



2023 Annual Water Quality Report

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

January 2024

Permit No. 31-SDP-01-75C

Prepared For:

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CERTIFICATION AND PROJECT SUMMARY

	<p>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.</p>
	<p style="text-align: right;">1-26-2024</p> <hr/> <p>John M. Rice, P.E. Date</p>
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Project title: 2023 Annual Water Quality Report
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Dubuque, Iowa

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

EXECUTIVE SUMMARY

This 2023 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 semi-annual 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 2023 AWQR is for the period of November 2022 to October 2023. Semiannual groundwater and leachate sampling events occurred in April 2023 and October/November 2023. 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 (Appendix A).

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 (Appendix A), additional parameters were added for groundwater monitoring starting in Fall 2023.
- The same additional parameters were also added for the leachate monitoring 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 (Appendix A).
- 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	2
1.3 Groundwater Monitoring Program.....	2
1.4 Leachate Collection System Overview	3
1.5 Leachate and Underliner Monitoring.....	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 System Monitoring	9
5.2 System Maintenance.....	9
5.3 Conclusions and Recommendations	11
6.0 GROUNDWATER AND LEACHATE SYSTEM SAMPLING AND RESULTS	12
6.1 Groundwater and Leachate Sampling	12
6.1.1 Spring Sampling.....	12
6.1.2 Fall Sampling	12
6.2 Quality Assurance/Quality Control Summary	13
6.2.1 Turbidity	13
6.3 Groundwater Results	13
6.3.1 Exceedances of Background Without Immediately Preceding SSIs	13
6.3.2 SSIs.....	14
6.3.3 SSLs.....	14
6.3.4 Phenols and VOCs	14
6.3.5 Parameters Added in October 2023	14
6.4 Comparison of Leachate, Underliner, and Groundwater Results	15
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:	October 2023 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 2023
Figure 3:	Potentiometric Surface Map – October 2023

APPENDICES

Appendix A:	Correspondence and Updated Closure Permit
Appendix B:	Field Notes, Facility Inspection Reports, and Survey
Appendix C:	Background Level Evaluation
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 system 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). 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).

The locations of the monitoring features are shown on Figure 2.

1.2.1 Monitoring Well Top of Casing Elevations

The monitoring wells were resurveyed during Fall 2023. A figure showing the updated top of casing and ground surface elevations from the survey is included in Appendix B. The resurveyed top of casing elevation for MW-1 was 2.6 feet lower than the previous top of casing elevation, and the resurveyed ground surface elevation at MW-1 was approximately 2 feet lower than the previous ground surface elevation. The cause of these changes in these MW-1 elevations is unknown, as there was no known modification to the riser height or regrading of the ground surface according to JDDW; however, the change in top of casing elevation does not appear to affect interpretations about groundwater flow direction. The change in top of casing and ground surface elevations for MW-2 and MW-3 were 1 foot or less based on the Fall 2023 survey. For the purpose of this report, it has been assumed that the total depths of the monitoring wells have not changed from the values used prior to Fall 2023.

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 (Appendix A), 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 July 2018 Hydrologic Monitoring System Plan; however, this document does not include changes to the monitoring program made since July 2018. 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⁾

JDDW Landfill Groundwater Monitoring Program

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 July 2018 Hydrologic Monitoring System Plan includes only visual observations of turbidity. However, the IDNR requested measured values for turbidity for future reports 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 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 Monitoring

Prior to Fall 2023, the semiannual sampling has 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, which has often been referred to previously as “Underliner.” These samples are described in the 2018 HMSP procedures. Note that the Stage 2 underliner drain line had not previously been sampled as there has been no record of flow observed from the line while the leachate valves are open (as during typical operation).

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 (Appendix A). For the Fall 2023 sampling, additional sample points were included for the leachate and underliner liquid, as described in Section 6.1.2.

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. 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 2023 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 October inspection, small animal burrows were noted at various locations across the landfill cap and minor erosion was noted on the south end of the landfill.
- 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.

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. Minor erosion was observed during the October 2023 inspection. It is recommended that JDDW inspect and repair this area if needed.

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.

A summary of the monitoring well maintenance and performance based on semiannual water level, depth to bottom, and purge rate measurements is provided in Table 4a. Groundwater elevation measurements are provided in Table 4b.

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 2023 and October 2023 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 Fall 2023 monitoring event (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 2023 are compared to baseline purge rates from October 2017 in Table 4a. The October 2023 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. Exceedances of the control limits or USEPA Maximum Contaminant Levels (MCLs) are required to be reported to the IDNR within 30 days of receipt of the analytical results, per the closure permit (Section X, Paragraph 4[n]) and 567 IAC 115.26(6).

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 were updated for this 2023 Annual Report using the most recent results through October 2022. 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 2022 were used to evaluate background levels. For metals, all available total metals results as of October 2022 were used, amounting to 11 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 2025 Annual Report, after two years of use. Background levels will be established for the new parameters added in

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.

Fall 2023 once a minimum of 8 to 10 independent background sample results are available, per the USEPA Unified Guidance (USEPA, 2009).

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 eight constituents in the monitoring program as of Fall 2023: fluoride, ammonia, nitrate, barium, lithium, molybdenum, boron, and sulfate. 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 System Monitoring

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 elevations of the saturated waste in Stage 1 and Stage 2.

During the 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 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 closed.

The monthly volume of leachate pumped to the NPDES Outfall #008 is summarized in Table 12. A total of approximately 1,543,049 gallons were discharged between October 2022 and October 2023, which equates to an annual average discharge rate of 3.0 gpm.

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 elevations of saturated waste do not appear to correlate to monthly precipitation.

5.2 System Maintenance

Leachate collection system maintenance performed during 2023 is described below.

On April 11, 2023, Superior Jetting, Inc. attempted jetting and televising the leachate standpipes, leachate drain lines, and underliner drain lines. TRC was on site to observe. The findings from the jetting and televising included the following:

- A blockage was encountered within the Stage 1 standpipe around approximately 78-80 feet below the top of the standpipe, but the blockage did not prevent the flow of water from jetting. Televising revealed that 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.
- The Stage 2 leachate drain line had gravel and sediment encountered upon removal of the PVC fitting, after jetting of the Stage 2 standpipe. This material was removed.
- Superior Jetting noted “debris or damaged pipe” in the Stage 1 leachate drain line, that could not be identified during the video inspection.
- No other debris, damage, or obstructions were noted.

On August 8, 2023, Origin Design measured the depth to the obstruction in the Stage 1 standpipe at 80.52 feet below the top of the standpipe.

The Stage 1 leachate flow rates show alternating increasing and decreasing trends throughout the reporting period (increasing between February and May, then decreasing from May to August, and decreasing from August through October). Although the leachate flow increased slightly between the March and April 2023 measurements, which were collected before and after the April 11, 2023 jetting, it is not certain whether the jetting caused an increase in flow rates.

The Stage 2 leachate flow rates were fairly consistent from November 2022 through March 2023, increased in April 2023 after jetting was performed, and decreased. The increase between March and April 2023 may be caused by the jetting performed on April 11th.

The Stage 1 underliner flow rates were essentially the same whether measured with the leachate valve open or closed.

The Stage 2 underliner drain line did not have any observed flow during the monthly monitoring events while the leachate valve was open, consistent with previous observations. When the leachate valve was closed, flow rates ranged from 0.19 to 0.35 gpm. This 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 landfill performed jetting of the Stage 1 and Stage 2 leachate drain lines and underliner drain lines on October 25, 2023. Note that this occurred after TRC collected leachate samples on October 25.

5.3 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).

Routine video inspection (televising) of the entirety of the system (standpipes, leachate drain lines, and underliner drain lines) is recommended to be completed annually to identify potential blockages and/or structural issues. Jetting is recommending as needed, such as if video inspection indicates debris or blockages or 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 2023 by TRC.

6.1.1 Spring Sampling

Sampling was completed on April 24, 2023. The sampling consisted of the typical sampling scope as in 2022, including sampling of groundwater from MW-1, MW-2, and MW-3; sampling of “Combined Leachate” from the leachate collection tank; and sampling from the Stage 1 underliner drain line.

6.1.2 Fall Sampling

Sampling and monitoring were initially performed on October 24-26, 2023. The Fall 2023 sampling event had an expanded scope including additional parameters for laboratory analysis as required by the revised Closure Permit (IDNR, 2023), and additional sampling from the leachate drain lines and underliner drain lines. In their response letter to the 2022 AWQR dated August 9, 2023, the IDNR requested that leachate be sampled for the same parameters as the underliner and groundwater monitoring points (Appendix A). For the purpose of better understanding the composition of the leachate and underliner liquid from Stage 1 and Stage 2, TRC proposed to collect individual samples from the two leachate drain lines and the two underliner drain lines when the leachate valves were open (allowing the leachate to drain, as during typical operation). Consistent with previous sampling events, there was no flow from the Stage 2 underliner drain line while the leachate valves were open; as such, a sample could not be collected. TRC also proposed to collect individual samples from the two underliner drain lines while the leachate valves were closed. Closing the leachate valves prevents leachate from draining via the leachate drain lines, and allows leachate levels to equilibrate to the saturated waste thickness and back up into the standpipe within each stage.

Note that when TRC returned to the site on October 26 to collect sampling and monitoring data with the leachate valves closed, the Stage 1 PVC fitting and leachate drain line connection was observed to be leaking in the leachate building. As such, TRC was unable to collect the remainder of Stage 1 data as planned. TRC returned to the site on November 13 to find that the connection was still leaking. On November 28, the leak was observed to be fixed and TRC was able to collect the remainder of the data.

The groundwater and leachate sampling forms for both semiannual sampling events are included in Appendix B. Sampling was conducted in accordance with the current monitoring program, with the exception of the additional leachate and underliner sampling performed in Fall 2023 as described above. 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 Fall 2023 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 2023 duplicate samples were collected from MW-3. An equipment blank was collected during both sampling events to assess whether pump decontamination procedures between wells was adequate. Equipment blank results included a detection of chemical oxygen demand in April and a detection of ammonia in October; however, neither resulted in the qualification of sample results, as discussed in the data validation reviews (Appendix F).

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 2023. The April 2023 turbidity measurements for MW-1 and MW-2 were elevated; however, because no visual turbidity was observed in those samples, these measurements are believed to be due to equipment error. Sample turbidity measurements from October 2023 indicated low turbidity values ranging from 1.5 to 12.9 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 no exceedances of background levels without immediately preceding SSIs during the reporting period (April and October 2023 sampling). Table 6 provides a summary of constituents detected or measured in the most recent sampling event (October 2023) that do not have immediately preceding SSIs.

6.3.2 SSIs

Table 7 summarizes the SSIs identified during the most recent sampling event (October 2023). 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 2023 include the following constituents:

- Chloride (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 except the nitrate result from MW-2, which appears anomalously high as compared to historic concentrations (see concentration vs. time graph in Appendix E). The nitrate results do not exceed the health-based GWPS, so calculation of a lower confidence limit is not necessary. Health-based GWPS (MCLs or statewide standards) are not established for the other parameters with SSIs identified during the 2023 sampling. 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 2023 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 collected for VOCs and total phenols during the October 2023 event. Neither VOCs nor phenols were detected in the monitoring wells or in the leachate. 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.

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 October 2023 sampling are included in Table 9f along with the Fall 2023 sample results from the leachate collection system and underliner drains. Groundwater results for the new 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 a concentration below the GWPS and was not detected in MW-1 or MW-2. Lithium and molybdenum were not detected in the groundwater samples.

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

6.4 Comparison of Leachate, Underliner, and Groundwater Results

In their letter documenting review of the 2022 AWQR (Appendix A), the IDNR requested a comparison of groundwater, leachate, and underliner results with a discussion of similarities or differences. The Fall 2023 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 may indicate that the underliner liquid from each stage is primarily composed of leachate from that stage. Additionally, the Stage 1 underliner results from the sample collected with the leachate valve open (leachate draining freely) were generally similar to the results from the underliner sample collected with the leachate valve closed, for most parameters.

In general, higher concentrations of the monitored parameters were detected in the Stage 2 leachate and underliner than in the Stage 1 leachate or underliner, including several of the parameters that had SSIs in downgradient wells within the past year (such as specific conductance, chloride, and magnesium). Each of the six new parameters added in Fall 2023 (sulfate, TDS, boron, calcium, lithium, and molybdenum) were detected in the Stage 2 leachate/underliner, and all but molybdenum were also detected in the Stage 1 leachate or underliner, although at concentrations lower than in Stage 2.

Four of the new parameters (sulfate, TDS, boron, and calcium) detected in the leachate and underliner samples were also detected in downgradient groundwater samples at concentrations higher than upgradient well results. For example, sulfate was detected at concentrations greater than 1,000 mg/L in the Stage 2 leachate/underliner, and at a concentration of 121 mg/L in MW-3, whereas sulfate concentrations were less than 30 mg/L in the Stage 1 leachate/underliner, MW-1, and MW-2. Boron was detected at concentrations above 20 mg/L in the Stage 2 leachate and underliner, compared to concentrations between approximately 5 and 8 mg/L in the Stage 1 leachate/underliner, and 2.48 mg/L in MW-3 (note that boron was not detected in MW-1 or MW-2).

6.5 Conclusions and Recommendations

The results of the semi-annual monitoring and inspection indicate that the landfill monitoring network continues to provide usable data. The constituents that were detected at elevated concentrations in downgradient monitoring wells are consistent with those reported in the leachate and underliner samples, and the leachate and underliner results suggest higher concentrations of most constituents in Stage 2 compared to Stage 1. Groundwater results are below the GWPS for the parameters for which they are established. No changes to monitoring are proposed at this time.

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.
- 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
2023 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	-	Nitrate as nitrogen	-	1	5	0
MW 3	Dolomite with shale	Assessment	-	Chloride, nitrate as nitrogen, total magnesium, specific conductance	-	1	5	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, 1/9/2024

Checked by: M. Holicity 1/11/2024

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
2023 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)	
	10/26/2022	4/24/2023	10/24/2023	April 2024	October 2024	Previously Collected	Next Event
MW-1	List A, total phenols	List A	List A+B, total phenols, VOCs	List A+B	List A+B, total phenols	October 2023	October 2028
MW-2	List A, total phenols	List A	List A+B, total phenols, VOCs	List A+B	List A+B, total phenols	October 2023	October 2028
MW-3	List A, total phenols	List A	List A+B, total phenols, VOCs	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

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, 1/9/2024
Checked by: E. Lawson, 1/18/2024

Table 3: Monitoring Well Maintenance and Performance Reevaluation Schedule
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Compliance with:	Monitoring Calendar Years				
	2022	2023	2024	2025	2026
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 ¹)	Completed	Completed		Scheduled	
567 IAC 115.21(2)"b" changes in the hydrologic setting and flow paths (biennial ¹)	Completed	Completed		Scheduled	
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, 12/15/2023

Checked by: E. Lawson, 1/18/2024

Table 4a: Monitoring Well Maintenance and Performance Summary
2023 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⁾		4/24/2023	10/24/2023		Baseline Purge Rate (mL/min), 10/16/2017	Most Recent Purge Rate (mL/min), 10/24/2023	% Change
MW-1	842.05	673.27	643.27	198.78	Depth to Water (ft btoc)	134.72	134.71	0.23	125	175	17%
					Groundwater Elevation (ft MSL)	707.33	707.34				
					Depth to Bottom (ft btoc)	198.78	199.01				
					Submerged Screen (Y/N)	Y	Y				
MW-2	848.49	681.77	651.77	196.72	Depth to Water (ft btoc)	150.62	150.79	0.26	115	125	4%
					Groundwater Elevation (ft MSL)	697.87	697.7				
					Depth to Bottom (ft btoc)	196.72	196.98				
					Submerged Screen (Y/N)	Y	Y				
MW-3	774.06	677.00	647.00	127.06	Depth to Water (ft btoc)	74.73	74.90	0.08	200	150	-14%
					Groundwater Elevation (ft MSL)	699.33	699.16				
					Depth to Bottom (ft btoc)	127.06	127.14				
					Submerged Screen (Y/N)	Y	Y				

Notes:

ft MSL = feet above mean sea level
Y/N = Yes/No
-- = Not measured

Prepared by: L. Auner, 12/19/2023
Checked by: M. Holicky 1/11/2024

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 depth assumed to be the same as on well construction forms

Table 4b: Monthly Groundwater Elevation Measurements
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
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Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[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	131.71	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
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
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

Table 4b: Monthly Groundwater Elevation Measurements
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Date	MW-1 ^[1]		MW-2 ^[2]		MW-3 ^[3]	
	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)	Depth to Groundwater (ft)	Water Elevation (ft)
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
Average	131.36	713.29	147.73	701.03	72.34	701.69

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, 12/19/2023

Checked By: M. Holicky 1/11/2024

Table 5: Background and GWPS Summary
2023 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	6.7 - 8.0	95% LPL - 95% UPL (k=8)	-	-
	Specific conductance	µmhos	20*	20	472	730	611	753.5	95% UPL (k=8)	-	-
Non-metal Inorganics	Chloride	mg/L	20	15	2.48	6.69	4.62	8.05	95% KM UPL (k=8)	-	-
	Fluoride	mg/L	20	5	0.101	0.251	0.1492	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	3	6.42	13.5	9.9266667	13.5	Max Detected	-	-
	Total dissolved solids (TDS)	mg/L	--	--	--	--	--	--	--	-	-
Metals	Barium, total	mg/L	11	11	0.057	0.104	0.081	0.118	95% UPL (k=8)	2	MCL
	Boron, total	mg/L	--	--	--	--	--	--	--	6	SS
	Calcium, total	mg/L	--	--	--	--	--	--	--	-	-
	Iron, total	mg/L	11	1	0.521	0.521	0.521	0.521	Max Detected	-	-
	Lithium, total	mg/L	--	--	--	--	--	--	--	0.014	SS
	Magnesium, total	mg/L	11	11	39.2	45.4	42.0	47.8	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, 1/9/2024

Checked by: M. Holicky 1/11/2024

Footnotes:

1. The data set used for background calculations consisted of the most recent results through October 2022. Background levels will be updated for the 2025 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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

Well	Constituent	Units	Most Recent Result (October 2023)	Background Level
MW-2	Chloride	mg/L	7.93	8.05
	Chemical oxygen demand	mg/L	7.07	13.5
	Barium, total	mg/L	0.0915	0.118
	Magnesium, total	mg/L	44.2	47.8
	pH	SU	7.3	6.7 - 8.0
	Specific conductance	µmhos	737.0	753.5
	TDS	mg/L	420.0	-
	Calcium, total	mg/L	100.0	-
	Sulfate	mg/L	19.9	-
MW-3	Chemical oxygen demand	mg/L	5.7	13.5
	Barium, total	mg/L	0.0534	0.118
	pH	SU	7.28	6.7 - 8.0
	TDS	mg/L	730	-
	Boron, total	mg/L	2.48	-
	Calcium, total	mg/L	127	-
	Sulfate	mg/L	121	-

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, 1/9/2024

Checked by: M. Holicky 1/11/2024

**Table 7: Summary of Ongoing and Newly Identified SSIs
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C**

Well	Constituent	Units	Most Recent Result (October 2023)	Background Level	Lower Confidence Limit	GWPS	Sample Dates	
							Initial Exceedance	Verification Sample
MW-2	Nitrate, as nitrogen	mg/L	2.88	0.5	-	10	10/26/2022	4/24/2023
MW-3	Chloride	mg/l	75.9	8.05	-	-	4/26/2021	10/7/2021
	Nitrate, as nitrogen	mg/L	0.935	0.5	-	10	4/27/2022	10/26/2022
	Magnesium, total	mg/l	58.6	47.8	-	-	4/26/2021	10/7/2021
	Specific conductance	µmhos	1243.8	753.5	-	-	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, 1/3/2024

Checked by: M. Holicky 1/11/2024

Table 8: Summary of Ongoing and Newly Identified SSLs
2023 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
2023 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
2023 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	

Notes:

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

Updated By: L. Auner, 1/3/2024
Checked By: M. Holicky 1/11/2024

Table 9b: MW-2 Groundwater Monitoring Results
2023 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
2023 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

Notes:

* Erroneous measurement

Qualifiers not included in table.

Updated By: L. Auner, 1/3/2024

Checked By: M. Holicky 1/11/2024

Table 9c: MW-3 Groundwater Monitoring Results
2023 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	0.07930		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
2023 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
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	

Notes:
* Erroneous measurement
Qualifiers not included in table.

Updated By: L. Auner, 1/3/2024
Checked By: M. Holicky 1/11/2024

Table 9d: Stage 1 Underliner Monitoring Results
2023 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
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
2023 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	8.0	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	< 0.50	76.3	22.1		2.96		< 0.0200		39.6			0.472		0.662	3.80

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, 1/5/2024

Checked By: M. Holicky 1/11/2024

Table 9e: Combined Leachate Monitoring Results
2023 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	8.400	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	9.170	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
2023 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

Notes:
Qualifiers not included in table.

