITY (NTU)	WATER LEVEL (ft bloc)	CUMULATIVE PURGE VOLUME (L)																								
		Stabilization Criteria																																
		100 mL/min- 500 mL/min	None	3%	10% or 0.2 mg/L, whichever is greater (optional)	±0.1	±10 mV (optional)	within 10%, or <10 NTU	<0.1 ft																									
9:45	200	13.99	1157.0	0.89	7.25	156.4	7.74	74.29	0.0																									
9:50	200	13.84	1152.0	0.39	7.35	151.5	5.28	74.91	1.0																									
9:55	200	13.75	1152.0	0.33	7.34	149.5	5.31	75.10	2.0																									
10:00	200	13.73	1144.3	0.29	7.41	142.9	5.72	75.23	3.0																									
10:05	200	13.78	1144.4	0.26	7.39	140.7	5.11	75.29	4.0																									
10:10	200	13.72	1137.5	0.25	7.44	134.7	5.49	75.32	5.0																									
10:15	200	13.80	1132.5	0.23	7.41	132.8	5.91	75.32	6.0																									
BOTTLES FILLED																																		
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED																									
1	250 mL	CLR PLST	None	☐	☒ No	1	500mL	AMB GLS	H2SO4	☐	☒ No																							
1	250 mL	CLR PLST	H2SO4	☐	☒ No	1	1 L	CLR PLST	None	☐	☒ No																							
1	250 mL	CLR PLST	HNO3	☐	☒ No					☐	☐																							
SHIPPING METHOD: FedEx					DATE SHIPPED: 10/15/25				DATE SIGNED: <i>01/16/2026</i>																									
					SIGNATURE: <i>Maddie Holicky</i>																													

Groundwater Sampling Field Sheet

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-3 Weather: Rainy
 Date: 10/15/2025 Sampler: MH

Monitoring Well Construction Information

Borehole diameter (in): 8 Ground surface elevation (ft. MSL): 772.26
 Casing Diameter (in): 5 Top of Casing elevation (ft. MSL): 774.06
 Casing material: PVC Depth to top of screen (ft TOC): 97.06

Monitoring Well Field Observations

Locked (Y/N): Yes

	Before purging	After purging	Before sampling
Depth to water (ft. TOC):	74.29	75.32	75.32
Water Elevation (ft. MSL)	699.77	698.74	698.74

Screen submerged? (Y/N): Yes

	Constructed	Measured	Difference
Well Depth (ft. TOC)	127.06	126.93	0.13

Well conditions commentary: good

Sampling Equipment

Type of Sampling Equipment: Pump
 Equipment Name & Description: Sample Pro Bladder Pump
 Pump Type: Submersible Pump
 Dedicated/Disposable/Portable: Portable
 Decontamination for pump: Alconox wash, DI water rinse
 Tubing (Dedicated/Disposable): Disposable
 Purge Method: Low-flow

Sample Info

Equipment depth (ft. TOC) 112
 Flow Rate (mL/min): 200
 Volume purged (L): 6
 Volume sampled (L): 2.25
 Odor? (Y/N) None
 Color? (Y/N) None

Comments: _____



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque Works				PREPARED				CHECKED							
PROJECT NUMBER: 631103				BY: MH		DATE: 10/15/25		BY: LA		DATE: 1/16/26					
SAMPLE ID: EB-01				WELL DIAMETER: ____ in											
WELL MATERIAL: ☐ PVC ☐ SS ☐ GS ☐ IRON				☒ OTHER: Equipment Blank											
SAMPLE TYPE: ☐ GW ☐ WW ☐ SW ☐ DI ☐ LEACHATE				☒ OTHER: Equipment Blank											
PURGING START		TIME:		DATE: 10/15/25		SAMPLE:		TIME: 1445		DATE: 10/15/25					
SAMPLE METHOD:	☒ PUMP	BLADDER PUMP (Non-Dedicated)			PH: - SU		CONDUCTIVITY: - umhos/cm								
	☐ BAILER				DO: - mg/l		ORP: - mV								
	☐ PASSIVE				TURBIDITY: - NTU										
DEPTH TO WATER: T/ PVC				☒ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY											
DEPTH TO BOTTOM: T/ PVC				TEMPERATURE: - °C				OTHER							
WELL VOLUME: ☐ LITERS ☐ GALLONS				COLOR: None				ODOR: None							
VOLUME REMOVED: ☐ LITERS ☐ GALLONS				FILTRATE (0.45 um) ☐ YES ☒ NO											
COLOR:				ODOR:				FILT COLOR:				FILT ODOR:			
TURBIDITY				QC SAMPLE: ☐ MS/MSD ☐ DUP-											
☐ NONE ☐ SLIGHT ☐ MODERATE ☐ VERY				Collected by pouring distilled water over bladder pump											
DISPOSAL METHOD: ☒ GROUND ☐ DRUM ☐ OTHER				COMMENTS: following decontamination.											
BOTTLES FILLED															
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED					
1	250 mL	CLR PLST	None	☐ Y	☒ N	1	500mL	AMB GLS	H2SO4	☐ Y	☒ N				
1	250 mL	CLR PLST	H2SO4	☐ Y	☒ N	1	1 L	CLR PLST	None	☐ Y	☒ N				
1	250 ml	CLR PLST	HNO3	☐ Y	☒ N					☐ Y	☐ N				
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/15/25											
				SIGNATURE: <i>Maddie Holicky</i>				DATE SIGNED: <u>01/16/2026</u>							

JDDW Landfill - Leachate Flow and Standpipe Measurements

Recorded by Maddie Holicky

Flow Totalizer Measurement		
Total gallons pumped to X-18 discharge	Date	Time
112300	10/15/2025	9:57

Flow Measurements - Leachate and Underliner Drains									
Leachate Drain Valve Status	Drain	Date	Start Time	Volume Filled (L)	Time to Fill (sec)			Avg. Time (sec)	Avg. Flow (gpm)
					Test 1	Test 2	Test 3		
Open (Day 1)	Stage 1 Leachate	10/15/2025	958	1.35	17	17	18	17.33	1.23
	Stage 2 Leachate	10/15/2025	1000	1.35	18	20	20	19.33	1.11
	Stage 1 Underliner	10/15/2025	1002	1.35	132	131	135	132.67	0.16
	Stage 2 Underliner	No flow	-	-	-	-	-	-	-
Closed (Day 2)	Stage 1 Underliner	10/16/2025	1030	1.35	20	20	19	19.67	1.09
	Stage 2 Underliner	10/16/2025	1031	1.35	20	19	18	19.00	1.13

Standpipe and Liner Elevations		
	Stage 1	Stage 2
Top of Standpipe Elevation (ft):	869.32	850.76
Synthetic Liner Elevation (ft):	787.1	780.8

Standpipe Depth to Leachate Measurements						
Leachate Drain Valve Status	Standpipe	Date	Time	Depth to Leachate (ft btoc)	Change in Depth to Leachate (ft)	Depth to Bottom (ft btoc)
Open	Stage 1	10/15/2025	840	ND	--	80.9
Closed		10/16/2025	905	80.59	--	--
		10/16/2025	1010	80.6	0.01	--
						--
Open	Stage 2	10/15/2025	850	ND	--	72.97
Closed		10/16/2025	908	56.29	--	--
		10/16/2025	1008	56.3	0.01	--
						--

Notes:

1. If change in depth to leachate is <0.1 ft after 1 hour, level is considered stable. If not <0.1 ft, remeasure at 1 hr intervals until change is <0.1 ft.
2. If obstruction is encountered, note that an obstruction was encountered and the depth to the obstruction.
3. False depth to leachate on 10/15/2025 stage 2 at 56.39

Leachate and Underliner Sampling Summary

Site Name: John Deere Dubuque Works
 Permit No: 31-SDP-01-75
 Weather: Clear, 40 -55
 Sampler: Maddie Holicky

Project #: 630113
 Prepared by: MH Date: 10/15/2025
 Checked by: LA Date: 1/16/26

Sample Summary										
Sample ID	Sample Date	Sample Time	pH (SU)	Conductivity (umhos/cm)	DO (mg/L)	ORP (mV)	Temperature (°C)	Turbidity (NTU)	Color	Odor
S1 Leachate Open	10/15/2025	11:00	7.56	1457.2	5.69	-84.5	17.38	0.78	none	none
S2 Leachate Open	10/15/2025	11:10	8.19	2875.9	8.59	-123.1	18.41	8.32	none	none
S1 Underliner Open	10/15/2025	10:55	8.15	1179.5	10.07	119	17.07	4.44	none	none
S2 Underliner Open	No flow	-	-	-	-	-	-	-	-	-
S1 Underliner Closed	10/16/2025	10:30	7.03	1487.8	6.12	-9.1	17.75	511	light brown	none
S2 Underliner Closed	10/16/2025	10:35	7.53	3911.7	6.9	-127.3	18.36	16.6	none	none
Combined Leachate	10/15/2025	11:20	8.09	2100.0	8.1	-78.2	18.31	43.04	light brown	none

Notes on Sample IDs

S1 = Stage 1 Open = sample collected while leachate valves open
 S2 = Stage 2 Closed = sample collected while leachate valves closed

Sampling Methods:	Stage 1 and Stage 2 leachate and underliner samples collected from drains in leachate building. Combined Leachate sample collected from combined leachate sample tap in leachate building.
Equipment:	Stage 1 and Stage 2 leachate and underliner samples collected into new, disposable 1-gallon collapsible jugs prior to being poured into laboratory-provided sample containers. Combined Leachate sample collected directly from tap, no equipment used.
Decontamination	Not applicable, only disposable equipment used.

Bottles Filled for Each Sample					
Method(s)	Number	Size (mL)	Type	Preservative	Filtered?
EPA 9056A	1	250	CLR PLST	None	No
EPA 350.1	1	250	CLR PLST	H2SO4	No
EPA 6010C	1	250	CLR PLST	HNO3	No
EPA 9066	1	500	AMB GLS	H2SO4	No
EPA 2540C	1	1000	CLR PLST	None	No
Total sample volume (mL):		2250			

Additional Comments

Appendix C: Background Levels

Technical Memorandum

To: Lydia Auner - TRC

From: Joyce Peterson, Senior Environmental Consultant - TRC

Subject: John Deere Dubuque Works – Dubuque, IA Landfill Background Concentrations

Date: January 5, 2026

CC:

Project No.: 000701313.0000

The background statistics have been updated for the John Deere Dubuque Works industrial waste landfill in Dubuque, Iowa. The methods used in 2021 for the original background values were used for the update, as summarized in this memo.

Data Set for Statistical Evaluation

The background well is MW-1. The parameters that were considered for statistical evaluation consist of all parameters in the semiannual or annual monitoring program for which at least eight rounds of sampling have been performed and which have numerical results (except temperature and turbidity), as follows:

- | | |
|--------------------------|------------------------|
| — Ammonia as nitrogen | — Magnesium |
| — Barium | — Nitrate as nitrogen |
| — Chemical Oxygen Demand | — pH |
| — Chloride | — Phenols |
| — Fluoride | — Specific Conductance |
| — Iron | |

The most recent 20 results as of October 2024 were used for the background calculations for each parameter except total metals, for which the most recent 15 results were used because only 15 rounds of total metals analysis had been conducted as of October 2024 (analysis of total metals began in October 2017). For most parameters except metals, this consisted of semiannual results for samples collected between April 2015 and October 2024. Sequentially earlier results were included for parameters that aren't sampled semiannually or otherwise have missing or omitted data. The data sets were observed visually for outliers using quantile-quantile (Q-Q) graphs. Two outliers were omitted from the data sets used for the background evaluation: pH in April 2015, which was well outside the normal range for pH, and the single detected concentration for nitrate (3.76 mg/L in October 2017). The pH outlier was confirmed using a statistical test for outliers (graphs and test outputs included in Attachment 1). The outlier values were replaced by the next earlier value to maintain a data set of 20 values. Table 1 presents a summary of the data used for the statistical evaluation.

Background concentrations were assigned as follows based on the percent of detected results in the data set and the data distribution:

- For data sets with more than 50 percent detected concentrations, the new values to be added to the data set were compared to the existing data set using the Wilcoxon-Mann-Whitney two sample hypothesis test. For each of the five data sets with more than 50 percent detected concentrations, the result of the test was that the new data were found to be statistically consistent with the earlier data set.
 - If the data set consisted only of detected concentrations and the distribution of data was parametric, USEPA's ProUCL Software (v. 5.2) was used to calculate an upper prediction limit (UPL). The UPL calculation was made for 8 future comparisons (two downgradient wells, semiannual sampling, and recalculation of the UPL after two years).
 - If the data set had some nondetect results, but more than 50 percent detected concentrations, and the distribution of data was parametric, the Kaplan-Meier adjustment method was used to estimate the UPL.
 - If nonparametric statistical methods were required, the upper simultaneous limit was selected to compensate for the lower confidence level of nonparametric statistical methods.
- If the data set consisted of fewer than 50 percent detected concentrations, the maximum detected concentration was selected for the background concentration. However, if the maximum detected concentration was less than the maximum Practical Quantification Limit (PQL), the maximum PQL was used instead.
- If the data set consisted only of nondetect results, statistical background comparisons will follow the "double quantification rule" [Unified Guidance Section 6.2.2]. An exceedance of background is confirmed by two consecutive detections above the Reporting Limit (PQL).

The parameters with 50 percent or more detections within the most recent 20 sampling events included chloride, total barium, total magnesium, pH, and specific conductivity. Of these, only chloride had a nondetect result. For these data sets, ProUCL (Wilcoxon-Mann-Whitney two-sample hypothesis test) was first used to test whether the four new data points were from a statistically similar distribution to the previous data. The old and new data sets were found to be statistically similar. The updated data sets were used to evaluate background threshold values (BTVs) for each of the data distributions available in the ProUCL program (*i.e.*, normal, Gamma, lognormal, and nonparametric). The data sets with greater than 50 percent detections were found by ProUCL to meet their criteria for a normal distribution. The 95 percent upper prediction limit for 8 future measurements was selected as the BTV for normally distributed data.

The five data sets with greater than 50 percent detections were tested for trending using the Theil-Sen test within ProUCL. For four of these data sets, neither an increasing nor a decreasing trend was identified at a 95 percent level of confidence. Total barium was identified as having an increasing trend at a 95 percent level of confidence. Although the slope is statistically significant, it is low. If the trend for total barium persists, it is projected to take about 18 years for the background barium concentration to increase by 0.1 mg/L.

Table 2 presents a summary of the statistical evaluation of background concentrations. The ProUCL outputs are provided in Attachment 1. The calculated values will be used for direct comparison of the results from the two downgradient monitoring wells. If a downgradient result exceeds the comparison value, resampling may be conducted to confirm the exceedance. However, if the exceeding downgradient result is within its normal range, resampling might not be conducted.

Table 1. Data Used for Background Concentration Statistical Evaluation

SAMPLE DATE	PARAMETERS										
	AMMONIA NITROGEN	TOTAL BARIUM	CHEMICAL OXYGEN DEMAND	CHLORIDE	FLUORIDE	TOTAL IRON	TOTAL MAGNESIUM	NITRATE	pH	PHENOLS	SPECIFIC CONDUCTANCE
Oct. 2009										< 0.018	
Apr. 2010										< 0.018	
Oct. 2010								< 0.100		< 0.018	
Apr. 2011								< 0.100	7.4	< 0.020	
Oct. 2011	< 0.2		< 5.0	< 5.0	0.13			< 0.100	7.4	< 0.018	620
Apr. 2012	< 0.2		6.4	< 5.0	< 0.50			< 0.100	7.3	< 0.020	630
Oct. 2012	< 0.2		< 5.0	< 5.0	< 0.20			< 0.100	7.3	< 0.020	610
Apr. 2013	< 0.2		< 5.0	< 5.0	< 0.50			< 0.100	7.4	< 0.020	630
Oct. 2013	< 0.2		< 5.0	< 5.0	< 0.10			< 0.100	7.7	< 0.019	620
Apr. 2014	< 0.200		< 5.00	< 5.00	< 0.100			< 0.100	7.6	< 0.0196	610
Oct. 2014	< 0.200		< 5.00	< 5.00	< 0.100			< 0.100	7.6	< 0.0196	610
Apr. 2015	< 0.200		< 5.00	2.66	< 0.100			< 0.100	6.1*	NA	636
Oct. 2015	< 0.200		< 5.00	2.93	< 0.100			< 0.100	7.0	< 0.0204	560
Apr. 2016	< 0.200		< 5.00	2.48	0.101			< 0.100	7.3	NA	304
Oct. 2016	< 0.200		13.50	6.69	< 0.100			< 0.100	7.1	< 0.0184	562
Apr. 2017	< 0.200		< 5.00	2.50	< 0.100			< 0.100	7.2	NA	472
Oct. 2017	< 0.200	0.0569	< 5.00	< 5.00	< 0.500	< 0.500	43.9	3.76*	7.3	< 0.0188	564
Apr. 2018	< 0.200	0.0747	< 5.00	4.61	0.164	0.521	42.8	< 0.100	7.6	NA	730
Oct. 2018	< 0.200	0.0747	< 10.0	5.43	0.117	< 0.500	40.9	< 0.100	7.8	< 0.0196	580
Apr. 2019	< 0.200	0.0814	< 5.00	5.35	< 0.100	< 0.500	40.6	< 0.100	7.2	NA	665
Oct. 2019	< 0.200	0.0741	< 5.00	5.38	0.251	< 0.500	39.2	< 0.100	7.1	< 0.0200	625
Apr. 2020	< 0.200	0.0831	< 5.00	5.04	< 0.100	< 0.500	41.4	< 0.500	7.4	NA	609
Oct. 2020	< 0.200	0.0874	< 5.00	5.31	< 0.100	< 0.500	41.1	< 0.100	7.2	< 0.0184	614

Table 1. Data Used for Background Concentration Statistical Evaluation

SAMPLE DATE	PARAMETERS										
	AMMONIA NITROGEN	TOTAL BARIUM	CHEMICAL OXYGEN DEMAND	CHLORIDE	FLUORIDE	TOTAL IRON	TOTAL MAGNESIUM	NITRATE	pH	PHENOLS	SPECIFIC CONDUCTANCE
Apr. 2021	< 0.200	0.0890	9.86	4.77	0.113	< 0.500	43.0	NA	7.4	<0.0188	604
Oct. 2021	< 0.200	0.0853	6.42	5.60	<0.100	<0.500	40.2	<0.100	7.35	<0.0200	639.3
Apr. 2022	< 0.200	0.104	<5.00 UJ	5.36	<0.100	<0.500	45.4	<0.100	7.39	NA	631.4
Oct. 2022	< 0.200	0.0796	<5.00 UJ	5.16 J-	<0.100 UJ	<0.500	43.1	<0.100 UJ	7.02	<0.0200 UJ	646.2
Apr. 2023	< 0.200	0.1010	6.37	5.45	< 0.100	<0.500	48.5	< 0.100	7.49	NA	411.6
Oct. 2023	< 0.200	0.0894	< 5.00	4.78	< 0.200	<0.500	42.3	< 0.200	7.55	< 0.0200	601.2
Apr. 2024	< 0.200	0.0770	< 5.00	5.68	< 0.200	<0.500	38.5	< 0.200	7.43	NA	571.3
Oct. 2024	< 0.200	0.0853	12.3	4.82	< 0.200	<0.500	37.9	< 0.200	7.43	< 0.0200	629.5

Concentrations expressed in mg/L except pH (standard units) and specific conductance (µmhos/cm)
* = Value identified as outlier and excluded from statistical evaluation for background level calculation.

Shaded cells not used in statistical evaluation.
NA – Result not available/constituent not analyzed

Table 2. Summary of Background Concentration Statistical Evaluation

PARAMETER	% ND	TRENDING	DISTRIBUTION	FUTURE COMPARISONS (k)	BACKGROUND	BASIS
Ammonia	100	NA	NA	NA	0.2	DQR at PQL
Total Barium	0	Upward	Normal	8	0.117	95% UPL (k=8)
COD	75	NA	NA	NA	13.5	Max Detected
Chloride	5	None	Nonparametric	8	6.69	95% USL
Fluoride	75	NA	NA	NA	0.251	Max Detected
Total Iron	93	NA	NA	NA	0.521	Max Detected
Total Magnesium	0	None	Normal	8	50.0	95% UPL (k=8)
Nitrate	100	NA	NA	NA	0.5	DQR at max PQL
pH	0	None	Normal	8	6.8 – 7.9	95% LPL - 95% UPL (k=8)
Phenols	100	NA	NA	NA	0.02	DQR at max PQL
Specific Conductivity	0	None	Nonparametric	8	730	95% USL

Concentrations expressed in mg/L except pH (standard units) and specific conductance (µmhos/cm)

NA – Not applicable

Attachment 1

ProUCL Outputs

- Wilcoxon-Mann-Whitney Tests
- Probability Graphs and Outlier Test
- Trend Tests
- Background Threshold Values

Wilcoxon-Mann-Whitney Tests

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensored Full Data Sets without NDs

User Selected Options

Date/Time of Computation	ProUCL 5.2 1/2/2026 4:03:21 PM
From File	ProUCL in.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median $\neq$ Sample 2 Mean/Median

Sample 1 Data: TOTAL BARIUM(new)

Sample 2 Data: TOTAL BARIUM(old)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Observations	4	11
Number of Missing Observations	0	5
Number of Distinct Observations	4	10
Minimum	0.077	0.0569
Maximum	0.101	0.104
Mean	0.0882	0.0809
Median	0.0874	0.0814
SD	0.00999	0.0117
SE of Mean	0.00499	0.00352

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	41.5
WMW U-Stat	31.5
Mean (U)	22
SD(U) - Adj ties	7.653
Lower U-Stat Critical Value (0.025)	7
Upper U-Stat Critical Value (0.975)	37
Standardized WMW U-Stat	1.243
Approximate P-Value	0.214

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensored Full Data Sets without NDs

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:04:30 PM
From File ProUCL in.xls
Full Precision OFF
Confidence Coefficient 95%
Substantial Difference 0.000
Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis Sample 1 Mean/Median $\neq$ Sample 2 Mean/Median

Sample 1 Data: TOTAL MAGNESIUM(new)

Sample 2 Data: TOTAL MAGNESIUM(old)

Raw Statistics		
	Sample 1	Sample 2
Number of Valid Observations	4	11
Number of Missing Observations	0	5
Number of Distinct Observations	4	11
Minimum	37.9	39.2
Maximum	48.5	45.4
Mean	41.8	41.96
Median	40.4	41.4
SD	4.873	1.828
SE of Mean	2.437	0.551

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	27
WMW U-Stat	17
Mean (U)	22
SD(U) - Adj ties	7.659
Lower U-Stat Critical Value (0.025)	7
Upper U-Stat Critical Value (0.975)	37
Standardized WMW U-Stat	0.588
Approximate P-Value	0.557

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:10:35 PM
From File ProUCL in.xls
Full Precision OFF
Confidence Coefficient 95%
Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (2 Sided Alternative)
Alternative Hypothesis Sample 1 Mean/Median $\neq$ Sample 2 Mean/Median

Sample 1 Data: CHLORIDE(new)

Sample 2 Data: CHLORIDE(old)

Raw Statistics

	Sample 1	Sample 2
Number of Valid Data	4	16
Number of Non-Detects	0	1
Number of Detect Data	4	15
Minimum Non-Detect	N/A	5
Maximum Non-Detect	N/A	5
Percent Non-detects	0.00%	6.25%
Minimum Detect	4.78	2.48
Maximum Detect	5.68	6.69
Mean of Detects	5.183	4.618
Median of Detects	5.135	5.16
SD of Detects	0.452	1.317

WMW test is meant for a Single Detection Limit Case

Use of Gehan or T-W test is suggested when multiple detection limits are present

All observations ≤ 5 (Max DL) are ranked the same

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	46
WMW U-Stat	36
Mean (U)	32
SD(U) - Adj ties	10.58
Lower U-Stat Critical Value (0.025)	12
Upper U-Stat Critical Value (0.975)	52
Standardized WMW U-Stat	0.396
Approximate P-Value	0.692

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensored Full Data Sets without NDs

User Selected Options

Date/Time of Computation	ProUCL 5.2 1/12/2026 5:05:54 PM
From File	ProUCL in_a.xls
Full Precision	OFF
Confidence Coefficient	95%
Substantial Difference	0.000
Selected Null Hypothesis	Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis	Sample 1 Mean/Median $\neq$ Sample 2 Mean/Median

Sample 1 Data: pH(new)

Sample 2 Data: pH(old)

Raw Statistics		
	Sample 1	Sample 2
Number of Valid Observations	4	16
Number of Missing Observations	0	1
Number of Distinct Observations	3	10
Minimum	7.43	7
Maximum	7.55	7.8
Mean	7.475	7.31
Median	7.46	7.3
SD	0.0574	0.222
SE of Mean	0.0287	0.0554

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

Sample 1 Rank Sum W-Stat	62
WMW U-Stat	52
Mean (U)	32
SD(U) - Adj ties	10.55
Lower U-Stat Critical Value (0.025)	12
Upper U-Stat Critical Value (0.975)	52
Standardized WMW U-Stat	1.896
Approximate P-Value	0.0579

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Wilcoxon-Mann-Whitney Sample 1 vs Sample 2 Comparison Test for Uncensored Full Data Sets without NDs

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:09:50 PM
From File ProUCL in.xls
Full Precision OFF
Confidence Coefficient 95%
Substantial Difference 0.000
Selected Null Hypothesis Sample 1 Mean/Median = Sample 2 Mean/Median (Two Sided Alternative)
Alternative Hypothesis Sample 1 Mean/Median <> Sample 2 Mean/Median

Sample 1 Data: SPECIFIC CONDUCTANCE(new)

Sample 2 Data: SPECIFIC CONDUCTANCE(old)

Raw Statistics		
	Sample 1	Sample 2
Number of Valid Observations	4	16
Number of Distinct Observations	4	16
Minimum	411.6	304
Maximum	629.5	730
Mean	553.4	590.1
Median	586.3	611.5
SD	97.47	94.93
SE of Mean	48.74	23.73

Wilcoxon-Mann-Whitney (WMW) Test

H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

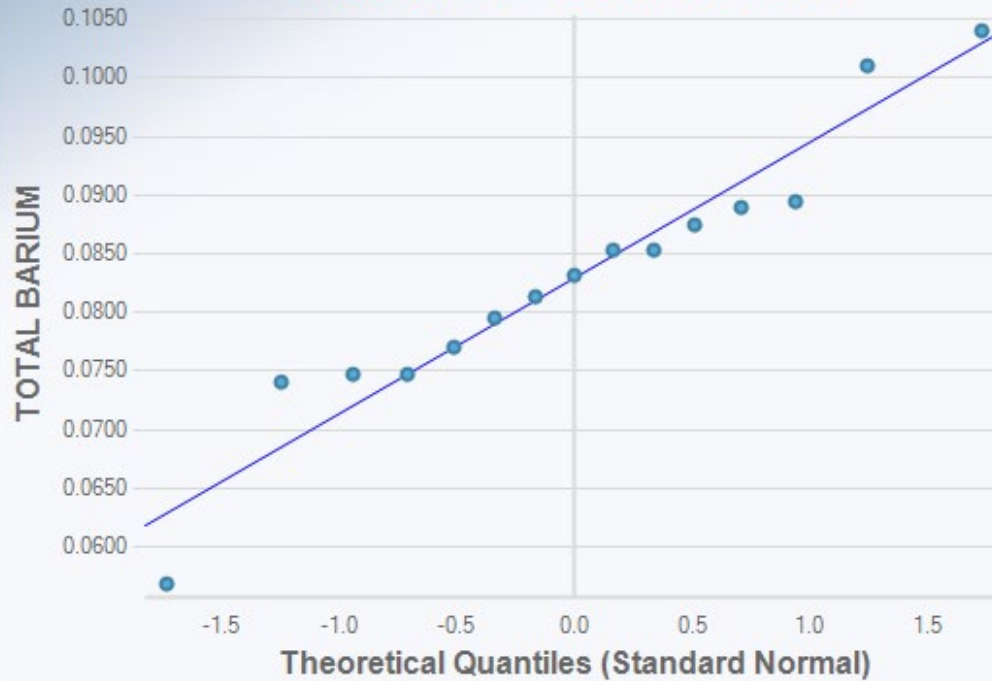
Sample 1 Rank Sum W-Stat	32
WMW U-Stat	22
Mean (U)	32
SD(U) - Adj ties	10.58
Lower U-Stat Critical Value (0.025)	12
Upper U-Stat Critical Value (0.975)	52
Standardized WMW U-Stat	0.898
Approximate P-Value	0.369

Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Probability Graphs and Outlier Test

Q-Q Plot for TOTAL BARIUM



TOTAL BARIUM

N = 15

Mean = 0.0829

Sd = 0.0114

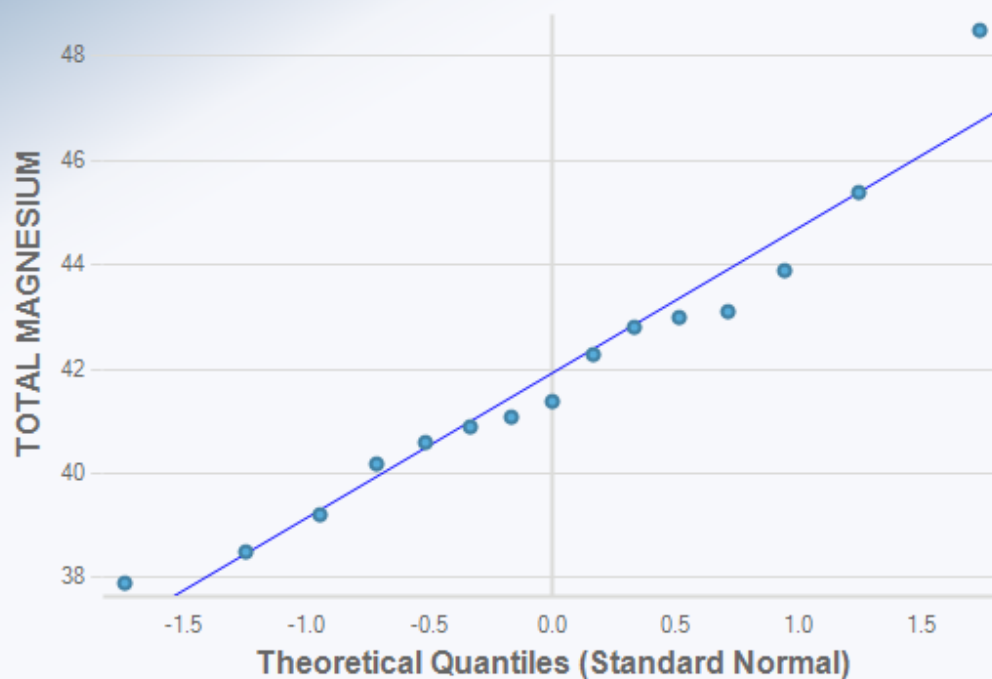
Slope = 0.0115

Intercept = 0.0829

Correlation, R = 0.967

Best Fit Line

Q-Q Plot for TOTAL MAGNESIUM



TOTAL MAGNESIUM

N = 15

Mean = 41.92

Sd = 2.735

Slope = 2.789

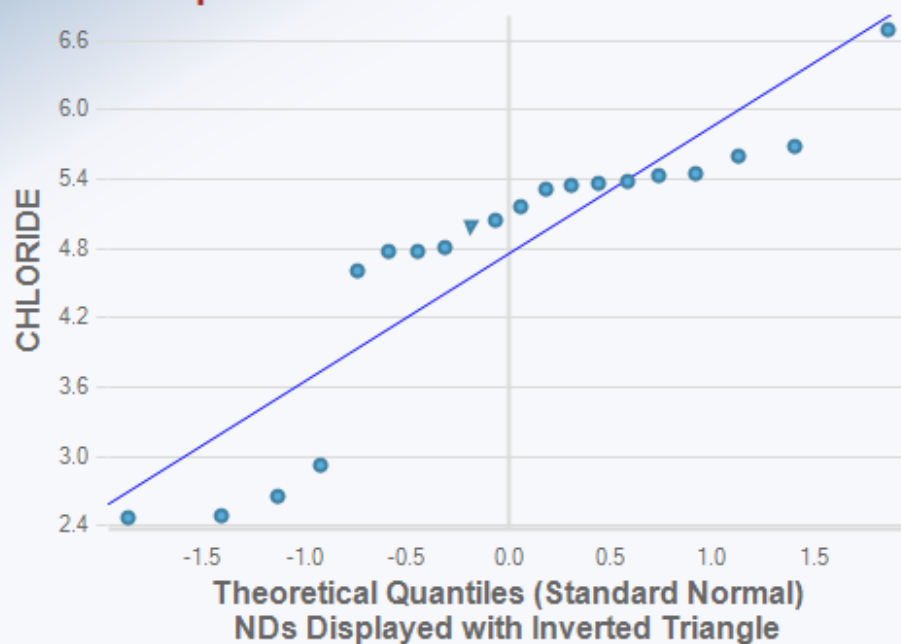
Intercept = 41.92

Correlation, R = 0.974

Best Fit Line

Q-Q Plot for CHLORIDE

Reported values used for nondetects

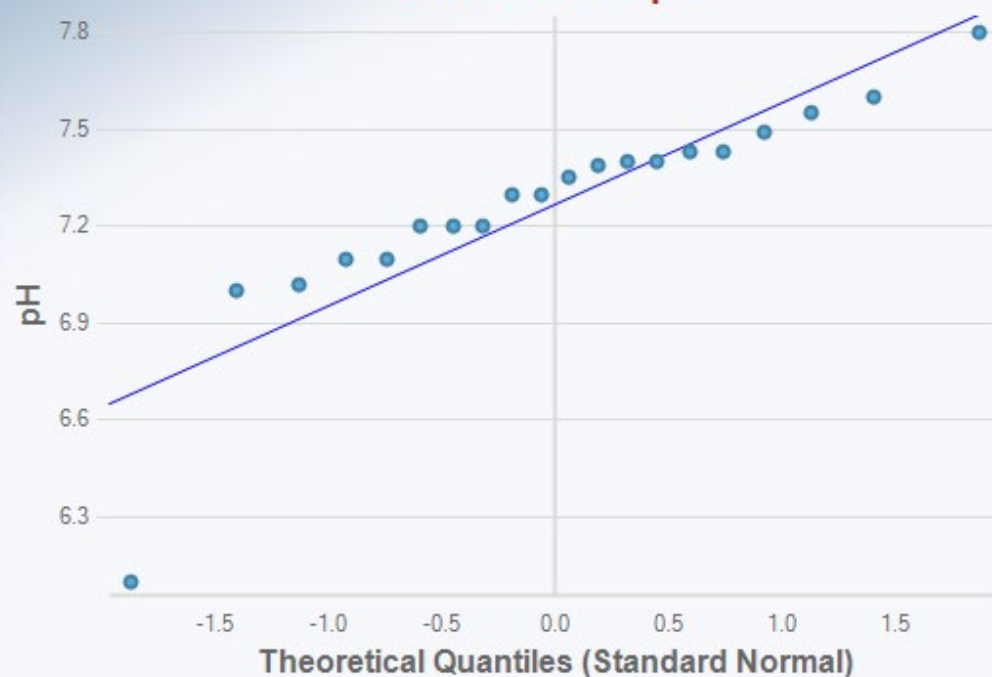


CHLORIDE

Total Number of Data = 20
 Number of Non-Detects = 1
 Number of Detects = 19
 Detected Mean = 4.737
 Detected Sd = 1.2
 Slope (displayed data) = 1.101
 Intercept (displayed data) = 4.75
 Correlation, R = 0.907