Updated By: L. Auner, 1/3/2024
Checked By: M. Holicky 1/11/2024

Table 9f: October 2023 Monitoring Results
 2023 Annual Water Quality Report
 John Deere Dubuque Works Landfill
 Permit No. 31-SDP-01-75C
 Dubuque, Iowa

Sample ID			S1 Leachate Open	S1 Underliner Open	S1 underliner Closed	S2 Leachate Open	S2 Underliner Closed	Combined Leachate	MW-1	MW-2	MW-3	Dup-1	EB-1
Parent Sample of Duplicate												MW-3	
Sample Date			10/25/2023	10/25/2023	11/28/2023	10/25/2023	10/26/2023	10/25/2023	10/24/2023	10/24/2023	10/24/2023	10/24/2023	10/24/2023
Parameter Group	Parameter	Units											
Field Parameters	pH	SU	7.36	8.19	5.64	8.2	6.96	7.92	7.55	7.33	7.28	--	--
	Specific conductance	umhos/cm	1489.3	1135.3	1197	2937.1	2476.9	2234.7	601.2	737	1243.8	--	--
General Chemistry and Anions	Chloride	mg/L	78.8 J-	76.3 J-	82	129 J-	127	108 J-	4.78	7.93	75.9	76	<1.00
	Fluoride	mg/L	0.442 J-	0.472 J-	<1.00	0.884 J-	0.89	0.687 J-	<0.200	<0.200	<0.200	<0.200	<0.200
	Nitrate as N	mg/L	0.363 J-	3.8 J-	3.67	<0.200 UJ	0.619	0.766 J-	<0.200	2.88	0.935	0.912	<0.200
	Sulfate	mg/L	14.8 J-	10.9 J-	14.2	1180 J-	1020	678 J-	28.4	19.9	121	119	<1.00
	Ammonia as N	mg/L	4.15 J-	<0.500 UJ	<0.500	9.28 J-	7.28	5.79 J-	<0.200	<0.200	<0.200	<0.200	5.28
	Chemical Oxygen Demand	mg/L	25.9 J	22.1 J	23.3	69.5 J-	56.6	53.1 J-	<5.00	7.07	5.7	<5.00	<5.00
	Total Dissolved Solids	mg/L	930 J-	700 J-	650	2420 J-	2090	1600 J-	330	420	730	724	<50.0
Metals	Barium, total	mg/L	0.945	0.662	0.42	0.0334	0.0279	0.268	0.0894	0.0915	0.0534	0.0544	<0.0100
	Boron, total	mg/L	8.08	5.28	5.14	24.2	20.4	16.9	<0.200	<0.200	2.48	2.54	<0.200
	Calcium, total	mg/L	126	86.7	68.1	172	139	146	72.4	100	127	129	<1.00
	Iron, total	mg/L	9.65	2.96	<0.500	1.78	1.71	2.14	<0.500	<0.500	<0.500	<0.500	<0.500
	Lithium, total	mg/L	0.193	0.1	0.103	1.16	1.04	0.724	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
	Magnesium, total	mg/L	41.6	39.6	38.6	137	116	95.1	42.3	44.2	58.6	59.8	<1.00
	Molybdenum, total	mg/L	<0.0500	<0.0500	<0.0500	0.0624	0.0575	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500
Organics	Phenols, total	mg/L	<0.0200 UJ	<0.0200 UJ	<0.0200	<0.0200 UJ	<0.0208	<0.0200 UJ	<0.0200	<0.0204	<0.0200	<0.0200	<0.0200
	VOCs	ug/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
 ND = not detected
 VOCs = volatile organic compounds
 J = estimated
 J- = estimated with potential low bias
 UJ = estimated nondetect

Prepared by: L. Auner, 1/11/2024
 Checked by: M. Holicky 1/12/2024

Table 10: Historic SSI and SSL since January 1, 2021
2023 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
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.

Updated by: L. Auner, 1/4/2024
 Checked by: M. Holicky 1/11/2024

Notes:

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

Table 11: Corrective Action Trend Analysis
2023 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
2023 Annual Water Quality Report
John Deere Dubuque Works Landfill
Permit No. 31-SDP-01-75C

First Day of Measurements for Event	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 (in)
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2 ¹	Stage 1	Stage 2			
11/15/2022	791.42	798.17	4.32	17.37	0.61	0.83	-	-	-	-	63,486		3.73
12/8/2022	*	798.27	-	17.47	0.53	0.86	-	-	-	-	80,514		2.26
1/11/2023	*	795.17	-	14.37	0.46	0.86	-	-	-	-	125,246		1.87
2/15/2023	*	795.02	-	14.22	0.42	0.89	-	-	-	-	123,726		3.46
3/29/2023	*	798.57	-	17.77	0.64	0.88	-	-	-	-	169,635		1.37
4/18/2023	*	797.12	-	16.32	0.88	1.35	-	-	-	-	97,871	April 11 jetting for Stage 1 and Stage 2 (see notes).	1.66
5/18/2023	793.20	797.17	6.10	16.37	1.11	1.18	-	-	-	-	164,685		2.41
6/21/2023	792.74	797.16	5.64	16.36	1.02	1.08	0.21	0	0.20	0.29	179,214		1.81
7/18/2023	792.44	796.17	5.34	15.37	0.91	1.02	0.15	0	0.16	0.34	145,006		3.7
8/18/2023	792.53	796.64	5.43	15.84	0.75	1.01	0.18	0	0.19	0.25	128,399		3.21
9/19/2023	792.56	797.92	5.46	17.12	0.65	1.02	0.14	0	0.13	0.2	138,443		4.22
10/20/2023	791.66	798.08	4.56	17.28	0.57	1.01	0.09	0	0.09	0.19	126,824	October 25 jetting for Stage 1 and Stage 2 (see notes).	4.11
Annual Total											1,543,049		33.81

Notes:

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

Jetting on April 11, 2023 was performed for standpipes, leachate drain lines, and underliner drain lines for Stage 1 and Stage 2.

Jetting on October 25, 2023 was performed for leachate drain lines and underliner drain lines for Stage 1 and Stage 2.

LCS = leachate collection system

- = not measured or not applicable

* Elevations were not collected following standard procedures (leachate recovery test not performed) and are therefore not reported

Through May 2023, all measurements were made within one day. Starting June 2023, measurements were made over the course of two days, with the elevation of saturated waste, height of saturated waste above liner, and underliner drain line flow rates with LCS valves closed data collected on the second day.

Footnotes:

¹ No flow was observed during monthly monitoring, consistent with historical observations.

Prepared by: L. Auner, 1/8/2024

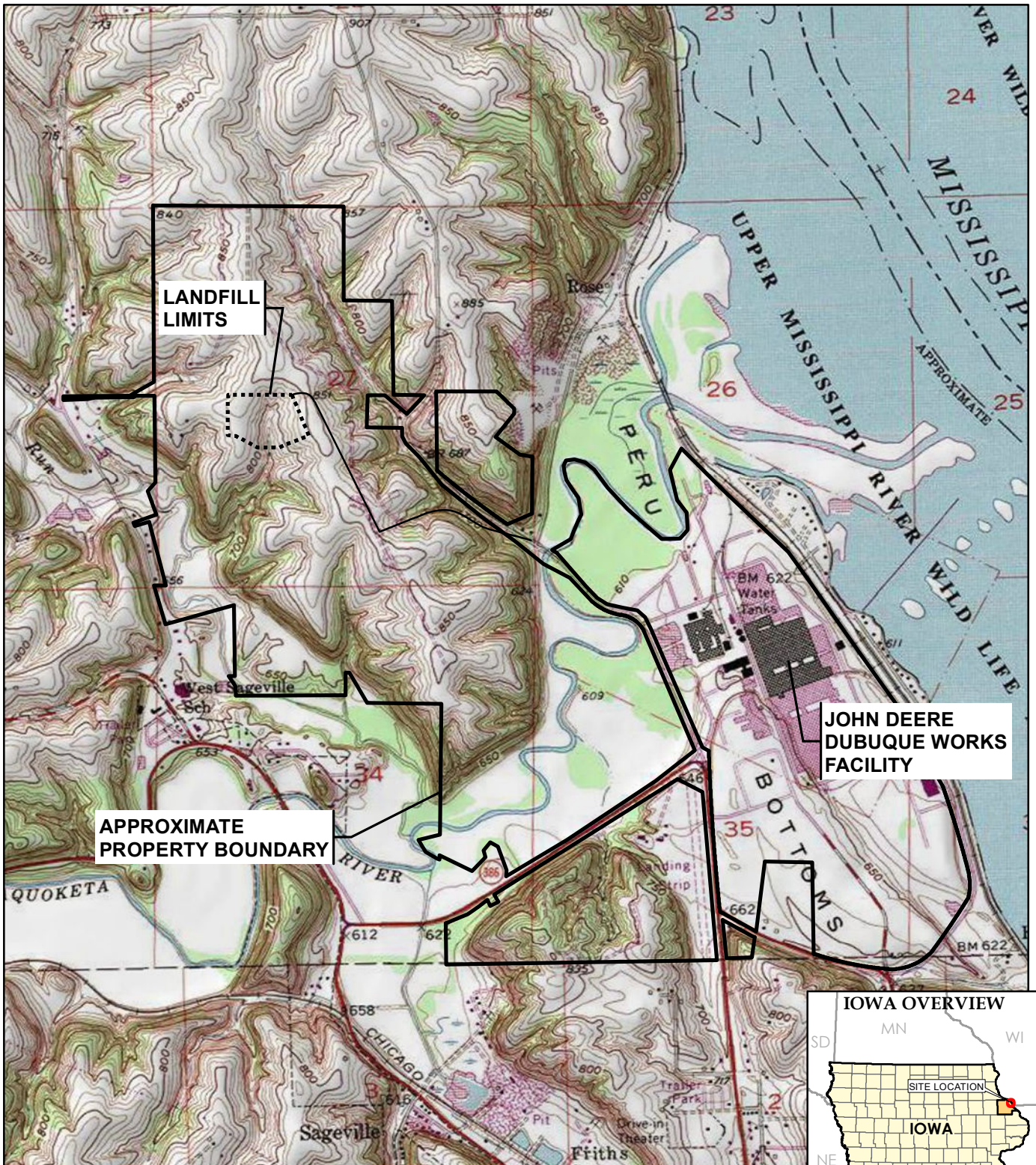
Checked by: M. Holicky 1/11/2024

Table 13: Gas Monitoring Summary
2023 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.



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.



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

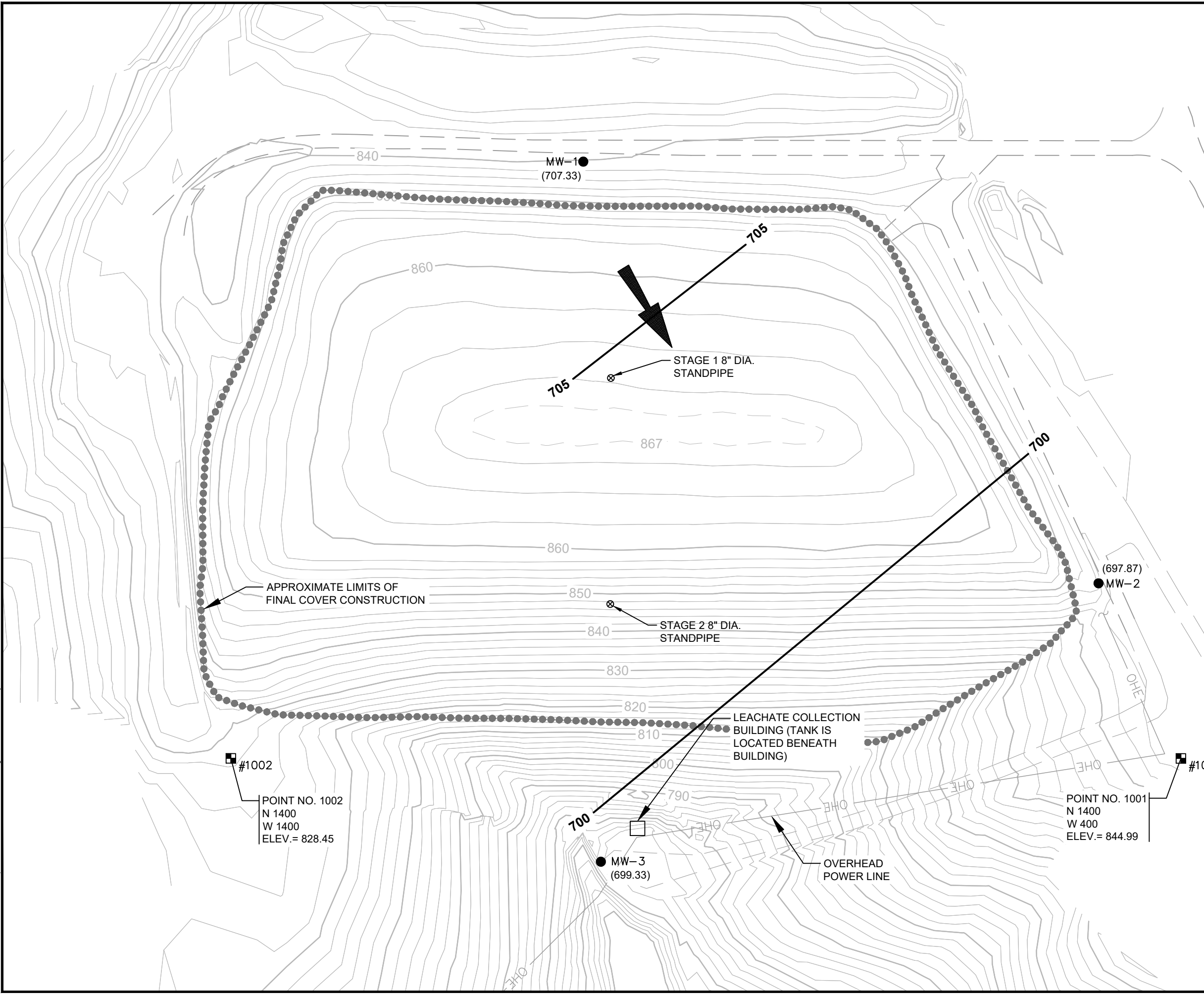
**JOHN DEERE DUBUQUE WORKS
 DUBUQUE, IOWA**

SITE LOCATION MAP

DRAWN BY:	A. FOJTIK
APPROVED BY:	E. LAWSON
PROJECT NO:	577511
FILE NO.	577511-001slm.mxd
DATE:	JANUARY 2024

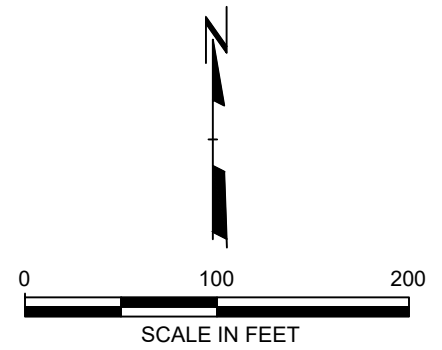
FIGURE 1

11x17 - USER: E.Alexander - ATTACHED: XREFS: basecamp - ATTACHED IMAGES: DRAWING NAME: M:\John Deere\Dubuque\577511.0000\577511.0000.02.dwg -- PLOT DATE: January 26, 2024 - 10:37AM -- LAYOUT: PSM
 Version: 2017-10-21



LEGEND	
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EXISTING 10' CONTOUR
	EXISTING 2' CONTOUR
	LIMITS OF FINAL COVER CONSTRUCTION
	EXISTING SURVEY CONTROL MONUMENT
	EXISTING MONITORING WELL LOCATION AND WATER ELEVATION
	LEACHATE STANDPIPE AND ELEVATION OF SATURATED WASTE
	GROUNDWATER FLOW DIRECTION
	GROUNDWATER CONTOUR (5' INTERVAL)

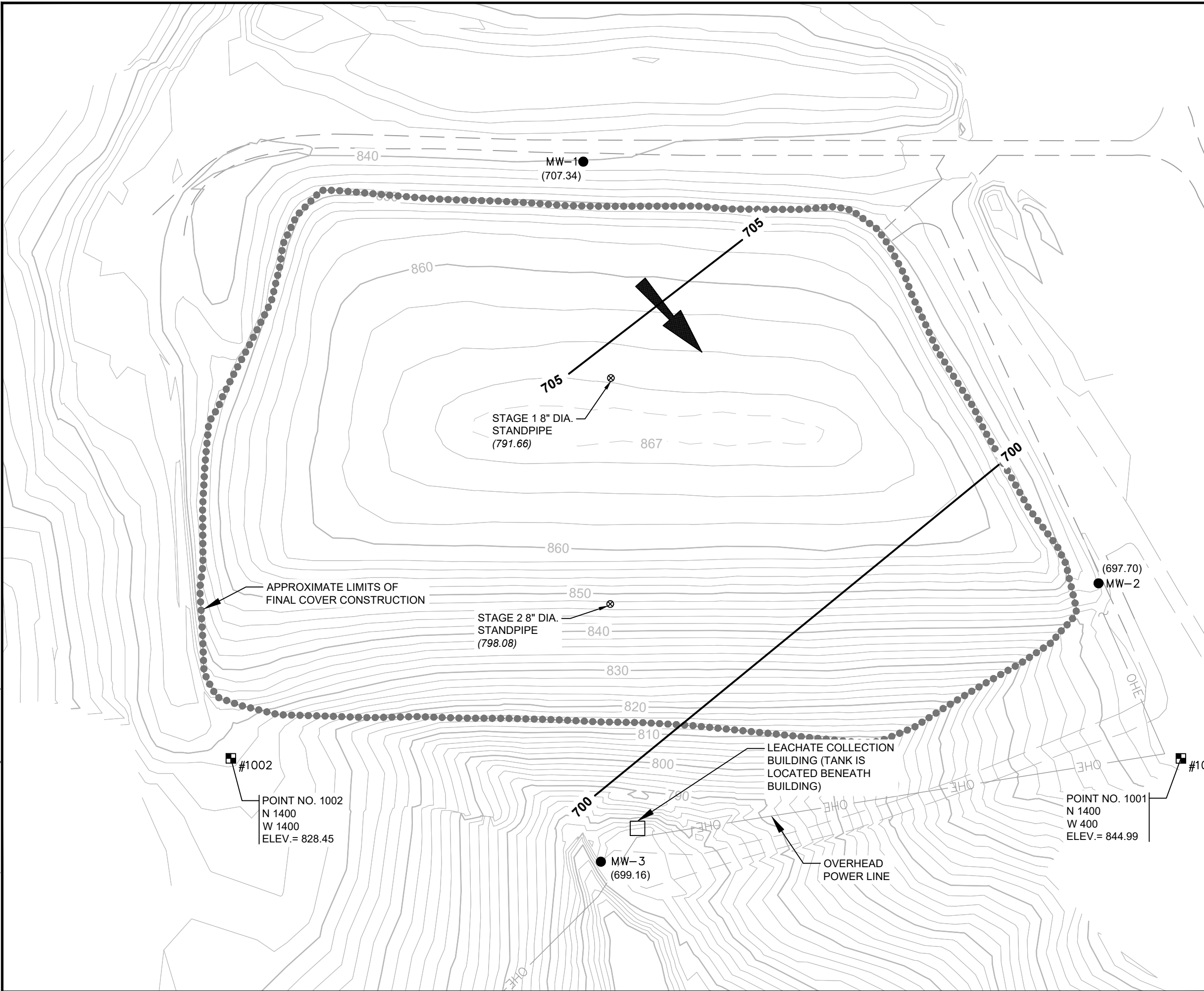
- NOTES**
1. BASE MAP DEVELOPED FROM PLAN SHEET PROVIDED BY JOHN DEERE DUBUQUE WORKS. INFORMATION TO DEFINE THE PROJECT GRID SYSTEM AND DATE OF SURVEY WAS NOT AVAILABLE.
 2. WELL LOCATIONS ARE APPROXIMATE.
 3. GROUNDWATER ELEVATIONS MEASURED BY TRC ON APRIL 24, 2023.
 4. THE APRIL 2023 ELEVATIONS OF SATURATED WASTE WERE NOT MEASURED FOLLOWING THE STANDARD PROCEDURE AND ARE THEREFORE NOT INCLUDED ON THIS FIGURE.



PROJECT:		JOHN DEERE DUBUQUE WORKS LANDFILL DUBUQUE, IOWA	
TITLE:		POTENTIOMETRIC SURFACE MAP (APRIL 2023)	
DRAWN BY:	E. ALEXANDER	PROJ NO.:	577511.0000
CHECKED BY:	L. AUNER	FIGURE 2	
APPROVED BY:	E. LAWSON		
DATE:	JANUARY 2024		
		999 Fourier Drive Suite 101 Madison, WI 53717 Phone: 608.826.3600	
FILE NO.:	577511.0000.02.dwg		

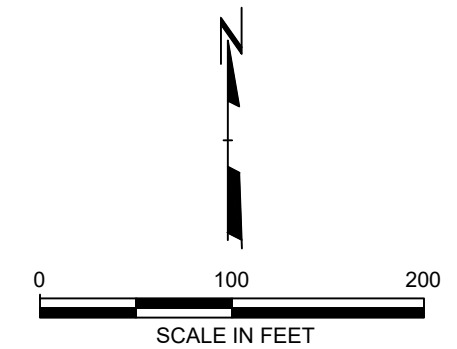
11x17 -- USER: E.Alexander -- ATTACHED XREFS: basecamp -- ATTACHED IMAGES: -- PLOT DATE: January 26, 2024 - 10:37AM -- LAYOUT: PSM OCT23
 DRAWING NAME: M:\John DeereDubuque\577511.0000.03.dwg

Version: 2017-10-21



LEGEND	
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	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**
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 OCTOBER 24, 2023.
 4. ELEVATIONS OF SATURATED WASTE MEASURED BY ORIGIN DESIGN ON OCTOBER 21, 2023.



PROJECT:		JOHN DEERE DUBUQUE WORKS LANDFILL DUBUQUE, IOWA	
TITLE:		POTENTIOMETRIC SURFACE MAP (OCTOBER 2023)	
DRAWN BY:	E. ALEXANDER	PROJ NO.:	577511.0000
CHECKED BY:	L. AUNER	FIGURE 3	
APPROVED BY:	E. LAWSON		
DATE:	JANUARY 2024		
		999 Fourier Drive Suite 101 Madison, WI 53717 Phone: 608.826.3600	
FILE NO.:	577511.0000.03.dwg		

Appendix A: Correspondence and Updated Closure Permit



August 9, 2023

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
2022 Annual Water Quality Report ([Document No. 105680](#))**

Dear Mr. Mai:

The Iowa Department of Natural Resources (DNR) has reviewed the 2022 Annual Water Quality Report (AWQR), dated January 2023, as submitted by TRC Environmental Corporation (TRC). Our comments on the AWQR and the subsequent virtual meeting are below.

1. Report Priority Items

No priority items were requested in the report.

2. Groundwater Monitoring

- a. In the 2016 AWQR Comment Letter ([Document No. 89171](#)), the DNR requested testing for 40 CFR Part 258 Appendix I parameters. However, this did not occur and was not addressed in the subsequent approval of the 2018 Hydrogeological Monitoring System Plan (HMSP). Further research by TRC and the DNR was unable to determine a basis for not including the parameters in the HMSP. Therefore, the DNR is expanding sampling to include boron, calcium, lithium, molybdenum, sulfate, and total dissolved solids. The DNR will issue a revised permit to include the expanded sampling requirements. Meanwhile, please proceed with these sampling requirements for the upcoming sampling event and the 2023 AWQR.
- b. Upon a review of Table 9d - Underliner Monitoring Results, it appears there may be some trends occurring with pH, specific conductance, chloride, and possibly others. Furthermore, the last time the leachate and underliner data appears to have been compared against the monitoring well data may have been in 2009 ([Document No. 66244](#)). Therefore, the DNR is requesting leachate be sampled for the same parameters as the underliner and groundwater monitoring points. Then compare the groundwater, leachate, and underliner results and provide a discussion of similarities or differences in the 2023 AWQR.
- c. Thank you for submitting a new electronic version of the report to replace the prior version that contained a corrupted Appendix C.