☒ Best Fit Line

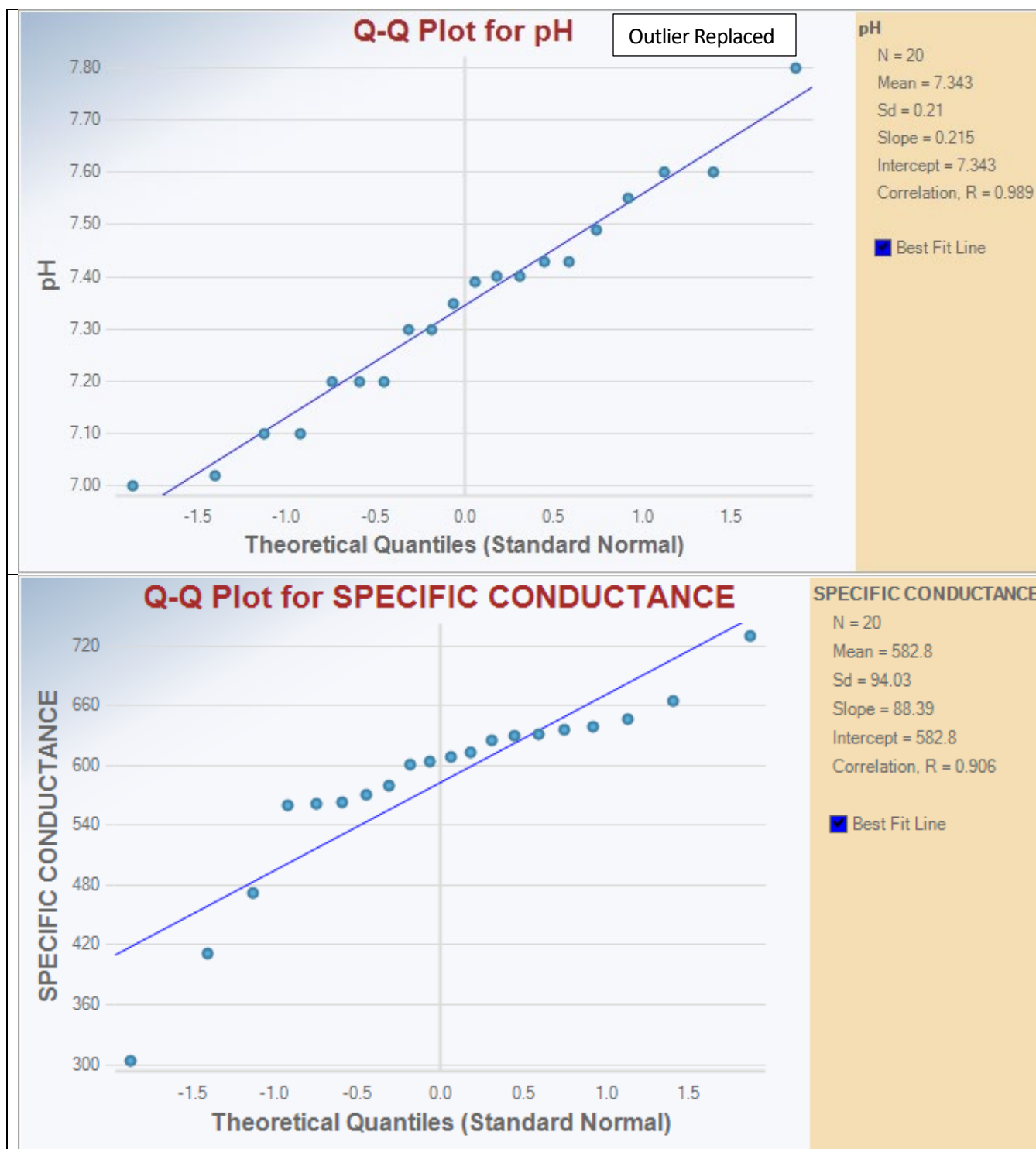
Q-Q Plot for pH



pH

N = 20
 Mean = 7.268
 Sd = 0.34
 Slope = 0.313
 Intercept = 7.268
 Correlation, R = 0.887

☒ Best Fit Line



Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 3:39:28 PM
From File ProUCL in.xls
Full Precision OFF

Dixon's Outlier Test for pH

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 7.8 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.321

For 10% significance level, 7.8 is not an outlier.

For 5% significance level, 7.8 is not an outlier.

For 1% significance level, 7.8 is not an outlier.

2. Observation Value 6.1 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.634

For 10% significance level, 6.1 is an outlier.

For 5% significance level, 6.1 is an outlier.

For 1% significance level, 6.1 is an outlier.

Dixon's Outlier Test for SPECIFIC CONDUCTANCE

Number of Observations = 20

10% critical value: 0.401

5% critical value: 0.45

1% critical value: 0.535

1. Observation Value 730 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.325

For 10% significance level, 730 is not an outlier.

For 5% significance level, 730 is not an outlier.

For 1% significance level, 730 is not an outlier.

2. Observation Value 304 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.491

For 10% significance level, 304 is an outlier.

For 5% significance level, 304 is an outlier.

For 1% significance level, 304 is not an outlier.

Outlier Tests for Selected Variables excluding nondetects

User Selected Options

Date/Time of ProUCL 5.2 1/2/2026 3:40:38 PM
Computation
From File ProUCL in.xls
Full Precision OFF

Dixon's Outlier Test for CHLORIDE

Total N = 20

Number NDs = 1

Number Detects = 19

10% critical value: 0.412

5% critical value: 0.462

1% critical value: 0.547

Note: NDs excluded from Outlier Test

1. Data Value 6.69 is a Potential Outlier (Upper Tail)?

Test Statistic: 0.270

For 10% significance level, 6.69 is not an outlier.

For 5% significance level, 6.69 is not an outlier.

For 1% significance level, 6.69 is not an outlier.

2. Data Value 2.48 is a Potential Outlier (Lower Tail)?

Test Statistic: 0.058

For 10% significance level, 2.48 is not an outlier.

For 5% significance level, 2.48 is not an outlier.

For 1% significance level, 2.48 is not an outlier.

Trend Tests

Theil-Sen Trend Test Analysis

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:36:26 PM
From File ProUCL in.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.95
Level of Significance 0.05

TOTAL BARIUM

General Statistics

Number of Events	15
Number Values Observations	20
Number Values Missing	5
Number of Values Reported (n)	15
Number of Values After Averaging	15
Number of Replicates	0
Minimum	0.0569
Maximum	0.104
Mean	0.0829
Geometric Mean	0.0821
Median	0.0831
Standard Deviation	0.0114
Coefficient of Variation	0.138

Mann-Kendall Statistics

M-K Test Value (S)	47
Tabulated p-value	0.01
Standard Deviation of S	20.16
Standardized Value of S	2.282
Approximate p-value	0.0112

Approximate inference for Theil-Sen Trend Test

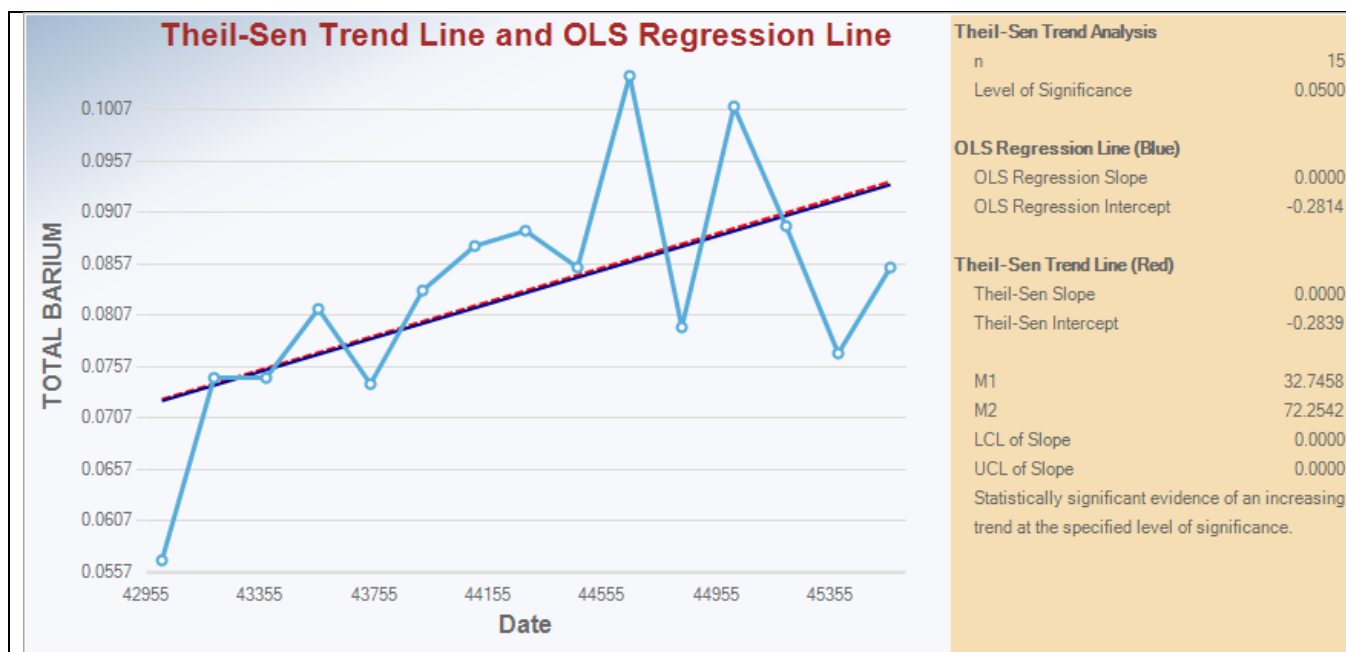
Number of Slopes	105
Theil-Sen Slope	8.2877E-6
Theil-Sen Intercept	-0.284
M1'	35.92
One-sided 95% lower limit of Slope	1.8216E-6
95% LCL of Slope (0.025)	1.1206E-6
95% UCL of Slope (0.975)	1.6047E-5

Statistically significant evidence of an increasing trend at the specified level of significance.

Theil-Sen Trend Test Estimates and Residuals

#	Events	Values	Estimates	Residuals
---	--------	--------	-----------	-----------

1	43009	0.0569	0.0725	-0.0156
2	43191	0.0747	0.074	6.8335E-4
3	43374	0.0747	0.0755	-8.333E-4
4	43556	0.0814	0.077	0.00436
5	43739	0.0741	0.0786	-0.00446
6	43922	0.0831	0.0801	0.00303
7	44105	0.0874	0.0816	0.00581
8	44287	0.089	0.0831	0.0059
9	44470	0.0853	0.0846	6.8335E-4
10	44652	0.104	0.0861	0.0179
11	44835	0.0796	0.0876	-0.00804
12	45017	0.101	0.0892	0.0118
13	45200	0.0894	0.0907	-0.00127
14	45383	0.077	0.0922	-0.0152
15	45566	0.0853	0.0937	-0.0084



Theil-Sen Trend Test Analysis

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:37:23 PM
From File ProUCL in.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.95
Level of Significance 0.05

TOTAL MAGNESIUM

General Statistics

Number of Events	15
Number Values Observations	20
Number Values Missing	5
Number of Values Reported (n)	15
Number of Values After Averaging	15
Number of Replicates	0
Minimum	37.9
Maximum	48.5
Mean	41.92
Geometric Mean	41.84
Median	41.4
Standard Deviation	2.735
Coefficient of Variation	0.0652

Mann-Kendall Statistics

M-K Test Value (S)	-11
Tabulated p-value	0.313
Standard Deviation of S	20.21
Standardized Value of S	-0.495
Approximate p-value	0.31

Approximate inference for Theil-Sen Trend Test

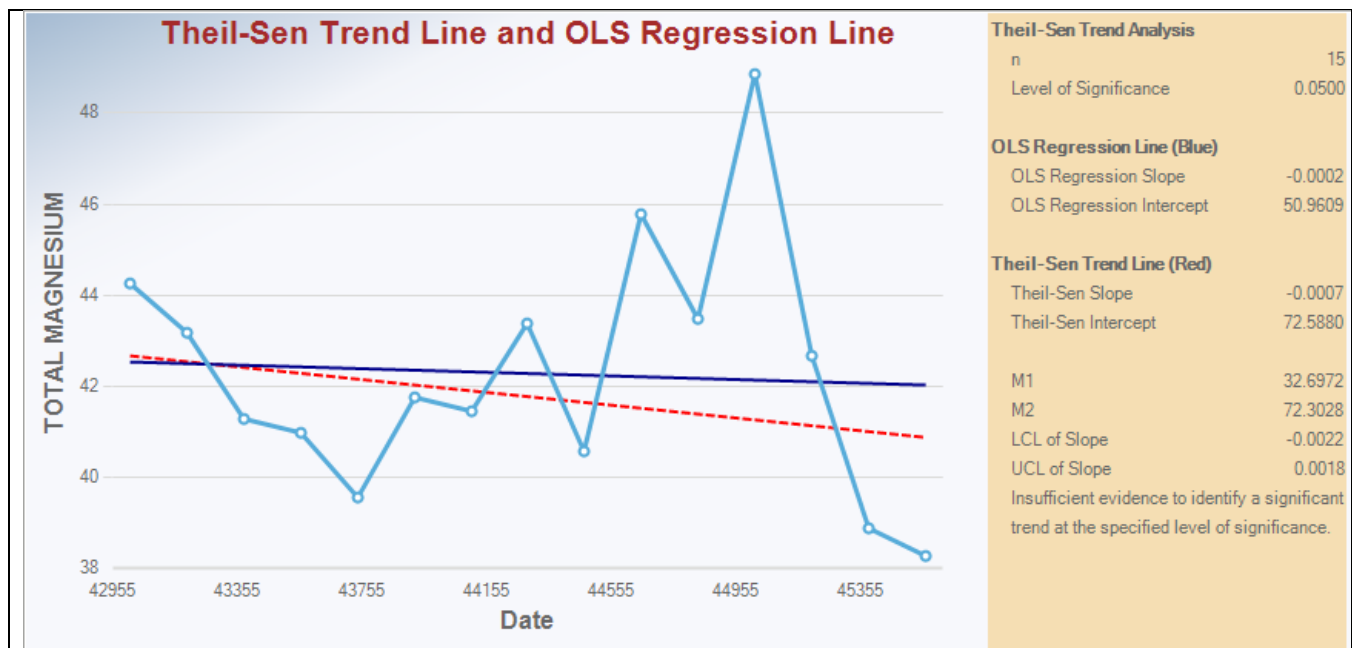
Number of Slopes	105
Theil-Sen Slope	-7.042E-4
Theil-Sen Intercept	72.59
M1	32.7
M2	72.3
95% LCL of Slope (0.025)	-0.00219
95% UCL of Slope (0.975)	0.0018

Insufficient evidence to identify a significant trend at the specified level of significance.

Theil-Sen Trend Test Estimates and Residuals

#	Events	Values	Estimates	Residuals
---	--------	--------	-----------	-----------

1	43009	43.9	42.3	1.6
2	43191	42.8	42.17	0.628
3	43374	40.9	42.04	-1.143
4	43556	40.6	41.91	-1.315
5	43739	39.2	41.79	-2.586
6	43922	41.4	41.66	-0.257
7	44105	41.1	41.53	-0.428
8	44287	43	41.4	1.6
9	44470	40.2	41.27	-1.071
10	44652	45.4	41.14	4.257
11	44835	43.1	41.01	2.086
12	45017	48.5	40.89	7.614
13	45200	42.3	40.76	1.543
14	45383	38.5	40.63	-2.128
15	45566	37.9	40.5	-2.599



Theil-Sen Trend Test Analysis

User Selected Options

Date/Time of Computation ProUCL 5.2 1/2/2026 4:37:06 PM
From File ProUCL in.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.95
Level of Significance 0.05

CHLORIDE

General Statistics

Number of Events	20
Number of Values Reported (n)	20
Number of Values After Averaging	20
Number of Replicates	0
Minimum	2.48
Maximum	6.69
Mean	4.75
Geometric Mean	4.579
Median	5.1
Standard Deviation	1.169
Coefficient of Variation	0.246

Mann-Kendall Statistics

M-K Test Value (S)	58
Tabulated p-value	0.032
Standard Deviation of S	30.82
Standardized Value of S	1.849
Approximate p-value	0.0322

Approximate inference for Theil-Sen Trend Test

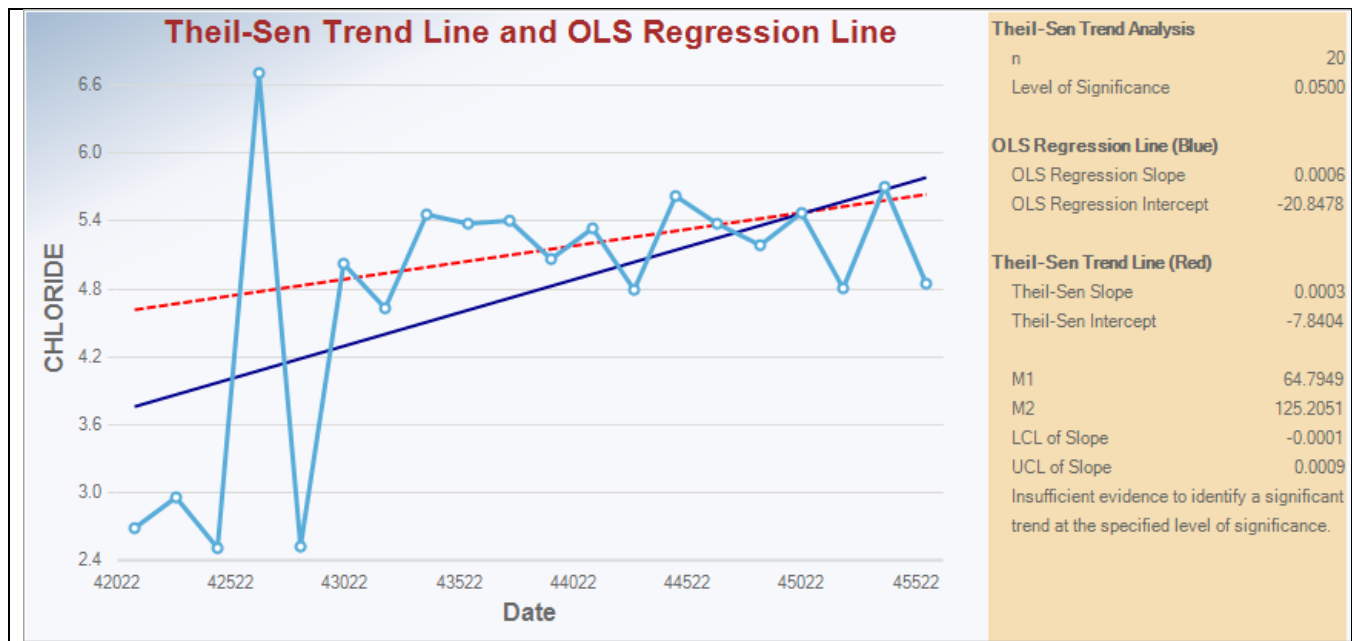
Number of Slopes	190
Theil-Sen Slope	2.9524E-4
Theil-Sen Intercept	-7.84
M1	64.79
M2	125.2
95% LCL of Slope (0.025)	-5.798E-5
95% UCL of Slope (0.975)	9.1641E-4

Insufficient evidence to identify a significant trend at the specified level of significance.

Theil-Sen Trend Test Estimates and Residuals

#	Events	Values	Estimates	Residuals
---	--------	--------	-----------	-----------

1	42095	2.66	4.588	-1.928
2	42278	2.93	4.642	-1.712
3	42461	2.48	4.696	-2.216
4	42644	6.69	4.75	1.94
5	42826	2.5	4.803	-2.303
6	43009	5	4.857	0.143
7	43191	4.61	4.911	-0.301
8	43374	5.43	4.965	0.465
9	43556	5.35	5.019	0.331
10	43739	5.38	5.073	0.307
11	43922	5.04	5.127	-0.087
12	44105	5.31	5.181	0.129
13	44287	4.77	5.235	-0.465
14	44470	5.6	5.289	0.311
15	44652	5.36	5.343	0.0175
16	44835	5.16	5.397	-0.237
17	45017	5.45	5.45	-2.978E-4
18	45200	4.78	5.504	-0.724
19	45383	5.68	5.558	0.122
20	45566	4.82	5.612	-0.792



Theil-Sen Trend Test Analysis

User Selected Options

Date/Time of Computation ProUCL 5.2 1/13/2026 10:00:15 AM
From File ProUCL in_a.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.95
Level of Significance 0.05

pH

General Statistics

Number of Events	20
Number Values Observations	21
Number Values Missing	1
Number of Values Reported (n)	20
Number of Values After Averaging	20
Number of Replicates	0
Minimum	7
Maximum	7.8
Mean	7.343
Geometric Mean	7.34
Median	7.37
Standard Deviation	0.21
Coefficient of Variation	0.0285

Mann-Kendall Statistics

M-K Test Value (S)	40
Tabulated p-value	0.104
Standard Deviation of S	30.68
Standardized Value of S	1.271
Approximate p-value	0.102

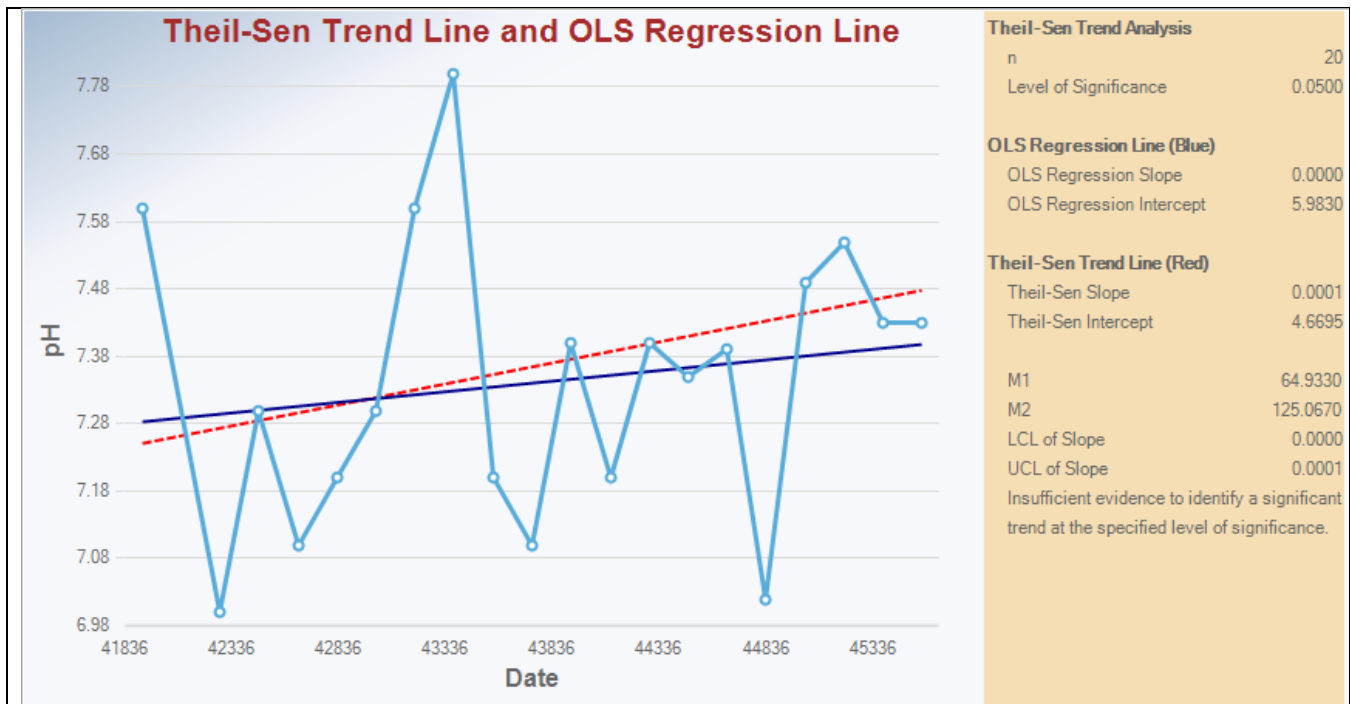
Approximate inference for Theil-Sen Trend Test

Number of Slopes	190
Theil-Sen Slope	6.1612E-5
Theil-Sen Intercept	4.67
M1	64.93
M2	125.1
95% LCL of Slope (0.025)	-4.670E-5
95% UCL of Slope (0.975)	1.3888E-4

**Insufficient evidence to identify a significant
trend at the specified level of significance.**

Theil-Sen Trend Test Estimates and Residuals

#	Events	Values	Estimates	Residuals
1	41913	7.6	7.252	0.348
2	42278	7	7.274	-0.274
3	42461	7.3	7.286	0.0144
4	42644	7.1	7.297	-0.197
5	42826	7.2	7.308	-0.108
6	43009	7.3	7.319	-0.0194
7	43191	7.6	7.331	0.269
8	43374	7.8	7.342	0.458
9	43556	7.2	7.353	-0.153
10	43739	7.1	7.364	-0.264
11	43922	7.4	7.376	0.0244
12	44105	7.2	7.387	-0.187
13	44287	7.4	7.398	0.00187
14	44470	7.35	7.409	-0.0594
15	44652	7.39	7.421	-0.0306
16	44835	7.02	7.432	-0.412
17	45017	7.49	7.443	0.0469
18	45200	7.55	7.454	0.0956
19	45383	7.43	7.466	-0.0357
20	45566	7.43	7.477	-0.0469



Theil-Sen Trend Test Analysis

User Selected Options

Date/Time of Computation	ProUCL 5.2 1/2/2026 4:39:35 PM
From File	ProUCL in.xls
Full Precision	OFF
Average Replicates	Replicates at sampling events will be averaged!
Confidence Coefficient	0.95
Level of Significance	0.05

SPECIFIC CONDUCTANCE

General Statistics

Number of Events	20
Number of Values Reported (n)	20
Number of Values After Averaging	20
Number of Replicates	0
Minimum	304
Maximum	730
Mean	582.8
Geometric Mean	573.8
Median	606.5
Standard Deviation	94.03
Coefficient of Variation	0.161

Mann-Kendall Statistics

M-K Test Value (S)	32
Tabulated p-value	0.159
Standard Deviation of S	30.82
Standardized Value of S	1.006
Approximate p-value	0.157

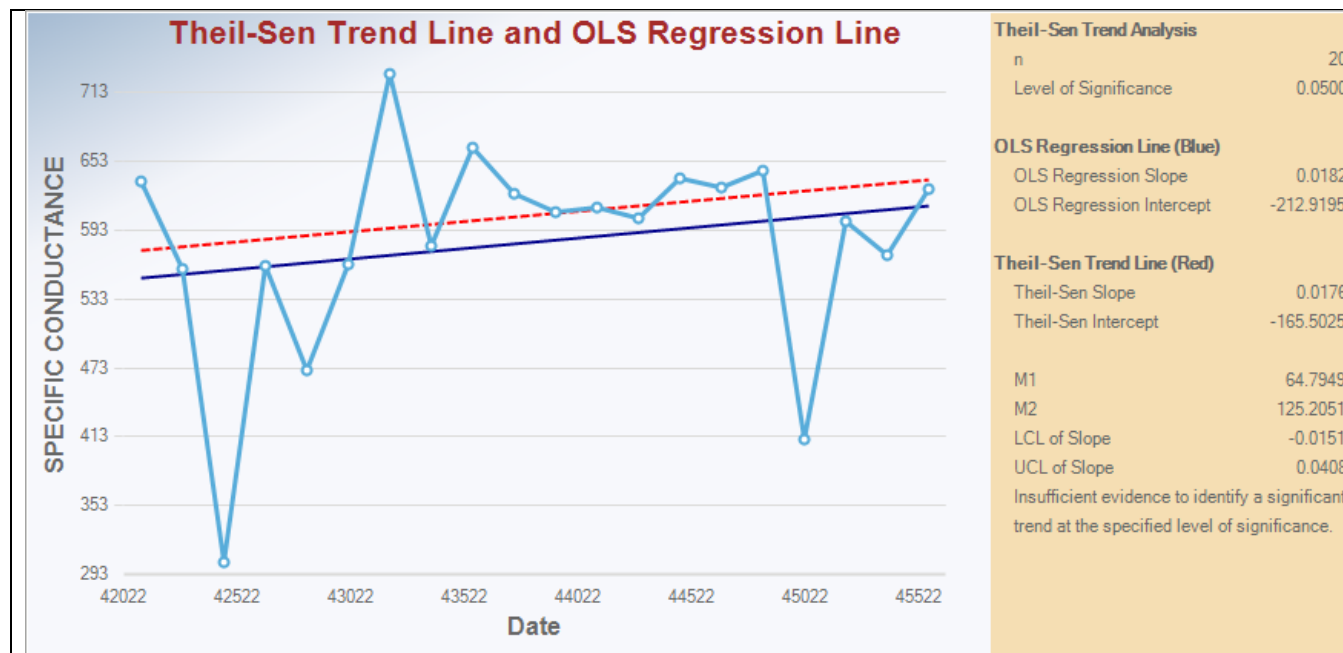
Approximate inference for Theil-Sen Trend Test

Number of Slopes	190
Theil-Sen Slope	0.0176
Theil-Sen Intercept	-165.5
M1	64.79
M2	125.2
95% LCL of Slope (0.025)	-0.0151
95% UCL of Slope (0.975)	0.0408

Insufficient evidence to identify a significant trend at the specified level of significance.