3. Leachate Control System

- a. The DNR appreciates TRC explaining the background on leachate head monitoring and operation of the system. The following is the DNR's documentation of our understanding of the system. The landfill was originally designed and permitted in the 1970s. And the measurement devices are actually an extension of the collection system, and they do not and cannot measure head on liner. Therefore, the DNR does not consider these compliance points for the purpose of maintaining less than 12 inches of head on liner. Instead, the system is intended to determine if leachate is building up in the waste mass, which is

determined by closing the downstream valves in the collection system, which causes leachate to back up for 24 hours, and a quasi-steady-state measurement of the liquid level is made. When compared to prior readings it can be used to determine if leachate is or is not building up in the waste mass.

- b. Please continue to monitor, operate, and report in accordance with the permit and applicable rules.

If you have any questions, you may contact me at [\(515\) 537-4051](tel:5155374051) or brian.rath@dnr.iowa.gov.

Sincerely,

Brian L. Rath, P.E.
Environmental Engineer Senior
Land Quality Bureau

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

DNR Field Office #1 – Manchester



August 17, 2023

MARK DICKSON, GENERAL MANAGER
JOHN DEERE DUBUQUE WORKS
18600 SOUTH JOHN DEERE ROAD
DUBUQUE IA 52001

**RE: John Deere Dubuque Works Industrial Waste Landfill
Permit No. 31-SDP-01-75C
Revised Permit – Amendment #5**

Dear Mr. Dickson:

Enclosed is the revised permit for the John Deere Dubuque Works Industrial Waste Landfill. The permit and the approved plans must be kept at the sanitary disposal project in accordance with Iowa Administrative Code 567 Paragraph 115.26(2)"c" ([567 IAC 115.26\(2\)"c"](#)). Please review the permit in its entirety with your operators, as they must become familiar with it.

The revised permit incorporates the additional sampling parameters required by the Iowa Department of Natural Resources in correspondence (Doc No. [107430](#)) dated August 9, 2023.

Note that the permit may contain conditions that require a response or action by you, which if not properly complied with, may prompt enforcement action by the IDNR.

If you have any questions, you may contact me at [\(515\) 537-4051](tel:515-537-4051) or brian.rath@dnr.iowa.gov.

Sincerely,

Brian L. Rath, P.E.
Environmental Engineer Senior
Land Quality Bureau

copy: DNR Field Office #1 – Manchester

Daniel Mai
John Deere Dubuque Works
18600 South John Deere Road
Dubuque, IA 52001

TRC Environmental Corporation
708 Heartland Trail, Suite 3000
Madison, WI 53717

**IOWA DEPARTMENT OF NATURAL RESOURCES
SANITARY DISPOSAL PROJECT CLOSURE PERMIT**

- I. Permit Number:** 31-SDP-01-75C
- II. Permitted Agency:** John Deere Dubuque Works
- III. Project Location:** Lot 1 of Lot 1; Lot 2 of Lot 1; and that portion of Lot 2 encompassing landfill development (including ingress and egress); all in the SW ¼ of Section 27, T90N, R2E, Dubuque County, Iowa
- IV. Responsible Official**
- Name: Mark Dickson, General Manager
John Deere Dubuque Works
- Address: 18600 South John Deere Road
Dubuque, IA 52001
- Phone: 563-589-6317
- Email: DicksonMarkA@JohnDeere.com
- V. Licensed Design Engineer**
- Name: Douglas R. Genthe, P.E.
- Address: TRC
708 Heartland Trail, Suite 3000
Madison, WI 53717
- Phone: 608-358-1756
- Email: dgenthe@trcsolutions.com
- License Number: 13469
- VI. Date Permit Issued:** May 24, 2012
- Revised Issuance Date: December 20, 2021 Amendment #4
- Revised Issuance Date: August 17, 2023 Amendment #5
- VII. Permit Expiration Date:** May 24, 2042
- VIII. Issued by:** _____
Environmental Protection Division
for the Director

IX. General Provisions

The above named permitted agency is hereby authorized to close the sanitary disposal project at the described location in conformance with Chapter 455B of the Code, the rules pursuant thereto existing at the time of issuance, and any subsequent new rules which may be duly adopted, and any provisions contained in Section X of this permit.

The facility shall be maintained according to the engineering plans and specifications approved by the Department of Natural Resources (Department) and these shall become a part of this permit. Any modifications or deviations from the engineering plans and specifications must have prior approval by the Department and an amendment to this permit issued.

The issuance of this permit in no way relieves the applicant of the responsibility for complying with all other local, state, and federal statutes, ordinances, and rules or other requirements applicable to the closure and maintenance of this closed sanitary landfill.

No legal or financial responsibility arising from the closure and post closure of the approved project shall attach to the State of Iowa or the Department due to the issuance of this permit.

If title to this project is transferred, the new owner must apply to the Department for a transfer of this permit within thirty days of the date of title transfer. This transfer is void sixty days after the date of title conveyance unless the Department has transferred the permit.

This facility shall be surveyed as necessary and inspected on an annual basis, as described in the Special Provisions of this permit. Annual reports shall be prepared containing a brief summary describing the site's conformance and nonconformance with the permit and the approved plans and specifications during the inspections. These reports shall be submitted by November 30 each year to both the Field and Main Offices of the Department. The Department shall be notified if any inspection reveals any nonconformance with the permit and approved plans and specifications.

Failure to comply with Chapter 455B of the Code, or any rule of order promulgated pursuant thereto, or any or all provisions of this permit may result in a civil penalty of up to \$5000 for each day of violation, pursuant to Section 455B.307 of the Code.

X. Special Provisions

1. The thirty-year postclosure period for this facility begins on the date of issuance of this renewed Closure Permit.
2. This site shall be closed and maintained in accordance with this permit, and the approved Landfill Closure Permit Application, dated October 28, 2011; including the Closure/Postclosure Plan, the Specifications, and the Construction Quality Assurance Plan, all dated November 2011 and submitted by IIW, P.C; and the following:
 - a. This site shall be inspected annually with all inspection data summarized in the annual report required in the General Provisions. The report shall include the status of conformance or nonconformance with the criteria defined in Subrules 115.26(13) and 115.26(14) IAC.
 - b. All diversion and drainage systems must be maintained to the approved specifications to prevent run-on and runoff erosion, or other damage to the final cover. These diversion and drainage structures must be designed to meet a 25-year, 24 hour rainfall event.
 - c. The vegetative cover shall be reseeded as necessary to maintain good vegetative growth. Any invading vegetation whose root system could damage the compacted soil layer shall be removed or destroyed immediately.
 - d. The integrity and effectiveness of the final cover must be maintained by making repairs as necessary to correct the effects of settling, subsidence, erosion, or other events. If damage to the final cover compacted soil layer occurs, repairs shall be made to correct the damage and return it to original specifications.
 - e. The review comments, dated January 16, 2002 from the Dubuque Soil & Water Conservation District relative to compliance with wind and soil loss limit regulations, in accordance with 567 IAC 115.26(1)“j” for all development areas, is incorporated as part of the permit documents.
3. The permit holder is prohibited from any additional waste disposal or other related landfill activities unless they are specifically approved through an amendment to this permit.
4. Hydrologic monitoring at the site shall be conducted in accordance with the hereby approved *Hydrologic Monitoring System Plan* (HMSP), dated July 30, 2018, as submitted by TRC Environmental Corporation, and the following:
 - a. The HMSP shall include upgradient groundwater monitoring point MW-1; and downgradient groundwater monitoring points MW-2 and MW-3.

- b. Monitoring points not used for water quality analysis may be retained as water level measuring points.
- c. In lieu of surface water monitoring, the permit holder shall divert all surface water that comes in contact with the waste to the leachate collection system. This shall be accomplished through the use of perimeter berms.
- d. Department construction documentation form 542-1277 and boring logs for all monitoring wells and piezometers shall be submitted within 30 days of installation. Department construction documentation form 542-1323 shall be submitted within 30 days of establishing surface water monitoring points.
- e. Quarterly sampling of the approved monitoring points was completed in January of 1992.
- f. First year quarterly samples shall be collected from any designated new monitoring well, dewatering system, and any monitoring point which lacks four quarterly samplings and analyzed for the parameters listed in 567 IAC 115.26(4) "d", "e" and "f". Baseline testing for the parameters listed in 567 IAC 115.26(4) "f" shall be conducted during the fall. All statistical evaluations shall include the updated baseline and subsequent sampling documentation.
- g. Continued semiannual sampling shall take place in April and October of each year and be analyzed for the parameters listed in 567 IAC 115.26(4) "e". Routine annual testing for the parameters listed in 567 IAC 115.26(4) "f" shall be conducted during October of each year.
- h. Supplemental sampling and analysis of monitoring points MW-1, MW-2, and MW-3 for fluorides, nitrates, barium, magnesium, boron, calcium, lithium, molybdenum, sulfate, and total dissolved solids shall take place in both the spring and fall sampling events in addition to the routine test parameters. The additional testing shall be conducted until otherwise approved by the Department.
- i. The elevation of water in each monitoring well shall be measured and recorded on a monthly basis.
- j. The Method Detection Limit (MDL) for the test parameters shall not exceed action levels as defined in 567 IAC Chapter 133. If the action levels cannot be feasibly achieved using procedures described in 567 IAC 115.26(5), then the MDL shall not exceed the lowest feasible level.
- k. In accordance with the variance, dated May 29, 2018, the permit holder is authorized to conduct sampling and analysis of total recoverable metals in lieu of sampling for dissolved metals as required by 567 IAC 115.26(4) "d".

- l. In accordance with the variance, dated May 29, 2018, the permit holder is authorized to remove total organic halogen (TOX) from the required sampling parameter list, as required by 567 IAC 115.26(4)"f".
- m. In accordance with the variance granted December 20, 2021 the modification to the facility's monitoring well maintenance and performance reevaluation plan is approved, as follows:

The permit holder is authorized to perform semiannual evaluations of well recharge rates to determine if well deterioration is occurring, in lieu of in situ permeability testing described in 567 IAC 115.21(2)d.

- n. If laboratory results exceed the upgradient mean plus two standard deviations or the Maximum Contaminant Level (MCL) for any parameter, the Department shall be notified within 30 days of receipt of the analytical results.
 - n. Results of all analysis and the associated Department sampling forms 542-1322 and 542-1324 shall be submitted to the Department's Main and local Field offices within 45 days of the sample collection.
 - o. In accordance with the variance granted on December 20, 2021, the permit holder is authorized to submit the Annual Water Quality Report on January 31 rather than on November 30 each year.
 - p. An Annual Water Quality Report (AWQR) summarizing the effects the facility is having on groundwater and surface water quality shall be submitted to the Department's Main and local Field offices by January 31 each year. This report shall be prepared in accordance with 567 IAC 115.26(8) "d" by a Professional Engineer licensed in the State of Iowa. The AWQR shall include the results of the monthly groundwater measurements and the routine groundwater analyses conducted at the monitoring points, and by using the DNR AWQR Format.
5. The permit holder shall operate the Leachate Control System in accordance with the approved plans, dated January 28, 2008, as submitted by IIW Engineers and Surveyors, P.C., and the following:
- a. The permit holder shall collect leachate from the leachate control system and properly dispose of the leachate either by treatment in an on-site facility, discharge with an NPDES permit; or by discharge to the John Deere Dubuque Works Wastewater Treatment Plant. If the discharge is to a POTW with a pretreatment program approved by the Department, the discharge must comply with the terms and conditions of a local permit issued for the discharge by the POTW. If the discharge is to a POTW without an approved pretreatment program a completed treatment agreement form shall be submitted to the Department's Wastewater Section. Copies of the local permit or treatment agreement shall be provided to the

Department's Solid Waste Planning, Permitting & Engineering Services Section and the local Field office. The treatment agreement must be on DNR Form 31 (542-3221) and must comply with the requirements of subrule 64.3(5).

- b. The permit holder shall monthly measure leachate head levels and elevations at all piezometers and record the volume of leachate collected and transported to the treatment works. Records of leachate contaminants testing required by the treatment works and any NPDES permit for on-site treated leachate discharges shall be maintained.
 - c. The leachate control system shall be operated and maintained in accordance with the approved permit documents. After implementation of the leachate control system, the permit holder shall routinely collect the necessary information and evaluate the effectiveness of the system in controlling the leachate. All documentation shall be summarized in a Leachate Control System Performance Evaluation (LCSPE) Report. Effective control shall be considered as maintaining compliance with maximum leachate head as defined in 567 IAC 115.26(11)"a"(1), achieving the lowest possible leachate head as required in 567 IAC 115.26(12)"b"(2), and maintaining surface and groundwater quality standards at compliance monitoring points.
 - d. The permit holder shall annually submit the LCSPE Report, including record data, as a supplement to the facility's Annual Water Quality Report, as defined in 567 IAC 115.26(8)"d". The performance evaluation shall include proposed additional leachate control measures and an implementation schedule in the event that the constructed system is not performing effectively
6. In accordance with the variance approval, dated September 14, 1989, the permit holder is exempted from determining the vertical groundwater flow component in accordance with 567 IAC 115.16(1); and is authorized to install well screens that are longer than the expected water table fluctuation, as required by 567 IAC 115.23(3) "c".
 7. In accordance with the variance approval of April 1, 1996 the permit holder is not required to monitor or report site methane gas concentrations, as required by 567 IAC 115.26(15). If the waste stream is modified to include organic materials which may produce methane during degradation, this variance approval is no longer valid unless an extension is specifically requested and approved by the Department.
 8. In accordance with the January 20, 2010 request and the February 2, 2010 approval, the permit holder is exempted from the following:
 - a. The permit holder is not required to perform pumping tests on the downgradient bedrock wells since the hydrogeologic properties of the site bedrock would not yield any additional useful information or accurate data.

- b. The permit holder is not required to install the minimum of three downgradient groundwater monitoring wells, as required by 567 IAC 115.22(2). There are currently two bedrock wells installed that provide adequate information to detect and monitor groundwater flow and groundwater quality. The installation of another downgradient well between MW-2 and MW-3 would not yield any additional useful information.
 - c. The permit holder is not required to install a downgradient monitoring well within 50-feet of the waste boundary. Placing a well within the required 50-feet of the waste boundary would require the well to be constructed within the 3:1 foreslope of the landfill. This construction would be impractical.
9. The Emergency Response and Remedial Action Plan (ERRAP) contained in Appendix 6 of the approved plans, dated January 28, 2008, as submitted by IIW Engineers and Surveyors, P.C. in compliance with 567 IAC 115.30(455B) is incorporated as part of the permit documents. The permit holder shall follow the approved ERRAP procedures during all emergencies pursuant to subrule 115.30. An updated ERRAP shall be submitted at the time of any significant changes in facility closure operations that require modification of the currently approved ERRAP.
 10. The Landfill Closure Clay Cap Hydraulic Conductivity Results, dated September 20, 2012 and submitted by IIW P.C., and approved on September 24, 2012 is incorporated as part of the permit documents.
 11. The Closure Compliance Report, dated November 13, 2012 and submitted by IIW P.C., and approved on January 14, 2013, is incorporated as part of the permit documents.

The report includes a copy of the notation filed with the county recorder showing, for the purposes of title abstract, the existence of a landfill on the property, and is incorporated as part of the permit documents.

XI. Permit Renewal and Revision History

Date	Comment
8/17/2023	Permit Revision (Amendment #5), add additional parameters to the HMSP (Special Provision X.4.h).


Appendix B: Field Notes, Facility Inspection Reports, and Survey

- April 24, 2023 Sampling Forms and Facility Inspection Report
- October 24-26 and November 13, 2023 Sampling Forms and Facility Inspection Report
- November 28, 2023 Sampling Form
- Fall 2023 Survey

**Sampling Forms and Facility Inspection Report
April 24, 2023**



PROJECT NAME:	John Deere Dubuque
PROJECT NUMBER:	515504
PROJECT MANAGER:	Erica Lawson
SITE LOCATION:	Dubuque, IA
DATES OF FIELDWORK:	4/24/2023
	Semi-Annual Sampling
PURPOSE OF FIELDWORK:	Leachate data collection
	Chris Frauen
WORK PERFORMED BY:	



SIGNED

11/17/2023

DATE

LA

CHECKED BY

1/3/24

DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: John Deere Dubuque	MANUF: InSitu	MODEL: AquaTROLL 600	SAMPLER: Chris Frauen
PROJECT NO.: 515504	OWNER: InSitu	SER #: 1021654	DATE: 4/24/23 - 4/24/23

PH METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
pH 4	pH 7	TIME	pH 4	pH 7	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE	<input checked="" type="checkbox"/> WITHIN RANGE	11:45	NR	NR	16:43	4/24/23
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					

CONDUCTIVITY METER					
CALIBRATION		POST SAMPLING CALIBRATION CHECK			DATE
STANDARD	TIME	CHECK	TEMP	TIME	
NR $\mu\text{S/cm}$	<input checked="" type="checkbox"/> WITHIN RANGE	11:44	NR $\mu\text{S/cm}$	NR $^{\circ}\text{C}$	16:43
$\mu\text{S/cm}$	<input type="checkbox"/> WITHIN RANGE		$\mu\text{S/cm}$	$^{\circ}\text{C}$	
$\mu\text{S/cm}$	<input type="checkbox"/> WITHIN RANGE		$\mu\text{S/cm}$	$^{\circ}\text{C}$	
$\mu\text{S/cm}$	<input type="checkbox"/> WITHIN RANGE		$\mu\text{S/cm}$	$^{\circ}\text{C}$	
$\mu\text{S/cm}$	<input type="checkbox"/> WITHIN RANGE		$\mu\text{S/cm}$	$^{\circ}\text{C}$	

DO METER				
CALIBRATION	TIME	CALIBRATION	TIME	DATE
<input checked="" type="checkbox"/> WITHIN RANGE	11:40	<input checked="" type="checkbox"/> WITHIN RANGE	16:40	4/24/23
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		

ORP METER					
CALIBRATION	TIME	POST SAMPLING CALIBRATION CHECK			DATE
		CHECK	TEMP	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE	11:42	NR mV	NR $^{\circ}\text{C}$	16:42	4/24/23
<input type="checkbox"/> WITHIN RANGE		mV	$^{\circ}\text{C}$		
<input type="checkbox"/> WITHIN RANGE		mV	$^{\circ}\text{C}$		
<input type="checkbox"/> WITHIN RANGE		mV	$^{\circ}\text{C}$		
<input type="checkbox"/> WITHIN RANGE		mV	$^{\circ}\text{C}$		

TURBIDITY CALIBRATION CHECK							
METER TYPE:		AquaTROLL 600					
PRE-SAMPLING CALIBRATION CHECK				POST SAMPLING CALIBRATION CHECK			
GEL VALUE (NTU)	GEL VALUE (NTU)	GEL VALUE (NTU)	TIME	GEL VALUE (NTU)	GEL VALUE (NTU)	GEL VALUE (NTU)	TIME
0-10	0-100	0-1000		0-10	0-100	0-1000	

Autocal Solution Lot#: Exp Date:

pH 7 Soutlion Lot#: Exp Date:

ORP Solution Lot#: Exp Date:

Parameters Calibrated: pH Conductivity
 Turbidity ORP Dissolved Oxygen

NOTES

AquaTROLL 600 meter was calibrated prior to sampling for pH, conductivity, DO, and ORP. Calibration check was performed after completion of sampling and results were within acceptable range. Records for calibration and calibration check were not saved

DATE	PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS
4/24	Turbidity measurments from Aqua Troll 600 appear erroneously high	Visually observed no turbidity in samples, and relied on other water quality parameters for determining stabilization.

SIGNED: Chris Frauen DATE: 11/17/2023 Checked: LA DATE: 1/3/24

JDDW-LANDFILL LEACHATE FLOW AND MONITORING WELL MEASUREMENTS

DATE: 4/24/2023

TIME: 7:45

NAME: Chris Frauen

Stage 1 Flow	
Vol Filled (L):	1.35
Test #	Time (s)
1	22.13
2	23.87
3	22.45
Average Time (s):	22.82
Average Flow (gpm):	0.94

Stage 2 Flow	
Vol Filled (L):	1.35
Test #	Time (s)
1	17.71
2	17.23
3	16.7
Average Time (s):	17.21
Average Flow (gpm):	1.24

Top of Standpipe Elevation (ft): 871.96

Synthetic Liner Elevation (ft): 787.1

Begin Test (time) 8:15

End Test (time) 8:20

Top of Standpipe Elevation (ft): 851.37

Synthetic Liner Elevation (ft): 780.8

Begin Test (time): 8:20

End Test (time): 8:25

Time	Landfill Well	M.P Elevation (MSL)	Water Elevation (MSL)	Water Level (Ft BTOC)
7:55	North (MW-1)	844.65	709.93	134.72
8:04	East (MW-2)	848.75	698.13	150.62
8:10	South (MW-3)	774.03	699.30	74.73

Gallons Pumped to X-18 Discharge: 7179665

Measurement Time: 8:15

Site Name: John Deere Dubuque Works
 Well/Piezometer: MW-1
 Date: 4/24/2023

Permit No.: 31-SDP-01-75
 Weather: Sunny
 Personnel: Chris Frauen

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 842.39
 Top of screen (ft. TOC): 168.78 Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 844.65
 Locked (Y/N)

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>134.72</u>	<u>134.84</u>	<u>134.84</u>
Water elevation (ft. MSL)	<u>709.93</u>	<u>709.81</u>	<u>709.81</u>

3 Well Volumes (gal): 196 Screen submerged? (Y/N): Y

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>198.78</u>	<u>NM</u>	<u>NA</u>

Well conditions commentary: ok

Sampling Details

Sampling Method: Pump (conventional or **low flow**) ~~No purge (specify sample interval)~~
 (circle one) Bailer ~~Other (specify)~~

Equipment type: Submersible pump ~~Peristaltic pump~~ Bladder pump ~~Inertial lift pump~~
 (check one) Bailer ~~No purge (specify):~~ Other (specify):

Equipment name/description: Sample Pro Bladder Bump Dedicated? (Y/N) Disposible? (Y/N)
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
MW-1	EPA 9056A	250 mL plastin unpres	Yes or No
MW-1	EPA 350.1	250 mL plastic H2SO4	Yes or No
MW-1	EPA 6010C	250 mL plastic HNO3	Yes or No

Equipment depth 175 ft TOC Flow Rate: 0.2 L/min Volume removed: 15.0 L Volume sampled: 750mL
 Well dry? (Y/N) **N** Odor? (Y/N) **N** Color? (Y/N) **N**

Comments: _____

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-2 Weather: Sunny
 Date: 4/24/2023 Personnel: Chris Frauen

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 846.68
 Top of screen (ft. TOC): 166.72 Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 848.75
 Locked (Y/N)

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>150.62</u>	<u>151.35</u>	<u>151.35</u>
Water elevation (ft. MSL)	<u>698.13</u>	<u>697.4</u>	<u>697.4</u>

3 Well Volumes (gal): 141 Screen submerged? (Y/N): Y

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>196.72</u>	<u>NM</u>	<u>NA</u>

Well conditions commentary: ok

Sampling Details

Sampling Method: Pump (conventional or low flow) No purge (specify sample interval)
 (circle one) Bailer Other (specify)

Equipment type: Submersible pump Peristaltic pump Bladder pump Inertial lift pump
 (check one) Bailer No purge (specify): Other (specify):

Equipment name/description: Sample Pro Bladder Pump Dedicated? (Y/N) Disposable? (Y/N)
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
MW-2	EPA 9056A	250 mL plastin unpres	Yes or No
MW-2	EPA 350.1	250 mL plastic H2SO4	Yes or No
MW-2	EPA 6010C	250 mL plastic HNO3	Yes or No

Equipment depth: 175ft TOC Flow Rate: 0.2 L/min Volume removed: 5.0 L Volume sampled: 750 mL
 Well dry? (Y/N) **N** Odor? (Y/N) **N** Color? (Y/N) **N**

Comments: _____



LOW-FLOW WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED			
PROJECT NUMBER: 515504				BY: CF		DATE: 5/18/23		BY: <i>LA</i>		DATE: <i>1/3/24</i>	
SAMPLE ID: MW-3				WELL DIAMETER: 5 in							
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input type="checkbox"/> OTHER:							
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:			
PURGING		TIME: 16:17		DATE: 05/18/23		SAMPLE:		TIME: 16:42		DATE: 05/18/23	
PUMP TYPE: BLADDER PUMP (Non-Dedicated)				PH: 7.26		SU		CONDUCTIVITY: 1286.4 umhos/cm			
STABILIZATION CRITERIA: EPA				DO: 1.55 mg/l		ORP: 172.9 mV					
DEPTH TO WATER: 74.73 T/ PVC				TURBIDITY: 0.9 NTU							
DEPTH TO BOTTOM: 127.06 T/ PVC (constructed)				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY							
WELL VOLUME: 202.05 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				TEMPERATURE: 52.44 °F				OTHER: --			
VOLUME REMOVED: 5.0 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: none				ODOR: none			
COLOR: none				ODOR: none				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS: Turbidity measurments appear erroneous							
TIME	PURGE RATE (ML/MIN)	TEMPERATURE (°F)	SPECIFIC CONDUCTIVITY (µS/cm)	D.O. (mg/L)	pH (SU)	ORP (mV)	TURBIDITY (NTU)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (L)		
	0.1 L/min-0.5 L/min	3%	3%	10% @ >0.5 or 3 readings <0.5	±0.1	±10 mV	10% if >5 NTU	Appx. 0.3 ft			
16:22	0.2	57.53	1254.7	5.64	7.33	180.7	0.0	NR	1.0		
16:27	0.2	53.27	1289.4	1.76	7.23	182.3	0	NR	2.0		
16:32	0.2	52.74	1289.1	1.64	7.23	179.7	0	NR	3.0		
16:37	0.2	52.57	1286.9	1.58	7.24	176.2	0	NR	4.0		
16:42	0.2	52.44	1286.4	1.55	7.26	172.9	0.9210768	76.10	5.0		
BOTTLES FILLED											
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
SHIPPING METHOD: FedEx				DATE SHIPPED: 4/24/23							
				SIGNATURE: <i>Chris...</i>				DATE SIGNED: 11/17/2023			

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-3 Weather: Sunny
 Date: 4/24/2023 Personnel: Chris Frauen

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 771.26
 Top of screen (ft. TOC): 97.06 Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 774.03
 Locked (Y/N)

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>74.73</u>	<u>76.1</u>	<u>76.1</u>
Water elevation (ft. MSL)	<u>699.30</u>	<u>697.93</u>	<u>697.93</u>

3 Well Volumes (L): 160 Screen submerged? (Y/N): Y

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>127.06</u>	<u>NM</u>	<u>NA</u>

Well conditions commentary: ok

Sampling Details

Sampling Method: Pump (conventional or low flow) ~~No purge (specify sample interval)~~
 (circle one) Bailer ~~Other (specify)~~

Equipment type: Submersible pump ~~Peristaltic pump~~ Bladder pump ~~Inertial lift pump~~
 (check one) Bailer ~~No purge (specify):~~ Other (specify):

Equipment name/description: Sample Pro Bladder Bump Dedicated? (Y/N) Disposible? (Y/N)
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
MW-3/DUP-1	EPA 9056A	250 mL plastin unpres	Yes or No
MW-3/DUP-1	EPA 350.1	250 mL plastic H2SO4	Yes or No
MW-3/DUP-1	EPA 6010C	250 mL plastic HNO3	Yes or No

Equipment depth 100ft TOC Flow Rate: 0.2 L/min Volume removed: 5.0 L Volume sampled: 1.5 L
 Well dry? (Y/N) N Odor? (Y/N) N Color? (Y/N) N

Comments: _____



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 4/24/23		BY: LA		DATE: 1/3/24			
SAMPLE ID: Underliner				WELL DIAMETER: ___ in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME:		DATE: 04/24/23		SAMPLE:		TIME: 16:31		DATE: 04/24/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: NM SU		CONDUCTIVITY: NM umhos/cm					
	<input type="checkbox"/>	BAILER				DO: NM mg/l		ORP: NM mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: NM NTU							
DEPTH TO WATER: T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: T/ PVC				TEMPERATURE: NM °C				OTHER					
WELL VOLUME: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: N/A <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: None ODOR: None				FILT COLOR:				FILT ODOR:					
TURBIDITY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-									
<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				COMMENTS:									
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input checked="" type="checkbox"/> N/A													
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
1	250 mL	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
SHIPPING METHOD: FedEx				DATE SHIPPED: 4/24/23									
				SIGNATURE:				DATE SIGNED: 11/17/2023					

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: Underliner Leachate Weather: Sunny
 Date: 4/24/2023 Personnel: Chris Frauen

Monitoring Well Details

Borehole diameter (in): NA Casing Diameter (in): NA Ground surface elevation (ft. MSL): NA
 Top of screen (ft. TOC): NA Materials: NA Top of Casing elevation (ft. MSL): NA
 Locked (Y/N)

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>NA</u>	<u>NA</u>	<u>NA</u>
Water elevation (ft. MSL)	<u>NA</u>	<u>NA</u>	<u>NA</u>

3 Well Volumes (gal): NA Screen submerged? (Y/N) NA

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>NA</u>	<u>NA</u>	<u>NA</u>

Well conditions commentary: NA

Sampling Details

Sampling Method: **Pump (conventional or low flow?)** No purge (specify sample interval)
 (circle one) **Bailer** Other (specify)

Equipment type: **Submersible pump** Peristaltic pump Bladder pump Inertial lift pump
 (check one) **Bailer** No purge (specify): Other (specify):

Equipment name/description: Leachate pump Dedicated? (Y/N) Disposable? (Y/N)
 Decontamination method: None

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
Underliner Leachate	EPA 9056A	250 mL plastin unpres	Yes or No
Underliner Leachate	EPA 350.1	250 mL plastic H2SO4	Yes or No
Underliner Leachate	EPA 6010C	250 mL plastic HNO3	Yes or No

Equipment depth N/A Flow Rate: N/A Volume removed: N/A Volume sampled: 750 mL
 Well dry? (Y/N) N/A Odor? (Y/N) N Color? (Y/N) N

Comments: _____



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 4/24/23		BY: LA		DATE: 1/3/24			
SAMPLE ID: Combined				WELL DIAMETER: N/A in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: NA									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER: NA					
PURGING START		TIME:		DATE: 04/24/23		SAMPLE:		TIME: 16:35		DATE: 04/24/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: NM SU		CONDUCTIVITY: NM umhos/cm					
	<input type="checkbox"/>	BAILER				DO: NM mg/l		ORP: NM mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: NM NTU							
DEPTH TO WATER: NA T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: NA T/ PVC				TEMPERATURE: NM °C				OTHER					
WELL VOLUME: <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: NA <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: None ODOR: Leachate				FILT COLOR:				FILT ODOR:					
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-									
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input checked="" type="checkbox"/> N/A				COMMENTS:									
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
1	250 mL	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N		
SHIPPING METHOD: FedEx				DATE SHIPPED: 4/24/23									
				SIGNATURE:				DATE SIGNED: <u>11/17/2023</u>					

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: Combined Leachate Weather: Sunny
 Date: 4/24/2023 Personnel: Chris Frauen

Monitoring Well Details

Borehole diameter (in): NA Casing Diameter (in): NA Ground surface elevation (ft. MSL): NA
 Top of screen (ft. TOC): NA Materials: NA Top of Casing elevation (ft. MSL): NA
 Locked (Y/N)

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>NA</u>	<u>NA</u>	<u>NA</u>
Water elevation (ft. MSL)	<u>NA</u>	<u>NA</u>	<u>NA</u>

3 Well Volumes (gal): NA Screen submerged? (Y/N) NA

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>NA</u>	<u>NA</u>	<u>NA</u>

Well conditions commentary: NA

Sampling Details

Sampling Method: **Pump (conventional or low flow?)** No purge (specify sample interval)
 (circle one) **Bailer** Other (specify)

Equipment type: **Submersible pump** Peristaltic pump Bladder pump Inertial lift pump
 (check one) **Bailer** No purge (specify): Other (specify):

Equipment name/description: Leachate pump Dedicated? (Y/N) Disposable? (Y/N)
 Decontamination method: None

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
Combined Leachate	EPA 9056A	250 mL plastin unpres	Yes or No
Combined Leachate	EPA 350.1	250 mL plastic H2SO4	Yes or No
Combined Leachate	EPA 6010C	250 mL plastic HNO3	Yes or No

Equipment depth NA Flow Rate: NA Volume removed: NA Volume sampled: 750 mL
 Well dry? (Y/N) N Odor? (Y/N) Leachate Color? (Y/N) Yellow

Comments: _____



Facility Inspection Report
John Deere Dubuque Works Landfill – Dubuque, Iowa
Permit No. 31-SDP-01-75C

Date		Name of Inspector
4/24/2023		Chris Frauen
Description of Weather:		
Time	Temperature	Precipitation
7:50	50°F	None
Weather Conditions	Ground Conditions	General Past 7-Day Weather Conditions
Sunny/partly cloudy	Moist	Small amount of rain 1-2 days prior to inspection
Final Cover:		
General Health of Vegetation:		
Healthy <input checked="" type="checkbox"/>	Stressed <input type="checkbox"/>	Barren <input type="checkbox"/>
Comments:		
Vegetation does not look stressed		
Density of Vegetation:		
Good <input checked="" type="checkbox"/>	Fair <input type="checkbox"/>	Poor <input type="checkbox"/>
Comments:		
Evidence of Burrowing Animals:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	None noticed
Erosion of Landfill Cap:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	None noticed
Settlement of Landfill Cap:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	None noticed
Drainage Ditch Erosion:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	Okay
Leachate Seeps Identified:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	No evidence of potential leachate seep noted

Site Features:

Fence Secure:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Okay
Gates and Locks Secure:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	No locks on standpipes
Signs Present:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Okay
Access Road Accessible:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Okay
Storm Water Diversion Structures Operating:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Okay

Leachate Collection System:

Standpipe #	Condition	Comments
Stage 1 (north)	Adequate <input type="checkbox"/> Requires Maintenance <input checked="" type="checkbox"/>	Needs new cap, pipe uncovered during inspection
Stage 2 (south)	Adequate <input type="checkbox"/> Requires Maintenance <input checked="" type="checkbox"/>	Not lockable
Stage 1 Under Liner	Flow rate = 0.94 gpm	
Stage 2 Under Liner	Flow rate = 1.24 gpm	

Groundwater Monitoring Wells:

Well #	Condition	Comments
MW-1 (north)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
MW-2 (east)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
MW-3 (south)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	

Survey Control Monuments:

Monument #	Condition	Comments
1001 (SE)	Adequate <input type="checkbox"/> Requires Maintenance <input type="checkbox"/>	Not inspected; will inspect in October 2023
1002 (SW)	Adequate <input type="checkbox"/> Requires Maintenance <input type="checkbox"/>	Not inspected; will inspect in October 2023



Sampling Forms and Facility Inspection Report October 24-26 and November 13, 2023



PROJECT NAME:	John Deere Dubuque
PROJECT NUMBER:	515504
PROJECT MANAGER:	Erica Lawson
SITE LOCATION:	Dubuque, IA
DATES OF FIELDWORK:	10/24/2023 - 10/26/2023 and 11/13/2023
PURPOSE OF FIELDWORK:	Semi-Annual Sampling
WORK PERFORMED BY:	Chris Frauen

LA,
12/19/23

A handwritten signature in black ink, appearing to read "Chris Frauen".

11/21/2023

LA

1/11/2024

SIGNED

DATE

CHECKED BY

DATE



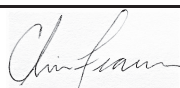
GENERAL NOTES

PROJECT NAME: John Deere Dubuque	DATE: 10/24/2023	TIME ARRIVED: 8:20
PROJECT NUMBER: 515504	AUTHOR: CF	TIME LEFT: 18:00

WEATHER		
TEMPERATURE: 60 °F	WIND: 10 MPH	VISIBILITY: Clear
WORK / SAMPLING PERFORMED		
Sampled MW-1, MW-2, MW-3, DUP-01, EB-01		
Ran out of time to finish leachate samples		
Will return tomorrow to complete, then close valves and return 10/26 to complete sampling w/ valves closed		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
ORP not stabilizing in MW-1	Made note and sampled
Car stuck in mud	Called JD to help

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
James Hensley	JD	Asked to call maintenance to pull me out
Dan Mai	JD	" "


11/21/2023
LA
1/11/2024

SIGNED DATE CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: John Deere Dubuque	DATE: 10/25/2023	TIME ARRIVED: 8:15
PROJECT NUMBER: 515504	AUTHOR: Chris Frauen	TIME LEFT: 12:20

WEATHER		
---------	--	--

TEMPERATURE: <u>60</u> °F	WIND: <u>5</u> MPH	VISIBILITY: <u>Overcast</u>
---------------------------	--------------------	-----------------------------

WORK / SAMPLING PERFORMED

Sampled leachate with valves open
closed valves; will return tomorrow to take "closed" leachate samples and take underliner flow measurements

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
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None	

COMMUNICATION		
---------------	--	--

NAME	REPRESENTING	SUBJECT / COMMENTS

	11/21/2023	LA	1/11/2024
SIGNED	DATE	CHECKED BY	DATE



GENERAL NOTES

PROJECT NAME: John Deere Dubuque	DATE: 10/26/2023	TIME ARRIVED: 8:20
PROJECT NUMBER: 515504	AUTHOR: Chris Frauen	TIME LEFT: 10:18

WEATHER		
TEMPERATURE: 60 °F	WIND: 0 MPH	VISIBILITY: Overcast
WORK / SAMPLING PERFORMED		
Returned to site to take "closed" leachate samples and flow measurements		
After jetting, PVC fitting was cross-threaded on Stage 1 standpipe drain		
water was leaking from the fitting		
As a result, no leachate was able to be measured in stage 1 standpipe and flow measurments from		
underliner drain were unable to be taken		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
After jetting, PVC fitting was cross-threaded on Stage 1 standpipe drain	Erica called JD to fix

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica	TRC	Regarding cross threaded PVC fitting

	11/21/2023	LA	1/11/2024
SIGNED	DATE	CHECKED BY	DATE



GENERAL NOTES

PROJECT NAME: John Deere Dubuque	DATE: 11/13/2023	TIME ARRIVED: 8:45
PROJECT NUMBER: 515504	AUTHOR: CF	TIME LEFT: 10:25

WEATHER

TEMPERATURE: 55 °F	WIND: 10 MPH	VISIBILITY: Clear
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WORK / SAMPLING PERFORMED

Collect leachate flow data and elevations. (Due to leak of PVC fitting, leachate measurements were not collected.)
Depth to bottom measurements of MWs

LA,
1/11/24

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
----------------------	-------------------------

PVC fitting on S1 leachate leaking	Called PM

COMMUNICATION

NAME	REPRESENTING	SUBJECT / COMMENTS
Erica	TRC	Discussed continued leak of S1 leachate fitting. JD will fix

11/21/2023

LA

1/11/2024

SIGNED

DATE

CHECKED BY

DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: John Deere Dubuque	MANUF: InSitu	MODEL: TRC	SAMPLER: C. Frauen
PROJECT NO.: 515504	OWNER: AquaTROLL 400	SER #: 807539 v1.27	DATE: 10/24/23 - 10/26/23

PH METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
pH 4	pH 7	TIME	pH 4	pH 7	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE	<input checked="" type="checkbox"/> WITHIN RANGE	8:20	4.06	7.10	18:07	10/24/23
<input checked="" type="checkbox"/> WITHIN RANGE	<input checked="" type="checkbox"/> WITHIN RANGE	8:15	4.09	7.15	12:10	10/25/23
<input checked="" type="checkbox"/> WITHIN RANGE	<input checked="" type="checkbox"/> WITHIN RANGE	8:50	4.11	7.16	9:34	10/26/23
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					

CONDUCTIVITY METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
STANDARD		TIME	CHECK	TEMP	TIME	
4490 μS/cm	<input checked="" type="checkbox"/> WITHIN RANGE	8:22	4489.1 μS/cm	18.51 °C	18:08	10/24/23
4490 μS/cm	<input checked="" type="checkbox"/> WITHIN RANGE	8:14	4392.4 μS/cm	18.69 °C	12:17	10/25/23
4490 μS/cm	<input checked="" type="checkbox"/> WITHIN RANGE	8:45	4374.6 μS/cm	18.43 °C	9:37	10/26/23
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		

DO METER				
CALIBRATION	TIME	CALIBRATION	TIME	DATE
<input checked="" type="checkbox"/> WITHIN RANGE	8:18	<input checked="" type="checkbox"/> WITHIN RANGE	18:01	10/24/23
<input checked="" type="checkbox"/> WITHIN RANGE	8:13	<input checked="" type="checkbox"/> WITHIN RANGE	12:12	10/25/23
<input checked="" type="checkbox"/> WITHIN RANGE	8:48	<input checked="" type="checkbox"/> WITHIN RANGE	9:39	10/26/23
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		
<input type="checkbox"/> WITHIN RANGE		<input type="checkbox"/> WITHIN RANGE		

ORP METER					
CALIBRATION	TIME	POST SAMPLING CALIBRATION CHECK			DATE
		CHECK	TEMP	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE	8:12	140.2 mV	18.49 °C	18:05	10/24/23
<input checked="" type="checkbox"/> WITHIN RANGE	8:13	136.8 mV	17.49 °C	12:13	10/25/23
<input checked="" type="checkbox"/> WITHIN RANGE	8:47	235.6 mV	18.22 °C	9:41	10/26/23
<input type="checkbox"/> WITHIN RANGE		mV	°C		
<input type="checkbox"/> WITHIN RANGE		mV	°C		

TURBIDITY CALIBRATION CHECK								
METER TYPE:		Hach 2100P						
PRE-SAMPLING CALIBRATION CHECK								
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	DATE
4.06	4.07	42.4	42.6	477	478	Y	9:30	10/24/23

Autocal Solution Lot#:	3GB529	Exp Date:	2/1/24
pH 7 Soutlion Lot#:	3GA1018	Exp Date:	1/1/25
ORP Solution Lot#:	23B100205	Exp Date:	2/14/28
Parameters Calibrated:	<input checked="" type="checkbox"/> pH	<input checked="" type="checkbox"/> Conductivity	
	<input type="checkbox"/> Turbidity	<input checked="" type="checkbox"/> ORP	<input checked="" type="checkbox"/> Dissolved Oxygen

NOTES
Turbidity calibrated by TRC staff 10/21/23 and checked on-site 10/24/23

DATE	PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS

11/21/2023

 SIGNED DATE

LA 1/11/2024

 Checked DATE

JDDW-LANDFILL LEACHATE FLOW AND STANDPIPE MEASUREMENTS

DATE: 10/24/2023 TIME: 15:45 NAME: C. Frauen

Stage 1 Leachate Drain	
Vol Filled (L):	0.7
Test #	Time (s)
1	18.51
2	18.49
3	18.80
Average Time (s):	18.60
Average Flow (gpm):	0.60

Stage 2 Leachate Drain	
Vol Filled (L):	0.7
Test #	Time (s)
1	11.5
2	11.62
3	11.14
Average Time (s):	11.42
Average Flow (gpm):	0.97

Top of Standpipe Elevation (ft): 871.96

Synthetic Liner Elevation (ft): 787.1

Begin Test (time) 15:45

End Test (time) 15:53

Top of Standpipe Elevation (ft): 851.37

Synthetic Liner Elevation (ft): 780.8

Begin Test (time): 16:02

End Test (time): 16:08

Stage 1 Underliner Drain (Valve OPEN)	
Vol Filled (L):	0.7
Test #	Time (s)
1	107.8
2	110.2
3	108.80
Average Time (s):	108.93
Average Flow (gpm):	0.10

Stage 2 Underliner Drain (Valve OPEN)	
Vol Filled (L):	0.7
Test #	Time (s)
1	NO FLOW
2	
3	
Average Time (s):	
Average Flow (gpm):	

DATE: 10/26/2023 TIME: 9:10 NAME: C. Frauen

Stage 1 Underliner Drain (Valve CLOSED)	
Vol Filled (L):	
Test #	Time (s)
1	Leaking PVC fitting
2	Will take flow at a later date
3	
Average Time (s):	
Average Flow (gpm):	

Stage 2 Underliner Drain (Valve CLOSED)	
Vol Filled (L):	0.7
Test #	Time (s)
1	59.65
2	61.3
3	60.43
Average Time (s):	60.46
Average Flow (gpm):	0.18

Gallons Pumped to X-18 Discharge: 8,049,025

Measurement Time: 9:40

Valve Status - Day	Standpipe	Date	Time	Depth to Leachate (ft btoc)
Open - Day 1	Standpipe 1	10/25/2023	10:35	Obstruction at 80.50
Closed - Day 2		10/26/2023	8:35	No leachate
Closed - Day 2				
Open - Day 1	Standpipe 2	10/25/2023	10:45	56.38
Closed - Day 2		10/26/2023	8:30	53.25
Closed - Day 2		10/26/2023	10:02	53.26

*if second reading is <0.1 ft, system is considered stable. If not, remeasure at 1 hr intervals until <0.1 ft change.