Theil-Sen Trend Test Estimates and Residuals

#	Events	Values	Estimates	Residuals
1	42095	636	575.9	60.07
2	42278	560	579.2	-19.16
3	42461	304	582.4	-278.4
4	42644	562	585.6	-23.6
5	42826	472	588.8	-116.8
6	43009	564	592	-28.03
7	43191	730	595.2	134.8
8	43374	580	598.5	-18.46
9	43556	665	601.7	63.33
10	43739	625	604.9	20.11
11	43922	609	608.1	0.888
12	44105	614	611.3	2.665
13	44287	604	614.5	-10.54
14	44470	639.3	617.8	21.54
15	44652	631.4	621	10.43
16	44835	646.2	624.2	22.01
17	45017	411.6	627.4	-215.8
18	45200	601.2	630.6	-29.42
19	45383	571.3	633.8	-62.54
20	45566	629.5	637.1	-7.568



Background Threshold Values

Background Statistics for Uncensored Full Data Sets**User Selected Options**

Date/Time of Computation	ProUCL 5.2 1/2/2026 4:19:16 PM
From File	P:\Clients\John Deere\Dubuque IA LF\2025 stats update\ProUCL in.xlsx
Full Precision	OFF
Confidence Coefficient	95%
Coverage	95%
New or Future K Observations	8
Number of Bootstrap Operations	2000

TOTAL BARIUM**General Statistics**

Total Number of Observations	15	Number of Distinct Observations	13
		Number of Missing Observations	5
Minimum	0.0569	First Quartile	0.0759
Second Largest	0.101	Median	0.0831
Maximum	0.104	Third Quartile	0.0882
Mean	0.0829	SD	0.0114
Coefficient of Variation	0.138	Skewness	-0.191
Mean of logged Data	-2.5	SD of logged Data	0.143

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.566	d2max (for USL)	2.409
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Normal GOF Test

Shapiro Wilk Test Statistic	0.95
1% Shapiro Wilk Critical Value	0.835
Lilliefors Test Statistic	0.154
1% Lilliefors Critical Value	0.255

Shapiro Wilk GOF Test

Data appear Normal at 1% Significance Level

Lilliefors GOF Test

Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	0.112	90% Percentile (z)	0.0975
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95% UPL (t)	0.104	95% Percentile (z)	0.102
95% UPL for Next 8 Observations	0.117	99% Percentile (z)	0.109
95% UPL for Mean of 8 Observations	0.0917	95% USL	0.11
Gamma GOF Test			
A-D Test Statistic	0.383	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.157	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.221	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			
Gamma Statistics			
k hat (MLE)	54.02	k star (bias corrected MLE)	43.26
Theta hat (MLE)	0.00153	Theta star (bias corrected MLE)	0.00192
nu hat (MLE)	1621	nu star (bias corrected)	1298
MLE Mean (bias corrected)	0.0829	MLE Sd (bias corrected)	0.0126
Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	0.105	90% Percentile	0.0994
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.106	95% Percentile	0.105
95% WH UPL for Next 8 Observations	0.122	99% Percentile	0.115
95% HW UPL for Next 8 Observations	0.123		
95% WH Approx. Gamma UTL with 95% Coverage	0.116	95% HW Approx. Gamma UTL with 95% Coverage	0.117
95% WH USL	0.114	95% HW USL	0.114
Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.926	Shapiro Wilk Lognormal GOF Test	
10% Shapiro Wilk Critical Value	0.901	Data appear Lognormal at 10% Significance Level	
Lilliefors Test Statistic	0.171	Lilliefors Lognormal GOF Test	
10% Lilliefors Critical Value	0.202	Data appear Lognormal at 10% Significance Level	
Data appear Lognormal at 10% Significance Level			
Background Statistics assuming Lognormal Distribution			
95% UTL with 95% Coverage	0.119	90% Percentile (z)	0.0986
95% UPL (t)	0.107	95% Percentile (z)	0.104

95% UPL for Next 8 Observations	0.125	99% Percentile (z)	0.115
95% UPL for Mean of 8 Observations	0.0917	95% USL	0.116

Nonparametric Distribution Free Background Statistics

Data appear Normal at 1% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	15	95% UTL with 95% Coverage	0.104
Approx, f used to compute achieved CC	0.789	Approximate Actual Confidence Coefficient achieved by UTL	0.537
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	0.104	95% BCA Bootstrap UTL with 95% Coverage	0.104
95% UPL	0.104	90% Percentile	0.0964
90% Chebyshev UPL	0.118	95% Percentile	0.102
95% Chebyshev UPL	0.134	99% Percentile	0.104
95% USL	0.104		

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

TOTAL MAGNESIUM

General Statistics

Total Number of Observations	15	Number of Distinct Observations	15
		Number of Missing Observations	5
Minimum	37.9	First Quartile	40.4
Second Largest	45.4	Median	41.4
Maximum	48.5	Third Quartile	43.05
Mean	41.92	SD	2.735
Coefficient of Variation	0.0652	Skewness	0.822
Mean of logged Data	3.734	SD of logged Data	0.0641

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.566	d2max (for USL)	2.409
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Normal GOF Test

Shapiro Wilk Test Statistic	0.955
1% Shapiro Wilk Critical Value	0.835
Lilliefors Test Statistic	0.133
1% Lilliefors Critical Value	0.255

Shapiro Wilk GOF Test

Data appear Normal at 1% Significance Level

Lilliefors GOF Test

Data appear Normal at 1% Significance Level

Data appear Normal at 1% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	48.94
95% UPL (t)	46.9

90% Percentile (z)	45.43
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95% Percentile (z)	46.42
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99% Percentile (z)	48.28
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95% USL	48.51
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95% UPL for Next 8 Observations	50.01
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95% UPL for Mean of 8 Observations	44.03
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Gamma GOF Test

A-D Test Statistic	0.215
5% A-D Critical Value	0.734
K-S Test Statistic	0.12
5% K-S Critical Value	0.221

Anderson-Darling Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	258.2
Theta hat (MLE)	0.162
nu hat (MLE)	7746
MLE Mean (bias corrected)	41.92

k star (bias corrected MLE)	206.6
Theta star (bias corrected MLE)	0.203
nu star (bias corrected)	6198
MLE Sd (bias corrected)	2.916

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	46.97
95% Hawkins Wixley (HW) Approx. Gamma UPL	46.98
95% WH UPL for Next 8 Observations	50.36
95% HW UPL for Next 8 Observations	50.41
95% WH Approx. Gamma UTL with 95% Coverage	49.18
95% WH USL	48.71

90% Percentile	45.7
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95% Percentile	46.83
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99% Percentile	49
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95% HW Approx. Gamma UTL with 95% Coverage	49.21
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95% HW USL	48.73
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Lognormal GOF Test

Shapiro Wilk Test Statistic	0.968
10% Shapiro Wilk Critical Value	0.901

Shapiro Wilk Lognormal GOF Test

Data appear Lognormal at 10% Significance Level

Lilliefors Test Statistic 0.121
10% Lilliefors Critical Value 0.202

Lilliefors Lognormal GOF Test
Data appear Lognormal at 10% Significance Level

Data appear Lognormal at 10% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	49.31	90% Percentile (z)	45.42
95% UPL (t)	47.01	95% Percentile (z)	46.49
95% UPL for Next 8 Observations	50.57	99% Percentile (z)	48.56
95% UPL for Mean of 8 Observations	43.96	95% USL	48.82

Nonparametric Distribution Free Background Statistics

Data appear Normal at 1% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	15	95% UTL with 95% Coverage	48.5
Approx, f used to compute achieved CC	0.789	Approximate Actual Confidence Coefficient achieved by UTL	0.537
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	48.5	95% BCA Bootstrap UTL with 95% Coverage	48.5
95% UPL	48.5	90% Percentile	44.8
90% Chebyshev UPL	50.39	95% Percentile	46.33
95% Chebyshev UPL	54.23	99% Percentile	48.07
95% USL	48.5		

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

Background Statistics for Uncensored Full Data Sets

User Selected Options

Date/Time of Computation ProUCL 5.2 1/12/2026 5:07:23 PM
From File P:\Clients\John Deere\Dubuque IA LF\2025 stats update\ProUCL in.xlsx
Full Precision OFF
Confidence Coefficient 95%
Coverage 95%

New or Future K Observations 8
Number of Bootstrap Operations 2000

pH

General Statistics

Total Number of Observations	20	Number of Distinct Observations	13
		Number of Missing Observations	1
Minimum	7	First Quartile	7.2
Second Largest	7.6	Median	7.37
Maximum	7.8	Third Quartile	7.445
Mean	7.343	SD	0.21
Coefficient of Variation	0.0285	Skewness	0.2
Mean of logged Data	1.993	SD of logged Data	0.0285

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.396	d2max (for USL)	2.557
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Normal GOF Test

Shapiro Wilk Test Statistic	0.975
1% Shapiro Wilk Critical Value	0.868
Lilliefors Test Statistic	0.102
1% Lilliefors Critical Value	0.223

Data appear Normal at 1% Significance Level

Shapiro Wilk GOF Test

Data appear Normal at 1% Significance Level

Lilliefors GOF Test

Data appear Normal at 1% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	7.845	90% Percentile (z)	7.612
95% UPL (t)	7.714	95% Percentile (z)	7.688
95% UPL for Next 8 Observations	7.935	99% Percentile (z)	7.831
95% UPL for Mean of 8 Observations	7.495	95% USL	7.879

Gamma GOF Test

A-D Test Statistic	0.217
5% A-D Critical Value	0.74
K-S Test Statistic	0.107

Anderson-Darling Gamma GOF Test

Detected data appear Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

5% K-S Critical Value 0.193 Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1296	k star (bias corrected MLE)	1101
Theta hat (MLE)	0.00567	Theta star (bias corrected MLE)	0.00667
nu hat (MLE)	51830	nu star (bias corrected)	44057
MLE Mean (bias corrected)	7.343	MLE Sd (bias corrected)	0.221

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	7.718	90% Percentile	7.628
95% Hawkins Wixley (HW) Approx. Gamma UPL	7.719	95% Percentile	7.711
95% WH UPL for Next 8 Observations	7.949	99% Percentile	7.868
95% HW UPL for Next 8 Observations	7.95		
95% WH Approx. Gamma UTL with 95% Coverage	7.854	95% HW Approx. Gamma UTL with 95% Coverage	7.855
95% WH USL	7.889	95% HW USL	7.891

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.975
10% Shapiro Wilk Critical Value	0.92
Lilliefors Test Statistic	0.101
10% Lilliefors Critical Value	0.176

Shapiro Wilk Lognormal GOF Test

Data appear Lognormal at 10% Significance Level

Lilliefors Lognormal GOF Test

Data appear Lognormal at 10% Significance Level

Data appear Lognormal at 10% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	7.859	90% Percentile (z)	7.613
95% UPL (t)	7.72	95% Percentile (z)	7.692
95% UPL for Next 8 Observations	7.956	99% Percentile (z)	7.843
95% UPL for Mean of 8 Observations	7.493	95% USL	7.895

Nonparametric Distribution Free Background Statistics

Data appear Normal at 1% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	20	95% UTL with 95% Coverage	7.8
Approx, f used to compute achieved CC	1.053	Approximate Actual Confidence Coefficient achieved by UTL	0.642

			Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	7.8	95% BCA Bootstrap UTL with 95% Coverage	7.8	
	95% UPL	90% Percentile	7.6	
90% Chebyshev UPL	7.987	95% Percentile	7.61	
95% Chebyshev UPL	8.279	99% Percentile	7.762	
	95% USL			
	7.8			

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.
The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

SPECIFIC CONDUCTANCE

General Statistics

Total Number of Observations	20	Number of Distinct Observations	20
Minimum	304	First Quartile	563.5
Second Largest	665	Median	606.5
Maximum	730	Third Quartile	632.6
Mean	582.8	SD	94.03
Coefficient of Variation	0.161	Skewness	-1.644
Mean of logged Data	6.352	SD of logged Data	0.193

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.396	d2max (for USL)	2.557
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Normal GOF Test

Shapiro Wilk Test Statistic	0.839
1% Shapiro Wilk Critical Value	0.868
Lilliefors Test Statistic	0.254
1% Lilliefors Critical Value	0.223

Shapiro Wilk GOF Test

Data Not Normal at 1% Significance Level

Lilliefors GOF Test

Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Background Statistics Assuming Normal Distribution

95% UTL with 95% Coverage	808.1	90% Percentile (z)	703.3
95% UPL (t)	749.4	95% Percentile (z)	737.4

95% UPL for Next 8 Observations	848.6	99% Percentile (z)	801.5
95% UPL for Mean of 8 Observations	650.8	95% USL	823.2

Gamma GOF Test

A-D Test Statistic	1.663
5% A-D Critical Value	0.74
K-S Test Statistic	0.284
5% K-S Critical Value	0.193

Anderson-Darling Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov Gamma GOF Test

Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	32.21	k star (bias corrected MLE)	27.41
Theta hat (MLE)	18.09	Theta star (bias corrected MLE)	21.26
nu hat (MLE)	1288	nu star (bias corrected)	1096
MLE Mean (bias corrected)	582.8	MLE Sd (bias corrected)	111.3

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	782.7	90% Percentile	729.2
95% Hawkins Wixley (HW) Approx. Gamma UPL	788.3	95% Percentile	777.1
95% WH UPL for Next 8 Observations	925.7	99% Percentile	872.5
95% HW UPL for Next 8 Observations	939.5		
95% WH Approx. Gamma UTL with 95% Coverage	865.4	95% HW Approx. Gamma UTL with 95% Coverage	875.4
95% WH USL	887.6	95% HW USL	898.9

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.751
10% Shapiro Wilk Critical Value	0.92
Lilliefors Test Statistic	0.3
10% Lilliefors Critical Value	0.176

Shapiro Wilk Lognormal GOF Test

Data Not Lognormal at 10% Significance Level

Lilliefors Lognormal GOF Test

Data Not Lognormal at 10% Significance Level

Data Not Lognormal at 10% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	911	90% Percentile (z)	734.7
95% UPL (t)	807.7	95% Percentile (z)	788.1
95% UPL for Next 8 Observations	990	99% Percentile (z)	898.9

95% UPL for Mean of 8 Observations 659.7

95% USL 939.7

Nonparametric Distribution Free Background Statistics

Data do not follow a Discernible Distribution

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	20	95% UTL with 95% Coverage	730
Approx, f used to compute achieved CC	1.053	Approximate Actual Confidence Coefficient achieved by UTL	0.642
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	730	95% BCA Bootstrap UTL with 95% Coverage	730
95% UPL	726.8	90% Percentile	648.1
90% Chebyshev UPL	871.8	95% Percentile	668.3
95% Chebyshev UPL	1003	99% Percentile	717.7
95% USL	730		

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

Background Statistics for Data Sets with Non-Detects

User Selected Options

Date/Time of Computation	ProUCL 5.2 1/2/2026 4:20:03 PM
From File	ProUCL in.xls
Full Precision	OFF
Confidence Coefficient	95%
Coverage	95%
Different or Future K Observations	8
Number of Bootstrap Operations	2000

CHLORIDE

General Statistics			
Total Number of Observations	20	Number of Missing Observations	0
Number of Distinct Observations	20		
Number of Detects	19	Number of Non-Detects	1

Number of Distinct Detects	19	Number of Distinct Non-Detects	1
Minimum Detect	2.48	Minimum Non-Detect	5
Maximum Detect	6.69	Maximum Non-Detect	5
Variance Detected	1.44	Percent Non-Detects	5%
Mean Detected	4.737	SD Detected	1.2
Mean of Detected Logged Data	1.517	SD of Detected Logged Data	0.303

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.396	d2max (for USL)	2.557
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Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.827	Shapiro Wilk GOF Test
1% Shapiro Wilk Critical Value	0.863	Data Not Normal at 1% Significance Level
Lilliefors Test Statistic	0.248	Lilliefors GOF Test
1% Lilliefors Critical Value	0.229	Data Not Normal at 1% Significance Level

Data Not Normal at 1% Significance Level

Kaplan Meier (KM) Background Statistics Assuming Normal Distribution

KM Mean	4.685	KM SD	1.185
95% UTL95% Coverage	7.523	95% KM UPL (t)	6.784
95% KM UPL for Next 8 Observations	8.034	95% KM UPL for Mean of Next 8 Observations	5.542
90% KM Percentile (z)	6.203	95% KM Percentile (z)	6.634
99% KM Percentile (z)	7.441	95% KM USL	7.714

DL/2 Substitution Background Statistics Assuming Normal Distribution

Mean	4.625	SD	1.271
95% UTL95% Coverage	7.669	95% UPL (t)	6.876
95% UPL for Next 8 Observations	8.216	95% UPL for Mean of Next 8 Observations	5.544
90% Percentile (z)	6.253	95% Percentile (z)	6.715
99% Percentile (z)	7.581	95% USL	7.873

DL/2 is not a recommended method. DL/2 provided for comparisons and historical reasons

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	2.003	Anderson-Darling GOF Test
5% A-D Critical Value	0.741	Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.287	Kolmogorov-Smirnov GOF

5% K-S Critical Value 0.198 Data Not Gamma Distributed at 5% Significance Level

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	13.15	k star (bias corrected MLE)	11.11
Theta hat (MLE)	0.36	Theta star (bias corrected MLE)	0.427
nu hat (MLE)	499.6	nu star (bias corrected)	422
MLE Mean (bias corrected)	4.737		
MLE Sd (bias corrected)	1.421	95% Percentile of Chisquare (2kstar)	34.19

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs
 GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)
 For such situations, GROS method may yield incorrect values of UCLs and BTVs
 This is especially true when the sample size is small.
 For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	2.48	Mean	4.689
Maximum	6.69	Median	5.1
SD	1.187	CV	0.253
k hat (MLE)	13.43	k star (bias corrected MLE)	11.44
Theta hat (MLE)	0.349	Theta star (bias corrected MLE)	0.41
nu hat (MLE)	537	nu star (bias corrected)	457.8
MLE Mean (bias corrected)	4.689	MLE Sd (bias corrected)	1.386
95% Percentile of Chisquare (2kstar)	35.03	90% Percentile	6.53
95% Percentile	7.177	99% Percentile	8.5

The following statistics are computed using Gamma ROS Statistics on Imputed Data

Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods

	WH	HW		WH	HW
95% Approx. Gamma UTL with 95% Coverage	8.423	8.589	95% Approx. Gamma UPL	7.269	7.353
95% Gamma USL	8.738	8.931	95% UPL for Next 8 Observations	9.286	9.529

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.685	SD (KM)	1.185
Variance (KM)	1.404	SE of Mean (KM)	0.278
k hat (KM)	15.63	k star (KM)	13.32
nu hat (KM)	625.4	nu star (KM)	532.9

theta hat (KM)	0.3	theta star (KM)	0.352
80% gamma percentile (KM)	5.717	90% gamma percentile (KM)	6.386
95% gamma percentile (KM)	6.976	99% gamma percentile (KM)	8.175

The following statistics are computed using gamma distribution and KM estimates

Upper Limits using Wilson Hilferty (WH) and Hawkins Wixley (HW) Methods

	WH	HW		WH	HW
95% Approx. Gamma UTL with 95% Coverage	8.428	8.598	95% Approx. Gamma UPL	7.269	7.354
95% KM Gamma Percentile	7.047	7.118	95% Gamma USL	8.745	8.942

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.761
10% Shapiro Wilk Critical Value	0.917
Lilliefors Test Statistic	0.304
10% Lilliefors Critical Value	0.18

Shapiro Wilk GOF Test

Data Not Lognormal at 10% Significance Level

Lilliefors GOF Test

Data Not Lognormal at 10% Significance Level

Data Not Lognormal at 10% Significance Level

Background Lognormal ROS Statistics Assuming Lognormal Distribution Using Imputed Non-Detects

Mean in Original Scale	4.68	Mean in Log Scale	1.505
SD in Original Scale	1.195	SD in Log Scale	0.3
95% UTL95% Coverage	9.234	95% BCA UTL95% Coverage	6.69
95% Bootstrap (%) UTL95% Coverage	6.69	95% UPL (t)	7.659
95% UPL for Next 8 Observations	10.51	95% UPL for Mean of 8 Observations	5.595
90% Percentile (z)	6.613	95% Percentile (z)	7.373
99% Percentile (z)	9.043	95% USL	9.689

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean of Logged Data	1.504	95% KM UTL (Lognormal)95% Coverage	9.24
KM SD of Logged Data	0.3	95% KM UPL (Lognormal)	7.661
95% KM Percentile Lognormal (z)	7.374	95% KM USL (Lognormal)	9.696

Background DL/2 Statistics Assuming Lognormal Distribution

Mean in Original Scale	4.625	Mean in Log Scale	1.487
SD in Original Scale	1.271	SD in Log Scale	0.324
95% UTL95% Coverage	9.615	95% UPL (t)	7.854
95% UPL for Next 8 Observations	11.06	95% UPL for Mean of 8 Observations	5.592

90% Percentile (z)	6.7	95% Percentile (z)	7.538
99% Percentile (z)	9.4	95% USL	10.13

DL/2 is not a Recommended Method. DL/2 provided for comparisons and historical reasons.

Nonparametric Distribution Free Background Statistics

Data do not follow a Discernible Distribution

Nonparametric Upper Limits for BTVs(no distinction made between detects and nondetects)

Order of Statistic, r	20	95% UTL with 95% Coverage	6.69
Approx, f used to compute achieved CC	1.053	Approximate Actual Confidence Coefficient achieved by UTL	0.642
Approximate Sample Size needed to achieve specified CC	59	95% UPL	6.64
95% USL 6.69		95% KM Chebyshev UPL	9.977

Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

The use of USL tends to provide a balance between false positives and false negatives provided the data represents a background data set and when many onsite observations need to be compared with the BTV.

Appendix D: Laboratory Reports

- April 2025
- October 2025

**Laboratory Analytical Report
April 2025**

ANALYTICAL REPORT

PREPARED FOR

Attn: Austin Shoemaker
John Deere & Co
18600 S John Deere Road
PO BOX 538
Dubuque, Iowa 52001

Generated 5/7/2025 5:31:58 PM Revision 1

JOB DESCRIPTION

JDDW Semiannual Groundwater

JOB NUMBER

310-303155-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
(319)277-2401

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Table of Contents

Cover Page 1

Table of Contents 3

Case Narrative 4

Sample Summary 6

Detection Summary 7

Client Sample Results 10

Definitions 21

QC Sample Results 22

QC Association 27

Chronicle 31

Certification Summary 35

Method Summary 36

Chain of Custody 37

Receipt Checklists 42



Case Narrative

Client: John Deere & Co
Project: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Job ID: 310-303155-1

Eurofins Cedar Falls

Job Narrative 310-303155-1

REVISION

The report being provided is a revision of the original report sent on 4/11/2025. The report (revision 1) is being revised due to Updated sample date/time and including both COC's on the report..

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

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

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

Receipt

The samples were received on 4/2/2025 9:15 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.1°C and 0.2°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: MW-1 (310-303155-1), MW-2 (310-303155-2), MW-3 (310-303155-3), DUP-1 (310-303155-4), S1 Leachate Open (310-303155-5), S2 Leachate Open (310-303155-6) and S1 Underliner Open (310-303155-7). Elevated reporting limits (RLs) are provided.

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

Metals

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

General Chemistry

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

Eurofins Cedar Falls

Case Narrative

Client: John Deere & Co
Project: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Job ID: 310-303354-1

Eurofins Cedar Falls

Job Narrative 310-303354-1

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

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

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

Receipt

The samples were received on 4/3/2025 9:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.7°C.

HPLC/IC

Method 9056A_ORGFM_28D: The following samples were diluted due to the nature of the sample matrix: S1 Underliner Closed (310-303354-1), S2 Underliner Closed (310-303354-2) and Combined Leachate (310-303354-3). Elevated reporting limits (RLs) are provided.

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

Metals

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

General Chemistry

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

Eurofins Cedar Falls

Sample Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-303155-1	MW-1	Water	04/01/25 15:28	04/02/25 09:15
310-303155-2	MW-2	Water	04/01/25 14:21	04/02/25 09:15
310-303155-3	MW-3	Water	04/01/25 11:58	04/02/25 09:15
310-303155-4	DUP-1	Water	04/01/25 00:00	04/02/25 09:15
310-303155-5	S1 Leachate Open	Water	04/01/25 12:15	04/02/25 09:15
310-303155-6	S2 Leachate Open	Water	04/01/25 12:18	04/02/25 09:15
310-303155-7	S1 Underliner Open	Water	04/01/25 12:20	04/02/25 09:15
310-303155-8	EB-01	Water	04/01/25 15:45	04/02/25 09:15
310-303354-1	S1 Underliner Closed	Water	04/02/25 13:20	04/03/25 09:40
310-303354-2	S2 Underliner Closed	Water	04/02/25 13:35	04/03/25 09:40
310-303354-3	Combined Leachate	Water	04/02/25 13:50	04/03/25 09:40

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: MW-1

Lab Sample ID: 310-303155-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	6.54		5.00		mg/L	5		9056A	Total/NA
Sulfate	24.5		5.00		mg/L	5		9056A	Total/NA
Barium	0.0786		0.0100		mg/L	1		6010D	Total/NA
Calcium	60.4		1.00		mg/L	1		6010D	Total/NA
Magnesium	35.0		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	6.75		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	338		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 310-303155-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.69		5.00		mg/L	5		9056A	Total/NA
Sulfate	18.6		5.00		mg/L	5		9056A	Total/NA
Barium	0.0829		0.0100		mg/L	1		6010D	Total/NA
Calcium	90.4		1.00		mg/L	1		6010D	Total/NA
Magnesium	39.8		1.00		mg/L	1		6010D	Total/NA
Nitrate as N	1.56		0.100		mg/L	1		353.2	Total/NA
Total Dissolved Solids	410		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 310-303155-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	76.4		5.00		mg/L	5		9056A	Total/NA
Sulfate	111		5.00		mg/L	5		9056A	Total/NA
Barium	0.0520		0.0100		mg/L	1		6010D	Total/NA
Boron	2.25		0.200		mg/L	1		6010D	Total/NA
Calcium	123		1.00		mg/L	1		6010D	Total/NA
Magnesium	57.1		1.00		mg/L	1		6010D	Total/NA
Nitrate as N	1.03		0.100		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	6.75		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	738		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP-1

Lab Sample ID: 310-303155-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	8.19		5.00		mg/L	5		9056A	Total/NA
Sulfate	20.3		5.00		mg/L	5		9056A	Total/NA
Barium	0.0857		0.0100		mg/L	1		6010D	Total/NA
Calcium	93.6		1.00		mg/L	1		6010D	Total/NA
Magnesium	41.2		1.00		mg/L	1		6010D	Total/NA
Nitrate as N	1.64		0.100		mg/L	1		353.2	Total/NA
Total Dissolved Solids	402		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S1 Leachate Open

Lab Sample ID: 310-303155-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	74.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	20.6		5.00		mg/L	5		9056A	Total/NA
Barium	0.716		0.0100		mg/L	1		6010D	Total/NA
Boron	8.18		0.200		mg/L	1		6010D	Total/NA
Calcium	119		1.00		mg/L	1		6010D	Total/NA
Iron	2.67		0.500		mg/L	1		6010D	Total/NA
Lithium	0.206		0.0500		mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S1 Leachate Open (Continued)

Lab Sample ID: 310-303155-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Magnesium	41.5		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	3.44		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	28.4		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	886		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S2 Leachate Open

Lab Sample ID: 310-303155-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	106		5.00		mg/L	5		9056A	Total/NA
Sulfate	1160		20.0		mg/L	20		9056A	Total/NA
Barium	0.0283		0.0100		mg/L	1		6010D	Total/NA
Boron	21.4		0.200		mg/L	1		6010D	Total/NA
Calcium	158		1.00		mg/L	1		6010D	Total/NA
Iron	2.16		0.500		mg/L	1		6010D	Total/NA
Lithium	1.10		0.0500		mg/L	1		6010D	Total/NA
Magnesium	133		1.00		mg/L	1		6010D	Total/NA
Molybdenum	0.0524		0.0500		mg/L	1		6010D	Total/NA
Ammonia as N	9.94		0.500		mg/L	1		350.1	Total/NA
Nitrate as N	0.110		0.100		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	125		10.0		mg/L	2		5220D LL	Total/NA
Total Dissolved Solids	2330		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S1 Underliner Open

Lab Sample ID: 310-303155-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	58.0		5.00		mg/L	5		9056A	Total/NA
Sulfate	22.2		5.00		mg/L	5		9056A	Total/NA
Barium	0.471		0.0100		mg/L	1		6010D	Total/NA
Boron	2.64		0.200		mg/L	1		6010D	Total/NA
Calcium	65.2		1.00		mg/L	1		6010D	Total/NA
Lithium	0.0642		0.0500		mg/L	1		6010D	Total/NA
Magnesium	37.1		1.00		mg/L	1		6010D	Total/NA
Nitrate as N	2.95		1.00		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	17.6		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	610		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: EB-01

Lab Sample ID: 310-303155-8

No Detections.