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-1 Weather: Clear
 Date: 10/24/2023 Sampler: C. Frauen

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 840.33
 Top of screen (ft. TOC): ~~673.27~~ Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 842.05
 Locked (Y/N) 168.78

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>134.71</u>	<u>135.38</u>	<u>135.38</u>
Water elevation (ft. MSL)	<u>707.34</u>	<u>706.67</u>	<u>706.67</u>

3 Well Volumes (gal): 197 Screen submerged? (Y/N): Y

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>198.78</u>	<u>199.01</u>	<u>-0.23</u>

Well conditions commentary: Good

Sampling Details

Sampling Method: Pump (low flow)

Equipment type: Submersible pump

Equipment name/description: Sample Pro Bladder Pump Dedicated? (Y/N) Y Disposable? (Y/N) N
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s) plastic	Filtered? (if yes, filter size)
MW-1	EPA 9056A	250 mL plastic unpres	No
MW-1	EPA 350.1	250 mL plastic H2SO4	No
MW-1	EPA 6010C	250 mL plastic HNO3	No
MW-1	EPA 9066	500 mL am glass H2SO4	No
MW-1	EPA 2540C	1 L plastic unpreserved	No
MW-1	EPA 8260D	3x40 mL HCl	No

Flow Rate
 Equipment depth 181 (mL/Min): 175 Volume removed: 11.4 L Volume sampled: 2.37
 Well dry? (Y/N) N Odor? (Y/N) N Color? (Y/N) N

Comments: _____

LA,
1/11/24

LA,
1/11/24

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-2 Weather: Overcast
 Date: 10/24/2023 Sampler: CF

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 846.71
 Top of screen (ft. TOC): ~~-681.77~~ Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 848.49
 Locked (Y/N) 166.72
 Water Level (ft. TOC): 150.79 Before purging 150.95 After purging 150.95 Before sampling
 Water elevation (ft. MSL) 697.70 697.54 697.54
 3 Well Volumes (gal): 141 Screen submerged? (Y/N): Y
 Well Depth (ft. TOC) 196.72 Constructed 196.98 Measured -0.26 Difference
 Well conditions commentary: Good

Sampling Details

Sampling Method: Pump (low flow)
 Equipment type: Submersible pump
 Equipment name/description: Sample Pro Bladder Pump Dedicated? (Y/N) Disposable? (Y/N)
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s)	Filtered? (if yes, filter size)
MW-2	EPA 9056A	250 mL plastic unpres	No
MW-2	EPA 350.1	250 mL plastic H2SO4	No
MW-2	EPA 6010C	250 mL plastic HNO3	No
MW-2	EPA 9066	500 mL am glass H2SO4	No
MW-2	EPA 2540C	1 L plastic unpreserved	No
MW-2	EPA 8260D	3x40 mL HCl	No

Flow Rate
 Equipment depth 181.50 (mL/Min): 125 Volume removed: 3 L Volume sampled: 2.37 L
 Well dry? (Y/N) No Odor? (Y/N) Color? (Y/N)

Comments: _____

LA,
1/11/24

LA,
1/11/24

Site Name: John Deere Dubuque Works Permit No.: 31-SDP-01-75
 Well/Piezometer: MW-3 Weather: Overcast
 Date: 10/24/2023 Sampler: C. Frauen

Monitoring Well Details

Borehole diameter (in): -- Casing Diameter (in): 5 Ground surface elevation (ft. MSL): 772.26
 Top of screen (ft. TOC): ~~677~~ Materials: SCH 40 PVC Top of Casing elevation (ft. MSL): 774.06
 Locked (Y/N) 97.06

	Before purging	After purging	Before sampling
Water Level (ft. TOC):	<u>74.90</u>	<u>75.42</u>	<u>75.42</u>
Water elevation (ft. MSL)	<u>699.16</u>	<u>698.64</u>	<u>698.64</u>

3 Well Volumes (gal): 160 Screen submerged? (Y/N): Y

	Constructed	Measured	Difference
Well Depth (ft. TOC)	<u>127.06</u>	<u>127.14</u>	<u>-0.08</u>

Well conditions commentary: _____

Sampling Details

Sampling Method: Pump (low flow)

Equipment type: Submersible pump

Equipment name/description: Sample Pro Bladder Pump Dedicated? (Y/N) _____ Disposable? (Y/N) _____
 Decontamination method: Alconox wash, DI water rinse

Sample Name(s)	Method(s)	Container(s) plastic	Filtered? (if yes, filter size)
MW-3/DUP-01	EPA 9056A	250 mL plastic unpres	No
MW-3/DUP-01	EPA 350.1	250 mL plastic H2SO4	No
MW-3/DUP-01	EPA 6010C	250 mL plastic HNO3	No
MW-3/DUP-01	EPA 9066	500 mL am glass H2SO4	No
MW-3/DUP-01	EPA 2540C	1 L plastic unpreserved	No
MW-3/DUP-01	EPA 8260D	3x40 mL HCl	No

Equipment depth 123 Flow Rate (mL/Min): 150 Volume removed: 6.8 L Volume sampled: 2.37
 Well dry? (Y/N) No Odor? (Y/N) N Color? (Y/N) N

Comments: _____

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 10/25/23		BY: LA		DATE: 1/11/24			
SAMPLE ID: S1 Leachate Open				WELL DIAMETER: <u>NA</u> in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME: N/A		DATE: 10/25/23		SAMPLE:		TIME: 9:00		DATE: 10/25/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: 7.36 SU		CONDUCTIVITY: 1489.3 umhos/cm					
	<input type="checkbox"/>	BAILER				DO: 6.73 mg/l		ORP: 54.0 mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: 1.7 NTU							
DEPTH TO WATER: -- T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 15.89 °C				OTHER					
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: ODOR:				FILT COLOR:				FILT ODOR:					
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				COMMENTS: constant flow, no way to calculate amount removed					
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER													
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/25/23									
				SIGNATURE: <i>Chifraum</i>				DATE SIGNED: <u>11/21/2023</u>					

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 10/25/23		BY: LA		DATE: 1/11/24			
SAMPLE ID: S2 Leachate Open				WELL DIAMETER: <u>NA</u> in				LA, 1/11/24					
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME: N/A		DATE: 10/25/23		SAMPLE:		TIME: 8:55		DATE: 10/25/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/> PUMP	SUBMERSIBLE PUMP (SS)				PH: 8.20 SU		CONDUCTIVITY: 2937.1 umhos/cm					
	<input type="checkbox"/> BAILER					DO: 9.74 mg/l		ORP: 74.8 mV					
	<input type="checkbox"/> PASSIVE					TURBIDITY: 8.9 NTU							
DEPTH TO WATER: -- T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 15.75 °C				OTHER					
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				ODOR:				FILT COLOR: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-					
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				TURBIDITY				COMMENTS: constant flow, no way to calculate amount removed					
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/25/2023									
				SIGNATURE: <u><i>Chris...</i></u>				DATE SIGNED: <u>11/21/2023</u>					



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 10/25/23		BY: LA		DATE: 1/11/24			
SAMPLE ID: S1 Underliner Open				WELL DIAMETER: <u>NA</u> in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME: N/A		DATE: 10/25/23		SAMPLE:		TIME: 8:30		DATE: 10/25/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: 8.19 SU		CONDUCTIVITY: 1135.3 umhos/cm					
	<input type="checkbox"/>	BAILER				DO: 6.73 mg/l		ORP: 129.6 mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: 1.8 NTU							
DEPTH TO WATER: -- T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 15.89 °C				OTHER					
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: ODOR:				FILT COLOR:				FILT ODOR:					
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				constant flow, no way to calculate amount removed					
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS:									
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/25/2023									
				SIGNATURE: <i>Chiflam</i>				DATE SIGNED: 11/21/2023					

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED							
PROJECT NUMBER: 515504				BY: CF		DATE: 10/25/23		BY: LA		DATE: 1/11/24					
SAMPLE ID: S2 Underliner Open				WELL DIAMETER: <u>NA</u> in											
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A											
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:							
PURGING START		TIME: N/A		DATE: 10/25/23		SAMPLE:		TIME: N/A		DATE: N/A					
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: N/A SU		CONDUCTIVITY: N/A umhos/cm							
	<input type="checkbox"/>	BAILER				DO: N/A mg/l		ORP: N/A mV							
	<input type="checkbox"/>	PASSIVE				TURBIDITY: N/A NTU									
DEPTH TO WATER: -- T/ PVC				<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY											
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: N/A °C				OTHER							
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: N/A				ODOR: N/A							
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO											
COLOR: ODOR:				FILT COLOR: N/A				FILT ODOR: N/A							
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				NO FLOW - NO SAMPLE COLLECTED							
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS:											
BOTTLES FILLED															
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED				
1	250 mL	CLR PLST	None	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	1	500mL	AMB GLS	H2SO4	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	1	1 L	CLR PLST	None	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
1	250 mL	CLR PLST	HNO3	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	3	40 mL	VOA	HCL	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
SHIPPING METHOD:				DATE SHIPPED:											
				SIGNATURE: <i>[Signature]</i>				DATE SIGNED: <u>11/21/2023</u>							

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 10/25/23		BY: LA		DATE: 1/11/24			
SAMPLE ID: Combined Leachate				WELL DIAMETER: <u>NA</u> in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER:									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME: N/A		DATE: 10/25/23		SAMPLE:		TIME: 9:30		DATE: 10/25/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: 7.92 SU		CONDUCTIVITY: 2234.7 umhos/cm					
	<input type="checkbox"/>	BAILER				DO: 8.84 mg/l		ORP: 112.4 mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: 44.1 NTU							
DEPTH TO WATER: -- T/ PVC				<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 17.13 °C				OTHER					
WELL VOLUME: -- <input type="checkbox"/> LITERS <input checked="" type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: <input type="checkbox"/> LITERS <input checked="" type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: ODOR:				FILT COLOR:				FILT ODOR:					
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-									
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS:									
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/25/2023									
				SIGNATURE: <u>Chris</u>				DATE SIGNED: <u>11/21/2023</u>					

LA,
1/11/24

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED					
PROJECT NUMBER: 515504				BY: CF		DATE: 10/26/23		BY: LA		DATE: 1/11/24			
SAMPLE ID: S2 Underliner Closed				WELL DIAMETER: <u>NA</u> in									
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A									
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:					
PURGING START		TIME:		DATE:		SAMPLE:		TIME: 9:15		DATE: 10/26/23			
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	SUBMERSIBLE PUMP (SS)			PH: 6.96 SU		CONDUCTIVITY: 2476.9 umhos/cm					
	<input type="checkbox"/>	BAILER				DO: 6.54 mg/l		ORP: 227.5 mV					
	<input type="checkbox"/>	PASSIVE				TURBIDITY: 1.4 NTU							
DEPTH TO WATER: -- T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY									
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 16.29 °C				OTHER					
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: Leachate					
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO									
COLOR: ODOR:				FILT COLOR:				FILT ODOR:					
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				COMMENTS: constant flow, no way to calculate amount removed					
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER													
BOTTLES FILLED													
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N	
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/25/2023									
				SIGNATURE: _____ <i>[Signature]</i> _____				DATE SIGNED: 11/21/2023					

LA,
1/11/24



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED							
PROJECT NUMBER: 515504				BY: CF		DATE: 10/24/23		BY: LA		DATE: 1/11/24					
SAMPLE ID: EB-01				WELL DIAMETER: N/A in											
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER:											
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE				<input checked="" type="checkbox"/> OTHER:											
PURGING START		TIME:		DATE: 10/24/23		SAMPLE:		TIME: 16:50		DATE: 10/24/23					
SAMPLE METHOD:	<input checked="" type="checkbox"/>	PUMP	BLADDER PUMP (Non-Dedicated)			PH: N/A SU		CONDUCTIVITY: N/A umhos/cm							
	<input type="checkbox"/>	BAILER				DO: N/A mg/l		ORP: N/A mV							
	<input type="checkbox"/>	PASSIVE				TURBIDITY: N/A NTU									
DEPTH TO WATER: T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY											
DEPTH TO BOTTOM: T/ PVC				TEMPERATURE: N/A °C				OTHER							
WELL VOLUME: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: None				ODOR: None							
VOLUME REMOVED: <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO											
COLOR:				ODOR:				FILT COLOR: FILT ODOR:							
TURBIDITY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-											
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				COMMENTS: Collected off bladder pump following sampling											
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER															
BOTTLES FILLED															
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED				
1	250 mL	CLR PLST	None	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	1	500mL	AMB GLS	H2SO4	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	1	1 L	CLR PLST	None	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N	3	40 mL	VOA	HCL	<input type="checkbox"/>	Y	<input checked="" type="checkbox"/>	N
SHIPPING METHOD: FedEx				DATE SHIPPED: 10/24/2023											
				SIGNATURE: <u> </u>				DATE SIGNED: <u> 11/21/2023 </u>							

LA,
1/11/24



Facility Inspection Report
John Deere Dubuque Works Landfill – Dubuque, Iowa
Permit No. 31-SDP-01-75C

Date		Name of Inspector
10/25/2023		Chris Frauen
Description of Weather:		
Time	Temperature	Precipitation
10:45 am	65°F	Rained overnight
Weather Conditions	Ground Conditions	General Past 7-Day Weather Conditions
Foggy, cloudy	Wet	Clear with rain last night
Final Cover:		
General Health of Vegetation:		
Healthy <input checked="" type="checkbox"/>	Stressed <input type="checkbox"/>	Barren <input type="checkbox"/>
Comments:		
Density of Vegetation:		
Good <input checked="" type="checkbox"/>	Fair <input type="checkbox"/>	Poor <input type="checkbox"/>
Comments:		
Evidence of Burrowing Animals:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	Small burrows on south and west, 3" across
Erosion of Landfill Cap:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	Minor erosion on south end
Settlement of Landfill Cap:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	
Drainage Ditch Erosion:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	
Leachate Seeps Identified:		Comments:
No <input checked="" type="checkbox"/>	Yes <input type="checkbox"/>	Checked most plausible seep area on southwest side

Site Features:

Fence Secure:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	
Gates and Locks Secure:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	
Signs Present:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	
Access Road Accessible:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	
Storm Water Diversion Structures Operating:		Comments:
No <input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	

Leachate Collection System:

Standpipe #	Condition	Comments
Stage 1 (north)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
Stage 2 (south)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
Stage 1 Under Liner	Flow rate = ___ gpm	
Stage 2 Under Liner	Flow rate = ___ gpm	

Groundwater Monitoring Wells:

Well #	Condition	Comments
MW-1 (north)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
MW-2 (east)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
MW-3 (south)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	

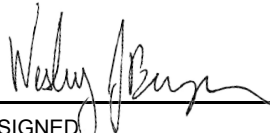
Survey Control Monuments:

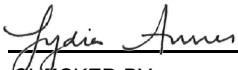
Monument #	Condition	Comments
1001 (SE)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	
1002 (SW)	Adequate <input checked="" type="checkbox"/> Requires Maintenance <input type="checkbox"/>	

Sampling Form
November 28, 2023



PROJECT NAME:	John Deere Dubuque
PROJECT NUMBER:	515504
PROJECT MANAGER:	Erica Lawson
SITE LOCATION:	Dubuque, IA
DATES OF FIELDWORK:	11/28/2023
PURPOSE OF FIELDWORK:	Semi-Annual Sampling
WORK PERFORMED BY:	Wesley Braga

 _____
SIGNED 11/29/23
DATE

 _____
CHECKED BY 1/12/2023
DATE



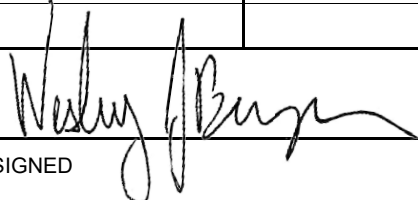
GENERAL NOTES

PROJECT NAME: John Deere Dubuque	DATE: 11/28/2023	TIME ARRIVED: 10:20
PROJECT NUMBER: 515504	AUTHOR: WB	TIME LEFT: 14:10

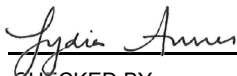
WEATHER		
TEMPERATURE: <u>50</u> °F	WIND: <u>5</u> MPH	VISIBILITY: <u>Clear</u>
WORK / SAMPLING PERFORMED		
Conducted landfill inspection, measured leachate levels in Standpipe 1 and 2, measured underliner drain line flow rate (with LCS wet valves closed) for Stage 1 and Stage 2, collected sample from Stage 1 underliner drain line (while wet valve closed).		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
None	

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Erica Lawson	TRC	Leachate levels and landfill inspection.



 SIGNED _____ DATE 1/12/2023



 CHECKED BY _____ DATE 1/12/2023



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: John Deere Dubuque	MANUF: InSitu	MODEL: TRC	SAMPLER: W.Braga
PROJECT NO.: 515504	OWNER: AquaTROLL 400	SER #: 807539	DATE: 11/28/23

PH METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
pH 4	pH 7	TIME	pH 4	pH 7	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE	<input checked="" type="checkbox"/> WITHIN RANGE	12:13	4.06	7.02	14:25	11/28/23
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					
<input type="checkbox"/> WITHIN RANGE	<input type="checkbox"/> WITHIN RANGE					

CONDUCTIVITY METER						
CALIBRATION			POST SAMPLING CALIBRATION CHECK			DATE
STANDARD		TIME	CHECK	TEMP	TIME	
4490 μS/cm	<input checked="" type="checkbox"/> WITHIN RANGE	12:10	4512 μS/cm	12.56 °C	14:23	11/28/23
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		
μS/cm	<input type="checkbox"/> WITHIN RANGE		μS/cm	°C		

DO METER						
CALIBRATION		TIME	CALIBRATION		TIME	DATE
<input checked="" type="checkbox"/> WITHIN RANGE		12:05	<input checked="" type="checkbox"/> WITHIN RANGE		14:15	
<input type="checkbox"/> WITHIN RANGE			<input type="checkbox"/> WITHIN RANGE			
<input type="checkbox"/> WITHIN RANGE			<input type="checkbox"/> WITHIN RANGE			
<input type="checkbox"/> WITHIN RANGE			<input type="checkbox"/> WITHIN RANGE			
<input type="checkbox"/> WITHIN RANGE			<input type="checkbox"/> WITHIN RANGE			

ORP METER						
CALIBRATION		TIME	POST SAMPLING CALIBRATION CHECK			DATE
			CHECK	TEMP	TIME	
<input checked="" type="checkbox"/> WITHIN RANGE		12:07	212.6 mV	14.80 °C	14:11	11/28/23
<input type="checkbox"/> WITHIN RANGE			mV	°C		
<input type="checkbox"/> WITHIN RANGE			mV	°C		
<input type="checkbox"/> WITHIN RANGE			mV	°C		
<input type="checkbox"/> WITHIN RANGE			mV	°C		

TURBIDITY CALIBRATION CHECK								
METER TYPE:		Hach 2100P						
PRE-SAMPLING CALIBRATION CHECK								
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	DATE
4.06	4.08	42.4	42.6	477	481	Y	12:03	11/28/23

Autocal Solution Lot#: 3GB529 Exp Date: 2/1/24
 pH 7 Soution Lot#: 3GA1018 Exp Date: 1/1/25
 ORP Solution Lot#: 23B100205 Exp Date: 2/14/28

Parameters Calibrated: pH Conductivity
 Turbidity ORP Dissolved Oxygen

NOTES

DATE	PROBLEMS ENCOUNTERED	CORRECTIVE ACTIONS

1/12/24

 SIGNED DATE

 Checked DATE

JDDW-LANDFILL LEACHATE FLOW AND STANDPIPE MEASUREMENTS

DATE: -- TIME: -- NAME: --

Stage 1 Leachate Drain	
Vol Filled (L):	--
Test #	Time (s)
1	--
2	--
3	--
Average Time (s):	
Average Flow (gpm):	

Stage 2 Leachate Drain	
Vol Filled (L):	--
Test #	Time (s)
1	--
2	--
3	--
Average Time (s):	
Average Flow (gpm):	

Top of Standpipe Elevation (ft): 871.96

Synthetic Liner Elevation (ft): 787.1

Begin Test (time) --

End Test (time) --

Top of Standpipe Elevation (ft): 851.37

Synthetic Liner Elevation (ft): 780.8

Begin Test (time): --

End Test (time): --

Stage 1 Underliner Drain (Valve OPEN)	
Vol Filled (L):	--
Test #	Time (s)
1	--
2	--
3	--
Average Time (s):	
Average Flow (gpm):	

Stage 2 Underliner Drain (Valve OPEN)	
Vol Filled (L):	--
Test #	Time (s)
1	--
2	--
3	--
Average Time (s):	
Average Flow (gpm):	

DATE: 11/28/2023 TIME: 12:30 NAME: Wesley Braga

Stage 1 Underliner Drain (Valve CLOSED)	
Vol Filled (L):	1.35
Test #	Time (s)
1	239.59
2	247.43
3	242.32
Average Time (s): 243.11	
Average Flow (gpm): 0.09	

Stage 2 Underliner Drain (Valve CLOSED)	
Vol Filled (L):	1.35
Test #	Time (s)
1	121.59
2	116.26
3	120
Average Time (s): 119.28	
Average Flow (gpm): 0.18	

Gallons Pumped to X-18 Discharge: NM

Measurement Time: --

Valve Status - Day	Standpipe	Date	Time	Depth to Leachate (ft btoc)
Open - Day 1	Standpipe 1	--	--	--
Closed - Day 2		11/28/2023	10:35	67.12
Closed - Day 2			12:05	67.15
Open - Day 1	Standpipe 2	--	--	--
Closed - Day 2		11/28/2023	10:30	53.22
Closed - Day 2			12:10	53.22

*if second reading is <0.1 ft, system is considered stable. If not, remeasure at 1 hr intervals until <0.1 ft change.



WATER SAMPLE LOG

PROJECT NAME: John Deere Dubuque				PREPARED				CHECKED							
PROJECT NUMBER: 515504				BY: WB		DATE: 11/28/23		BY: LA		DATE: 1/12/23					
SAMPLE ID: S1 Underliner Closed				WELL DIAMETER: ___ in											
WELL MATERIAL: <input type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> GS <input type="checkbox"/> IRON				<input checked="" type="checkbox"/> OTHER: N/A											
SAMPLE TYPE: <input type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI				<input checked="" type="checkbox"/> LEACHATE				<input type="checkbox"/> OTHER:							
PURGING START		TIME: N/A		DATE: 11/28/23		SAMPLE:		TIME: 12:45		DATE: 11/28/23					
SAMPLE METHOD:		<input checked="" type="checkbox"/> PUMP		SUBMERSIBLE PUMP (SS)				PH: 5.64		SU		CONDUCTIVITY: 1197.0 umhos/cm			
		<input type="checkbox"/> BAILER						DO: 8.07 mg/l		ORP: 196.8 mV					
		<input type="checkbox"/> PASSIVE						TURBIDITY: 45.2 NTU							
DEPTH TO WATER: -- T/ PVC				<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY											
DEPTH TO BOTTOM: -- T/ PVC				TEMPERATURE: 12.22 °C				OTHER							
WELL VOLUME: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: light yellow				ODOR: leachate							
VOLUME REMOVED: -- <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO											
COLOR: -- ODOR: --				FILT COLOR:				FILT ODOR:							
TURBIDITY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-											
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				COMMENTS:											
DISPOSAL METHOD: <input type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER															
BOTTLES FILLED															
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED				
1	250 mL	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	500mL	AMB GLS	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N			
1	250 mL	CLR PLST	H2SO4	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1	1 L	CLR PLST	None	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N			
1	250 ml	CLR PLST	HNO3	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		3	40 mL	VOA	HCL	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N			
SHIPPING METHOD: FedEx				DATE SHIPPED: 11/28/23											
				SIGNATURE:				DATE SIGNED: 11/29/23							

Fall 2023 Survey

M
MONITORING WELL 1
T.O.C. = 842.05'
GROUND SURFACE = 840.33'

M
STAGE 1 STANDPIPE
T.O.C. = 869.32'
GROUND SURFACE = 865.43'

M
STAGE 2 STANDPIPE
T.O.C. = 850.76'
GROUND SURFACE = 846.83'

M
MONITORING WELL 2
T.O.C. = 848.49'
GROUND SURFACE = 846.71'

828.45
CONTROL PT 1002

844.99
CONTROL PT 1001

844.40
ORIGIN CONTROL PT 7

M
MONITORING WELL 3
T.O.C. = 774.06'
GROUND SURFACE = 772.26'



HORIZONTAL SCALE IN FEET



DRAWING MAY HAVE BEEN REDUCED

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NOTES:

- 1. SURVEY PERFORMED ON 9/26/23
 - 2. GROUND SURFACES SURVEYED 10/30/23
- T.O.C = TOP OF PVC CASING

DRAWN	SAF	PLAT NO.	#
CHECKED	CLG	PROJ. NO.	2301929
DATE	1-08-24	SHEET	1 of 1
P:\23\019\01929\DRAWINGS\SURVEY\2301929 -			

MONITORING WELLS=LANDFILL

Appendix C: Background Level Evaluation



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 10, 2024
CC:
Project No.: 577511.0000.0000

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 include all parameters included in the monitoring program through October 2022 except temperature, as follows:

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

The most recent 20 results as of October 2022 were used for the background calculations for each parameter except total metals, for which the most recent 11 results were used because only 11 rounds of total metals analysis had been conducted as of October 2022 (analysis of total metals began in October 2017). For most parameters except metals, this consisted of semiannual results for samples collected between April 2013 and October 2022. 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. Three outliers were omitted from the data sets used for the background evaluation – nitrate in October 2017, pH in April 2015, and specific conductance in April 2016. These results were well outside the normal range for the three parameters. The specific conductance outlier was also confirmed using a statistical test for outliers (included in Attachment 1). 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 some nondetect results. For these data sets, ProUCL was 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 and, if the trend 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
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

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	0.118	95% UPL (k=8)
COD	75	NA	NA	NA	13.5	Max Detected
Chloride	25	None	Normal	8	8.05	95% KM UPL (k=8)
Fluoride	75	NA	NA	NA	0.251	Max Detected
Total Iron	91	NA	NA	NA	0.521	Max Detected
Total Magnesium	0	None	Normal	8	47.8	95% UPL (k=8)
Nitrate	100	NA	NA	NA	0.5	DQR at max PQL
pH	0	None	Normal	8	6.7 - 8.0	95% LPL - 95% UPL (k=8)
Phenols	100	NA	NA	NA	0.02	DQR at max PQL
Specific Conductivity	0	None	Normal	8	754	95% UPL (k=8)

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 Uncensor Full Data Sets without NDs

User Selected Options

Date/Time of Computation ProUCL 5.2 7/26/2023 4:37:24 PM
 From File WorkSheet.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: T Barium(new)

Sample 2 Data: T Barium(old)

	Raw Statistics	
	Sample 1	Sample 2
Number of Valid Observations	3	8
Number of Distinct Observations	3	7
Minimum	0.0796	0.0569
Maximum	0.104	0.089
Mean	0.0896	0.0777
Median	0.0853	0.0781
SD	0.0128	0.0102
SE of Mean	0.00737	0.00361

Wilcoxon-Mann-Whitney (WMW) Test

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

Sample 1 Rank Sum W-Stat	24
WMW U-Stat	18
Mean (U)	12
SD(U) - Adj ties	4.899
Lower U-Stat Critical Value (0.025)	3
Upper U-Stat Critical Value (0.975)	21
Standardized WMW U-Stat	1.228
Approximate P-Value	0.22

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 Uncensor Full Data Sets without NDs

User Selected Options
 Date/Time of Computation ProUCL 5.2 7/26/2023 4:38:06 PM
 From File WorkSheet.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: T Magnesium(new)

Sample 2 Data: T Magnesium(old)

	Raw Statistics	
	Sample 1	Sample 2
Number of Valid Observations	3	8
Number of Distinct Observations	3	8
Minimum	40.2	39.2
Maximum	45.4	43.9
Mean	42.9	41.61
Median	43.1	41.25
SD	2.606	1.523
SE of Mean	1.504	0.538

Wilcoxon-Mann-Whitney (WMW) Test

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

Sample 1 Rank Sum W-Stat	22
WMW U-Stat	16
Mean (U)	12
SD(U) - Adj ties	4.899
Lower U-Stat Critical Value (0.025)	3
Upper U-Stat Critical Value (0.975)	21
Standardized WMW U-Stat	0.714
Approximate P-Value	0.475

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 7/26/2023 4:40:01 PM
 From File WorkSheet_a.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 <> Sample 2 Mean/Median

Sample 1 Data: Chloride(new)

Sample 2 Data: Chloride(old)

	Raw Statistics	
	Sample 1	Sample 2
Number of Valid Data	3	17
Number of Non-Detects	0	5
Number of Detect Data	3	12
Minimum Non-Detect	N/A	5
Maximum Non-Detect	N/A	5
Percent Non-detects	0.00%	29.41%
Minimum Detect	5.16	2.48
Maximum Detect	5.6	6.69
Mean of Detects	5.373	4.429
Median of Detects	5.36	4.905
SD of Detects	0.22	1.416

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	48
WMW U-Stat	42
Mean (U)	25.5
SD(U) - Adj ties	9.447
Lower U-Stat Critical Value (0.025)	7
Upper U-Stat Critical Value (0.975)	44
Standardized WMW U-Stat	1.912
Approximate P-Value	0.0559

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 Uncensor Full Data Sets without NDs

User Selected Options
 Date/Time of Computation ProUCL 5.2 7/26/2023 4:50:38 PM
 From File WorkSheet_c.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: pH(new)

Sample 2 Data: pH(old)

	Raw Statistics	
	Sample 1	Sample 2
Number of Valid Observations	3	17
Number of Distinct Observations	3	13
Minimum	7.02	7.03
Maximum	7.39	7.81
Mean	7.253	7.366
Median	7.35	7.3
SD	0.203	0.227
SE of Mean	0.117	0.0551

Wilcoxon-Mann-Whitney (WMW) Test

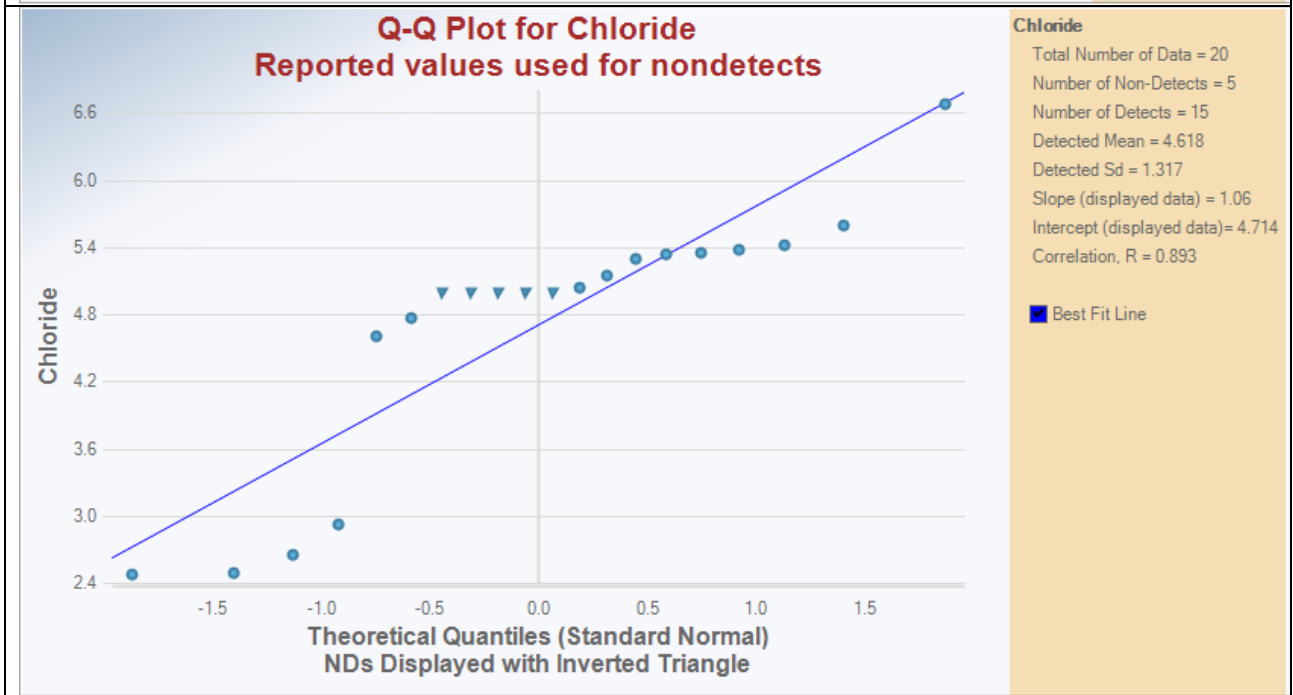
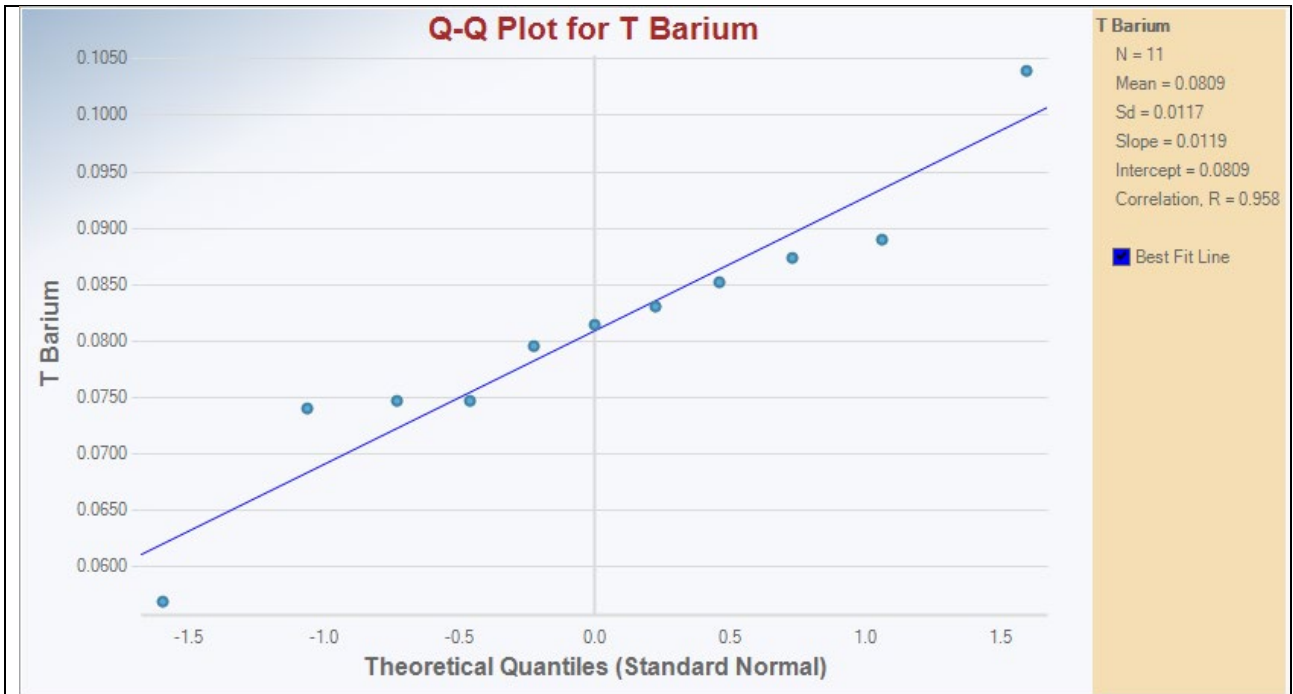
H0: Mean/Median of Sample 1 = Mean/Median of Sample 2

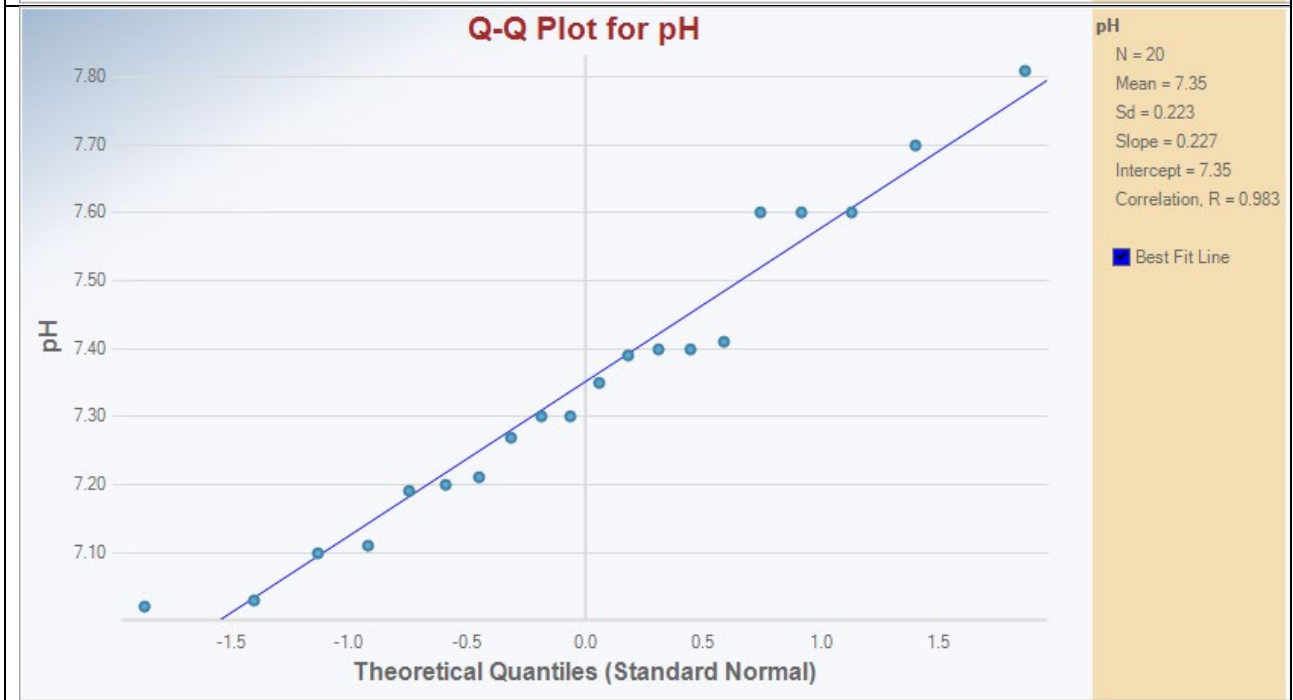
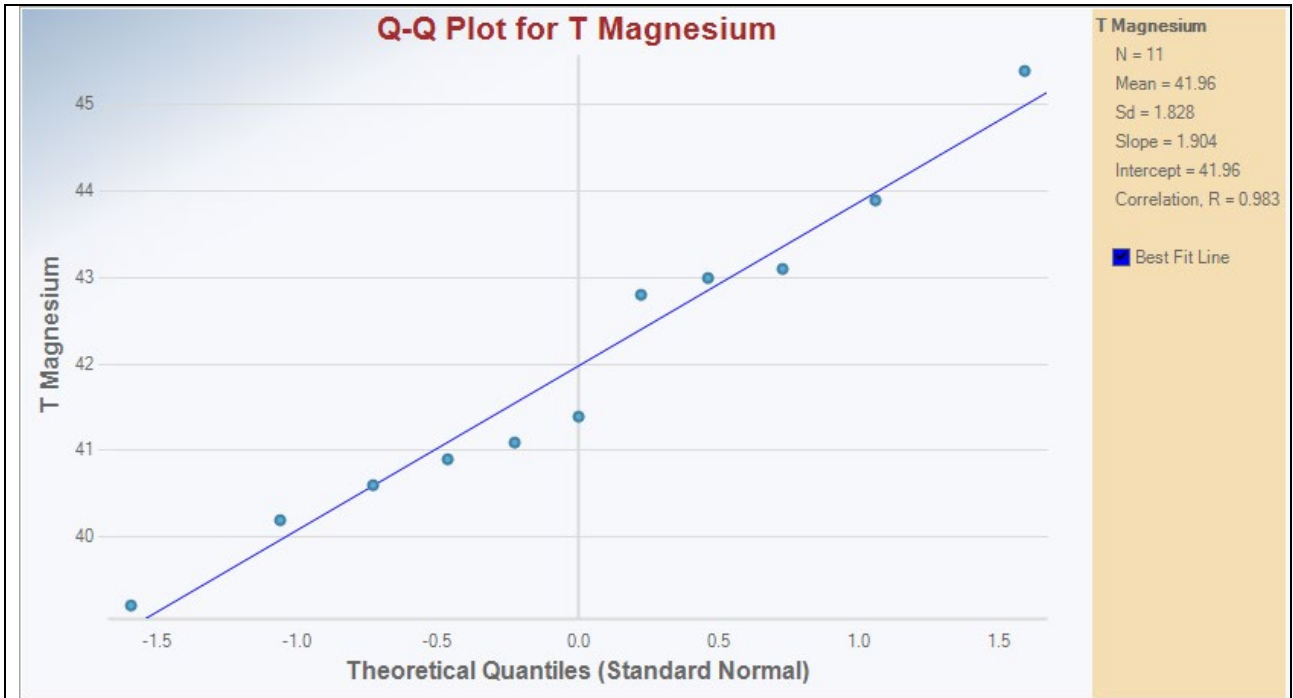
Sample 1 Rank Sum W-Stat	24
WMW U-Stat	18
Mean (U)	25.5
SD(U) - Adj ties	9.429
Lower U-Stat Critical Value (0.025)	7
Upper U-Stat Critical Value (0.975)	44
Standardized WMW U-Stat	-0.796
Approximate P-Value	0.426