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-303354-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	65.2		5.00		mg/L	5		9056A	Total/NA
Sulfate	17.4		5.00		mg/L	5		9056A	Total/NA
Barium	0.654		0.0100		mg/L	1		6010D	Total/NA
Boron	3.57		0.200		mg/L	1		6010D	Total/NA
Calcium	82.2		1.00		mg/L	1		6010D	Total/NA
Lithium	0.0881		0.0500		mg/L	1		6010D	Total/NA
Magnesium	39.5		1.00		mg/L	1		6010D	Total/NA
Nitrate as N	2.51		0.100		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	13.8		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	712		50.0		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S2 Underliner Closed

Lab Sample ID: 310-303354-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	109		5.00		mg/L	5		9056A	Total/NA
Sulfate	1140		20.0		mg/L	20		9056A	Total/NA
Barium	0.0312		0.0100		mg/L	1		6010D	Total/NA
Boron	21.4		0.200		mg/L	1		6010D	Total/NA
Calcium	160		1.00		mg/L	1		6010D	Total/NA
Iron	2.31		0.500		mg/L	1		6010D	Total/NA
Lithium	1.10		0.0500		mg/L	1		6010D	Total/NA
Magnesium	133		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	6.88	F1	0.500		mg/L	1		350.1	Total/NA
Nitrate as N	1.21		0.100		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	55.9		10.0		mg/L	2		5220D LL	Total/NA
Total Dissolved Solids	2150		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: Combined Leachate

Lab Sample ID: 310-303354-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	81.6		20.0		mg/L	20		9056A	Total/NA
Sulfate	649		20.0		mg/L	20		9056A	Total/NA
Barium	0.197		0.0100		mg/L	1		6010D	Total/NA
Boron	14.0		0.200		mg/L	1		6010D	Total/NA
Calcium	126		1.00		mg/L	1		6010D	Total/NA
Iron	3.31		0.500		mg/L	1		6010D	Total/NA
Lithium	0.654		0.0500		mg/L	1		6010D	Total/NA
Magnesium	88.3		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	5.49		0.500		mg/L	1		350.1	Total/NA
Nitrate as N	0.668		0.100		mg/L	1		353.2	Total/NA
Chemical Oxygen Demand	46.5		10.0		mg/L	2		5220D LL	Total/NA
Total Dissolved Solids	1810		250		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: MW-1

Lab Sample ID: 310-303155-1

Date Collected: 04/01/25 15:28

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	6.54		5.00		mg/L			04/08/25 11:26	5
Fluoride	<1.00		1.00		mg/L			04/08/25 11:26	5
Sulfate	24.5		5.00		mg/L			04/08/25 11:26	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0786		0.0100		mg/L		04/08/25 09:00	04/10/25 10:27	1
Boron	<0.200		0.200		mg/L		04/08/25 09:00	04/10/25 10:27	1
Calcium	60.4		1.00		mg/L		04/08/25 09:00	04/10/25 10:27	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:27	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:27	1
Magnesium	35.0		1.00		mg/L		04/08/25 09:00	04/10/25 10:27	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:31	1
Nitrate as N (EPA 353.2)	<0.100		0.100		mg/L			04/09/25 01:17	1
Chemical Oxygen Demand (SM 5220D LL)	6.75		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	338		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: MW-2

Lab Sample ID: 310-303155-2

Date Collected: 04/01/25 14:21

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.69		5.00		mg/L			04/08/25 11:41	5
Fluoride	<1.00		1.00		mg/L			04/08/25 11:41	5
Sulfate	18.6		5.00		mg/L			04/08/25 11:41	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0829		0.0100		mg/L		04/08/25 09:00	04/10/25 10:28	1
Boron	<0.200		0.200		mg/L		04/08/25 09:00	04/10/25 10:28	1
Calcium	90.4		1.00		mg/L		04/08/25 09:00	04/10/25 10:28	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:28	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:28	1
Magnesium	39.8		1.00		mg/L		04/08/25 09:00	04/10/25 10:28	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:32	1
Nitrate as N (EPA 353.2)	1.56		0.100		mg/L			04/09/25 01:19	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	410		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: MW-3

Lab Sample ID: 310-303155-3

Date Collected: 04/01/25 11:58

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.4		5.00		mg/L			04/08/25 11:57	5
Fluoride	<1.00		1.00		mg/L			04/08/25 11:57	5
Sulfate	111		5.00		mg/L			04/08/25 11:57	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0520		0.0100		mg/L		04/08/25 09:00	04/10/25 10:29	1
Boron	2.25		0.200		mg/L		04/08/25 09:00	04/10/25 10:29	1
Calcium	123		1.00		mg/L		04/08/25 09:00	04/10/25 10:29	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:29	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:29	1
Magnesium	57.1		1.00		mg/L		04/08/25 09:00	04/10/25 10:29	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:32	1
Nitrate as N (EPA 353.2)	1.03		0.100		mg/L			04/09/25 01:20	1
Chemical Oxygen Demand (SM 5220D LL)	6.75		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	738		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: DUP-1

Lab Sample ID: 310-303155-4

Date Collected: 04/01/25 00:00

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	8.19		5.00		mg/L			04/08/25 12:12	5
Fluoride	<1.00		1.00		mg/L			04/08/25 12:12	5
Sulfate	20.3		5.00		mg/L			04/08/25 12:12	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0857		0.0100		mg/L		04/08/25 09:00	04/10/25 10:31	1
Boron	<0.200		0.200		mg/L		04/08/25 09:00	04/10/25 10:31	1
Calcium	93.6		1.00		mg/L		04/08/25 09:00	04/10/25 10:31	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:31	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:31	1
Magnesium	41.2		1.00		mg/L		04/08/25 09:00	04/10/25 10:31	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:34	1
Nitrate as N (EPA 353.2)	1.64		0.100		mg/L			04/09/25 01:22	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	402		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S1 Leachate Open

Lab Sample ID: 310-303155-5

Date Collected: 04/01/25 12:15

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	74.2		5.00		mg/L			04/08/25 12:28	5
Fluoride	<1.00		1.00		mg/L			04/08/25 12:28	5
Sulfate	20.6		5.00		mg/L			04/08/25 12:28	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.716		0.0100		mg/L		04/08/25 09:00	04/10/25 10:32	1
Boron	8.18		0.200		mg/L		04/08/25 09:00	04/10/25 10:32	1
Calcium	119		1.00		mg/L		04/08/25 09:00	04/10/25 10:32	1
Iron	2.67		0.500		mg/L		04/08/25 09:00	04/10/25 10:32	1
Lithium	0.206		0.0500		mg/L		04/08/25 09:00	04/10/25 10:32	1
Magnesium	41.5		1.00		mg/L		04/08/25 09:00	04/10/25 10:32	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.44		0.500		mg/L		04/04/25 11:01	04/04/25 17:34	1
Nitrate as N (EPA 353.2)	<0.100		0.100		mg/L			04/09/25 01:24	1
Chemical Oxygen Demand (SM 5220D LL)	28.4		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	886		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S2 Leachate Open

Lab Sample ID: 310-303155-6

Date Collected: 04/01/25 12:18

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	106		5.00		mg/L			04/08/25 13:15	5
Fluoride	<1.00		1.00		mg/L			04/08/25 13:15	5
Sulfate	1160		20.0		mg/L			04/08/25 09:37	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0283		0.0100		mg/L		04/08/25 09:00	04/10/25 10:33	1
Boron	21.4		0.200		mg/L		04/08/25 09:00	04/10/25 10:33	1
Calcium	158		1.00		mg/L		04/08/25 09:00	04/10/25 10:33	1
Iron	2.16		0.500		mg/L		04/08/25 09:00	04/10/25 10:33	1
Lithium	1.10		0.0500		mg/L		04/08/25 09:00	04/10/25 10:33	1
Magnesium	133		1.00		mg/L		04/08/25 09:00	04/10/25 10:33	1
Molybdenum	0.0524		0.0500		mg/L		04/08/25 09:00	04/10/25 10:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	9.94		0.500		mg/L		04/04/25 11:01	04/04/25 17:36	1
Nitrate as N (EPA 353.2)	0.110		0.100		mg/L			04/09/25 01:30	1
Chemical Oxygen Demand (SM 5220D LL)	125		10.0		mg/L			04/04/25 09:18	2
Total Dissolved Solids (SM 2540C)	2330		250		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S1 Underliner Open

Lab Sample ID: 310-303155-7

Date Collected: 04/01/25 12:20

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	58.0		5.00		mg/L			04/09/25 08:49	5
Fluoride	<1.00		1.00		mg/L			04/09/25 08:49	5
Sulfate	22.2		5.00		mg/L			04/09/25 08:49	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.471		0.0100		mg/L		04/08/25 09:00	04/10/25 10:34	1
Boron	2.64		0.200		mg/L		04/08/25 09:00	04/10/25 10:34	1
Calcium	65.2		1.00		mg/L		04/08/25 09:00	04/10/25 10:34	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:34	1
Lithium	0.0642		0.0500		mg/L		04/08/25 09:00	04/10/25 10:34	1
Magnesium	37.1		1.00		mg/L		04/08/25 09:00	04/10/25 10:34	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:37	1
Nitrate as N (EPA 353.2)	2.95		1.00		mg/L			04/09/25 01:32	1
Chemical Oxygen Demand (SM 5220D LL)	17.6		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	610		50.0		mg/L			04/04/25 15:14	1

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Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: EB-01

Lab Sample ID: 310-303155-8

Date Collected: 04/01/25 15:45

Matrix: Water

Date Received: 04/02/25 09:15

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/09/25 09:04	1
Fluoride	<0.200		0.200		mg/L			04/09/25 09:04	1
Sulfate	<1.00		1.00		mg/L			04/09/25 09:04	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		04/08/25 09:00	04/10/25 10:38	1
Boron	<0.200		0.200		mg/L		04/08/25 09:00	04/10/25 10:38	1
Calcium	<1.00		1.00		mg/L		04/08/25 09:00	04/10/25 10:38	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:38	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:38	1
Magnesium	<1.00		1.00		mg/L		04/08/25 09:00	04/10/25 10:38	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 17:38	1
Nitrate as N (EPA 353.2)	<0.100		0.100		mg/L			04/09/25 01:33	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/04/25 09:18	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			04/04/25 15:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-303354-1

Date Collected: 04/02/25 13:20

Matrix: Water

Date Received: 04/03/25 09:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	65.2		5.00		mg/L			04/09/25 12:59	5
Fluoride	<1.00		1.00		mg/L			04/09/25 12:59	5
Sulfate	17.4		5.00		mg/L			04/09/25 12:59	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.654		0.0100		mg/L		04/08/25 09:00	04/10/25 10:41	1
Boron	3.57		0.200		mg/L		04/08/25 09:00	04/10/25 10:41	1
Calcium	82.2		1.00		mg/L		04/08/25 09:00	04/10/25 10:41	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:41	1
Lithium	0.0881		0.0500		mg/L		04/08/25 09:00	04/10/25 10:41	1
Magnesium	39.5		1.00		mg/L		04/08/25 09:00	04/10/25 10:41	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L		04/07/25 11:23	04/07/25 18:50	1
Nitrate as N (EPA 353.2)	2.51		0.100		mg/L			04/09/25 13:41	1
Chemical Oxygen Demand (SM 5220D LL)	13.8		5.00		mg/L			04/09/25 10:39	1
Total Dissolved Solids (SM 2540C)	712		50.0		mg/L			04/04/25 16:53	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S2 Underliner Closed

Lab Sample ID: 310-303354-2

Date Collected: 04/02/25 13:35

Matrix: Water

Date Received: 04/03/25 09:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	109		5.00		mg/L			04/09/25 13:12	5
Fluoride	<1.00		1.00		mg/L			04/09/25 13:12	5
Sulfate	1140		20.0		mg/L			04/10/25 09:19	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0312		0.0100		mg/L		04/08/25 09:00	04/10/25 10:42	1
Boron	21.4		0.200		mg/L		04/08/25 09:00	04/10/25 10:42	1
Calcium	160		1.00		mg/L		04/08/25 09:00	04/10/25 10:42	1
Iron	2.31		0.500		mg/L		04/08/25 09:00	04/10/25 10:42	1
Lithium	1.10		0.0500		mg/L		04/08/25 09:00	04/10/25 10:42	1
Magnesium	133		1.00		mg/L		04/08/25 09:00	04/10/25 10:42	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	6.88	F1	0.500		mg/L		04/07/25 11:23	04/07/25 18:41	1
Nitrate as N (EPA 353.2)	1.21		0.100		mg/L			04/09/25 13:42	1
Chemical Oxygen Demand (SM 5220D LL)	55.9		10.0		mg/L			04/09/25 10:39	2
Total Dissolved Solids (SM 2540C)	2150		250		mg/L			04/04/25 16:53	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-303354-3

Date Collected: 04/02/25 13:50

Matrix: Water

Date Received: 04/03/25 09:40

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	81.6		20.0		mg/L			04/09/25 13:25	20
Fluoride	<1.00		1.00		mg/L			04/10/25 17:49	5
Sulfate	649		20.0		mg/L			04/09/25 13:25	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.197		0.0100		mg/L		04/08/25 09:00	04/10/25 10:43	1
Boron	14.0		0.200		mg/L		04/08/25 09:00	04/10/25 10:43	1
Calcium	126		1.00		mg/L		04/08/25 09:00	04/10/25 10:43	1
Iron	3.31		0.500		mg/L		04/08/25 09:00	04/10/25 10:43	1
Lithium	0.654		0.0500		mg/L		04/08/25 09:00	04/10/25 10:43	1
Magnesium	88.3		1.00		mg/L		04/08/25 09:00	04/10/25 10:43	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.49		0.500		mg/L		04/07/25 11:23	04/07/25 18:43	1
Nitrate as N (EPA 353.2)	0.668		0.100		mg/L			04/09/25 13:48	1
Chemical Oxygen Demand (SM 5220D LL)	46.5		10.0		mg/L			04/09/25 10:39	2
Total Dissolved Solids (SM 2540C)	1810		250		mg/L			04/04/25 16:53	1

Definitions/Glossary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F1	MS and/or MSD recovery exceeds control limits.

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: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-451137/3

Matrix: Water

Analysis Batch: 451137

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/08/25 10:23	1
Fluoride	<0.200		0.200		mg/L			04/08/25 10:23	1
Sulfate	<1.00		1.00		mg/L			04/08/25 10:23	1

Lab Sample ID: LCS 310-451137/4

Matrix: Water

Analysis Batch: 451137

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	9.256		mg/L		93	90 - 110
Fluoride	2.00	1.970		mg/L		99	90 - 110
Sulfate	10.0	9.231		mg/L		92	90 - 110

Lab Sample ID: MB 310-451219/3

Matrix: Water

Analysis Batch: 451219

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/09/25 12:33	1
Fluoride	<0.200		0.200		mg/L			04/09/25 12:33	1
Sulfate	<1.00		1.00		mg/L			04/09/25 12:33	1

Lab Sample ID: LCS 310-451219/4

Matrix: Water

Analysis Batch: 451219

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	9.803		mg/L		98	90 - 110
Fluoride	2.00	2.047		mg/L		102	90 - 110
Sulfate	10.0	9.936		mg/L		99	90 - 110

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-450877/1-A

Matrix: Water

Analysis Batch: 451234

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 450877

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		04/08/25 09:00	04/10/25 10:13	1
Boron	<0.200		0.200		mg/L		04/08/25 09:00	04/10/25 10:13	1
Calcium	<1.00		1.00		mg/L		04/08/25 09:00	04/10/25 10:13	1
Iron	<0.500		0.500		mg/L		04/08/25 09:00	04/10/25 10:13	1
Lithium	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:13	1
Magnesium	<1.00		1.00		mg/L		04/08/25 09:00	04/10/25 10:13	1
Molybdenum	<0.0500		0.0500		mg/L		04/08/25 09:00	04/10/25 10:13	1

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QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 310-450877/2-A

Matrix: Water

Analysis Batch: 451234

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 450877

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	1.037		mg/L		104	80 - 120
Boron	2.00	2.091		mg/L		105	80 - 120
Calcium	20.0	19.49		mg/L		97	80 - 120
Iron	2.00	2.084		mg/L		104	80 - 120
Lithium	2.00	2.040		mg/L		102	80 - 120
Magnesium	20.0	19.81		mg/L		99	80 - 120
Molybdenum	2.00	2.050		mg/L		102	80 - 120

Lab Sample ID: 310-303155-8 DU

Matrix: Water

Analysis Batch: 451234

Client Sample ID: EB-01

Prep Type: Total/NA

Prep Batch: 450877

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Barium	<0.0100		<0.0100		mg/L		NC	20
Boron	<0.200		<0.200		mg/L		NC	20
Calcium	<1.00		<1.00		mg/L		NC	20
Iron	<0.500		<0.500		mg/L		NC	20
Lithium	<0.0500		<0.0500		mg/L		NC	20
Magnesium	<1.00		<1.00		mg/L		NC	20
Molybdenum	<0.0500		<0.0500		mg/L		NC	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-450717/1-A

Matrix: Water

Analysis Batch: 450759

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 450717

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.500		0.500		mg/L		04/04/25 11:01	04/04/25 16:47	1

Lab Sample ID: LCS 310-450717/2-A

Matrix: Water

Analysis Batch: 450759

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 450717

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	3.888		mg/L		97	90 - 110

Lab Sample ID: MB 310-450847/1-A

Matrix: Water

Analysis Batch: 450896

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 450847

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.500		0.500		mg/L		04/07/25 11:23	04/07/25 18:39	1

Lab Sample ID: LCS 310-450847/2-A

Matrix: Water

Analysis Batch: 450896

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 450847

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	4.210		mg/L		105	90 - 110

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: 310-303354-2 MS

Matrix: Water

Analysis Batch: 450896

Client Sample ID: S2 Underliner Closed

Prep Type: Total/NA

Prep Batch: 450847

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	6.88	F1	4.00	11.52	E F1	mg/L		116	90 - 110

Lab Sample ID: 310-303354-2 MSD

Matrix: Water

Analysis Batch: 450896

Client Sample ID: S2 Underliner Closed

Prep Type: Total/NA

Prep Batch: 450847

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia as N	6.88	F1	4.00	11.14	E	mg/L		106	90 - 110	3	14

Method: 5220D LL - COD

Lab Sample ID: MB 310-450693/32

Matrix: Water

Analysis Batch: 450693

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00		mg/L			04/04/25 09:18	1

Lab Sample ID: MB 310-450693/5

Matrix: Water

Analysis Batch: 450693

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00		mg/L			04/04/25 09:18	1

Lab Sample ID: LCS 310-450693/3

Matrix: Water

Analysis Batch: 450693

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	127.7		mg/L		102	85 - 110

Lab Sample ID: LCS 310-450693/33

Matrix: Water

Analysis Batch: 450693

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	126.4		mg/L		101	85 - 110

Lab Sample ID: 310-303155-4 MS

Matrix: Water

Analysis Batch: 450693

Client Sample ID: DUP-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	<5.00		50.0	60.17		mg/L		111	83 - 146

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Method: 5220D LL - COD (Continued)

Lab Sample ID: 310-303155-4 MSD

Matrix: Water

Analysis Batch: 450693

Client Sample ID: DUP-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chemical Oxygen Demand	<5.00		50.0	59.51		mg/L		109	83 - 146	1	18

Lab Sample ID: MB 310-451095/5

Matrix: Water

Analysis Batch: 451095

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00		mg/L			04/09/25 10:39	1

Lab Sample ID: MB 310-451095/60

Matrix: Water

Analysis Batch: 451095

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00		mg/L			04/09/25 10:39	1

Lab Sample ID: LCS 310-451095/63

Matrix: Water

Analysis Batch: 451095

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	126.8		mg/L		101	85 - 110

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

Lab Sample ID: MB 310-450762/1

Matrix: Water

Analysis Batch: 450762

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			04/04/25 15:14	1

Lab Sample ID: LCS 310-450762/2

Matrix: Water

Analysis Batch: 450762

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	1014		mg/L		101	88 - 110

Lab Sample ID: 310-303155-1 DU

Matrix: Water

Analysis Batch: 450762

Client Sample ID: MW-1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	338		320.0		mg/L		5	16

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

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

Lab Sample ID: MB 310-450765/1
Matrix: Water
Analysis Batch: 450765

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			04/04/25 16:53	1

Lab Sample ID: LCS 310-450765/2
Matrix: Water
Analysis Batch: 450765

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	990.0		mg/L		99	88 - 110

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

HPLC/IC

Analysis Batch: 451137

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	9056A	
310-303155-2	MW-2	Total/NA	Water	9056A	
310-303155-3	MW-3	Total/NA	Water	9056A	
310-303155-4	DUP-1	Total/NA	Water	9056A	
310-303155-5	S1 Leachate Open	Total/NA	Water	9056A	
310-303155-6	S2 Leachate Open	Total/NA	Water	9056A	
310-303155-6	S2 Leachate Open	Total/NA	Water	9056A	
310-303155-7	S1 Underliner Open	Total/NA	Water	9056A	
310-303155-8	EB-01	Total/NA	Water	9056A	
MB 310-451137/3	Method Blank	Total/NA	Water	9056A	
LCS 310-451137/4	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 451219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	9056A	
310-303354-2	S2 Underliner Closed	Total/NA	Water	9056A	
310-303354-2	S2 Underliner Closed	Total/NA	Water	9056A	
310-303354-3	Combined Leachate	Total/NA	Water	9056A	
310-303354-3	Combined Leachate	Total/NA	Water	9056A	
MB 310-451219/3	Method Blank	Total/NA	Water	9056A	
LCS 310-451219/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 450877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	3005A	
310-303155-2	MW-2	Total/NA	Water	3005A	
310-303155-3	MW-3	Total/NA	Water	3005A	
310-303155-4	DUP-1	Total/NA	Water	3005A	
310-303155-5	S1 Leachate Open	Total/NA	Water	3005A	
310-303155-6	S2 Leachate Open	Total/NA	Water	3005A	
310-303155-7	S1 Underliner Open	Total/NA	Water	3005A	
310-303155-8	EB-01	Total/NA	Water	3005A	
310-303354-1	S1 Underliner Closed	Total/NA	Water	3005A	
310-303354-2	S2 Underliner Closed	Total/NA	Water	3005A	
310-303354-3	Combined Leachate	Total/NA	Water	3005A	
MB 310-450877/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-450877/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-303155-8 DU	EB-01	Total/NA	Water	3005A	

Analysis Batch: 451234

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	6010D	450877
310-303155-2	MW-2	Total/NA	Water	6010D	450877
310-303155-3	MW-3	Total/NA	Water	6010D	450877
310-303155-4	DUP-1	Total/NA	Water	6010D	450877
310-303155-5	S1 Leachate Open	Total/NA	Water	6010D	450877
310-303155-6	S2 Leachate Open	Total/NA	Water	6010D	450877
310-303155-7	S1 Underliner Open	Total/NA	Water	6010D	450877
310-303155-8	EB-01	Total/NA	Water	6010D	450877

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Metals (Continued)

Analysis Batch: 451234 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	6010D	450877
310-303354-2	S2 Underliner Closed	Total/NA	Water	6010D	450877
310-303354-3	Combined Leachate	Total/NA	Water	6010D	450877
MB 310-450877/1-A	Method Blank	Total/NA	Water	6010D	450877
LCS 310-450877/2-A	Lab Control Sample	Total/NA	Water	6010D	450877
310-303155-8 DU	EB-01	Total/NA	Water	6010D	450877

General Chemistry

Analysis Batch: 450693

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	5220D LL	
310-303155-2	MW-2	Total/NA	Water	5220D LL	
310-303155-3	MW-3	Total/NA	Water	5220D LL	
310-303155-4	DUP-1	Total/NA	Water	5220D LL	
310-303155-5	S1 Leachate Open	Total/NA	Water	5220D LL	
310-303155-6	S2 Leachate Open	Total/NA	Water	5220D LL	
310-303155-7	S1 Underliner Open	Total/NA	Water	5220D LL	
310-303155-8	EB-01	Total/NA	Water	5220D LL	
MB 310-450693/32	Method Blank	Total/NA	Water	5220D LL	
MB 310-450693/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-450693/3	Lab Control Sample	Total/NA	Water	5220D LL	
LCS 310-450693/33	Lab Control Sample	Total/NA	Water	5220D LL	
310-303155-4 MS	DUP-1	Total/NA	Water	5220D LL	
310-303155-4 MSD	DUP-1	Total/NA	Water	5220D LL	

Prep Batch: 450717

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	350.1	
310-303155-2	MW-2	Total/NA	Water	350.1	
310-303155-3	MW-3	Total/NA	Water	350.1	
310-303155-4	DUP-1	Total/NA	Water	350.1	
310-303155-5	S1 Leachate Open	Total/NA	Water	350.1	
310-303155-6	S2 Leachate Open	Total/NA	Water	350.1	
310-303155-7	S1 Underliner Open	Total/NA	Water	350.1	
310-303155-8	EB-01	Total/NA	Water	350.1	
MB 310-450717/1-A	Method Blank	Total/NA	Water	350.1	
LCS 310-450717/2-A	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 450759

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	350.1	450717
310-303155-2	MW-2	Total/NA	Water	350.1	450717
310-303155-3	MW-3	Total/NA	Water	350.1	450717
310-303155-4	DUP-1	Total/NA	Water	350.1	450717
310-303155-5	S1 Leachate Open	Total/NA	Water	350.1	450717
310-303155-6	S2 Leachate Open	Total/NA	Water	350.1	450717
310-303155-7	S1 Underliner Open	Total/NA	Water	350.1	450717
310-303155-8	EB-01	Total/NA	Water	350.1	450717
MB 310-450717/1-A	Method Blank	Total/NA	Water	350.1	450717
LCS 310-450717/2-A	Lab Control Sample	Total/NA	Water	350.1	450717

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

General Chemistry

Analysis Batch: 450762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	SM 2540C	
310-303155-2	MW-2	Total/NA	Water	SM 2540C	
310-303155-3	MW-3	Total/NA	Water	SM 2540C	
310-303155-4	DUP-1	Total/NA	Water	SM 2540C	
310-303155-5	S1 Leachate Open	Total/NA	Water	SM 2540C	
310-303155-6	S2 Leachate Open	Total/NA	Water	SM 2540C	
310-303155-7	S1 Underliner Open	Total/NA	Water	SM 2540C	
310-303155-8	EB-01	Total/NA	Water	SM 2540C	
MB 310-450762/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-450762/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-303155-1 DU	MW-1	Total/NA	Water	SM 2540C	

Analysis Batch: 450765

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	SM 2540C	
310-303354-2	S2 Underliner Closed	Total/NA	Water	SM 2540C	
310-303354-3	Combined Leachate	Total/NA	Water	SM 2540C	
MB 310-450765/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-450765/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Prep Batch: 450847

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	350.1	
310-303354-2	S2 Underliner Closed	Total/NA	Water	350.1	
310-303354-3	Combined Leachate	Total/NA	Water	350.1	
MB 310-450847/1-A	Method Blank	Total/NA	Water	350.1	
LCS 310-450847/2-A	Lab Control Sample	Total/NA	Water	350.1	
310-303354-2 MS	S2 Underliner Closed	Total/NA	Water	350.1	
310-303354-2 MSD	S2 Underliner Closed	Total/NA	Water	350.1	

Analysis Batch: 450858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303155-1	MW-1	Total/NA	Water	353.2	
310-303155-2	MW-2	Total/NA	Water	353.2	
310-303155-3	MW-3	Total/NA	Water	353.2	
310-303155-4	DUP-1	Total/NA	Water	353.2	
310-303155-5	S1 Leachate Open	Total/NA	Water	353.2	
310-303155-6	S2 Leachate Open	Total/NA	Water	353.2	
310-303155-7	S1 Underliner Open	Total/NA	Water	353.2	
310-303155-8	EB-01	Total/NA	Water	353.2	
310-303354-1	S1 Underliner Closed	Total/NA	Water	353.2	
310-303354-2	S2 Underliner Closed	Total/NA	Water	353.2	
310-303354-3	Combined Leachate	Total/NA	Water	353.2	

Analysis Batch: 450896

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	350.1	450847
310-303354-2	S2 Underliner Closed	Total/NA	Water	350.1	450847
310-303354-3	Combined Leachate	Total/NA	Water	350.1	450847
MB 310-450847/1-A	Method Blank	Total/NA	Water	350.1	450847
LCS 310-450847/2-A	Lab Control Sample	Total/NA	Water	350.1	450847

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

General Chemistry (Continued)

Analysis Batch: 450896 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-2 MS	S2 Underliner Closed	Total/NA	Water	350.1	450847
310-303354-2 MSD	S2 Underliner Closed	Total/NA	Water	350.1	450847

Analysis Batch: 451095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-303354-1	S1 Underliner Closed	Total/NA	Water	5220D LL	
310-303354-2	S2 Underliner Closed	Total/NA	Water	5220D LL	
310-303354-3	Combined Leachate	Total/NA	Water	5220D LL	
MB 310-451095/5	Method Blank	Total/NA	Water	5220D LL	
MB 310-451095/60	Method Blank	Total/NA	Water	5220D LL	
LCS 310-451095/63	Lab Control Sample	Total/NA	Water	5220D LL	

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: MW-1

Date Collected: 04/01/25 15:28

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 11:26
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:27
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:31
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:17
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: MW-2

Date Collected: 04/01/25 14:21

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 11:41
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:28
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:32
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:19
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: MW-3

Date Collected: 04/01/25 11:58

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 11:57
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:29
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:32
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:20
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: DUP-1

Date Collected: 04/01/25 00:00

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 12:12

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: DUP-1

Date Collected: 04/01/25 00:00

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:31
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:34
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:22
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: S1 Leachate Open

Date Collected: 04/01/25 12:15

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 12:28
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:32
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:34
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:24
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: S2 Leachate Open

Date Collected: 04/01/25 12:18

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		20	451137	WZC8	EET CF	04/08/25 09:37
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/08/25 13:15
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:33
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:36
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:30
Total/NA	Analysis	5220D LL		2	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: S1 Underliner Open

Date Collected: 04/01/25 12:20

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451137	WZC8	EET CF	04/09/25 08:49

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S1 Underliner Open

Date Collected: 04/01/25 12:20

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:34
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:37
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:32
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: EB-01

Date Collected: 04/01/25 15:45

Date Received: 04/02/25 09:15

Lab Sample ID: 310-303155-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	451137	WZC8	EET CF	04/09/25 09:04
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:38
Total/NA	Prep	350.1			450717	RLT9	EET CF	04/04/25 11:01
Total/NA	Analysis	350.1		1	450759	WZC8	EET CF	04/04/25 17:38
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 01:33
Total/NA	Analysis	5220D LL		1	450693	HE7K	EET CF	04/04/25 09:18
Total/NA	Analysis	SM 2540C		1	450762	HE7K	EET CF	04/04/25 15:14

Client Sample ID: S1 Underliner Closed

Date Collected: 04/02/25 13:20

Date Received: 04/03/25 09:40

Lab Sample ID: 310-303354-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451219	WZC8	EET CF	04/09/25 12:59
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:41
Total/NA	Prep	350.1			450847	RLT9	EET CF	04/07/25 11:23
Total/NA	Analysis	350.1		1	450896	ZJX4	EET CF	04/07/25 18:50
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 13:41
Total/NA	Analysis	5220D LL		1	451095	HE7K	EET CF	04/09/25 10:39
Total/NA	Analysis	SM 2540C		1	450765	HE7K	EET CF	04/04/25 16:53

Client Sample ID: S2 Underliner Closed

Date Collected: 04/02/25 13:35

Date Received: 04/03/25 09:40

Lab Sample ID: 310-303354-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		5	451219	WZC8	EET CF	04/09/25 13:12
Total/NA	Analysis	9056A		20	451219	WZC8	EET CF	04/10/25 09:19

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Client Sample ID: S2 Underliner Closed

Date Collected: 04/02/25 13:35

Date Received: 04/03/25 09:40

Lab Sample ID: 310-303354-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:42
Total/NA	Prep	350.1			450847	RLT9	EET CF	04/07/25 11:23
Total/NA	Analysis	350.1		1	450896	ZJX4	EET CF	04/07/25 18:41
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 13:42
Total/NA	Analysis	5220D LL		2	451095	HE7K	EET CF	04/09/25 10:39
Total/NA	Analysis	SM 2540C		1	450765	HE7K	EET CF	04/04/25 16:53

Client Sample ID: Combined Leachate

Date Collected: 04/02/25 13:50

Date Received: 04/03/25 09:40

Lab Sample ID: 310-303354-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		20	451219	WZC8	EET CF	04/09/25 13:25
Total/NA	Analysis	9056A		5	451219	WZC8	EET CF	04/10/25 17:49
Total/NA	Prep	3005A			450877	QTZ5	EET CF	04/08/25 09:00
Total/NA	Analysis	6010D		1	451234	ZRI4	EET CF	04/10/25 10:43
Total/NA	Prep	350.1			450847	RLT9	EET CF	04/07/25 11:23
Total/NA	Analysis	350.1		1	450896	ZJX4	EET CF	04/07/25 18:43
Total/NA	Analysis	353.2		1	450858	HE7K	EET CF	04/09/25 13:48
Total/NA	Analysis	5220D LL		2	451095	HE7K	EET CF	04/09/25 10:39
Total/NA	Analysis	SM 2540C		1	450765	HE7K	EET CF	04/04/25 16:53

Laboratory References:

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

Accreditation/Certification Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Laboratory: Eurofins Cedar Falls

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

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

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

Method Summary

Client: John Deere & Co
Project/Site: JDDW Semiannual Groundwater

Job ID: 310-303155-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6010D	Metals (ICP)	SW846	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
353.2	Nitrogen, Nitrate (Calculation)	EPA	EET CF
5220D LL	COD	SM	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
350.1	Distillation, Ammonia	EPA	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.