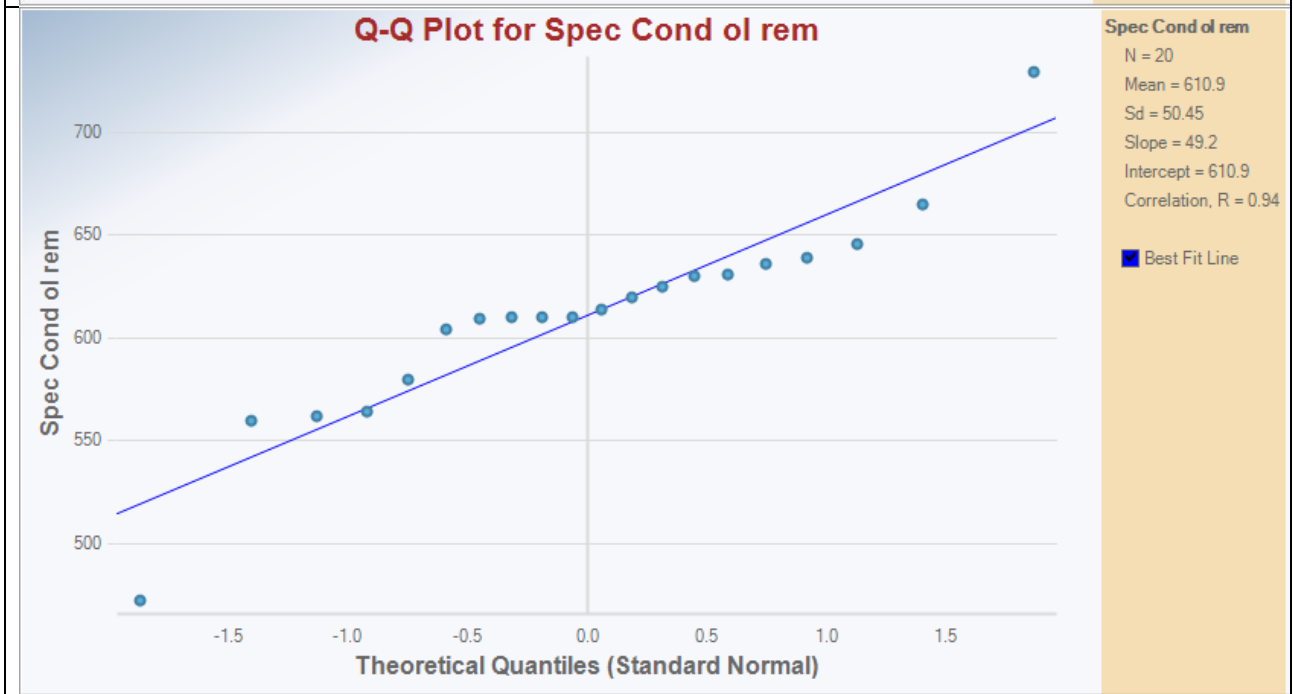
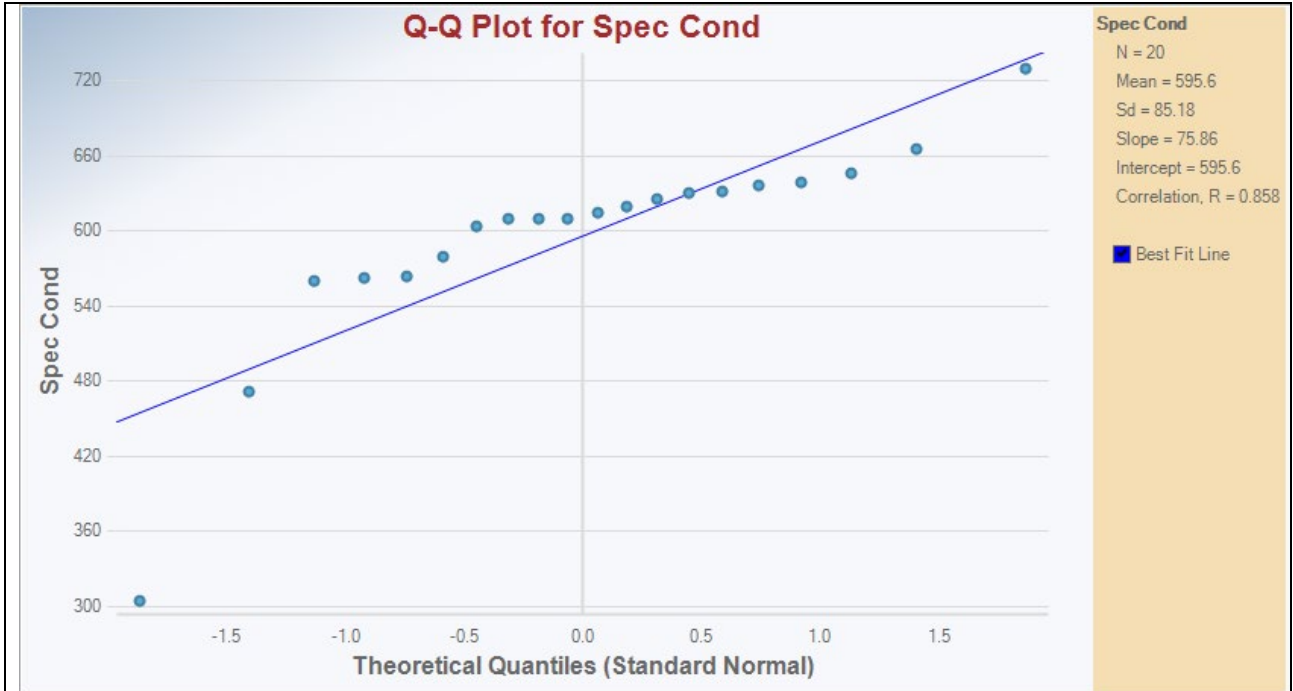
Conclusion with Alpha = 0.05

Do Not Reject H0, Conclude Sample 1 = Sample 2

Probability Graphs and Outlier Test







Outlier Tests for Selected Uncensored Variables

User Selected Options

Date/Time of Computation ProUCL 5.2 7/26/2023 1:52:58 PM

From File WorkSheet_a.xls

Full Precision OFF

Dixon's Outlier Test for Spec Cond

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: 0.493

For 10% significance level, 730 is an outlier.

For 5% significance level, 730 is an outlier.

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

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

Test Statistic: 0.748

For 10% significance level, 304 is an outlier.

For 5% significance level, 304 is an outlier.

For 1% significance level, 304 is an outlier.

Trend Tests

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation ProUCL 5.2 7/26/2023 1:44:30 PM
From File WorkSheet.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	11
Number of Values Reported (n)	11
Number of Values After Averaging	11
Number of Replicates	0
Minimum	0.0569
Maximum	0.104
Mean	0.0809
Geometric Mean	0.0801
Median	0.0814
Standard Deviation	0.0117
Coefficient of Variation	0.144

Mann-Kendall Statistics

M-K Test Value (S)	32
Tabulated p-value	0.005
Standard Deviation of S	12.81
Standardized Value of S	2.421
Approximate p-value	0.00775

Approximate inference for Theil-Sen Trend Test

Number of Slopes	55
Theil-Sen Slope	1.5128E-5
Theil-Sen Intercept	-0.583
M1'	16.97
One-sided 95% lower limit of Slope	4.8542E-6
95% LCL of Slope (0.025)	3.9826E-6
95% UCL of Slope (0.975)	2.4704E-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	0.0676	-0.0107
2	43208	0.0747	0.0706	0.0041
3	43382	0.0747	0.0732	0.00147
4	43573	0.0814	0.0761	0.00528
5	43739	0.0741	0.0786	-0.00453
6	43922	0.0831	0.0814	0.0017
7	44105	0.0874	0.0842	0.00323
8	44312	0.089	0.0873	0.0017
9	44470	0.0853	0.0897	-0.00439
10	44652	0.104	0.0924	0.0116
11	44835	0.0796	0.0952	-0.0156

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation ProUCL 5.2 7/26/2023 1:58:09 PM
From File WorkSheet_a.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	4.714
Geometric Mean	4.549
Median	5
Standard Deviation	1.144
Coefficient of Variation	0.243

Mann-Kendall Statistics

M-K Test Value (S)	52
Tabulated p-value	0.049
Standard Deviation of S	30.55
Standardized Value of S	1.669
Approximate p-value	0.0475

Approximate inference for Theil-Sen Trend Test

Number of Slopes	190
Theil-Sen Slope	1.3688E-4
Theil-Sen Intercept	-0.901
M1	65.06
M2	124.9
95% LCL of Slope (0.025)	0
95% UCL of Slope (0.975)	5.9725E-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	41365	5	4.761	0.239
2	41548	5	4.786	0.214
3	41739	5	4.813	0.187
4	41921	5	4.837	0.163
5	42095	2.66	4.861	-2.201
6	42278	2.93	4.886	-1.956
7	42461	2.48	4.911	-2.431
8	42644	6.69	4.936	1.754
9	42826	2.5	4.961	-2.461
10	43009	5	4.986	0.0136
11	43208	4.61	5.014	-0.404
12	43382	5.43	5.037	0.393
13	43573	5.35	5.064	0.286
14	43739	5.38	5.086	0.294
15	43922	5.04	5.111	-0.0714
16	44105	5.31	5.136	0.174
17	44312	4.77	5.165	-0.395
18	44470	5.6	5.186	0.414
19	44652	5.36	5.211	0.149
20	44835	5.16	5.236	-0.0763

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation ProUCL 5.2 7/26/2023 1:46:03 PM
From File WorkSheet.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	11
Number of Values Reported (n)	11
Number of Values After Averaging	11
Number of Replicates	0
Minimum	39.2
Maximum	45.4
Mean	41.96
Geometric Mean	41.93
Median	41.4
Standard Deviation	1.828
Coefficient of Variation	0.0436

Mann-Kendall Statistics

M-K Test Value (S)	5
Tabulated p-value	0.381
Standard Deviation of S	12.85
Standardized Value of S	0.311
Approximate p-value	0.378

Approximate inference for Theil-Sen Trend Test

Number of Slopes	55
Theil-Sen Slope	1.9120E-4
Theil-Sen Intercept	33
M1	14.91
M2	40.09
95% LCL of Slope (0.025)	-0.00247
95% UCL of Slope (0.975)	0.00278

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	41.23	2.675
2	43208	42.8	41.26	1.537
3	43382	40.9	41.3	-0.397
4	43573	40.6	41.33	-0.733
5	43739	39.2	41.37	-2.165
6	43922	41.4	41.4	0
7	44105	41.1	41.43	-0.335
8	44312	43	41.47	1.525
9	44470	40.2	41.5	-1.305
10	44652	45.4	41.54	3.86
11	44835	43.1	41.57	1.525

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation ProUCL 5.2 7/26/2023 2:07:48 PM
From File WorkSheet_c.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 of Values Reported (n)	20
Number of Values After Averaging	20
Number of Replicates	0
Minimum	7.02
Maximum	7.81
Mean	7.35
Geometric Mean	7.346
Median	7.325
Standard Deviation	0.223
Coefficient of Variation	0.0303

Mann-Kendall Statistics

M-K Test Value (S)	-33
Tabulated p-value	0.159
Standard Deviation of S	30.73
Standardized Value of S	-1.041
Approximate p-value	0.149

Approximate inference for Theil-Sen Trend Test

Number of Slopes	190
Theil-Sen Slope	-5.476E-5
Theil-Sen Intercept	9.686
M1	64.89
M2	125.1
95% LCL of Slope (0.025)	-1.300E-4
95% UCL of Slope (0.975)	5.5363E-5

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	41183	7.3	7.43	-0.13
2	41365	7.4	7.42	-0.0205
3	41548	7.7	7.41	0.29
4	41739	7.6	7.4	0.2
5	41921	7.6	7.39	0.21
6	42278	7.03	7.37	-0.34
7	42461	7.3	7.36	-0.0605
8	42644	7.11	7.35	-0.24
9	42826	7.21	7.34	-0.13
10	43009	7.27	7.33	-0.0604
11	43208	7.6	7.32	0.28
12	43382	7.81	7.31	0.5
13	43573	7.19	7.3	-0.11
14	43739	7.1	7.29	-0.19
15	43922	7.41	7.28	0.13
16	44105	7.2	7.27	-0.0704
17	44287	7.4	7.26	0.14
18	44470	7.35	7.25	0.0996
19	44652	7.39	7.24	0.15
20	44835	7.02	7.23	-0.21

Theil-Sen Trend Test Analysis

User Selected Options
Date/Time of Computation ProUCL 5.2 7/26/2023 2:03:27 PM
From File WorkSheet_b.xls
Full Precision OFF
Average Replicates Replicates at sampling events will be averaged!
Confidence Coefficient 0.95
Level of Significance 0.05

Spec Cond outlier rem

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	472
Maximum	730
Mean	610.9
Geometric Mean	608.8
Median	612
Standard Deviation	50.45
Coefficient of Variation	0.0826

Mann-Kendall Statistics

M-K Test Value (S)	33
Tabulated p-value	0.159
Standard Deviation of S	30.76
Standardized Value of S	1.04
Approximate p-value	0.149

Approximate inference for Theil-Sen Trend Test

Number of Slopes	190
Theil-Sen Slope	0.00639
Theil-Sen Intercept	336.7
M1	64.85
M2	125.1
95% LCL of Slope (0.025)	-0.0069
95% UCL of Slope (0.975)	0.0293

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	41183	610	599.7	10.3
2	41365	630	600.9	29.14
3	41548	620	602	17.97
4	41739	610	603.3	6.747
5	41921	610	604.4	5.585
6	42095	636	605.5	30.47
7	42278	560	606.7	-46.7
8	42644	562	609	-47.03
9	42826	472	610.2	-138.2
10	43009	564	611.4	-47.36
11	43208	730	612.6	117.4
12	43382	580	613.7	-33.75
13	43573	665	615	50.03
14	43739	625	616	8.973
15	43922	609.2	617.2	-7.996
16	44105	614	618.4	-4.365
17	44312	604	619.7	-15.69
18	44470	639.3	620.7	18.6
19	44652	631.4	621.9	9.542
20	44835	646.2	623	23.17

Background Threshold Values

Background Statistics for Uncensored Full Data Sets

User Selected Options

Date/Time of Computation ProUCL 5.2 7/26/2023 1:47:22 PM
 From File WorkSheet.xls
 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	11	Number of Distinct Observations	10
Minimum	0.0569	First Quartile	0.0747
Second Largest	0.089	Median	0.0814
Maximum	0.104	Third Quartile	0.0864
Mean	0.0809	SD	0.0117
Coefficient of Variation	0.144	Skewness	-0.115
Mean of logged Data	-2.524	SD of logged Data	0.15

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.815	d2max (for USL)	2.234
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Normal GOF Test

Shapiro Wilk Test Statistic	0.946
1% Shapiro Wilk Critical Value	0.792
Lilliefors Test Statistic	0.189
1% Lilliefors Critical Value	0.291

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	0.114
95% UPL (t)	0.103

90% Percentile (z)	0.0959
95% Percentile (z)	0.1
99% Percentile (z)	0.108
95% USL	0.107

95% UPL for Next 8 Observations	0.118
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95% UPL for Mean of 8 Observations 0.0908

Gamma GOF Test	
A-D Test Statistic	0.392
5% A-D Critical Value	0.728
K-S Test Statistic	0.193
5% K-S Critical Value	0.255

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)	50.51	k star (bias corrected MLE)	36.79
Theta hat (MLE)	0.0016	Theta star (bias corrected MLE)	0.0022
nu hat (MLE)	1111	nu star (bias corrected)	809.4
MLE Mean (bias corrected)	0.0809	MLE Sd (bias corrected)	0.0133

Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	0.105	90% Percentile	0.0984
95% Hawkins Wixley (HW) Approx. Gamma UPL	0.105	95% Percentile	0.104
95% WH UPL for Next 8 Observations	0.124	99% Percentile	0.115
95% HW UPL for Next 8 Observations	0.125		
95% WH Approx. Gamma UTL with 95% Coverage	0.119	95% HW Approx. Gamma UTL with 95% Coverage	0.12
95% WH USL	0.11	95% HW USL	0.11

Lognormal GOF Test	
Shapiro Wilk Test Statistic	0.923
10% Shapiro Wilk Critical Value	0.876
Lilliefors Test Statistic	0.21
10% Lilliefors Critical Value	0.231

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	0.122	90% Percentile (z)	0.0971
95% UPL (t)	0.106	95% Percentile (z)	0.103
95% UPL for Next 8 Observations	0.129	99% Percentile (z)	0.114
95% UPL for Mean of 8 Observations	0.0909	95% USL	0.112

Nonparametric Distribution Free Background Statistics
Data appear Normal at 1% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	11	95% UTL with 95% Coverage	0.104
Approx, f used to compute achieved CC	0.579	Approximate Actual Confidence Coefficient achieved by UTL	0.431
		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	0.089
90% Chebyshev UPL	0.118	95% Percentile	0.0965
95% Chebyshev UPL	0.134	99% Percentile	0.103
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	11	Number of Distinct Observations	11
Minimum	39.2	First Quartile	40.75
Second Largest	43.9	Median	41.4
Maximum	45.4	Third Quartile	43.05
Mean	41.96	SD	1.828
Coefficient of Variation	0.0436	Skewness	0.397
Mean of logged Data	3.736	SD of logged Data	0.0433

Critical Values for Background Threshold Values (BTVs)

Tolerance Factor K (For UTL)	2.815	d2max (for USL)	2.234
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Normal GOF Test	Shapiro Wilk GOF Test
Shapiro Wilk Test Statistic	0.966
1% Shapiro Wilk Critical Value	0.792
Lilliefors Test Statistic	0.167
1% Lilliefors Critical Value	0.291
	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	47.11	90% Percentile (z)	44.31
95% UPL (t)	45.42	95% Percentile (z)	44.97
95% UPL for Next 8 Observations		99% Percentile (z)	46.22
95% UPL for Mean of 8 Observations	43.5	95% USL	46.05

Gamma GOF Test	Anderson-Darling Gamma GOF Test
A-D Test Statistic	0.257
5% A-D Critical Value	0.726
K-S Test Statistic	0.168
5% K-S Critical Value	0.254
	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)	584.1	k star (bias corrected MLE)	424.8
Theta hat (MLE)	0.0718	Theta star (bias corrected MLE)	0.0988
nu hat (MLE)	12850	nu star (bias corrected)	9346
MLE Mean (bias corrected)	41.96	MLE Sd (bias corrected)	2.036

Background Statistics Assuming Gamma Distribution			
95% Wilson Hilferty (WH) Approx. Gamma UPL	45.48	90% Percentile	44.59
95% Hawkins Wixley (HW) Approx. Gamma UPL	45.49	95% Percentile	45.37
95% WH UPL for Next 8 Observations	47.99	99% Percentile	46.84
95% HW UPL for Next 8 Observations	48.02		
95% WH Approx. Gamma UTL with 95% Coverage	47.28	95% HW Approx. Gamma UTL with 95% Coverage	47.3
95% WH USL	46.14	95% HW USL	46.15

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.97
10% Shapiro Wilk Critical Value	0.876
Lilliefors Test Statistic	0.16
10% Lilliefors Critical Value	0.231

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	47.37	90% Percentile (z)	44.32
95% UPL (t)	45.51	95% Percentile (z)	45.02
95% UPL for Next 8 Observations	48.11	99% Percentile (z)	46.37
95% UPL for Mean of 8 Observations	43.49	95% USL	46.19

Nonparametric Distribution Free Background Statistics

Data appear Normal at 1% Significance Level

Nonparametric Upper Limits for Background Threshold Values

Order of Statistic, order	11	95% UTL with 95% Coverage	45.4
Approx, f used to compute achieved CC	0.579	Approximate Actual Confidence Coefficient achieved by UTL	0.431
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	45.4	95% BCA Bootstrap UTL with 95% Coverage	45.4
95% UPL	45.4	90% Percentile	43.9
90% Chebyshev UPL	47.69	95% Percentile	44.65
95% Chebyshev UPL	50.29	99% Percentile	45.25
95% USL	45.4		

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 7/26/2023 1:59:35 PM
 From File WorkSheet_a.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	16		
Number of Detects	15	Number of Non-Detects	5
Number of Distinct Detects	15	Number of Distinct Non-Detects	1
Minimum Detect	2.48	Minimum Non-Detect	5
Maximum Detect	6.69	Maximum Non-Detect	5
Variance Detected	1.736	Percent Non-Detects	25%
Mean Detected	4.618	SD Detected	1.317
Mean of Detected Logged Data	1.483	SD of Detected Logged Data	0.333

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	0.837
1% Shapiro Wilk Critical Value	0.835
Lilliefors Test Statistic	0.231
1% Lilliefors Critical Value	0.255

Shapiro Wilk GOF Test

Detected Data appear Normal at 1% Significance Level

Lilliefors GOF Test

Detected Data appear Normal at 1% Significance Level

Detected Data appear Normal at 1% Significance Level

Kaplan Meier (KM) Background Statistics Assuming Normal Distribution

KM Mean	4.295	KM SD	1.329
95% UTL 95% Coverage	7.48	95% KM UPL (t)	6.65
95% KM UPL for Next 8 Observations	8.052	95% KM UPL for Mean of Next 8 Observations	5.256
90% KM Percentile (z)	5.998	95% KM Percentile (z)	6.481
99% KM Percentile (z)	7.387	95% KM USL	7.693

DL/2 Substitution Background Statistics Assuming Normal Distribution

Mean	4.089	SD	1.471
95% UTL 95% Coverage	7.613	95% UPL (t)	6.695
95% UPL for Next 8 Observations	8.247	95% UPL for Mean of Next 8 Observations	5.153
90% Percentile (z)	5.974	95% Percentile (z)	6.508
99% Percentile (z)	7.511	95% USL	7.85

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	1.523
5% A-D Critical Value	0.737
K-S Test Statistic	0.271
5% K-S Critical Value	0.221

Anderson-Darling GOF Test

Data Not Gamma Distributed at 5% Significance Level

Kolmogorov-Smirnov GOF

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)	10.89	k star (bias corrected MLE)	8.76
Theta hat (MLE)	0.424	Theta star (bias corrected MLE)	0.527
nu hat (MLE)	326.8	nu star (bias corrected)	262.8
MLE Mean (bias corrected)	4.618		
MLE Sd (bias corrected)	1.56	95% Percentile of Chisquare (2kstar)	28.25

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	4.317
Maximum	6.69	Median	4.69
SD	1.276	CV	0.295
k hat (MLE)	11.11	k star (bias corrected MLE)	9.473
Theta hat (MLE)	0.389	Theta star (bias corrected MLE)	0.456
nu hat (MLE)	444.2	nu star (bias corrected)	378.9
MLE Mean (bias corrected)	4.317	MLE Sd (bias corrected)	1.403
95% Percentile of Chisquare (2kstar)	30.07	90% Percentile	6.184
95% Percentile	6.853	99% Percentile	8.23

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	8.155	8.3	95% Approx. Gamma UPL	6.951	7.016
95% Gamma USL	8.486	8.656	95% UPL for Next 8 Observations	9.063	9.283

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	4.295	SD (KM)	1.329
Variance (KM)	1.767	SE of Mean (KM)	0.344
k hat (KM)	10.44	k star (KM)	8.905
nu hat (KM)	417.5	nu star (KM)	356.2
theta hat (KM)	0.411	theta star (KM)	0.482
80% gamma percentile (KM)	5.436	90% gamma percentile (KM)	6.211
95% gamma percentile (KM)	6.903	99% gamma percentile (KM)	8.329