Laboratory References:

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



Environment Testing
America



310-303155 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>John Deere</u>			
City/State	CITY <u>Madison</u>	STATE <u>WI</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>4/2/25</u>	TIME <u>0915</u>	Received By: <u>BP</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID: _____			
Multiple Coolers? ☒ Yes ☐ No If yes: Cooler # <u>1</u> of <u>2</u>			
Cooler Custody Seals Present? ☒ Yes ☐ No If yes. Cooler custody seals intact? ☒ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes. Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes. Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other _____ ☐ NONE			
Thermometer ID: <u>AA</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.1</u>		Corrected Temp (°C): <u>0.1</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C)			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>John Deere</u>			
City/State:	CITY <u>Madison</u>	STATE <u>WI</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>4/2/25</u>	TIME <u>0915</u>	Received By: <u>BP</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID. _____			
Multiple Coolers? ☒ Yes ☐ No If yes: Cooler # <u>2</u> of <u>2</u>			
Cooler Custody Seals Present? ☒ Yes ☐ No If yes: Cooler custody seals intact? ☒ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes: Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes: Which VOA samples are in cooler? ↓ _____			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID. <u>AA</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.2</u>		Corrected Temp (°C): <u>0.2</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			

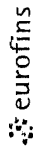
Eurofins Cedar Falls

3019 Venture Way

Cedar Falls, IA 50613

Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record



Environment Testing

Client Information		Lab PM:		Carrier Tracking No(s):		COC No:		
Client Contact:		Maddie Hollicky		Calhoun, Conner M		310-91979-20055 1		
Phone:		606-509-5097		E-Mail: Conner Calhoun@et.eurofins.com		Page: Page 1 of 1		
Company:		John Deere & Co		State of Origin: IA		Job #:		
Address:		999 Fourier Drive, Ste 101		Analysis Requested		Preservation Codes:		
City:		Madison				A - HCL M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)		
State, Zip:		WI, 53717						
Phone:		606-566-4957						
Email:		elawson@tricompanies.com						
Project Name:		JDDW Semiannual Groundwater						
Site:		JDDW 000						
TRC# 030113 Ph 3								
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix (W=water, S=solid, O=soil, BT=tissue, AA=air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Analysis Requested	Special Instructions/Note:
MW-1	4/1/25	1528	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
MW-2	4/1/25	1421	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
MW-3	4/1/25	1150	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
DUP-1	-	-	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
S1 Leachate Open	4/1/25	1215	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
S2 Leachate Open	↓	1218	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
S1 Underlimer Open	↓	1220	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
EB-01	4/1/25	1545	G	Water	N	X	Analysis Requested	Nitrate- 48hour hold time
Temp Blank			G	Water			Analysis Requested	Nitrate- 48hour hold time

Possible Hazard Identification		Deliverable Requested		Empty Kit Relinquished by	
☐ Non-Hazard	☐ Flammable	☐ Skin Irritant	☐ Poison B	☒ Unknown	☐ Radiological
Deliverable Requested: I, II, III, IV Other (specify)		Date:		Time:	
Relinquished by: <i>Maddie Hollicky</i>		Date/Time: 4/1/25 1700		Company: TRC	
Relinquished by:		Date/Time:		Company:	
Relinquished by:		Date/Time:		Company:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No		Cooler Temperature(s) °C and Other Remarks:	

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)		Special Instructions/QC Requirements	
☐ Return To Client	☐ Disposal By Lab	Archive For Months	
Special Instructions/QC Requirements		Method of Shipment:	
Received by: <i>Fedex</i>		Date/Time: 4/1/25 1700	
Received by: <i>MA</i>		Date/Time: 4/1/25 915	
Received by:		Date/Time:	

Ver 01/16/2019



Environment Testing
America



310-303354 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client. <u>John Deere</u>			
City/State	CITY <u>Madison</u>	STATE <u>WI</u>	Project.
Receipt Information			
Date/Time Received:	DATE <u>4/3/25</u>	TIME <u>0940</u>	Received By <u>BP</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID:
Multiple Coolers?		☐ Yes ☒ No	If yes: Cooler # ____ of ____
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes. Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes. Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID <u>P</u>		Correction Factor (°C). <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.7</u>		Corrected Temp (°C). <u>0.7</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C)			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			

Chain of Custody Record

[illegible]

Login Sample Receipt Checklist

Client: John Deere & Co

Job Number: 310-303155-1

Login Number: 303155

List Number: 1

Creator: Hirsch, Preston

List Source: Eurofins Cedar Falls

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

**Laboratory Analytical Report
October 2025**

ANALYTICAL REPORT

PREPARED FOR

Attn: Austin Shoemaker
John Deere & Co
18600 S John Deere Road
PO BOX 538
Dubuque, Iowa 52001

Generated 10/30/2025 4:32:37 PM

JOB DESCRIPTION

JDDW Semi-Annual GW's
#630113

JOB NUMBER

310-318198-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Generated
10/30/2025 4:32:37 PM

Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
(319)277-2401

Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	8
Detection Summary	9
Client Sample Results	12
Definitions	23
QC Sample Results	24
QC Association	31
Chronicle	36
Certification Summary	40
Method Summary	41
Chain of Custody	42
Receipt Checklists	47



Case Narrative

Client: John Deere & Co
Project: JDDW Semi-Annual GW's

Job ID: 310-318198-1

Job ID: 310-318198-1

Eurofins Cedar Falls

Job Narrative 310-318198-1

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

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

Receipt

The samples were received on 10/16/2025 10:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.3°C and 2.4°C.

HPLC/IC

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

Metals

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

General Chemistry

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

Eurofins Cedar Falls

Case Narrative

Client: John Deere & Co
Project: JDDW Semi-Annual GW's

Job ID: 310-318198-1

Job ID: 310-318198-2

Eurofins Cedar Falls

Job Narrative 310-318198-2

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

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

Receipt

The samples were received on 10/16/2025 10:10 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.3°C and 2.4°C.

HPLC/IC

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

Eurofins Cedar Falls

Case Narrative

Client: John Deere & Co
Project: JDDW Semi-Annual GW's

Job ID: 310-318198-1

Job ID: 310-318347-1

Eurofins Cedar Falls

Job Narrative 310-318347-1

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

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

Receipt

The samples were received on 10/17/2025 9:55 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°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.

Eurofins Cedar Falls

Case Narrative

Client: John Deere & Co
Project: JDDW Semi-Annual GW's

Job ID: 310-318198-1

Job ID: 310-318347-2

Eurofins Cedar Falls

Job Narrative 310-318347-2

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.

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Receipt

The samples were received on 10/17/2025 9:55 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.0°C.

HPLC/IC

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: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
310-318198-1	MW-1	Water	10/15/25 14:36	10/16/25 10:10	Iowa
310-318198-2	MW-2	Water	10/15/25 12:51	10/16/25 10:10	Iowa
310-318198-3	MW-3	Water	10/15/25 10:15	10/16/25 10:10	Iowa
310-318198-4	S1 Leachate Open	Water	10/15/25 11:00	10/16/25 10:10	Iowa
310-318198-5	S2 Leachate Open	Water	10/15/25 11:10	10/16/25 10:10	Iowa
310-318198-6	S1 Underliner Open	Water	10/15/25 10:55	10/16/25 10:10	Iowa
310-318198-7	Combined Leachate	Water	10/15/25 11:20	10/16/25 10:10	Iowa
310-318198-8	DUP-01	Water	10/15/25 00:00	10/16/25 10:10	Iowa
310-318198-9	EB-01	Water	10/15/25 14:45	10/16/25 10:10	Iowa
310-318347-1	S1 Underliner Closed	Water	10/16/25 10:30	10/17/25 09:55	Iowa
310-318347-2	S2 Underliner Closed	Water	10/16/25 10:35	10/17/25 09:55	Iowa

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: MW-1

Lab Sample ID: 310-318198-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.95		1.00		mg/L	1		9056A	Total/NA
Fluoride	0.213		0.200		mg/L	1		9056A	Total/NA
Sulfate	24.2		1.00		mg/L	1		9056A	Total/NA
Barium	0.0893		0.0100		mg/L	1		6010D	Total/NA
Calcium	68.6		1.00		mg/L	1		6010D	Total/NA
Magnesium	39.8		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	7.12		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	336		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 310-318198-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.54		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	1.96		0.200		mg/L	1		9056A	Total/NA
Sulfate	20.6		1.00		mg/L	1		9056A	Total/NA
Barium	0.0959		0.0100		mg/L	1		6010D	Total/NA
Calcium	108		1.00		mg/L	1		6010D	Total/NA
Magnesium	46.8		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	5.13		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	414		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 310-318198-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	76.6		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	1.42		0.200		mg/L	1		9056A	Total/NA
Sulfate	116		5.00		mg/L	5		9056A	Total/NA
Barium	0.0521		0.0100		mg/L	1		6010D	Total/NA
Boron	2.23		0.200		mg/L	1		6010D	Total/NA
Calcium	126		1.00		mg/L	1		6010D	Total/NA
Magnesium	58.7		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	5.46		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	726		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S1 Leachate Open

Lab Sample ID: 310-318198-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	73.8		1.00		mg/L	1		9056A	Total/NA
Sulfate	24.8		1.00		mg/L	1		9056A	Total/NA
Barium	0.701		0.0100		mg/L	1		6010D	Total/NA
Boron	6.99		0.200		mg/L	1		6010D	Total/NA
Calcium	117		1.00		mg/L	1		6010D	Total/NA
Iron	1.86		0.500		mg/L	1		6010D	Total/NA
Lithium	0.187		0.0500		mg/L	1		6010D	Total/NA
Magnesium	42.0		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	4.21		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	24.7		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	838		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S2 Leachate Open

Lab Sample ID: 310-318198-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	105		20.0		mg/L	20		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S2 Leachate Open (Continued)

Lab Sample ID: 310-318198-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.407		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.866		0.200		mg/L	1		9056A	Total/NA
Sulfate	1190		20.0		mg/L	20		9056A	Total/NA
Barium	0.0291		0.0100		mg/L	1		6010D	Total/NA
Boron	21.3		0.200		mg/L	1		6010D	Total/NA
Calcium	172		1.00		mg/L	1		6010D	Total/NA
Iron	2.48		0.500		mg/L	1		6010D	Total/NA
Lithium	1.18		0.0500		mg/L	1		6010D	Total/NA
Magnesium	144		1.00		mg/L	1		6010D	Total/NA
Molybdenum	0.0554		0.0500		mg/L	1		6010D	Total/NA
Ammonia as N	10.3		5.00		mg/L	10		350.1	Total/NA
Chemical Oxygen Demand	60.7		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	2070		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S1 Underliner Open

Lab Sample ID: 310-318198-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	75.9		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	3.01		0.200		mg/L	1		9056A	Total/NA
Sulfate	28.0		1.00		mg/L	1		9056A	Total/NA
Barium	0.662		0.0100		mg/L	1		6010D	Total/NA
Boron	3.05		0.200		mg/L	1		6010D	Total/NA
Calcium	88.6		1.00		mg/L	1		6010D	Total/NA
Lithium	0.0731		0.0500		mg/L	1		6010D	Total/NA
Magnesium	40.4		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	20.0		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	678		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: Combined Leachate

Lab Sample ID: 310-318198-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	89.5		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	0.733		0.200		mg/L	1		9056A	Total/NA
Sulfate	550		20.0		mg/L	20		9056A	Total/NA
Barium	0.214		0.0100		mg/L	1		6010D	Total/NA
Boron	13.4		0.200		mg/L	1		6010D	Total/NA
Calcium	143		1.00		mg/L	1		6010D	Total/NA
Iron	1.42		0.500		mg/L	1		6010D	Total/NA
Lithium	0.630		0.0500		mg/L	1		6010D	Total/NA
Magnesium	89.0		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	5.44		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	41.2		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	1420		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: DUP-01

Lab Sample ID: 310-318198-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.58		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	2.35		0.200		mg/L	1		9056A	Total/NA
Sulfate	21.0		1.00		mg/L	1		9056A	Total/NA
Barium	0.0887		0.0100		mg/L	1		6010D	Total/NA
Calcium	100		1.00		mg/L	1		6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: DUP-01 (Continued)

Lab Sample ID: 310-318198-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Magnesium	43.4		1.00		mg/L	1		6010D	Total/NA
Total Dissolved Solids	400		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: EB-01

Lab Sample ID: 310-318198-9

No Detections.

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-318347-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	74.1		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	0.362		0.200		mg/L	1		9056A	Total/NA
Sulfate	26.8		1.00		mg/L	1		9056A	Total/NA
Barium	1.44		0.0100		mg/L	1		6010D	Total/NA
Boron	6.72		0.200		mg/L	1		6010D	Total/NA
Calcium	121		1.00		mg/L	1		6010D	Total/NA
Iron	39.3		0.500		mg/L	1		6010D	Total/NA
Lithium	0.179		0.0500		mg/L	1		6010D	Total/NA
Magnesium	43.1		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	3.32		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	25.1		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	810		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S2 Underliner Closed

Lab Sample ID: 310-318347-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	105		20.0		mg/L	20		9056A	Total/NA
Nitrate as N	1.54		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.910		0.200		mg/L	1		9056A	Total/NA
Sulfate	1300		20.0		mg/L	20		9056A	Total/NA
Barium	0.0312		0.0100		mg/L	1		6010D	Total/NA
Boron	20.9		0.200		mg/L	1		6010D	Total/NA
Calcium	173		1.00		mg/L	1		6010D	Total/NA
Iron	1.88		0.500		mg/L	1		6010D	Total/NA
Lithium	1.14		0.0500		mg/L	1		6010D	Total/NA
Magnesium	142		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	7.67		5.00		mg/L	10		350.1	Total/NA
Chemical Oxygen Demand	58.5		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	2230		250		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: MW-1

Lab Sample ID: 310-318198-1

Date Collected: 10/15/25 14:36

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.95		1.00		mg/L			10/16/25 11:24	1
Nitrate as N	<0.200		0.200		mg/L			10/16/25 11:24	1
Fluoride	0.213		0.200		mg/L			10/16/25 11:24	1
Sulfate	24.2		1.00		mg/L			10/16/25 11:24	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0893		0.0100		mg/L		10/22/25 08:30	10/28/25 10:51	1
Boron	<0.200		0.200		mg/L		10/22/25 08:30	10/28/25 10:51	1
Calcium	68.6		1.00		mg/L		10/22/25 08:30	10/28/25 10:51	1
Iron	<0.500		0.500		mg/L		10/22/25 08:30	10/28/25 10:51	1
Lithium	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:51	1
Magnesium	39.8		1.00		mg/L		10/22/25 08:30	10/28/25 10:51	1
Molybdenum	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.200		0.200		mg/L			10/16/25 22:47	1
Chemical Oxygen Demand (SM 5220D LL)	7.12		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:56	1
Total Dissolved Solids (SM 2540C)	336		50.0		mg/L			10/18/25 16:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: MW-2

Lab Sample ID: 310-318198-2

Date Collected: 10/15/25 12:51

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.54		1.00		mg/L			10/16/25 11:59	1
Nitrate as N	1.96		0.200		mg/L			10/16/25 11:59	1
Fluoride	<0.200		0.200		mg/L			10/16/25 11:59	1
Sulfate	20.6		1.00		mg/L			10/16/25 11:59	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0959		0.0100		mg/L		10/22/25 08:30	10/28/25 10:52	1
Boron	<0.200		0.200		mg/L		10/22/25 08:30	10/28/25 10:52	1
Calcium	108		1.00		mg/L		10/22/25 08:30	10/28/25 10:52	1
Iron	<0.500		0.500		mg/L		10/22/25 08:30	10/28/25 10:52	1
Lithium	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:52	1
Magnesium	46.8		1.00		mg/L		10/22/25 08:30	10/28/25 10:52	1
Molybdenum	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.200		0.200		mg/L			10/16/25 22:47	1
Chemical Oxygen Demand (SM 5220D LL)	5.13		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:57	1
Total Dissolved Solids (SM 2540C)	414		50.0		mg/L			10/18/25 16:14	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: MW-3

Lab Sample ID: 310-318198-3

Date Collected: 10/15/25 10:15

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.6		1.00		mg/L			10/16/25 12:11	1
Nitrate as N	1.42		0.200		mg/L			10/16/25 12:11	1
Fluoride	<0.200		0.200		mg/L			10/16/25 12:11	1
Sulfate	116		5.00		mg/L			10/16/25 14:58	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0521		0.0100		mg/L		10/22/25 08:30	10/28/25 10:53	1
Boron	2.23		0.200		mg/L		10/22/25 08:30	10/28/25 10:53	1
Calcium	126		1.00		mg/L		10/22/25 08:30	10/28/25 10:53	1
Iron	<0.500		0.500		mg/L		10/22/25 08:30	10/28/25 10:53	1
Lithium	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:53	1
Magnesium	58.7		1.00		mg/L		10/22/25 08:30	10/28/25 10:53	1
Molybdenum	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.200		0.200		mg/L			10/16/25 22:48	1
Chemical Oxygen Demand (SM 5220D LL)	5.46		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:57	1
Total Dissolved Solids (SM 2540C)	726		50.0		mg/L			10/21/25 12:20	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S1 Leachate Open

Lab Sample ID: 310-318198-4

Date Collected: 10/15/25 11:00

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	73.8		1.00		mg/L			10/16/25 12:22	1
Nitrate as N	<0.200		0.200		mg/L			10/16/25 12:22	1
Fluoride	<0.200		0.200		mg/L			10/16/25 12:22	1
Sulfate	24.8		1.00		mg/L			10/16/25 12:22	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.701		0.0100		mg/L		10/23/25 08:30	10/27/25 15:39	1
Boron	6.99		0.200		mg/L		10/23/25 08:30	10/27/25 15:39	1
Calcium	117		1.00		mg/L		10/23/25 08:30	10/27/25 15:39	1
Iron	1.86		0.500		mg/L		10/23/25 08:30	10/27/25 15:39	1
Lithium	0.187		0.0500		mg/L		10/23/25 08:30	10/27/25 15:39	1
Magnesium	42.0		1.00		mg/L		10/23/25 08:30	10/27/25 15:39	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:39	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	4.21		0.500		mg/L			10/23/25 16:54	1
Chemical Oxygen Demand (SM 5220D LL)	24.7		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:57	1
Total Dissolved Solids (SM 2540C)	838		50.0		mg/L			10/21/25 12:20	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S2 Leachate Open

Lab Sample ID: 310-318198-5

Date Collected: 10/15/25 11:10

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	105		20.0		mg/L			10/16/25 15:09	20
Nitrate as N	0.407		0.200		mg/L			10/16/25 12:46	1
Fluoride	0.866		0.200		mg/L			10/16/25 12:46	1
Sulfate	1190		20.0		mg/L			10/16/25 15:09	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0291		0.0100		mg/L		10/23/25 08:30	10/27/25 15:45	1
Boron	21.3		0.200		mg/L		10/23/25 08:30	10/27/25 15:45	1
Calcium	172		1.00		mg/L		10/23/25 08:30	10/27/25 15:45	1
Iron	2.48		0.500		mg/L		10/23/25 08:30	10/27/25 15:45	1
Lithium	1.18		0.0500		mg/L		10/23/25 08:30	10/27/25 15:45	1
Magnesium	144		1.00		mg/L		10/23/25 08:30	10/27/25 15:45	1
Molybdenum	0.0554		0.0500		mg/L		10/23/25 08:30	10/27/25 15:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	10.3		5.00		mg/L			10/23/25 16:58	10
Chemical Oxygen Demand (SM 5220D LL)	60.7		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:58	1
Total Dissolved Solids (SM 2540C)	2070		250		mg/L			10/21/25 12:20	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S1 Underliner Open

Lab Sample ID: 310-318198-6

Date Collected: 10/15/25 10:55

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75.9		1.00		mg/L			10/16/25 12:34	1
Nitrate as N	3.01		0.200		mg/L			10/16/25 12:34	1
Fluoride	<0.200		0.200		mg/L			10/16/25 12:34	1
Sulfate	28.0		1.00		mg/L			10/16/25 12:34	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.662		0.0100		mg/L		10/23/25 08:30	10/27/25 15:46	1
Boron	3.05		0.200		mg/L		10/23/25 08:30	10/27/25 15:46	1
Calcium	88.6		1.00		mg/L		10/23/25 08:30	10/27/25 15:46	1
Iron	<0.500		0.500		mg/L		10/23/25 08:30	10/27/25 15:46	1
Lithium	0.0731		0.0500		mg/L		10/23/25 08:30	10/27/25 15:46	1
Magnesium	40.4		1.00		mg/L		10/23/25 08:30	10/27/25 15:46	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:46	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500		0.500		mg/L			10/23/25 17:01	1
Chemical Oxygen Demand (SM 5220D LL)	20.0		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 10:03	10/18/25 10:41	1
Total Dissolved Solids (SM 2540C)	678		50.0		mg/L			10/21/25 12:20	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: Combined Leachate

Lab Sample ID: 310-318198-7

Date Collected: 10/15/25 11:20

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	89.5		1.00		mg/L			10/16/25 13:20	1
Nitrate as N	0.733		0.200		mg/L			10/16/25 13:20	1
Fluoride	<0.200		0.200		mg/L			10/16/25 13:20	1
Sulfate	550		20.0		mg/L			10/16/25 15:21	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.214		0.0100		mg/L		10/23/25 08:30	10/27/25 15:50	1
Boron	13.4		0.200		mg/L		10/23/25 08:30	10/27/25 15:50	1
Calcium	143		1.00		mg/L		10/23/25 08:30	10/27/25 15:50	1
Iron	1.42		0.500		mg/L		10/23/25 08:30	10/27/25 15:50	1
Lithium	0.630		0.0500		mg/L		10/23/25 08:30	10/27/25 15:50	1
Magnesium	89.0		1.00		mg/L		10/23/25 08:30	10/27/25 15:50	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.44		0.500		mg/L			10/23/25 17:05	1
Chemical Oxygen Demand (SM 5220D LL)	41.2		5.00		mg/L			10/20/25 10:30	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 10:03	10/18/25 10:43	1
Total Dissolved Solids (SM 2540C)	1420		250		mg/L			10/21/25 12:20	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: DUP-01

Lab Sample ID: 310-318198-8

Date Collected: 10/15/25 00:00

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.58		1.00		mg/L			10/16/25 13:32	1
Nitrate as N	2.35		0.200		mg/L			10/16/25 13:32	1
Fluoride	<0.200		0.200		mg/L			10/16/25 13:32	1
Sulfate	21.0		1.00		mg/L			10/16/25 13:32	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0887		0.0100		mg/L		10/23/25 08:30	10/27/25 15:52	1
Boron	<0.200		0.200		mg/L		10/23/25 08:30	10/27/25 15:52	1
Calcium	100		1.00		mg/L		10/23/25 08:30	10/27/25 15:52	1
Iron	<0.500		0.500		mg/L		10/23/25 08:30	10/27/25 15:52	1
Lithium	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:52	1
Magnesium	43.4		1.00		mg/L		10/23/25 08:30	10/27/25 15:52	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:52	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.200		0.200		mg/L			10/16/25 22:49	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/22/25 09:22	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 10:03	10/18/25 10:43	1
Total Dissolved Solids (SM 2540C)	400		50.0		mg/L			10/21/25 15:33	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: EB-01

Lab Sample ID: 310-318198-9

Date Collected: 10/15/25 14:45

Matrix: Water

Date Received: 10/16/25 10:10

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/16/25 13:44	1
Nitrate as N	<0.200		0.200		mg/L			10/16/25 13:44	1
Fluoride	<0.200		0.200		mg/L			10/16/25 13:44	1
Sulfate	<1.00		1.00		mg/L			10/16/25 13:44	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/23/25 08:30	10/27/25 15:53	1
Boron	<0.200		0.200		mg/L		10/23/25 08:30	10/27/25 15:53	1
Calcium	<1.00		1.00		mg/L		10/23/25 08:30	10/27/25 15:53	1
Iron	<0.500		0.500		mg/L		10/23/25 08:30	10/27/25 15:53	1
Lithium	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:53	1
Magnesium	<1.00		1.00		mg/L		10/23/25 08:30	10/27/25 15:53	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.200		0.200		mg/L			10/16/25 22:50	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/22/25 09:22	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/17/25 10:03	10/18/25 10:43	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			10/21/25 15:33	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-318347-1

Date Collected: 10/16/25 10:30

Matrix: Water

Date Received: 10/17/25 09:55

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	74.1		1.00		mg/L			10/17/25 10:32	1
Nitrate as N	0.362		0.200		mg/L			10/17/25 10:32	1
Fluoride	<0.200		0.200		mg/L			10/17/25 10:32	1
Sulfate	26.8		1.00		mg/L			10/17/25 10:32	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	1.44		0.0100		mg/L		10/23/25 08:30	10/28/25 11:33	1
Boron	6.72		0.200		mg/L		10/23/25 08:30	10/28/25 11:33	1
Calcium	121		1.00		mg/L		10/23/25 08:30	10/28/25 11:33	1
Iron	39.3		0.500		mg/L		10/23/25 08:30	10/28/25 11:33	1
Lithium	0.179		0.0500		mg/L		10/23/25 08:30	10/28/25 11:33	1
Magnesium	43.1		1.00		mg/L		10/23/25 08:30	10/28/25 11:33	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/28/25 11:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.32		0.500		mg/L			10/24/25 13:25	1
Chemical Oxygen Demand (SM 5220D LL)	25.1		5.00		mg/L			10/22/25 09:22	1
Phenols, Total (SW846 9066)	<0.0208		0.0208		mg/L		10/22/25 09:23	10/22/25 21:04	1
Total Dissolved Solids (SM 2540C)	810		50.0		mg/L			10/22/25 14:13	1

Client Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S2 Underliner Closed

Lab Sample ID: 310-318347-2

Date Collected: 10/16/25 10:35

Matrix: Water

Date Received: 10/17/25 09:55

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	105		20.0		mg/L			10/17/25 11:17	20
Nitrate as N	1.54		0.200		mg/L			10/17/25 10:44	1
Fluoride	0.910		0.200		mg/L			10/17/25 10:44	1
Sulfate	1300		20.0		mg/L			10/17/25 11:17	20

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0312		0.0100		mg/L		10/23/25 08:30	10/28/25 11:35	1
Boron	20.9		0.200		mg/L		10/23/25 08:30	10/28/25 11:35	1
Calcium	173		1.00		mg/L		10/23/25 08:30	10/28/25 11:35	1
Iron	1.88		0.500		mg/L		10/23/25 08:30	10/28/25 11:35	1
Lithium	1.14		0.0500		mg/L		10/23/25 08:30	10/28/25 11:35	1
Magnesium	142		1.00		mg/L		10/23/25 08:30	10/28/25 11:35	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/28/25 11:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	7.67		5.00		mg/L			10/24/25 13:29	10
Chemical Oxygen Demand (SM 5220D LL)	58.5		5.00		mg/L			10/22/25 09:22	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		10/22/25 09:23	10/22/25 21:04	1
Total Dissolved Solids (SM 2540C)	2230		250		mg/L			10/22/25 13:07	1

Definitions/Glossary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Qualifiers

HPLC/IC

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

Metals

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

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: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-470762/3
Matrix: Water
Analysis Batch: 470762

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/16/25 11:02	1
Nitrate as N	<0.200		0.200		mg/L			10/16/25 11:02	1
Fluoride	<0.200		0.200		mg/L			10/16/25 11:02	1
Sulfate	<1.00		1.00		mg/L			10/16/25 11:02	1

Lab Sample ID: LCS 310-470762/4
Matrix: Water
Analysis Batch: 470762

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	9.885		mg/L		99	90 - 110
Nitrate as N	2.00	2.023		mg/L		101	90 - 110
Fluoride	2.00	2.130		mg/L		107	90 - 110
Sulfate	10.0	9.963		mg/L		100	90 - 110

Lab Sample ID: 310-318198-1 MS
Matrix: Water
Analysis Batch: 470762

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	4.95		5.00	9.518		mg/L		91	80 - 120
Nitrate as N	<0.200		1.00	0.9841		mg/L		98	80 - 120
Fluoride	0.213		1.00	1.035		mg/L		82	80 - 120
Sulfate	24.2		5.00	28.50	4	mg/L		85	80 - 120

Lab Sample ID: 310-318198-1 MSD
Matrix: Water
Analysis Batch: 470762

Client Sample ID: MW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	4.95		5.00	9.563		mg/L		92	80 - 120	0	15
Nitrate as N	<0.200		1.00	0.9940		mg/L		99	80 - 120	1	15
Fluoride	0.213		1.00	1.080		mg/L		87	80 - 120	4	15
Sulfate	24.2		5.00	28.57	4	mg/L		87	80 - 120	0	15

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-470861/1-A
Matrix: Water
Analysis Batch: 471585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470861

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/22/25 08:30	10/28/25 10:14	1
Boron	<0.200		0.200		mg/L		10/22/25 08:30	10/28/25 10:14	1
Calcium	<1.00		1.00		mg/L		10/22/25 08:30	10/28/25 10:14	1
Iron	<0.500		0.500		mg/L		10/22/25 08:30	10/28/25 10:14	1
Lithium	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:14	1
Magnesium	<1.00		1.00		mg/L		10/22/25 08:30	10/28/25 10:14	1
Molybdenum	<0.0500		0.0500		mg/L		10/22/25 08:30	10/28/25 10:14	1

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 310-470861/2-A
Matrix: Water
Analysis Batch: 471585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470861

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.9536		mg/L		95	80 - 120
Boron	2.00	1.832		mg/L		92	80 - 120
Calcium	20.0	17.81		mg/L		89	80 - 120
Iron	2.00	1.868		mg/L		93	80 - 120
Lithium	2.00	1.855		mg/L		93	80 - 120
Magnesium	20.0	18.44		mg/L		92	80 - 120
Molybdenum	2.00	1.896		mg/L		95	80 - 120

Lab Sample ID: MB 310-470989/1-A
Matrix: Water
Analysis Batch: 471481

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470989

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/23/25 08:30	10/27/25 15:36	1
Boron	<0.200		0.200		mg/L		10/23/25 08:30	10/27/25 15:36	1
Calcium	<1.00		1.00		mg/L		10/23/25 08:30	10/27/25 15:36	1
Iron	<0.500		0.500		mg/L		10/23/25 08:30	10/27/25 15:36	1
Lithium	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:36	1
Magnesium	<1.00		1.00		mg/L		10/23/25 08:30	10/27/25 15:36	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/27/25 15:36	1

Lab Sample ID: LCS 310-470989/2-A
Matrix: Water
Analysis Batch: 471481

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470989

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	1.013		mg/L		101	80 - 120
Boron	2.00	1.966		mg/L		98	80 - 120
Calcium	20.0	18.97		mg/L		95	80 - 120
Iron	2.00	1.998		mg/L		100	80 - 120
Lithium	2.00	1.972		mg/L		99	80 - 120
Magnesium	20.0	19.53		mg/L		98	80 - 120
Molybdenum	2.00	2.010		mg/L		101	80 - 120

Lab Sample ID: 310-318198-4 MS
Matrix: Water
Analysis Batch: 471481

Client Sample ID: S1 Leachate Open
Prep Type: Total/NA
Prep Batch: 470989

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	0.701		1.00	1.701		mg/L		100	75 - 125
Boron	6.99		2.00	9.055		mg/L		103	75 - 125
Calcium	117		20.0	136.3	4	mg/L		98	75 - 125
Iron	1.86		2.00	3.819		mg/L		98	75 - 125
Lithium	0.187		2.00	2.225		mg/L		102	75 - 125
Magnesium	42.0		20.0	62.03		mg/L		100	75 - 125
Molybdenum	<0.0500		2.00	2.007		mg/L		100	75 - 125

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: 310-318198-4 MSD

Matrix: Water

Analysis Batch: 471481

Client Sample ID: S1 Leachate Open

Prep Type: Total/NA

Prep Batch: 470989

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Barium	0.701		1.00	1.668		mg/L		97	75 - 125	2	20
Boron	6.99		2.00	8.849		mg/L		93	75 - 125	2	20
Calcium	117		20.0	133.2	4	mg/L		82	75 - 125	2	20
Iron	1.86		2.00	3.748		mg/L		95	75 - 125	2	20
Lithium	0.187		2.00	2.186		mg/L		100	75 - 125	2	20
Magnesium	42.0		20.0	60.66		mg/L		93	75 - 125	2	20
Molybdenum	<0.0500		2.00	1.983		mg/L		99	75 - 125	1	20

Lab Sample ID: MB 310-470990/1-A

Matrix: Water

Analysis Batch: 471585

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 470990

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/23/25 08:30	10/28/25 11:12	1
Boron	<0.200		0.200		mg/L		10/23/25 08:30	10/28/25 11:12	1
Calcium	<1.00		1.00		mg/L		10/23/25 08:30	10/28/25 11:12	1
Iron	<0.500		0.500		mg/L		10/23/25 08:30	10/28/25 11:12	1
Lithium	<0.0500		0.0500		mg/L		10/23/25 08:30	10/28/25 11:12	1
Magnesium	<1.00		1.00		mg/L		10/23/25 08:30	10/28/25 11:12	1
Molybdenum	<0.0500		0.0500		mg/L		10/23/25 08:30	10/28/25 11:12	1

Lab Sample ID: LCS 310-470990/2-A

Matrix: Water

Analysis Batch: 471585

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 470990

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.9879		mg/L		99	80 - 120
Boron	2.00	1.890		mg/L		94	80 - 120
Calcium	20.0	18.36		mg/L		92	80 - 120
Iron	2.00	1.940		mg/L		97	80 - 120
Lithium	2.00	1.903		mg/L		95	80 - 120
Magnesium	20.0	18.88		mg/L		94	80 - 120
Molybdenum	2.00	1.965		mg/L		98	80 - 120

Lab Sample ID: 310-318347-2 DU

Matrix: Water

Analysis Batch: 471585

Client Sample ID: S2 Underliner Closed

Prep Type: Total/NA

Prep Batch: 470990

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Barium	0.0312		0.03240		mg/L		4	20
Boron	20.9		21.50		mg/L		3	20
Calcium	173		180.0		mg/L		4	20
Iron	1.88		1.931		mg/L		3	20
Lithium	1.14		1.186		mg/L		4	20
Magnesium	142		147.4		mg/L		4	20
Molybdenum	<0.0500		<0.0500		mg/L		NC	20

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-470430/150
Matrix: Water
Analysis Batch: 470430

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.200		0.200		mg/L			10/16/25 22:33	1

Lab Sample ID: LCS 310-470430/151
Matrix: Water
Analysis Batch: 470430

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	5.65	5.410		mg/L		96	90 - 110

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

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

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

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

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

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

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

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

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

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

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

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

Method: 5220D LL - COD

Lab Sample ID: MB 310-470644/60
Matrix: Water
Analysis Batch: 470644

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	<5.00		5.00		mg/L			10/20/25 10:30	1

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 5220D LL - COD (Continued)

Lab Sample ID: LCS 310-470644/63
Matrix: Water
Analysis Batch: 470644

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	62.7	60.38		mg/L		96	85 - 115

Lab Sample ID: MB 310-470929/5
Matrix: Water
Analysis Batch: 470929

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

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

Lab Sample ID: LCS 310-470929/3
Matrix: Water
Analysis Batch: 470929

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	62.7	62.16		mg/L		99	85 - 115

Method: 9066 - Phenolics, Total Recoverable

Lab Sample ID: MB 310-470446/1-A
Matrix: Water
Analysis Batch: 470548

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0200		0.0200		mg/L		10/17/25 09:59	10/18/25 14:47	1

Lab Sample ID: LCS 310-470446/2-A
Matrix: Water
Analysis Batch: 470548

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470446

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.1070		mg/L		107	90 - 110

Lab Sample ID: MB 310-470447/1-A
Matrix: Water
Analysis Batch: 470521

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470447

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0200		0.0200		mg/L		10/17/25 10:03	10/18/25 10:40	1

Lab Sample ID: LCS 310-470447/2-A
Matrix: Water
Analysis Batch: 470521

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470447

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.09788		mg/L		98	90 - 110

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method: 9066 - Phenolics, Total Recoverable (Continued)

Lab Sample ID: 310-318198-6 MS
Matrix: Water
Analysis Batch: 470521

Client Sample ID: S1 Underliner Open
Prep Type: Total/NA
Prep Batch: 470447

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	<0.0200		0.100	0.09850		mg/L		98	68 - 126

Lab Sample ID: 310-318198-6 MSD
Matrix: Water
Analysis Batch: 470521

Client Sample ID: S1 Underliner Open
Prep Type: Total/NA
Prep Batch: 470447

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Phenols, Total	<0.0200		0.100	0.09787		mg/L		98	68 - 126	1	22

Lab Sample ID: MB 310-470930/1-A
Matrix: Water
Analysis Batch: 471031

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470930

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0196		0.0196		mg/L		10/22/25 09:23	10/22/25 21:04	1

Lab Sample ID: LCS 310-470930/2-A
Matrix: Water
Analysis Batch: 471031

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470930

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.09650		mg/L		97	90 - 110

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

Lab Sample ID: MB 310-470552/1
Matrix: Water
Analysis Batch: 470552

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/18/25 16:14	1

Lab Sample ID: LCS 310-470552/2
Matrix: Water
Analysis Batch: 470552

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	982.0		mg/L		98	89 - 110

Lab Sample ID: MB 310-470813/1
Matrix: Water
Analysis Batch: 470813

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/21/25 12:20	1

QC Sample Results

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

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

Lab Sample ID: LCS 310-470813/2

Matrix: Water

Analysis Batch: 470813

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	954.0		mg/L		95	89 - 110

Lab Sample ID: MB 310-470865/1

Matrix: Water

Analysis Batch: 470865

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/21/25 15:33	1

Lab Sample ID: LCS 310-470865/2

Matrix: Water

Analysis Batch: 470865

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	940.0		mg/L		94	89 - 110

Lab Sample ID: 310-318198-8 DU

Matrix: Water

Analysis Batch: 470865

Client Sample ID: DUP-01

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	400		414.0		mg/L		3	13

Lab Sample ID: MB 310-470978/1

Matrix: Water

Analysis Batch: 470978

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/22/25 13:07	1

Lab Sample ID: LCS 310-470978/2

Matrix: Water

Analysis Batch: 470978

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	936.0		mg/L		94	89 - 110

Lab Sample ID: MB 310-470993/1

Matrix: Water

Analysis Batch: 470993

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<50.0		50.0		mg/L			10/22/25 14:13	1

Lab Sample ID: LCS 310-470993/2

Matrix: Water

Analysis Batch: 470993

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Dissolved Solids	1000	954.0		mg/L		95	89 - 110

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

HPLC/IC

Analysis Batch: 470762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	9056A	
310-318198-2	MW-2	Total/NA	Water	9056A	
310-318198-3	MW-3	Total/NA	Water	9056A	
310-318198-3	MW-3	Total/NA	Water	9056A	
310-318198-4	S1 Leachate Open	Total/NA	Water	9056A	
310-318198-5	S2 Leachate Open	Total/NA	Water	9056A	
310-318198-5	S2 Leachate Open	Total/NA	Water	9056A	
310-318198-6	S1 Underliner Open	Total/NA	Water	9056A	
310-318198-7	Combined Leachate	Total/NA	Water	9056A	
310-318198-7	Combined Leachate	Total/NA	Water	9056A	
310-318198-8	DUP-01	Total/NA	Water	9056A	
310-318198-9	EB-01	Total/NA	Water	9056A	
310-318347-1	S1 Underliner Closed	Total/NA	Water	9056A	
310-318347-2	S2 Underliner Closed	Total/NA	Water	9056A	
310-318347-2	S2 Underliner Closed	Total/NA	Water	9056A	
MB 310-470762/3	Method Blank	Total/NA	Water	9056A	
LCS 310-470762/4	Lab Control Sample	Total/NA	Water	9056A	
310-318198-1 MS	MW-1	Total/NA	Water	9056A	
310-318198-1 MSD	MW-1	Total/NA	Water	9056A	

Metals

Prep Batch: 470861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	3005A	
310-318198-2	MW-2	Total/NA	Water	3005A	
310-318198-3	MW-3	Total/NA	Water	3005A	
MB 310-470861/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-470861/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 470989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-4	S1 Leachate Open	Total/NA	Water	3005A	
310-318198-5	S2 Leachate Open	Total/NA	Water	3005A	
310-318198-6	S1 Underliner Open	Total/NA	Water	3005A	
310-318198-7	Combined Leachate	Total/NA	Water	3005A	
310-318198-8	DUP-01	Total/NA	Water	3005A	
310-318198-9	EB-01	Total/NA	Water	3005A	
MB 310-470989/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-470989/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-318198-4 MS	S1 Leachate Open	Total/NA	Water	3005A	
310-318198-4 MSD	S1 Leachate Open	Total/NA	Water	3005A	

Prep Batch: 470990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-1	S1 Underliner Closed	Total/NA	Water	3005A	
310-318347-2	S2 Underliner Closed	Total/NA	Water	3005A	
MB 310-470990/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-470990/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-318347-2 DU	S2 Underliner Closed	Total/NA	Water	3005A	

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Metals

Analysis Batch: 471481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-4	S1 Leachate Open	Total/NA	Water	6010D	470989
310-318198-5	S2 Leachate Open	Total/NA	Water	6010D	470989
310-318198-6	S1 Underliner Open	Total/NA	Water	6010D	470989
310-318198-7	Combined Leachate	Total/NA	Water	6010D	470989
310-318198-8	DUP-01	Total/NA	Water	6010D	470989
310-318198-9	EB-01	Total/NA	Water	6010D	470989
MB 310-470989/1-A	Method Blank	Total/NA	Water	6010D	470989
LCS 310-470989/2-A	Lab Control Sample	Total/NA	Water	6010D	470989
310-318198-4 MS	S1 Leachate Open	Total/NA	Water	6010D	470989
310-318198-4 MSD	S1 Leachate Open	Total/NA	Water	6010D	470989

Analysis Batch: 471585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	6010D	470861
310-318198-2	MW-2	Total/NA	Water	6010D	470861
310-318198-3	MW-3	Total/NA	Water	6010D	470861
310-318347-1	S1 Underliner Closed	Total/NA	Water	6010D	470990
310-318347-2	S2 Underliner Closed	Total/NA	Water	6010D	470990
MB 310-470861/1-A	Method Blank	Total/NA	Water	6010D	470861
MB 310-470990/1-A	Method Blank	Total/NA	Water	6010D	470990
LCS 310-470861/2-A	Lab Control Sample	Total/NA	Water	6010D	470861
LCS 310-470990/2-A	Lab Control Sample	Total/NA	Water	6010D	470990
310-318347-2 DU	S2 Underliner Closed	Total/NA	Water	6010D	470990

General Chemistry

Analysis Batch: 470430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	350.1	
310-318198-2	MW-2	Total/NA	Water	350.1	
310-318198-3	MW-3	Total/NA	Water	350.1	
310-318198-8	DUP-01	Total/NA	Water	350.1	
310-318198-9	EB-01	Total/NA	Water	350.1	
MB 310-470430/150	Method Blank	Total/NA	Water	350.1	
LCS 310-470430/151	Lab Control Sample	Total/NA	Water	350.1	

Prep Batch: 470446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	Distill/Phenol	
310-318198-2	MW-2	Total/NA	Water	Distill/Phenol	
310-318198-3	MW-3	Total/NA	Water	Distill/Phenol	
310-318198-4	S1 Leachate Open	Total/NA	Water	Distill/Phenol	
310-318198-5	S2 Leachate Open	Total/NA	Water	Distill/Phenol	
MB 310-470446/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-470446/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Prep Batch: 470447

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-6	S1 Underliner Open	Total/NA	Water	Distill/Phenol	
310-318198-7	Combined Leachate	Total/NA	Water	Distill/Phenol	
310-318198-8	DUP-01	Total/NA	Water	Distill/Phenol	

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

General Chemistry (Continued)

Prep Batch: 470447 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-9	EB-01	Total/NA	Water	Distill/Phenol	
MB 310-470447/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-470447/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	
310-318198-6 MS	S1 Underliner Open	Total/NA	Water	Distill/Phenol	
310-318198-6 MSD	S1 Underliner Open	Total/NA	Water	Distill/Phenol	

Analysis Batch: 470521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-6	S1 Underliner Open	Total/NA	Water	9066	470447
310-318198-7	Combined Leachate	Total/NA	Water	9066	470447
310-318198-8	DUP-01	Total/NA	Water	9066	470447
310-318198-9	EB-01	Total/NA	Water	9066	470447
MB 310-470447/1-A	Method Blank	Total/NA	Water	9066	470447
LCS 310-470447/2-A	Lab Control Sample	Total/NA	Water	9066	470447
310-318198-6 MS	S1 Underliner Open	Total/NA	Water	9066	470447
310-318198-6 MSD	S1 Underliner Open	Total/NA	Water	9066	470447

Analysis Batch: 470548

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	9066	470446
310-318198-2	MW-2	Total/NA	Water	9066	470446
310-318198-3	MW-3	Total/NA	Water	9066	470446
310-318198-4	S1 Leachate Open	Total/NA	Water	9066	470446
310-318198-5	S2 Leachate Open	Total/NA	Water	9066	470446
MB 310-470446/1-A	Method Blank	Total/NA	Water	9066	470446
LCS 310-470446/2-A	Lab Control Sample	Total/NA	Water	9066	470446

Analysis Batch: 470552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	SM 2540C	
310-318198-2	MW-2	Total/NA	Water	SM 2540C	
MB 310-470552/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-470552/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 470644

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-1	MW-1	Total/NA	Water	5220D LL	
310-318198-2	MW-2	Total/NA	Water	5220D LL	
310-318198-3	MW-3	Total/NA	Water	5220D LL	
310-318198-4	S1 Leachate Open	Total/NA	Water	5220D LL	
310-318198-5	S2 Leachate Open	Total/NA	Water	5220D LL	
310-318198-6	S1 Underliner Open	Total/NA	Water	5220D LL	
310-318198-7	Combined Leachate	Total/NA	Water	5220D LL	
MB 310-470644/60	Method Blank	Total/NA	Water	5220D LL	
LCS 310-470644/63	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 470813

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-3	MW-3	Total/NA	Water	SM 2540C	
310-318198-4	S1 Leachate Open	Total/NA	Water	SM 2540C	
310-318198-5	S2 Leachate Open	Total/NA	Water	SM 2540C	

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

General Chemistry (Continued)

Analysis Batch: 470813 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-6	S1 Underliner Open	Total/NA	Water	SM 2540C	
310-318198-7	Combined Leachate	Total/NA	Water	SM 2540C	
MB 310-470813/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-470813/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 470865

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-8	DUP-01	Total/NA	Water	SM 2540C	
310-318198-9	EB-01	Total/NA	Water	SM 2540C	
MB 310-470865/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-470865/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-318198-8 DU	DUP-01	Total/NA	Water	SM 2540C	

Analysis Batch: 470929

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-8	DUP-01	Total/NA	Water	5220D LL	
310-318198-9	EB-01	Total/NA	Water	5220D LL	
310-318347-1	S1 Underliner Closed	Total/NA	Water	5220D LL	
310-318347-2	S2 Underliner Closed	Total/NA	Water	5220D LL	
MB 310-470929/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-470929/3	Lab Control Sample	Total/NA	Water	5220D LL	

Prep Batch: 470930

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-1	S1 Underliner Closed	Total/NA	Water	Distill/Phenol	
310-318347-2	S2 Underliner Closed	Total/NA	Water	Distill/Phenol	
MB 310-470930/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-470930/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Analysis Batch: 470978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-2	S2 Underliner Closed	Total/NA	Water	SM 2540C	
MB 310-470978/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-470978/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 470993

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-1	S1 Underliner Closed	Total/NA	Water	SM 2540C	
MB 310-470993/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-470993/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 471031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-1	S1 Underliner Closed	Total/NA	Water	9066	470930
310-318347-2	S2 Underliner Closed	Total/NA	Water	9066	470930
MB 310-470930/1-A	Method Blank	Total/NA	Water	9066	470930
LCS 310-470930/2-A	Lab Control Sample	Total/NA	Water	9066	470930

Analysis Batch: 471181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-4	S1 Leachate Open	Total/NA	Water	350.1	

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

General Chemistry (Continued)

Analysis Batch: 471181 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318198-5	S2 Leachate Open	Total/NA	Water	350.1	
310-318198-6	S1 Underliner Open	Total/NA	Water	350.1	
310-318198-7	Combined Leachate	Total/NA	Water	350.1	
MB 310-471181/84	Method Blank	Total/NA	Water	350.1	
LCS 310-471181/85	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 471341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-318347-1	S1 Underliner Closed	Total/NA	Water	350.1	
310-318347-2	S2 Underliner Closed	Total/NA	Water	350.1	
MB 310-471341/16	Method Blank	Total/NA	Water	350.1	
LCS 310-471341/17	Lab Control Sample	Total/NA	Water	350.1	

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: MW-1

Date Collected: 10/15/25 14:36

Date Received: 10/16/25 10:10

Lab Sample ID: 310-318198-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 11:24
Total/NA	Prep	3005A			470861	RLT9	EET CF	10/22/25 08:30
Total/NA	Analysis	6010D		1	471585	ZRI4	EET CF	10/28/25 10:51
Total/NA	Analysis	350.1		1	470430	ZJX4	EET CF	10/16/25 22:47
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470446	ENB7	EET CF	10/17/25 09:59
Total/NA	Analysis	9066		1	470548	ENB7	EET CF	10/18/25 14:56
Total/NA	Analysis	SM 2540C		1	470552	ENB7	EET CF	10/18/25 16:14

Client Sample ID: MW-2

Date Collected: 10/15/25 12:51

Date Received: 10/16/25 10:10

Lab Sample ID: 310-318198-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 11:59
Total/NA	Prep	3005A			470861	RLT9	EET CF	10/22/25 08:30
Total/NA	Analysis	6010D		1	471585	ZRI4	EET CF	10/28/25 10:52
Total/NA	Analysis	350.1		1	470430	ZJX4	EET CF	10/16/25 22:47
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470446	ENB7	EET CF	10/17/25 09:59
Total/NA	Analysis	9066		1	470548	ENB7	EET CF	10/18/25 14:57
Total/NA	Analysis	SM 2540C		1	470552	ENB7	EET CF	10/18/25 16:14

Client Sample ID: MW-3

Date Collected: 10/15/25 10:15

Date Received: 10/16/25 10:10

Lab Sample ID: 310-318198-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 12:11
Total/NA	Analysis	9056A		5	470762	ZRI4	EET CF	10/16/25 14:58
Total/NA	Prep	3005A			470861	RLT9	EET CF	10/22/25 08:30
Total/NA	Analysis	6010D		1	471585	ZRI4	EET CF	10/28/25 10:53
Total/NA	Analysis	350.1		1	470430	ZJX4	EET CF	10/16/25 22:48
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470446	ENB7	EET CF	10/17/25 09:59
Total/NA	Analysis	9066		1	470548	ENB7	EET CF	10/18/25 14:57
Total/NA	Analysis	SM 2540C		1	470813	TGN5	EET CF	10/21/25 12:20

Client Sample ID: S1 Leachate Open

Date Collected: 10/15/25 11:00

Date Received: 10/16/25 10:10

Lab Sample ID: 310-318198-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 12:22

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S1 Leachate Open

Lab Sample ID: 310-318198-4

Date Collected: 10/15/25 11:00

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:39
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 16:54
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470446	ENB7	EET CF	10/17/25 09:59
Total/NA	Analysis	9066		1	470548	ENB7	EET CF	10/18/25 14:57
Total/NA	Analysis	SM 2540C		1	470813	TGN5	EET CF	10/21/25 12:20

Client Sample ID: S2 Leachate Open

Lab Sample ID: 310-318198-5

Date Collected: 10/15/25 11:10

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 12:46
Total/NA	Analysis	9056A		20	470762	ZRI4	EET CF	10/16/25 15:09
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:45
Total/NA	Analysis	350.1		10	471181	WZC8	EET CF	10/23/25 16:58
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470446	ENB7	EET CF	10/17/25 09:59
Total/NA	Analysis	9066		1	470548	ENB7	EET CF	10/18/25 14:58
Total/NA	Analysis	SM 2540C		1	470813	TGN5	EET CF	10/21/25 12:20

Client Sample ID: S1 Underliner Open

Lab Sample ID: 310-318198-6

Date Collected: 10/15/25 10:55

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 12:34
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:46
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 17:01
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470447	ENB7	EET CF	10/17/25 10:03
Total/NA	Analysis	9066		1	470521	ENB7	EET CF	10/18/25 10:41
Total/NA	Analysis	SM 2540C		1	470813	TGN5	EET CF	10/21/25 12:20

Client Sample ID: Combined Leachate

Lab Sample ID: 310-318198-7

Date Collected: 10/15/25 11:20

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 13:20
Total/NA	Analysis	9056A		20	470762	ZRI4	EET CF	10/16/25 15:21

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: Combined Leachate

Lab Sample ID: 310-318198-7

Date Collected: 10/15/25 11:20

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:50
Total/NA	Analysis	350.1		1	471181	WZC8	EET CF	10/23/25 17:05
Total/NA	Analysis	5220D LL		1	470644	ENB7	EET CF	10/20/25 10:30
Total/NA	Prep	Distill/Phenol			470447	ENB7	EET CF	10/17/25 10:03
Total/NA	Analysis	9066		1	470521	ENB7	EET CF	10/18/25 10:43
Total/NA	Analysis	SM 2540C		1	470813	TGN5	EET CF	10/21/25 12:20

Client Sample ID: DUP-01

Lab Sample ID: 310-318198-8

Date Collected: 10/15/25 00:00

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 13:32
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:52
Total/NA	Analysis	350.1		1	470430	ZJX4	EET CF	10/16/25 22:49
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	Distill/Phenol			470447	ENB7	EET CF	10/17/25 10:03
Total/NA	Analysis	9066		1	470521	ENB7	EET CF	10/18/25 10:43
Total/NA	Analysis	SM 2540C		1	470865	TGN5	EET CF	10/21/25 15:33

Client Sample ID: EB-01

Lab Sample ID: 310-318198-9

Date Collected: 10/15/25 14:45

Matrix: Water

Date Received: 10/16/25 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/16/25 13:44
Total/NA	Prep	3005A			470989	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471481	ZRI4	EET CF	10/27/25 15:53
Total/NA	Analysis	350.1		1	470430	ZJX4	EET CF	10/16/25 22:50
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	Distill/Phenol			470447	ENB7	EET CF	10/17/25 10:03
Total/NA	Analysis	9066		1	470521	ENB7	EET CF	10/18/25 10:43
Total/NA	Analysis	SM 2540C		1	470865	TGN5	EET CF	10/21/25 15:33

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-318347-1

Date Collected: 10/16/25 10:30

Matrix: Water

Date Received: 10/17/25 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/17/25 10:32
Total/NA	Prep	3005A			470990	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471585	ZRI4	EET CF	10/28/25 11:33

Eurofins Cedar Falls

Lab Chronicle

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Client Sample ID: S1 Underliner Closed

Lab Sample ID: 310-318347-1

Date Collected: 10/16/25 10:30

Matrix: Water

Date Received: 10/17/25 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	350.1		1	471341	WZC8	EET CF	10/24/25 13:25
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	Distill/Phenol			470930	ENB7	EET CF	10/22/25 09:23
Total/NA	Analysis	9066		1	471031	ZJX4	EET CF	10/22/25 21:04
Total/NA	Analysis	SM 2540C		1	470993	TGN5	EET CF	10/22/25 14:13

Client Sample ID: S2 Underliner Closed

Lab Sample ID: 310-318347-2

Date Collected: 10/16/25 10:35

Matrix: Water

Date Received: 10/17/25 09:55

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	470762	ZRI4	EET CF	10/17/25 10:44
Total/NA	Analysis	9056A		20	470762	ZRI4	EET CF	10/17/25 11:17
Total/NA	Prep	3005A			470990	RLT9	EET CF	10/23/25 08:30
Total/NA	Analysis	6010D		1	471585	ZRI4	EET CF	10/28/25 11:35
Total/NA	Analysis	350.1		10	471341	WZC8	EET CF	10/24/25 13:29
Total/NA	Analysis	5220D LL		1	470929	HE7K	EET CF	10/22/25 09:22
Total/NA	Prep	Distill/Phenol			470930	ENB7	EET CF	10/22/25 09:23
Total/NA	Analysis	9066		1	471031	ZJX4	EET CF	10/22/25 21:04
Total/NA	Analysis	SM 2540C		1	470978	TGN5	EET CF	10/22/25 13:07

Laboratory References:

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

Accreditation/Certification Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Laboratory: Eurofins Cedar Falls

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

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

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

Method Summary

Client: John Deere & Co
Project/Site: JDDW Semi-Annual GW's

Job ID: 310-318198-1
SDG: #630113

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	EET CF
6010D	Metals (ICP)	SW846	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
5220D LL	COD	SM	EET CF
9066	Phenolics, Total Recoverable	SW846	EET CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
Distill/Phenol	Distillation, Phenolics	None	EET CF

Protocol References:

EPA = US Environmental Protection Agency

None = None

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

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

Laboratory References:

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



Environment Testing
America



310-318198 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>TRC</u>			
City/State:	CITY <u>Malden</u>	STATE <u>MA</u>	Project
Receipt Information			
Date/Time Received.	DATE <u>10-16-25</u>	TIME <u>7010</u>	Received By. <u>PH</u>
Delivery Type. ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other.			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes Cooler ID:			
Multiple Coolers? ☒ Yes ☐ No If yes. Cooler # <u>1</u> of <u>2</u>			
Cooler Custody Seals Present? ☒ Yes ☐ No If yes Cooler custody seals intact? ☒ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes: Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other ☐ 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>2.4</u>		Corrected Temp (°C): <u>2.4</u>	
Sample Container Temperature			
Container(s) used.	CONTAINER 1	CONTAINER 2	
Uncorrected Temp (°C)			
Corrected Temp (°C)			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client <u>TRC</u>			
City/State:	CITY <u>Malden</u>	STATE <u>MA</u>	Project:
Receipt Information			
Date/Time Received.	DATE <u>10-16-25</u>	TIME <u>7010</u>	Received By: <u>PH</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other. _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID. _____			
Multiple Coolers? ☒ Yes ☐ No If yes: Cooler # <u>2</u> of <u>2</u>			
Cooler Custody Seals Present? ☒ Yes ☐ No If yes: Cooler custody seals intact? ☒ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes: Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes: Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other. _____ ☐ NONE			
Thermometer ID: <u>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>0.3</u>		Corrected Temp (°C): <u>0.3</u>	
• Sample Container Temperature			
Container(s) used.	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C)			
Corrected Temp (°C)			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

Client Information		Sample		Lab PM		Carrier Tracking No's		CCC No	
Client Contact		Phone		E-Mail		State of Origin		Page of 1	
Company		PWSID		Lab PM		Carrier Tracking No's		CCC No	
TRC Environmental Corporation		Maddie Holmberg		Calhoun Conner M		310-86419-24126 2		Page of 1	
Address		9999 Fourier Drive Suite 101		E-Mail		State of Origin		Job #	
City		Madison		Conner Calhoun@et.eurofins.com		IA		Job #	
State, Zip		WI 53717		Conner Calhoun@et.eurofins.com		IA		Job #	
Phone		963-589-6133(Tel)		Conner Calhoun@et.eurofins.com		IA		Job #	
Email		elawson@trcwmparts.com		Conner Calhoun@et.eurofins.com		IA		Job #	
Project Name		JDDW Semi-Annual GW's		Conner Calhoun@et.eurofins.com		IA		Job #	
Site		JDPW-#630113		Conner Calhoun@et.eurofins.com		IA		Job #	
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (Water, Solid, Gas, Other)	
MW-1		10/15/25		1436		G		Water	
MW-2		10/15/25		1436		G		Water	
MW-3		10/15/25		1436		G		Water	
S1 leachate open		10/15/25		1436		G		Water	
S2 leachate open		10/15/25		1436		G		Water	
S1 underliner open		10/15/25		1436		G		Water	
Combined leachate		10/15/25		1436		G		Water	
DUP-1		10/15/25		1436		G		Water	
EB-01		10/15/25		1436		G		Water	
Possible Hazard Identification		Non-Hazard		Flammable		Skin Irritant		Poison B	
Deliverable Requested 1 II III IV Other (specify)		1		II		III		IV	
Empty Kit Relinquished by		Maddie Holmberg		Date		Time		Method of Shipment	
Relinquished by		Maddie Holmberg		Date/Time		10/15/25 1630		Company TRC	
Relinquished by		Maddie Holmberg		Date/Time		10/15/25 1630		Company TRC	
Relinquished by		Maddie Holmberg		Date/Time		10/15/25 1630		Company TRC	
Custody Seals Intact.		A Yes		A No		Custody Seal No		A No	



Environment Testing
America



310-318347 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client <u>TRC Env. Corp.</u>			
City/State.	CITY <u>Madison</u>	STATE <u>WI</u>	Project
Receipt Information			
Date/Time Received:	DATE <u>10/17/25</u>	TIME <u>0955</u>	Received By: <u>ES</u>
Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID: _____			
Multiple Coolers? ☐ Yes ☒ No If yes: Cooler # _____ of _____			
Cooler Custody Seals Present? ☒ Yes ☐ No If yes: Cooler custody seals intact? ☐ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes: Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes: Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>R</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>1.0</u>		Corrected Temp (°C): <u>1.0</u>	
* Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login.			
Additional Comments			
<u>318347</u>			

Chain of Custody Record

[illegible]

Login Sample Receipt Checklist

Client: John Deere & Co

Job Number: 310-318198-1

SDG Number: #630113

Login Number: 318198

List Number: 1

Creator: Schaufenbuel, Erin

List Source: Eurofins Cedar Falls

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

This receipt checklist is generated for all samples received in this Login. It may not be applicable to all Jobs associated with this Login.

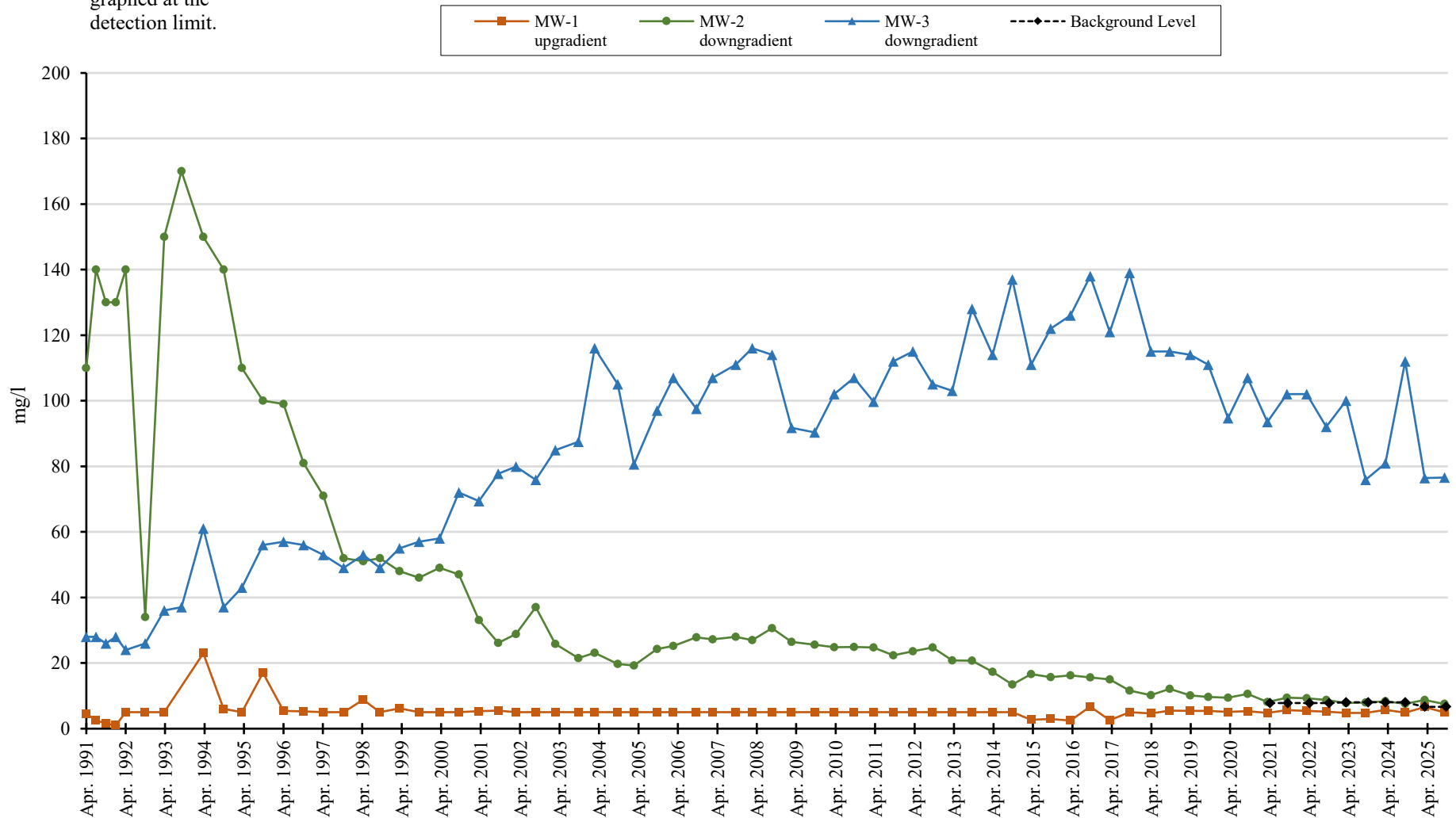
Eurofins Cedar Falls

Appendix E: Groundwater Results Graphs

Landfill Monitoring

Chloride

Nondetect
results are
graphed at the
detection limit.

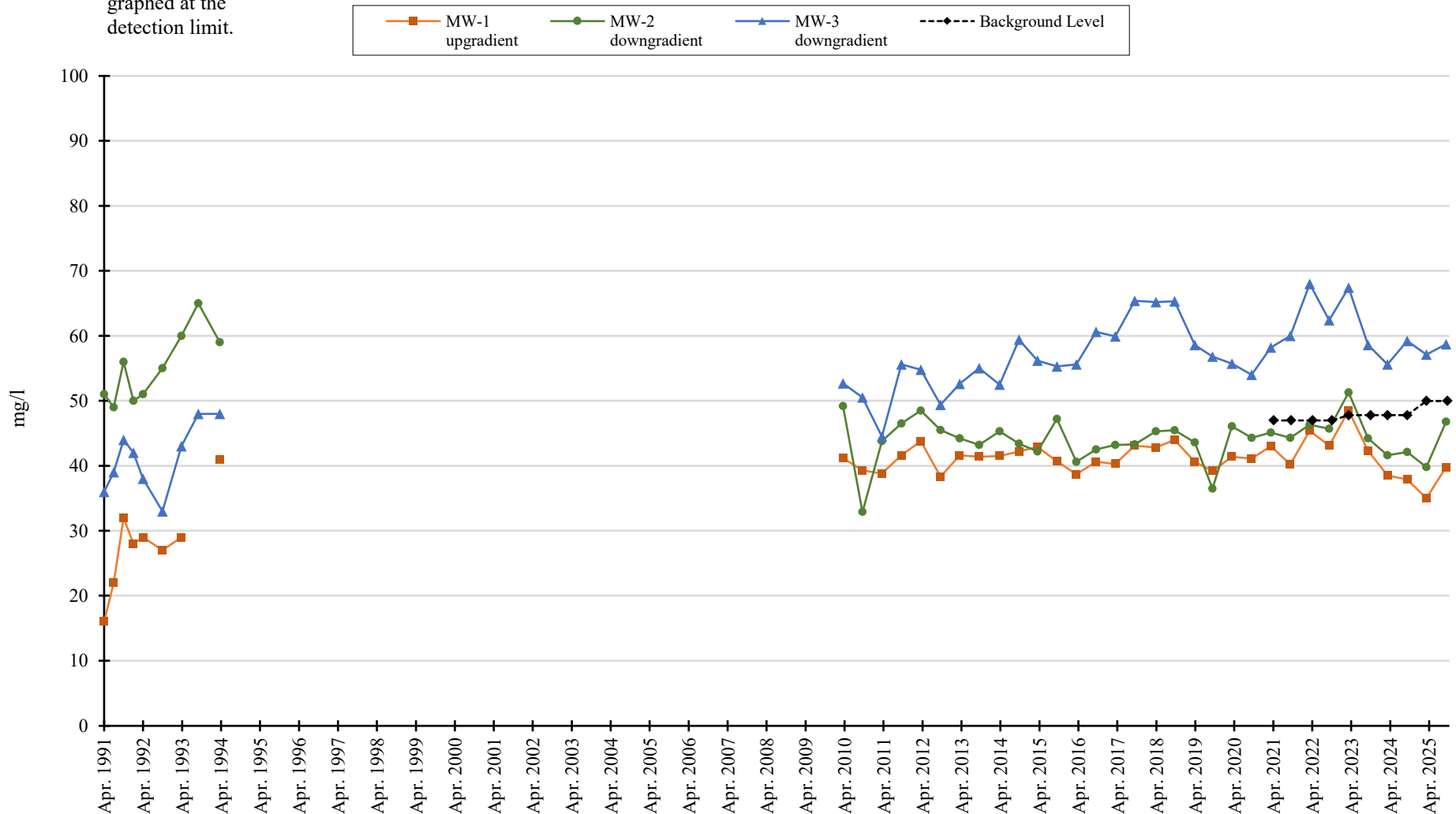


Landfill Monitoring

* Starting in April 2019, the
sample results are for total Mg.

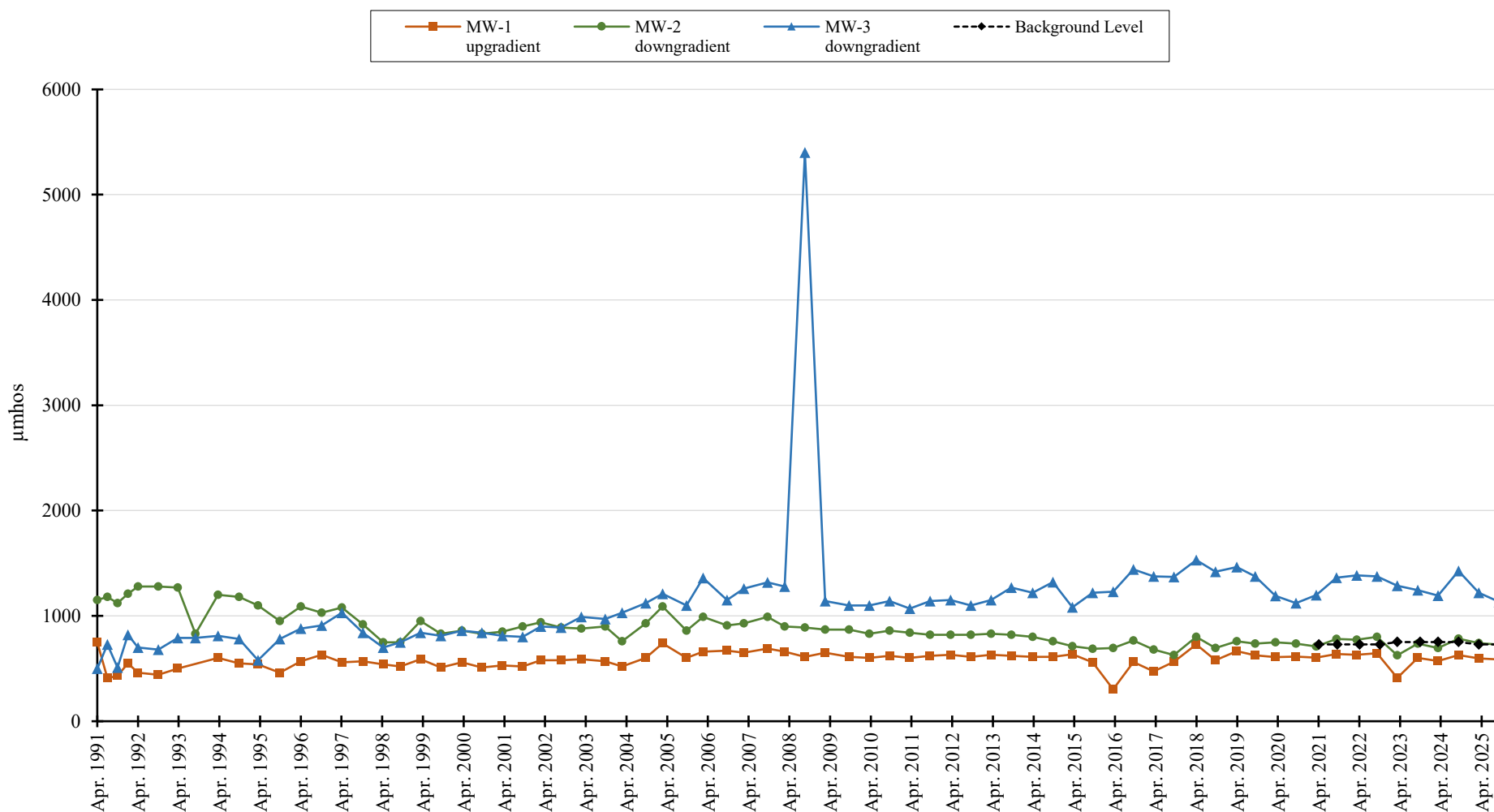
Magnesium (Dissolved and Total*)

Nondetect
results are
graphed at the
detection limit.



Landfill Monitoring

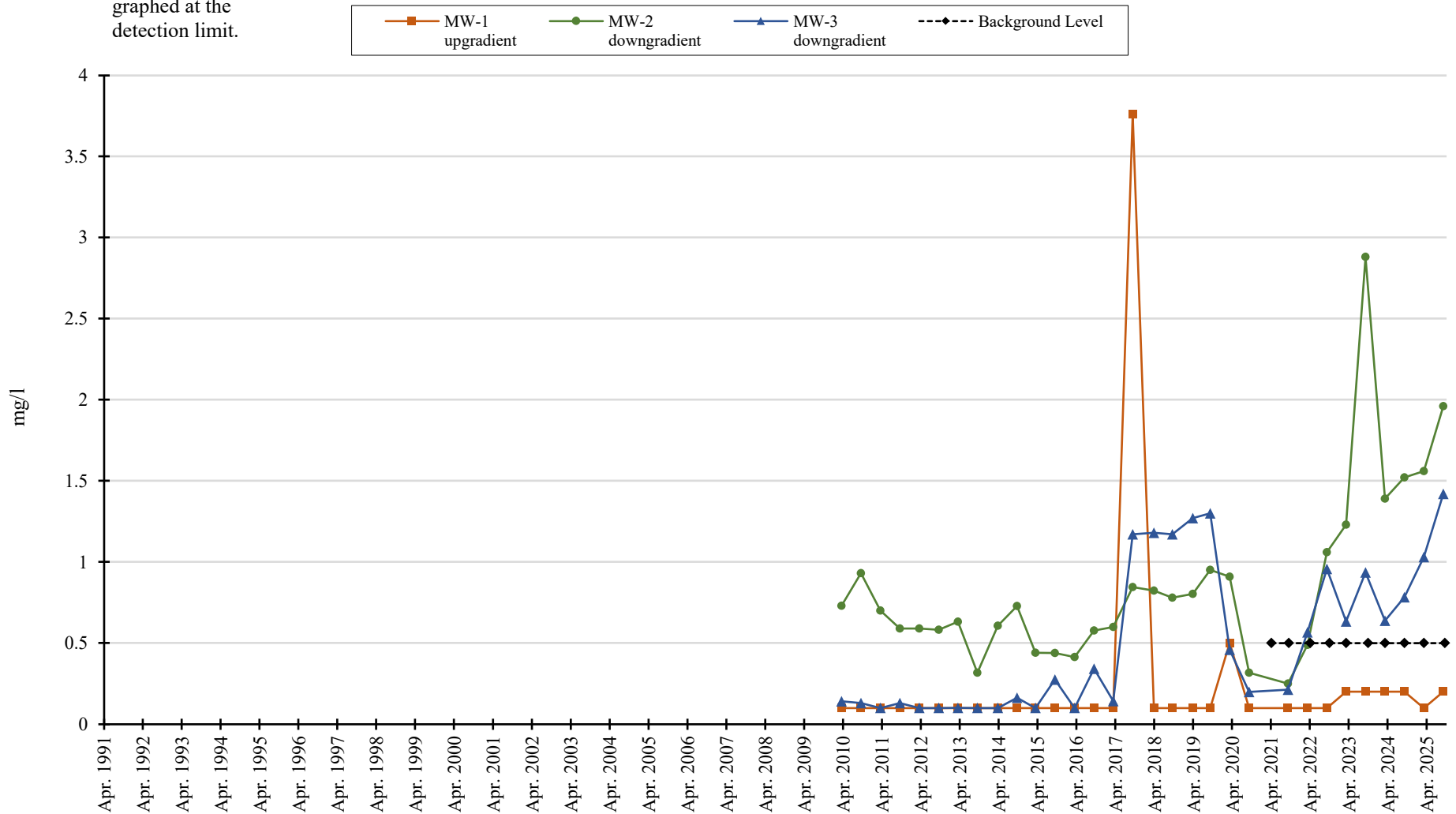
Specific Conductance



Landfill Monitoring

Nitrates

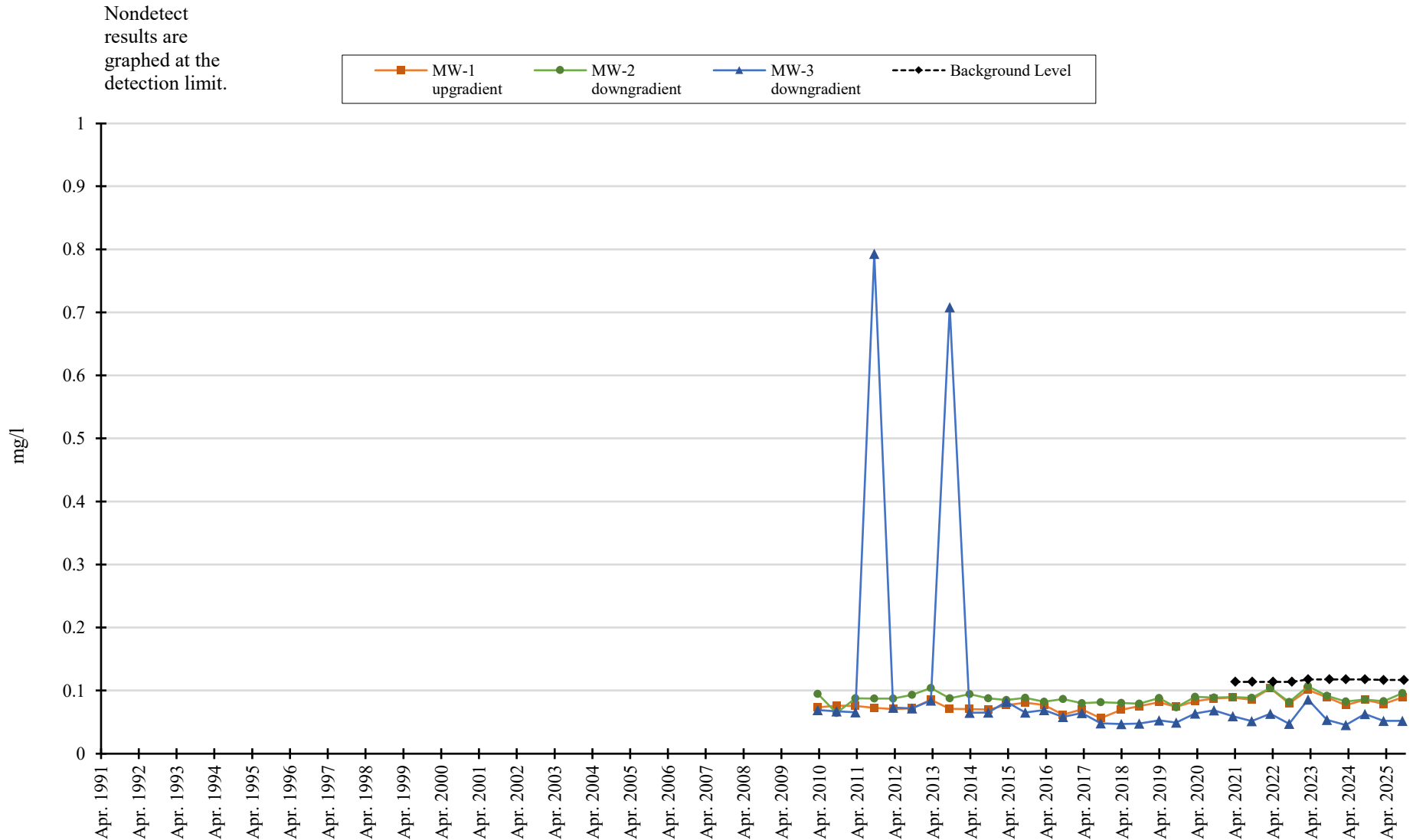
Nondetect
results are
graphed at the
detection limit.



Landfill Monitoring

Barium (Dissolved and Total*)

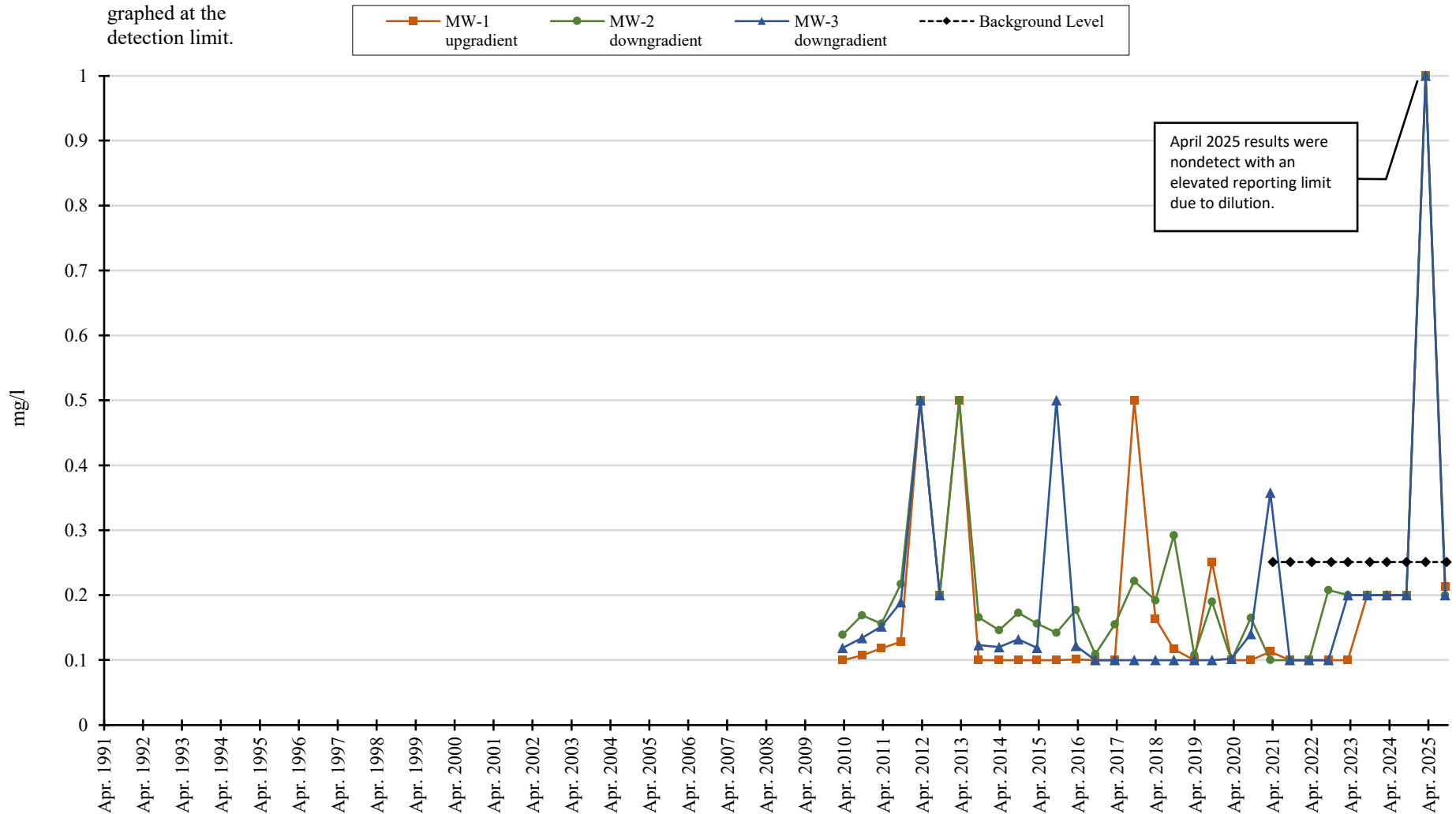
* Starting in April 2019, the sample results are for total Ba.



Landfill Monitoring

Fluoride

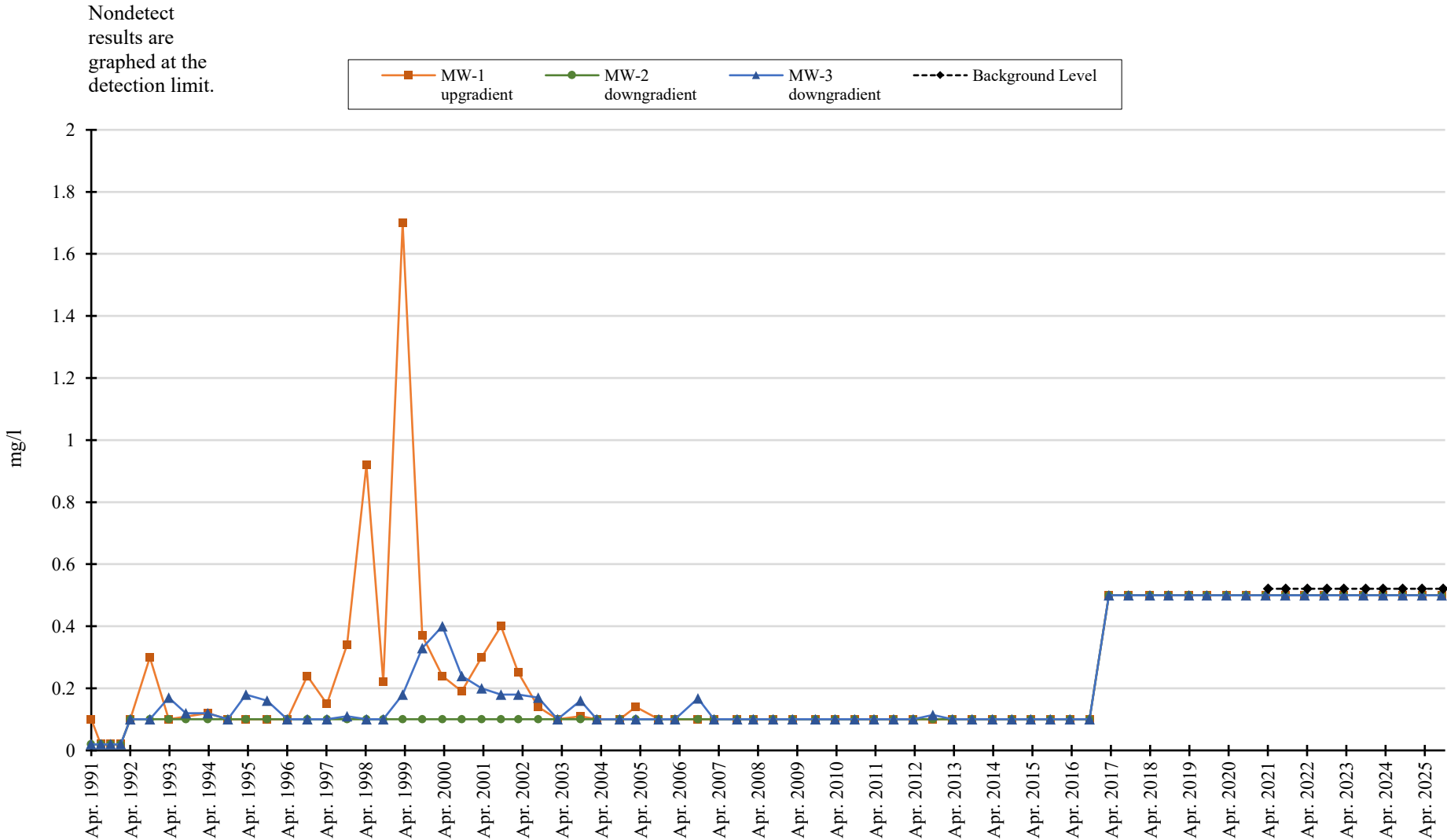
Nondetect
results are
graphed at the
detection limit.



Landfill Monitoring

Iron (Dissolved and Total*)

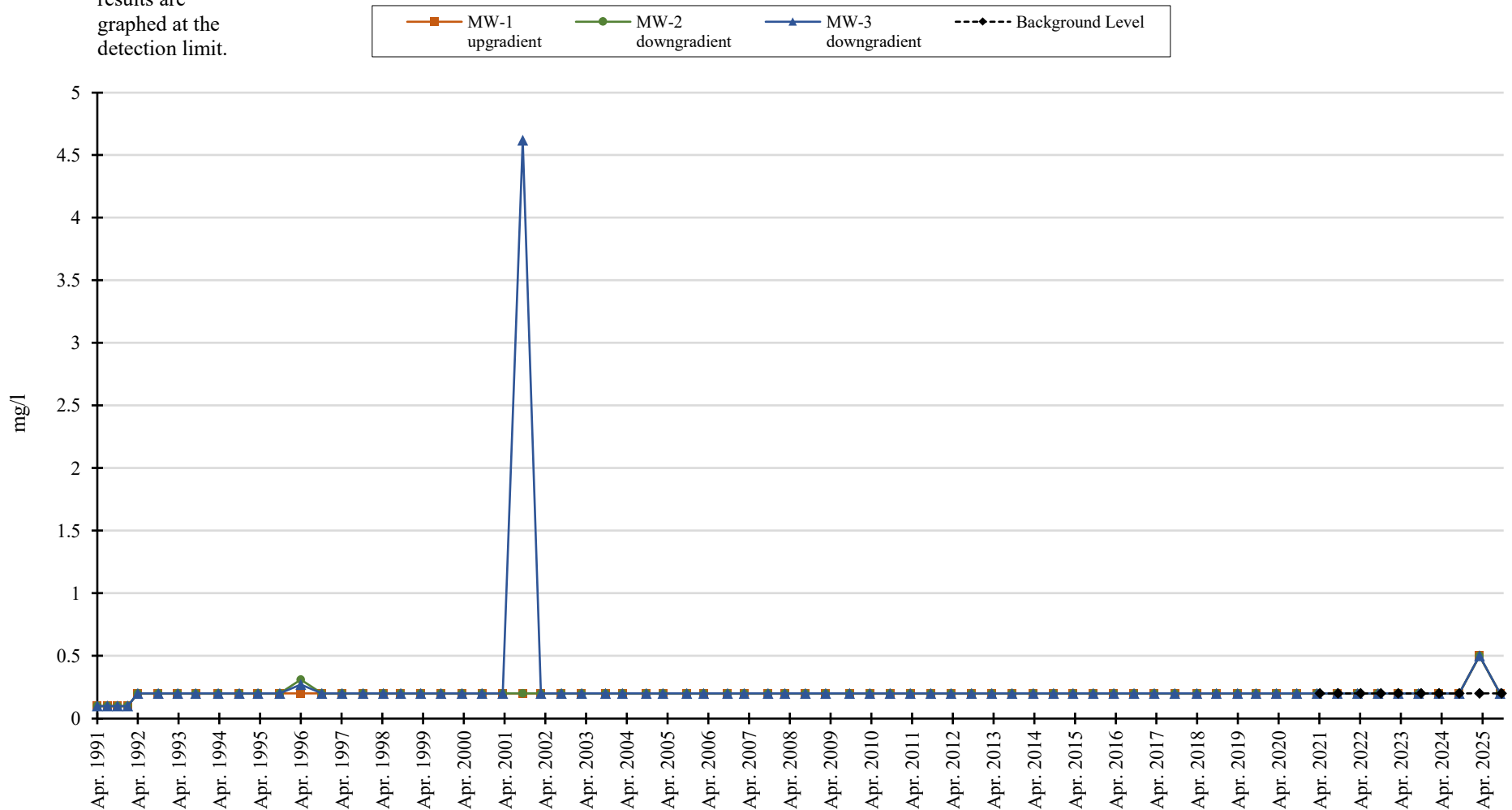
* Starting in April 2019, the sample results are for total iron.



Landfill Monitoring

Ammonia Nitrogen

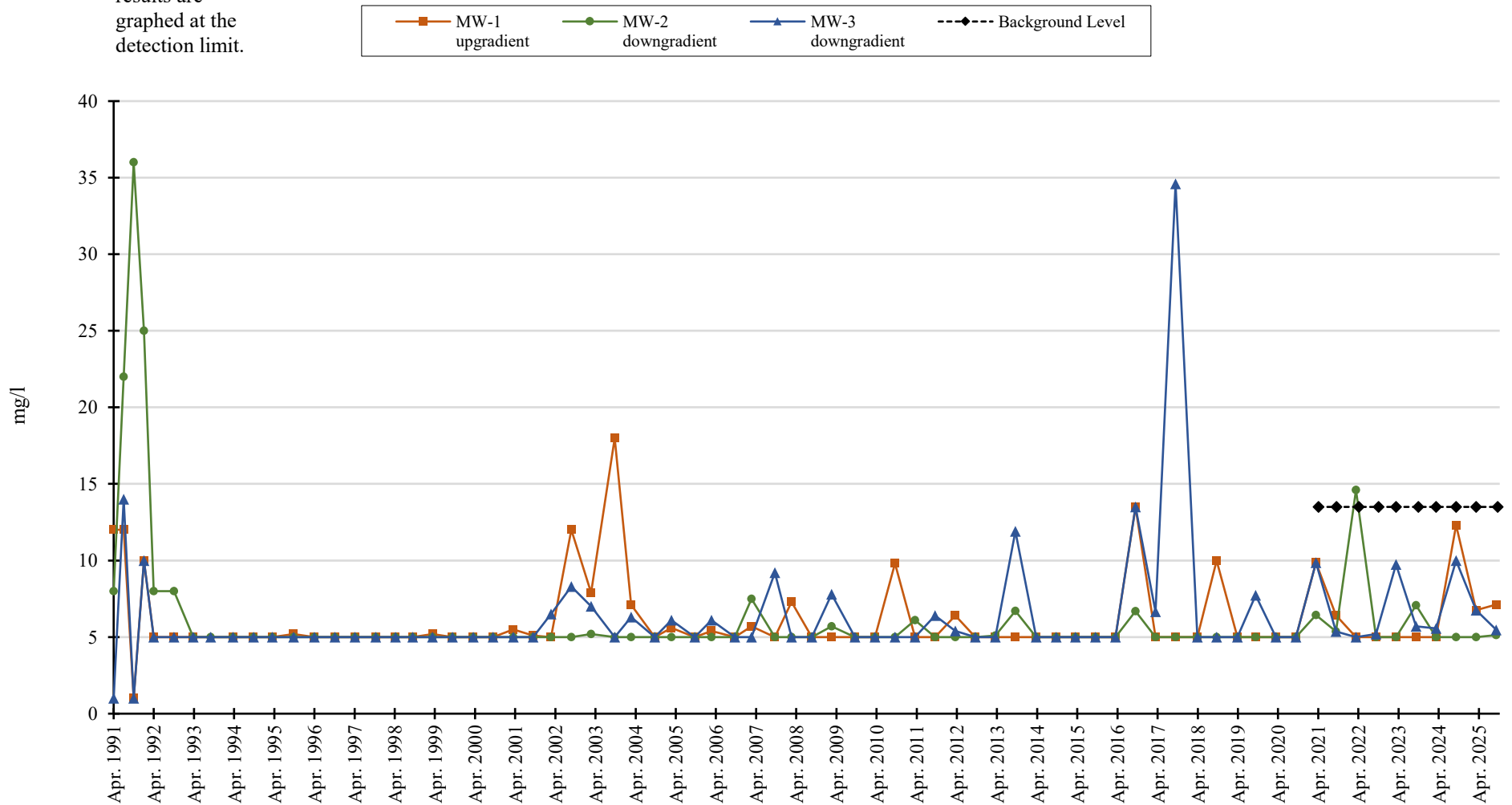
Nondetect
results are
graphed at the
detection limit.



Landfill Monitoring

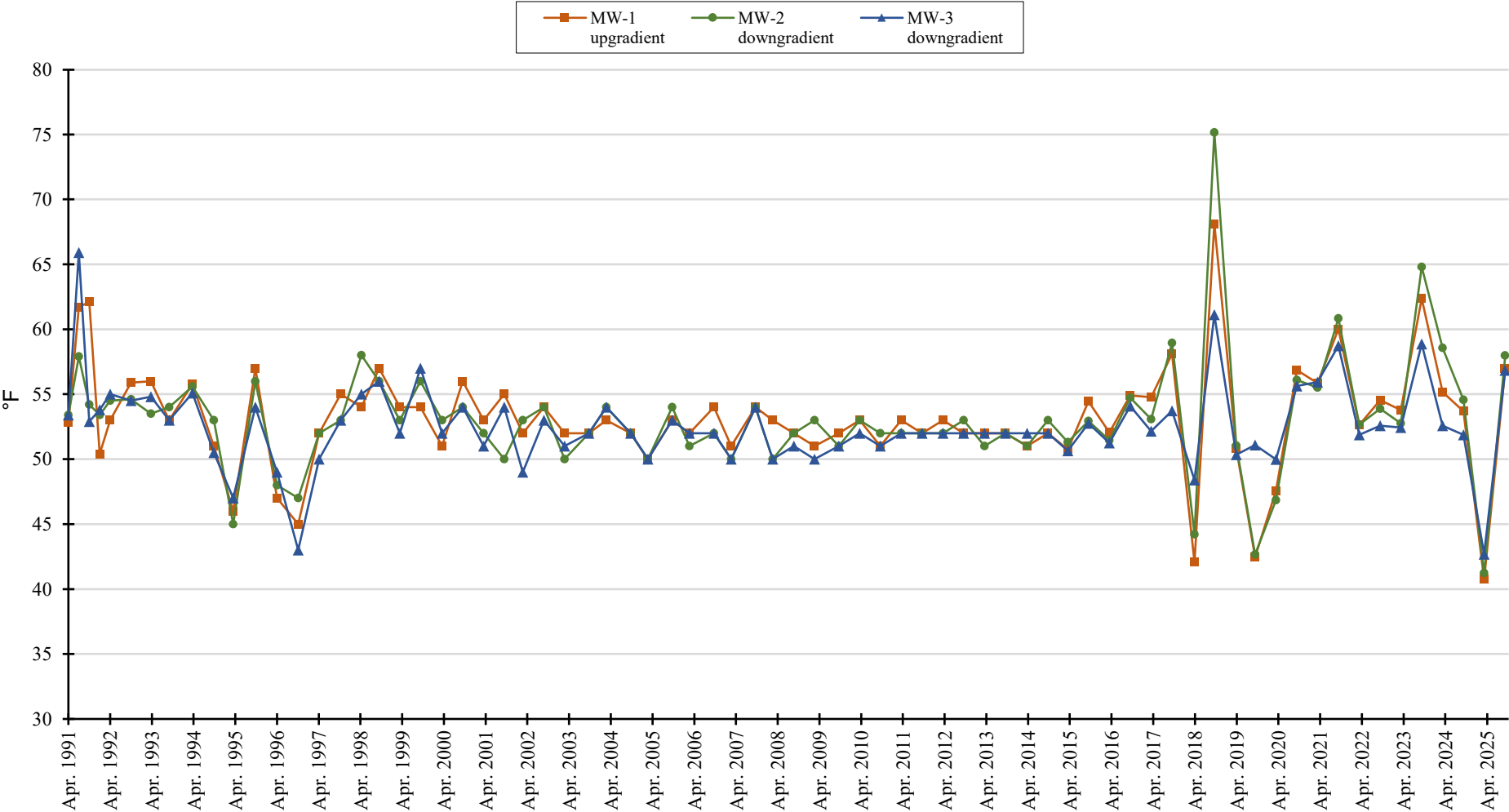
Chemical Oxygen Demand

Nondetect
results are
graphed at the
detection limit.



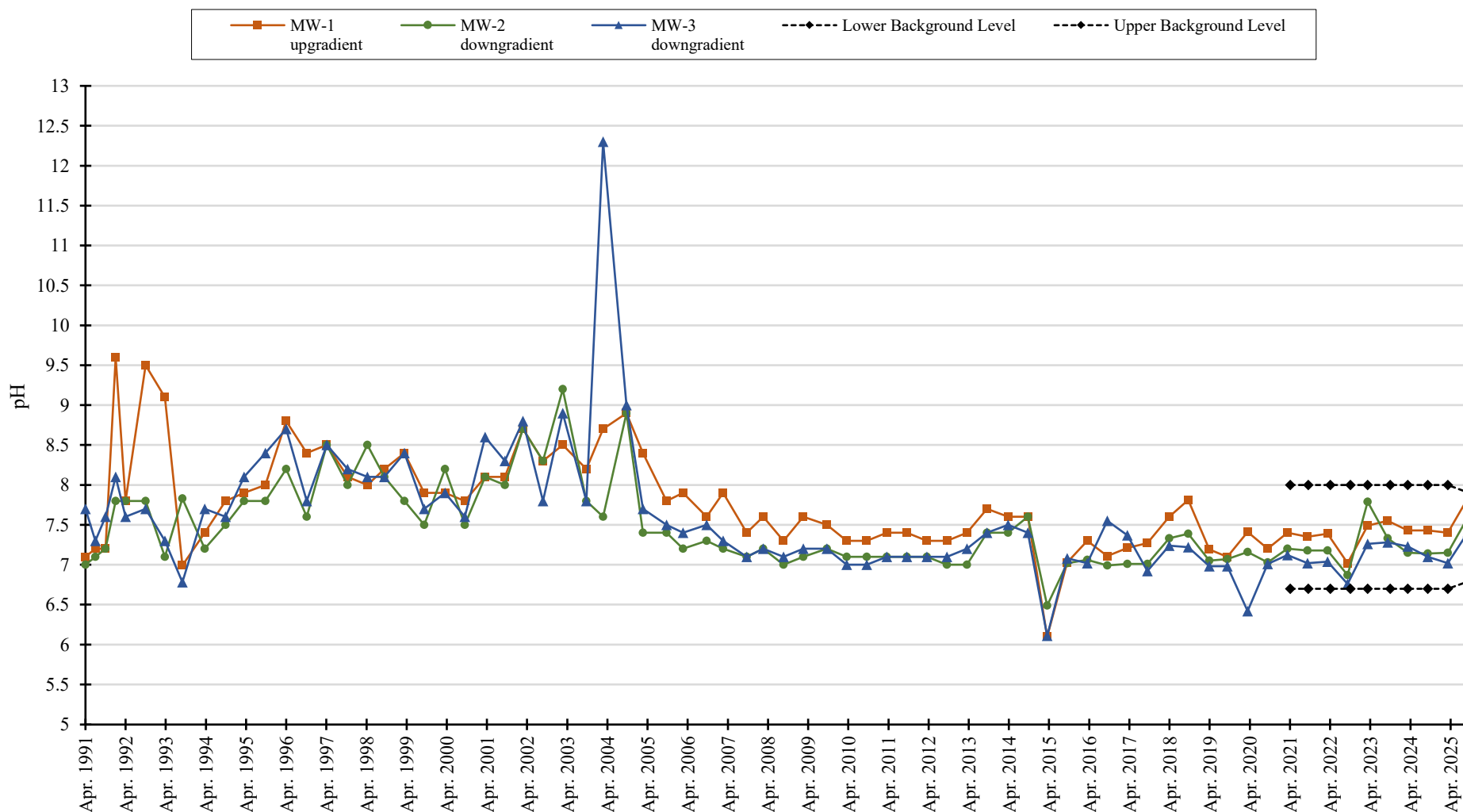
Landfill Monitoring

Temperature



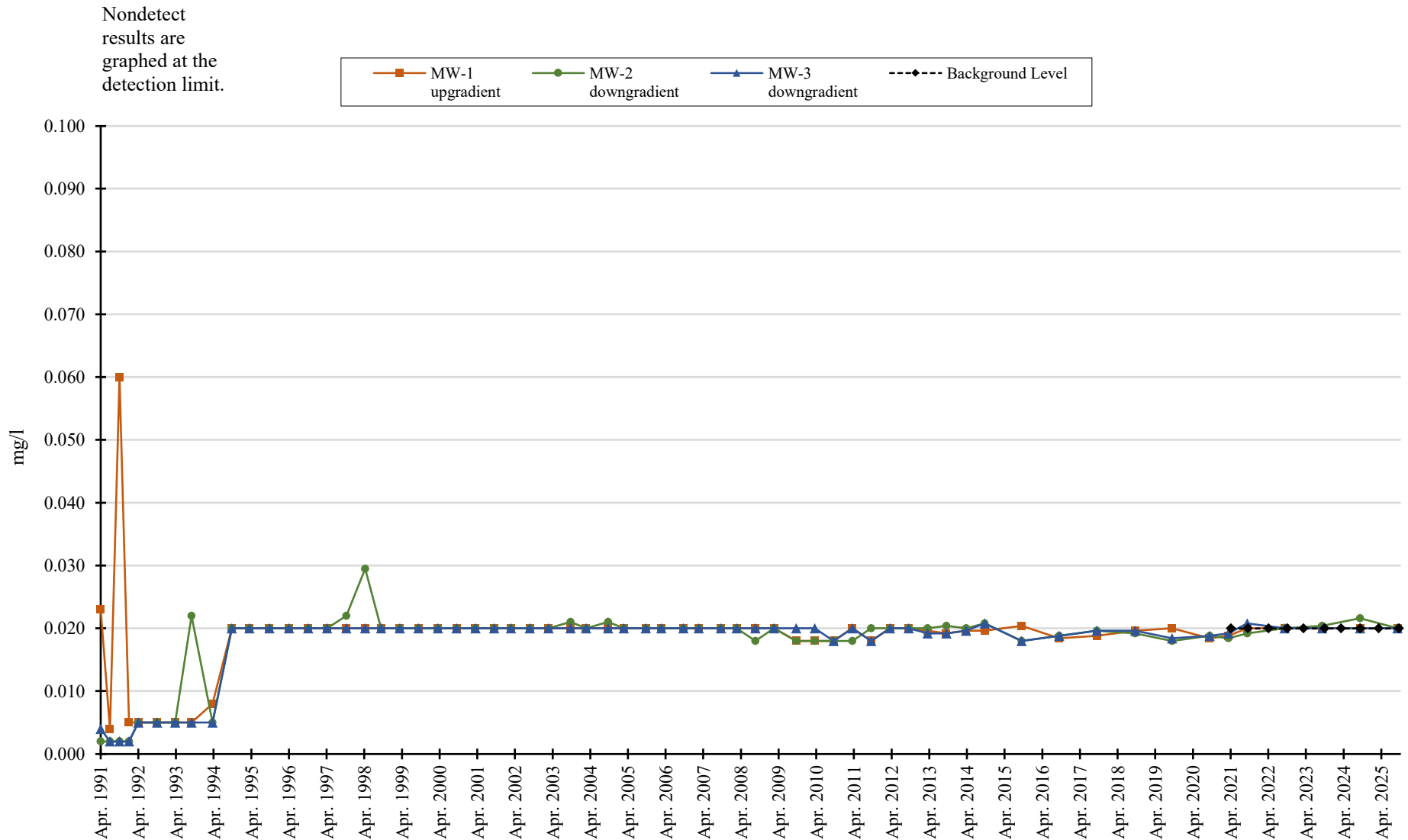
Landfill Monitoring

pH



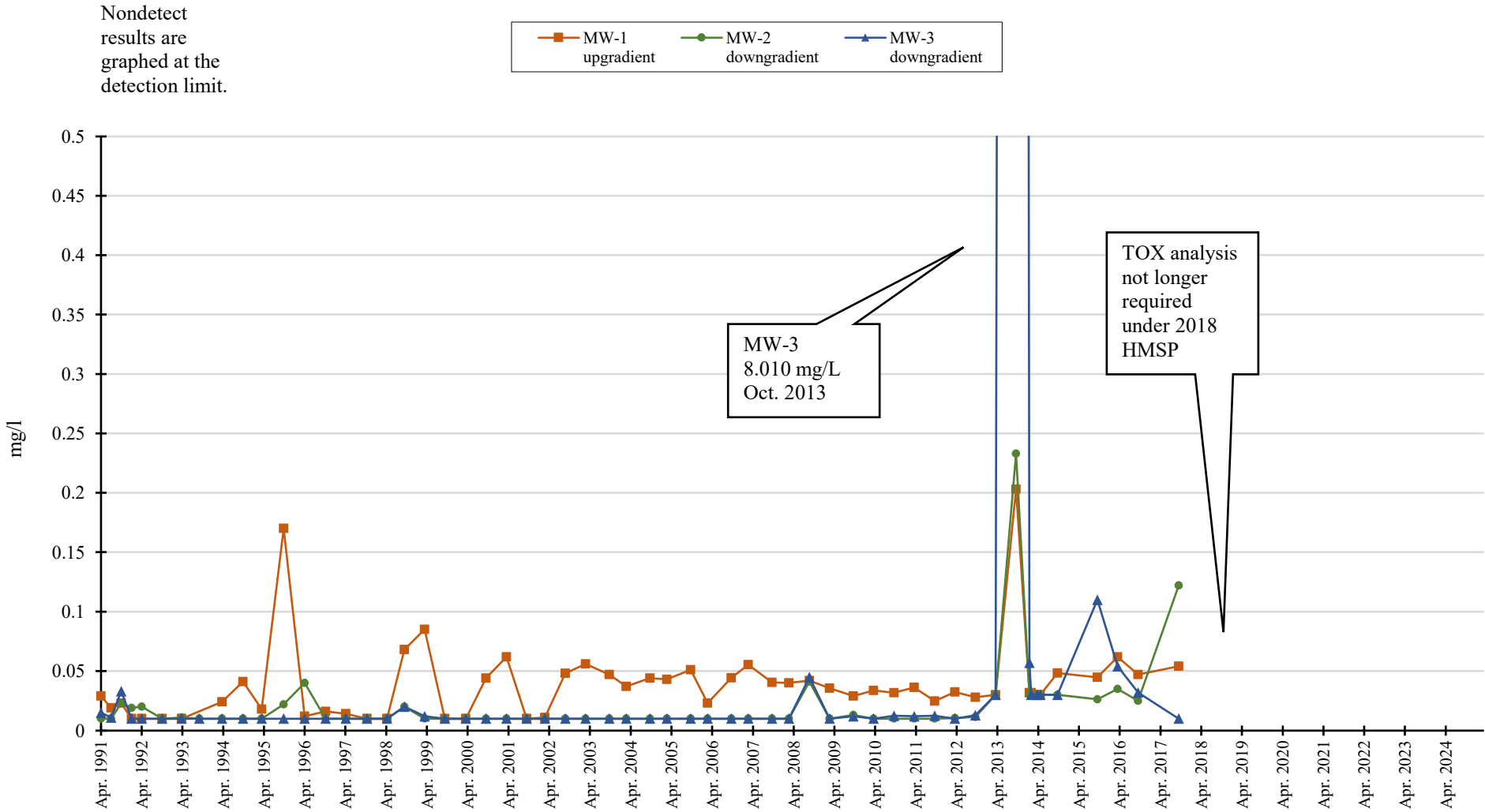
Landfill Monitoring

Phenols



Landfill Monitoring

Total Organic Halogen



Appendix F: Data Validation

- April 2025
- October 2025

**Data Validation
April 2025**



Memorandum

To: Erica Lawson

From: Nancy Bergstrom (Data Reviewer)
Jessica Esser (Peer Reviewer)

Date: June 2, 2025

Subject: Data Validation Review
Groundwater and Leachate Samples
John Deere, Dubuque Works Landfill
Eurofins Environment Testing – Cedar Falls, IA
Laboratory Job Number 310-303155-1 (includes Job Number 310-303354-1) – Rev.
2

SUMMARY

Limited validation was performed on the data for four groundwater samples, six leachate samples, and one equipment blank sample collected at the John Deere, Dubuque Works Landfill in Dubuque, Iowa. The samples were collected on April 1-2, 2025 and were submitted to Eurofins Environment Testing in Cedar Falls, Iowa for analysis. The samples were analyzed for one or more of the following parameters:

- Anions (chloride, fluoride, and sulfate) using SW-846 Method 9056A
- Nitrate using EPA Method 353.2 (by calculation)
- Select total metals (barium, boron, calcium, iron, lithium, magnesium, and molybdenum) using SW-846 Method 6010D
- Ammonia using EPA Method 350.1
- Chemical oxygen demand (COD) using Standard Methods (SM) 5220D
- Total dissolved solids (TDS) using SM 2540C

The sample results were assessed using the *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, November 2020. These guidelines were modified to accommodate the method-specific requirements.

In general, the data appear valid as reported and may be used for decision-making purposes. The following issues were noted which may have a minor impact on the data usability:

- The positive results for ammonia in samples S2 Underliner Closed and Combined Leachate were qualified as estimated (J+) with a potential high bias due to a high MS percent recovery (%R).

SAMPLES

Samples included in this review are listed below:

SDG 310-303155-1 (collected 04/1/2025)

- MW-1
- MW-2
- MW-3
- DUP-1¹
- EB-01
- S1 Underliner Open
- S1 Leachate Open
- S2 Leachate Open

¹Field duplicate of MW-2

SDG 310-303354-1 (collected 04/2/2025)

- S1 Underliner Closed
- S2 Underliner Closed
- Combined Leachate

REVIEW ELEMENTS

Sample data were reviewed for the following parameters:

- Agreement of analyses conducted with chain-of-custody requests
- Data completeness
- Holding times and sample preservation
- Blanks
- MS/MSD results
- Laboratory control sample (LCS) results
- Laboratory duplicate results
- Field duplicate results
- Quantitation limits (QLs) and sample results

DISCUSSION

Agreement of Analyses Conducted with Chain-of-Custody (COC) Requests

Sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. The following issues were noted.

- The COC form requested metals analysis by SW-846 Method 6010C, but this analysis was performed by SW-846 Method 6010D. No validation action was taken on this basis.
- The COC form requested nitrate by SW-846 Method 9056, but this analysis was performed by EPA Method 353.2 using a calculation. No validation action was taken on this basis.

Data Completeness

The data package was found to be complete as received from the laboratory with the following exceptions.

- The COC for Job Number 310-303354-1 was not included in the original lab report. The laboratory was contacted and provided a revised report to include the COC.

- The laboratory did not include the laboratory quality control data associated with the nitrate calculations in the original laboratory report. The laboratory report was revised to include this information.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method-specified holding times. Holding time compliance for the components of the nitrate analysis (nitrite and nitrate+nitrite) were verified through discussions with the laboratory and by evaluating the analysis date and time of the quality control samples. The cooler temperatures were within the acceptance criteria ($<6^{\circ}\text{C}$) upon sample receipt at the laboratory. All samples were properly preserved.

Blanks

There were no analytes detected in the laboratory method blanks or the equipment blank (EB-01).

The laboratory did not provide method blank results for nitrate as the nitrate results were derived from a calculation.

MS/MSD Results

MS/MSD analyses were performed on sample S1 Underliner Closed for nitrite, sample S2 Underliner Closed for ammonia, and sample DUP-1 for COD. The %Rs and relative percent differences (RPDs) met the laboratory acceptance criteria with the following exception.

Sample ID	Analyte	MS %R	MSD %R	RPD	%R/RPD QC Limits	Validation Action
S2 Underliner Closed	Ammonia	116	-	-	90-110	The positive results for Ammonia were qualified as estimated (J+) with a potential high bias in samples S2 Underliner Closed and Combined Leachate due to the high MS recovery. The nondetect result in sample S1 Underliner Closed did not require qualification.
Associated Samples: S1 Underliner Closed, S2 Underliner Closed, Combined Leachate - met criteria						

LCS Results

The LCS %Rs met the laboratory acceptance criteria.

The laboratory did not provide LCS results for nitrate as the nitrate results were derived from calculation.

Laboratory Duplicate Results

A laboratory duplicate analysis was performed on sample EB-01 for metals and on sample MW-1 for TDS. The RPDs met the laboratory acceptance criteria.

Field Duplicate Results

Samples MW-2/DUP-1 were submitted as the field duplicate pair. The following table summarizes the RPDs and absolute difference (AbsD), where applicable, of the detected analytes in the field duplicate pair and the validation actions.

Analyte	QL (mg/L)	MW-2 (mg/L)	DUP-1 (mg/L)	RPD (%) or AbsD (mg/L)	Validation Actions
TDS	50	410	402	RPD = 2.0	None; all criteria were met
Sulfate	5.0	18.6	20.3	AbsD = 1.7	
Chloride	5.0	8.69	8.19	AbsD = 0.5	
Nitrate	0.1	1.56	1.64	RPD = 5.0	
Magnesium	1.0	39.8	41.2	RPD = 3.5	
Barium	0.01	0.0829	0.0857	RPD = 3.3	
Calcium	1.0	90.4	93.6	RPD = 3.5	
Criteria: When both results are $\geq 5x$ the QL, RPDs must be $\leq 30\%$. When one or both results are $< 5x$ the QL, AbsD must be $< QL$.					

Quantitation Limits and Sample Results

The table below summarizes the dilutions that were performed on samples in this data set. The QLs for these samples were elevated accordingly, and the nondetect fluoride results for samples Combined Leachate, DUP-1, MW-1, MW-2, MW-3, S1 Leachate Open, S1 Underliner Closed, S1 Underliner Open, S2 Leachate Open, and S2 Underliner Closed were affected. No validation action was taken on this basis.

Sample IDs	Parameter	Dilution	Reason for Dilution
DUP-1	Chloride	5-fold	The case narrative states that samples were diluted due to the nature of the sample matrix.
MW-1			
MW-2			
MW-3			
S1 Leachate Open			
S1 Underliner Closed			
S1 Underliner Open			
S2 Leachate Open			
S2 Underliner Closed			
Combined Leachate			
DUP-1	Fluoride		
MW-1			
MW-2			
MW-3			
S1 Leachate Open			
S1 Underliner Closed			
S1 Underliner Open			
S2 Leachate Open			

Sample IDs	Parameter	Dilution	Reason for Dilution
S2 Underliner Closed	Fluoride	5-fold	The case narrative states that samples were diluted due to the nature of the sample matrix.
DUP-1	Sulfate		
MW-1			
MW-2			
MW-3			
S1 Leachate Open			
S1 Underliner Closed			
S1 Underliner Open			
Combined Leachate	Chloride	20-fold	A dilution was likely performed due to the concentration of chloride which would have exceeded or been close to exceeding the calibration range if analyzed undiluted.
Combined Leachate	Sulfate		Dilutions were likely performed due to the concentrations of sulfate which would have exceeded or been close to exceeding the calibration range if analyzed undiluted.
S2 Leachate Open			
S2 Underliner Closed			
Combined Leachate	COD	2-fold	Dilutions were likely performed due to the concentrations of COD which would have exceeded or been close to exceeding the calibration range if analyzed undiluted.
S2 Leachate Open			
S2 Underliner Closed			

It should be noted that the TDS analyses of samples S2 Leachate Open, Combined Leachate, and S2 Underliner Closed were likely performed with reduced volumes as the QLs were 5x higher than other samples. Since TDS was detected in these samples, there was no adverse impact to the data.

**Data Validation
October 2025**



Memorandum

To: Erica Lawson

From: Matt Denny (Data Reviewer)
Jessica Esser (Peer Reviewer)

Date: December 16, 2025

Subject: Data Validation Review
Groundwater and Leachate Samples
John Deere, Dubuque Works Landfill
Eurofins Environment Testing – Cedar Falls, IA
Laboratory Job Number 310-318198-1 (includes Job Number 310-318347-1)

SUMMARY

Limited validation was performed on the data for four groundwater samples, six leachate samples, and one equipment blank sample collected at the John Deere, Dubuque Works Landfill in Dubuque, Iowa. The samples were collected on October 15-16, 2025 and were submitted to Eurofins Environment Testing in Cedar Falls, Iowa for analysis. The samples were analyzed for one or more of the following parameters:

- Anions (chloride, fluoride, sulfate, and nitrate) using SW-846 Method 9056A
- Select total metals (barium, boron, calcium, iron, lithium, magnesium, and molybdenum) using SW-846 Method 6010D
- Ammonia using EPA Method 350.1
- Chemical oxygen demand (COD) using Standard Methods (SM) 5220D
- Total phenols using SW-846 Method 9068
- Total dissolved solids (TDS) using SM 2540C

The sample results were assessed using the *USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review*, November 2020. These guidelines were modified to accommodate the method-specific requirements.

In general, the data appear valid as reported and may be used for decision-making purposes.

SAMPLES

Samples included in this review are listed below:

SDG 310-318198-1 (collected 10/15/2025)

- | | | | |
|---------------------|----------------------|--------------------|----------------------|
| • MW-1 | • MW-2 | • MW-3 | • DUP-1 ¹ |
| • EB-01 | • S1 Underliner Open | • S1 Leachate Open | • S2 Leachate Open |
| • Combined Leachate | | | |

¹Field duplicate of MW-2

SDG 310-318347-1 (collected 10/16/2025)

- S1 Underliner Closed
- S2 Underliner Closed

REVIEW ELEMENTS

Sample data were reviewed for the following parameters:

- Agreement of analyses conducted with chain-of-custody requests
- Data completeness
- Holding times and sample preservation
- Blanks
- MS/MSD results
- Laboratory control sample (LCS) results
- Laboratory duplicate results
- Field duplicate results
- Quantitation limits (QLs) and sample results

DISCUSSION

Agreement of Analyses Conducted with Chain-of-Custody (COC) Requests

Sample reports were checked to verify that the results corresponded to analytical requests as designated on the COC. No issues were noted.

Data Completeness

The data package was found to be complete as received from the laboratory.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method-specified holding times. The cooler temperatures were within the acceptance criteria ($<6^{\circ}\text{C}$) upon sample receipt at the laboratory. All samples were properly preserved.

Blanks

There were no analytes detected in the laboratory method blanks or the equipment blank (EB-01).

MS/MSD Results

MS/MSD analyses were performed on sample MW-1 for anions, sample S1 Leachate Open for metals, and sample S1 Underliner Open for total phenols. The percent recoveries (%Rs) and relative percent differences (RPDs) met the laboratory acceptance criteria.

LCS Results

The LCS %Rs met the laboratory acceptance criteria.

Laboratory Duplicate Results

A laboratory duplicate analysis was performed on sample S2 Underliner Closed for metals and on sample DUP-1 for TDS. The RPDs met the laboratory acceptance criteria.

Field Duplicate Results

Samples MW-2/DUP-1 were submitted as the field duplicate pair. The following table summarizes the RPDs and absolute difference (AbsDs), where applicable, of the detected analytes in the field duplicate pair and the validation actions.

Analyte	QL (mg/L)	MW-2 (mg/L)	DUP-1 (mg/L)	RPD (%) or AbsD (mg/L)	Validation Actions
Chloride	1.00	7.54	7.58	RPD = 0.5	None; all criteria were met
Nitrate as N	0.200	1.96	2.35	RPD = 18.1	
Sulfate	1.00	20.6	21.0	RPD = 1.9	
Barium	0.0100	0.0959	0.0887	RPD = 7.8	
Calcium	1.00	108	100	RPD = 7.7	
Magnesium	1.00	46.8	43.4	RPD = 7.5	
COD	5.00	5.13	ND	AbsD = 0.13	
TDS	50.0	414	400	RPD = 3.4	
Criteria: When both results are $\geq 5x$ the QL, RPDs must be $\leq 30\%$. When one or both results are $< 5x$ the QL, AbsD must be $\leq QL$. In cases where one sample is nondetect (ND) and the other is a detection, the ND result is represented by the QL in calculating the AbsD.					

Quantitation Limits and Sample Results

The table below summarizes the dilutions that were performed on samples in this data set. The QLs for these samples were elevated accordingly, but all affected analytes were detected; therefore, there was not an adverse impact on the usability of the data.

Sample IDs	Parameter	Dilution	Reason for Dilution
MW-3	Sulfate	5-fold	Dilutions were likely performed due to the concentrations of target analytes which would have exceeded or been close to exceeding the calibration range if analyzed undiluted.
S2 Leachate Open	Chloride & Sulfate	20-fold	
	Ammonia	10-fold	
Combined Leachate	Sulfate	20-fold	
S2 Underliner Closed	Chloride & Sulfate	20-fold	
	Ammonia	10-fold	

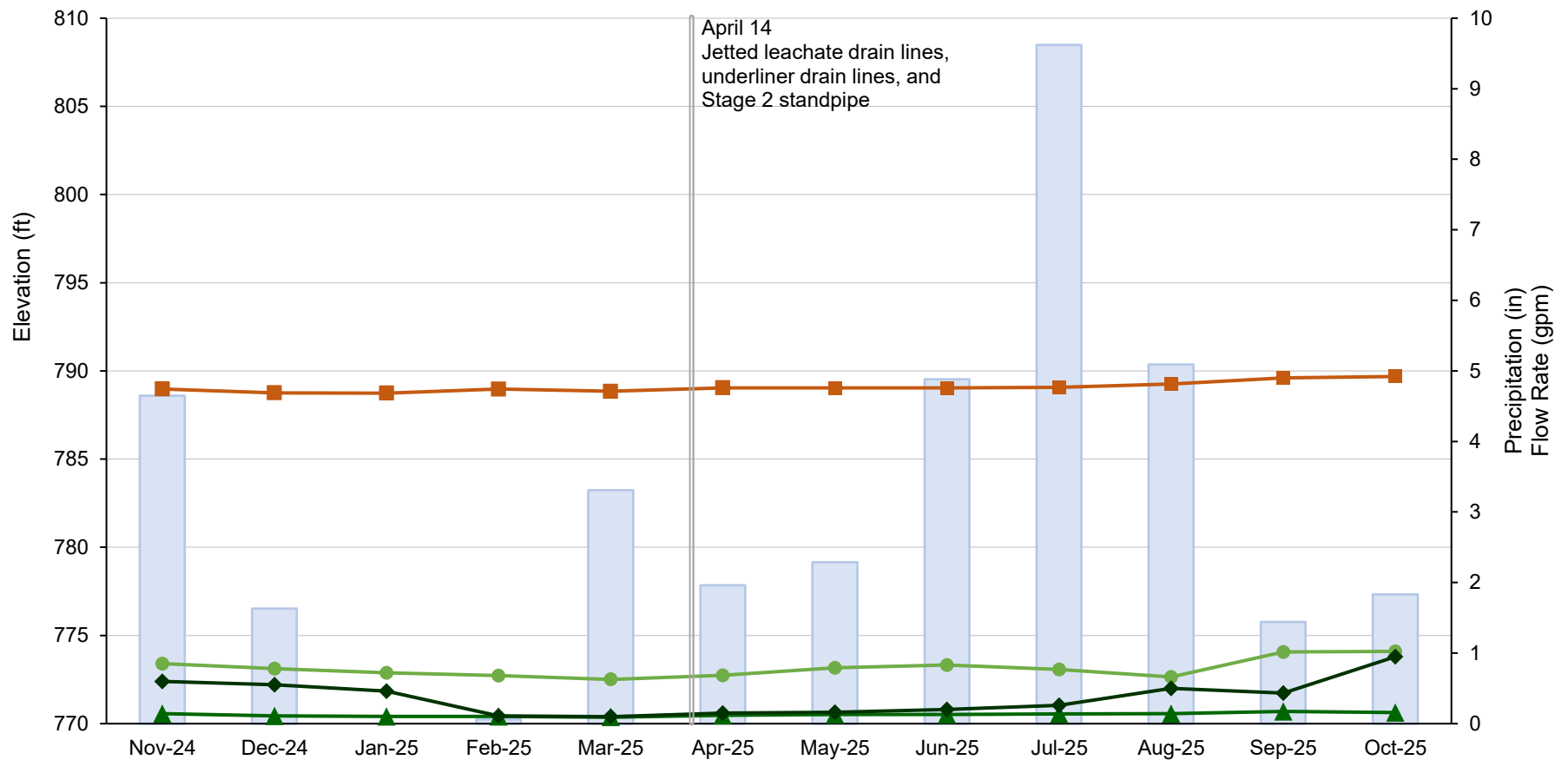
It should be noted that the TDS analyses of samples S2 Leachate Open, Combined Leachate, and S2 Underliner Closed were likely performed with reduced volumes as the QLs were 5x higher than other samples. Since TDS was detected in these samples, there was no adverse impact to the data.

It should be noted that the QLs for ammonia were 0.5 mg/L in leachate samples and 0.2 mg/L in groundwater samples due to the use of different preparation methods for each matrix.

Appendix G: Leachate Collection System Evaluation Graphs

Landfill Monitoring Stage 1 Leachate Collection Evaluation

- Total Monthly Precipitation (in)
- Elevation of Saturated Waste (ft)
- Liner Elevation (ft)
- Leachate Flow Rate (gpm)
- Underliner Flow Rate (valve open) (gpm)
- Underliner Flow Rate (valve closed) (gpm)



Landfill Monitoring Stage 2 Leachate Collection Evaluation

- Total Monthly Precipitation (in)
- Elevation of Saturated Waste (ft)
- Liner Elevation (ft)
- Leachate Flow Rate (gpm)
- Underliner Flow Rate (valve open) (gpm)
- Underliner Flow Rate (valve closed) (gpm)