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	8.387	8.557	95% Approx. Gamma UPL	7.088	7.165
95% KM Gamma Percentile	6.842	6.904	95% Gamma USL	8.745	8.946

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.784
10% Shapiro Wilk Critical Value	0.901

Shapiro Wilk GOF Test

Data Not Lognormal at 10% Significance Level

Lilliefors Test Statistic 0.287
 10% Lilliefors Critical Value 0.202

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	4.284	Mean in Log Scale	1.407
SD in Original Scale	1.3	SD in Log Scale	0.325
95% UTL 95% Coverage	8.901	95% BCA UTL 95% Coverage	6.69
95% Bootstrap (%) UTL 95% Coverage	6.69	95% UPL (t)	7.266
95% UPL for Next 8 Observations	10.24	95% UPL for Mean of 8 Observations	5.166
90% Percentile (z)	6.195	95% Percentile (z)	6.972
99% Percentile (z)	8.702	95% USL	9.379

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean of Logged Data	1.403	95% KM UTL (Lognormal)95% Coverage	9.202
KM SD of Logged Data	0.341	95% KM UPL (Lognormal)	7.439
95% KM Percentile Lognormal (z)	7.124	95% KM USL (Lognormal)	9.719

Background DL/2 Statistics Assuming Lognormal Distribution

Mean in Original Scale	4.089	Mean in Log Scale	1.342
SD in Original Scale	1.471	SD in Log Scale	0.381
95% UTL 95% Coverage	9.527	95% UPL (t)	7.512
95% UPL for Next 8 Observations	11.23	95% UPL for Mean of 8 Observations	5.038
90% Percentile (z)	6.232	95% Percentile (z)	7.157
99% Percentile (z)	9.278	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 appear to 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
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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	6.636
95% USL	6.69	95% KM Chebyshev UPL	10.23

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 7/26/2023 2:08:09 PM
From File	WorkSheet.xls
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	16
Minimum	7.02	First Quartile	7.198
Second Largest	7.7	Median	7.325
Maximum	7.81	Third Quartile	7.458
Mean	7.35	SD	0.223
Coefficient of Variation	0.0303	Skewness	0.423
Mean of logged Data	1.994	SD of logged Data	0.0302

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 0.957
 1% Shapiro Wilk Critical Value 0.868
 Lilliefors Test Statistic 0.143
 1% Lilliefors Critical Value 0.223

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 7.883
 95% UPL (t) 7.744
95% UPL for Next 8 Observations 7.979
 95% UPL for Mean of 8 Observations 7.511

90% Percentile (z) 7.635
 95% Percentile (z) 7.716
 99% Percentile (z) 7.868
 95% USL 7.919

Gamma GOF Test

A-D Test Statistic 0.328
 5% A-D Critical Value 0.74
 K-S Test Statistic 0.136
 5% K-S Critical Value 0.193

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) 1154
 Theta hat (MLE) 0.00637
 nu hat (MLE) 46174
 MLE Mean (bias corrected) 7.35

k star (bias corrected MLE) 981.2
 Theta star (bias corrected MLE) 0.00749
 nu star (bias corrected) 39250
 MLE Sd (bias corrected) 0.235

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL 7.748
 95% Hawkins Wixley (HW) Approx. Gamma UPL 7.748
 95% WH UPL for Next 8 Observations 7.993
 95% HW UPL for Next 8 Observations 7.994
 95% WH Approx. Gamma UTL with 95% Coverage 7.892
 95% WH USL 7.929

90% Percentile 7.652
 95% Percentile 7.74
 99% Percentile 7.906
 95% HW Approx. Gamma UTL with 95% Coverage 7.893
 95% HW USL 7.931

Lognormal GOF Test

Shapiro Wilk Test Statistic 0.96

Shapiro Wilk Lognormal GOF Test

10% Shapiro Wilk Critical Value	0.92	Data appear Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.137	Lilliefors Lognormal GOF Test
10% Lilliefors Critical Value	0.176	Data appear Lognormal at 10% Significance Level

Data appear Lognormal at 10% Significance Level

Background Statistics assuming Lognormal Distribution

95% UTL with 95% Coverage	7.897	90% Percentile (z)	7.636
95% UPL (t)	7.749	95% Percentile (z)	7.72
95% UPL for Next 8 Observations	8	99% Percentile (z)	7.88
95% UPL for Mean of 8 Observations	7.508	95% USL	7.935

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	7.81
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	7.81	95% BCA Bootstrap UTL with 95% Coverage	7.81
95% UPL	7.805	90% Percentile	7.61
90% Chebyshev UPL	8.034	95% Percentile	7.706
95% Chebyshev UPL	8.344	99% Percentile	7.789
95% USL	7.81		

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 7/26/2023 2:03:43 PM
 From File WorkSheet.xls



Full Precision OFF
 Confidence Coefficient 95%
 Coverage 95%
 New or Future K Observations 8
 Number of Bootstrap Operations 2000

Spec Cond [outlier removed]

General Statistics

Total Number of Observations	20	Number of Distinct Observations	18
		Number of Missing Observations	1
Minimum	472	First Quartile	598
Second Largest	665	Median	612
Maximum	730	Third Quartile	632.6
Mean	610.9	SD	50.45
Coefficient of Variation	0.0826	Skewness	-0.507
Mean of logged Data	6.412	SD of logged Data	0.0854

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 0.911
 1% Shapiro Wilk Critical Value 0.868
 Lilliefors Test Statistic 0.196
 1% Lilliefors Critical Value 0.223

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	731.8	90% Percentile (z)	675.6
95% UPL (t)	700.3	95% Percentile (z)	693.9
95% UPL for Next 8 Observations	753.5	99% Percentile (z)	728.3
95% UPL for Mean of 8 Observations	647.4	95% USL	739.9

Gamma GOF Test

A-D Test Statistic	0.819
5% A-D Critical Value	0.74
K-S Test Statistic	0.206
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)	148.1	k star (bias corrected MLE)	125.9
Theta hat (MLE)	4.125	Theta star (bias corrected MLE)	4.851
nu hat (MLE)	5924	nu star (bias corrected)	5037
MLE Mean (bias corrected)	610.9	MLE Sd (bias corrected)	54.44

Background Statistics Assuming Gamma Distribution

95% Wilson Hilferty (WH) Approx. Gamma UPL	705.3	90% Percentile	681.6
95% Hawkins Wixley (HW) Approx. Gamma UPL	706	95% Percentile	703.1
95% WH UPL for Next 8 Observations	766.7	99% Percentile	744.6
95% HW UPL for Next 8 Observations	768.7		
95% WH Approx. Gamma UTL with 95% Coverage	741.2	95% HW Approx. Gamma UTL with 95% Coverage	742.6
95% WH USL	750.7	95% HW USL	752.3

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.888
10% Shapiro Wilk Critical Value	0.92
Lilliefors Test Statistic	0.213
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	747.1	90% Percentile (z)	679.3
95% UPL (t)	708.3	95% Percentile (z)	700.7
95% UPL for Next 8 Observations	775.1	99% Percentile (z)	742.7
95% UPL for Mean of 8 Observations	647.6	95% USL	757.4

Nonparametric Distribution Free Background Statistics



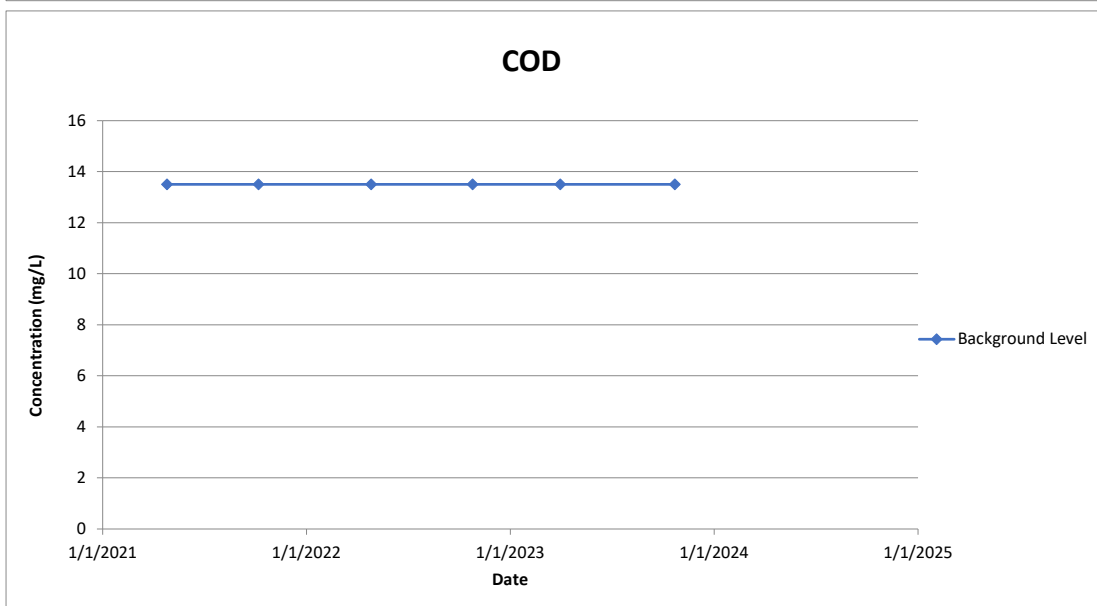
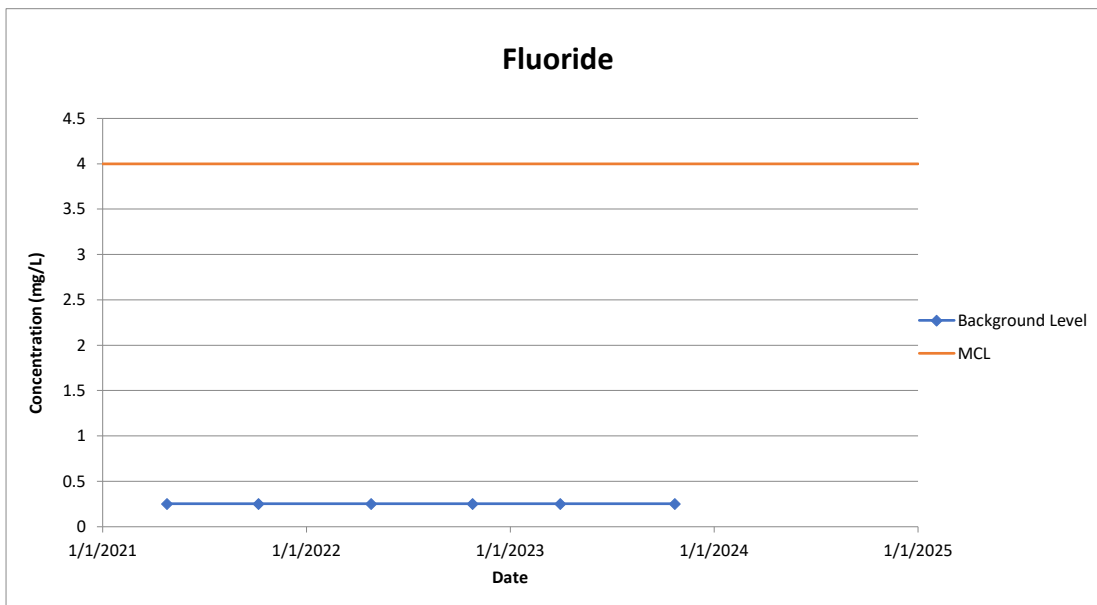
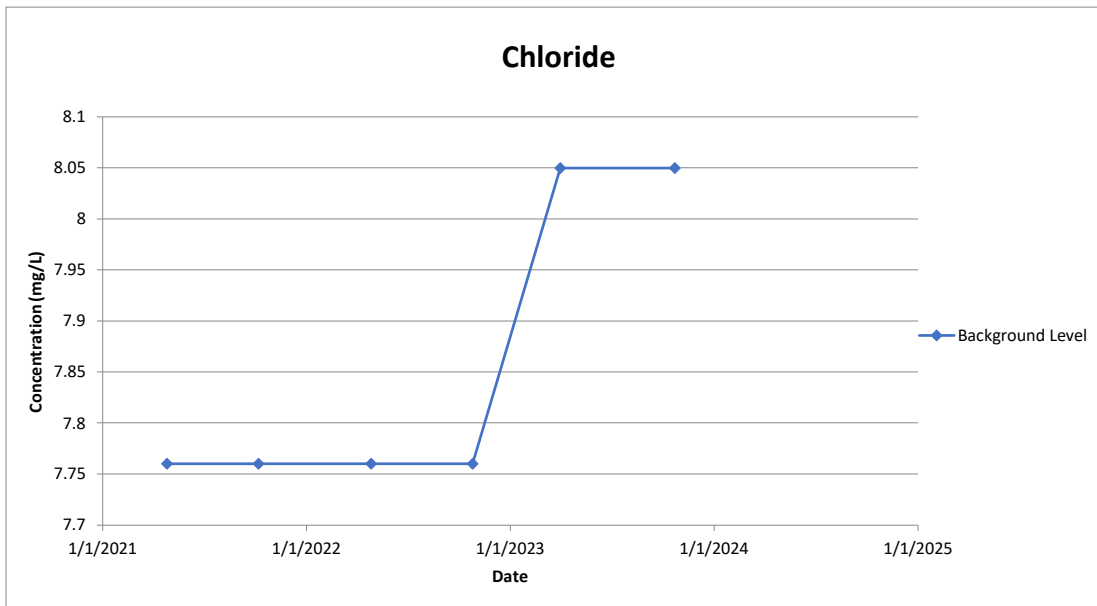
Data appear Normal at 1% Significance Level

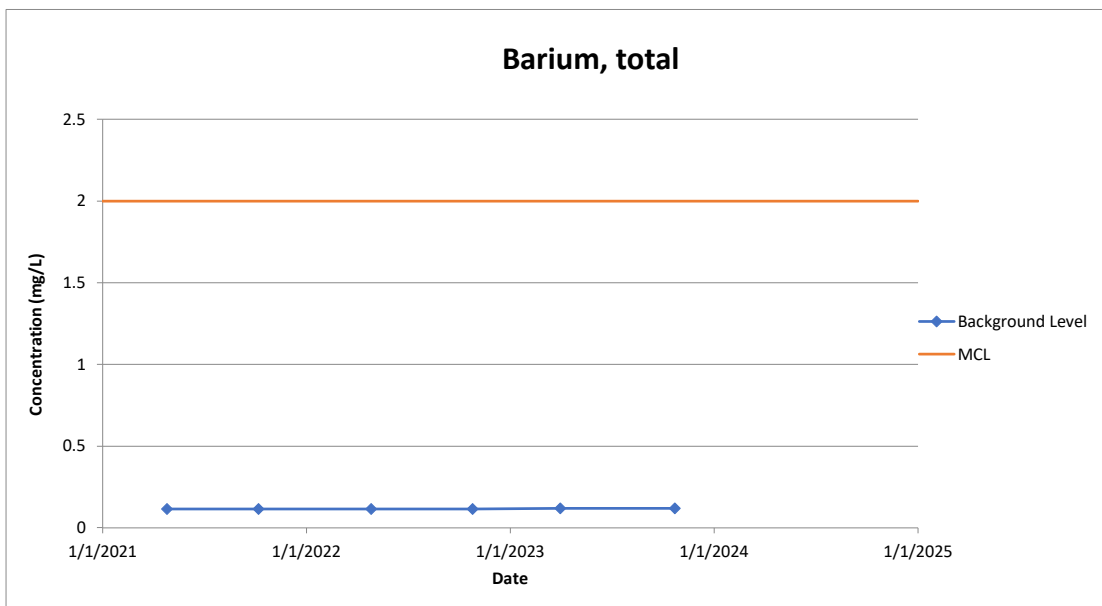
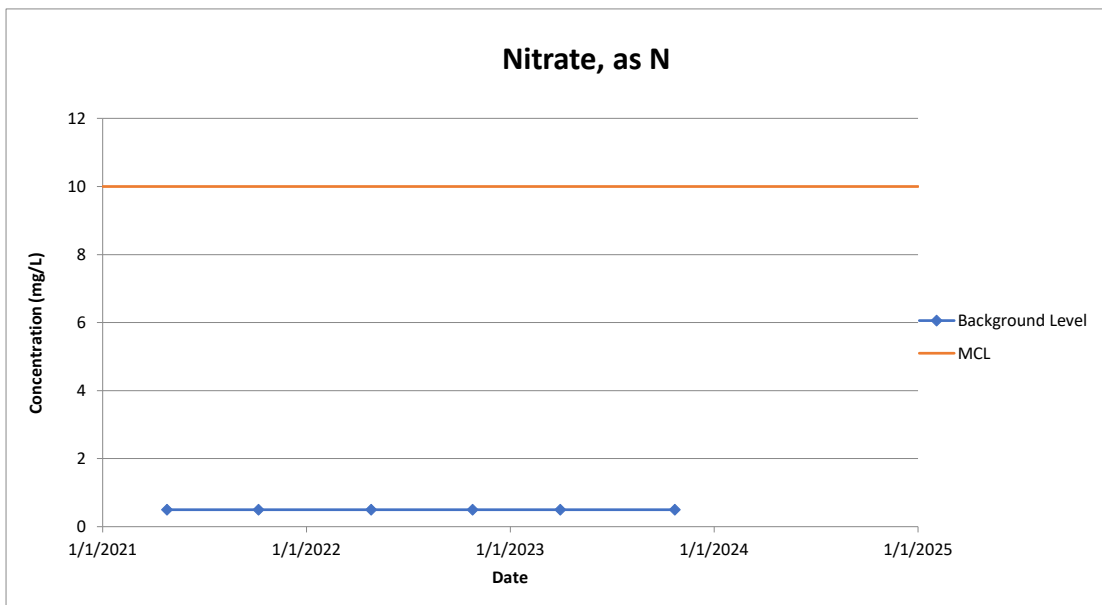
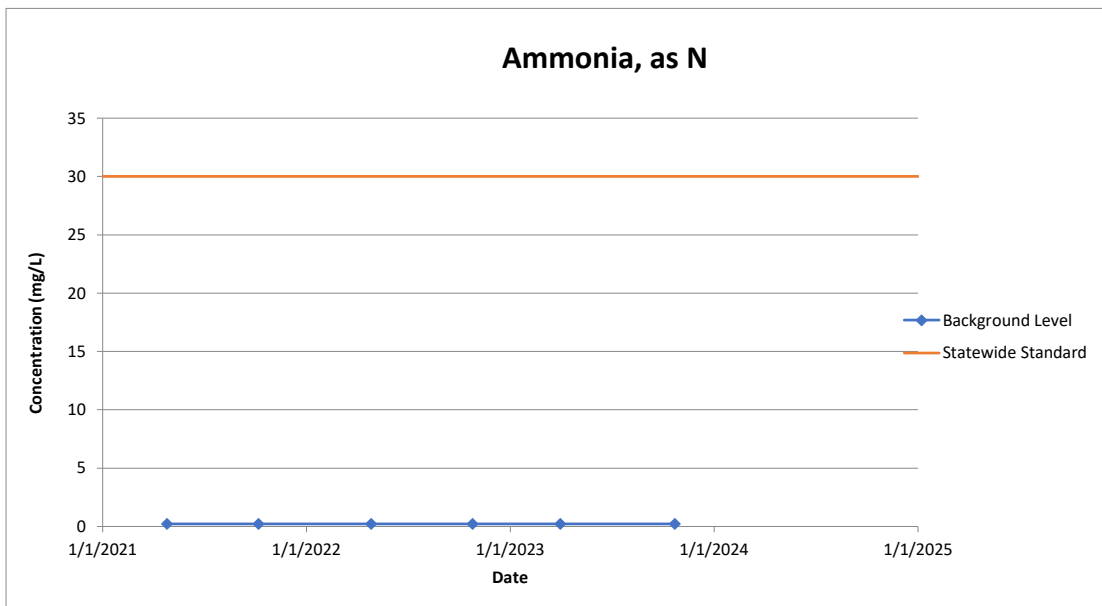
Nonparametric Upper Limits for Background Threshold Values

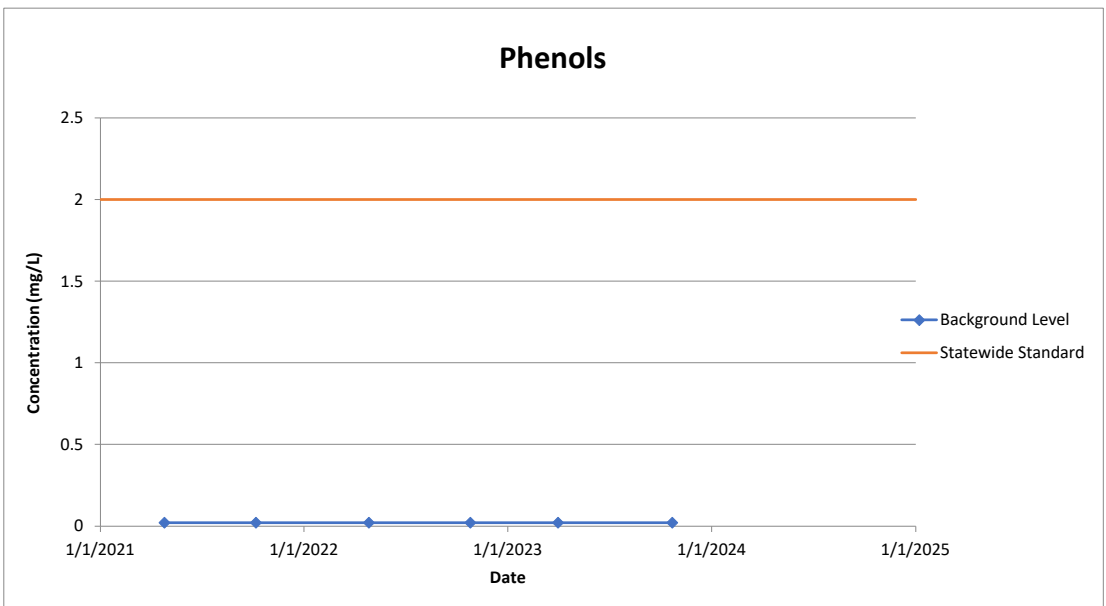
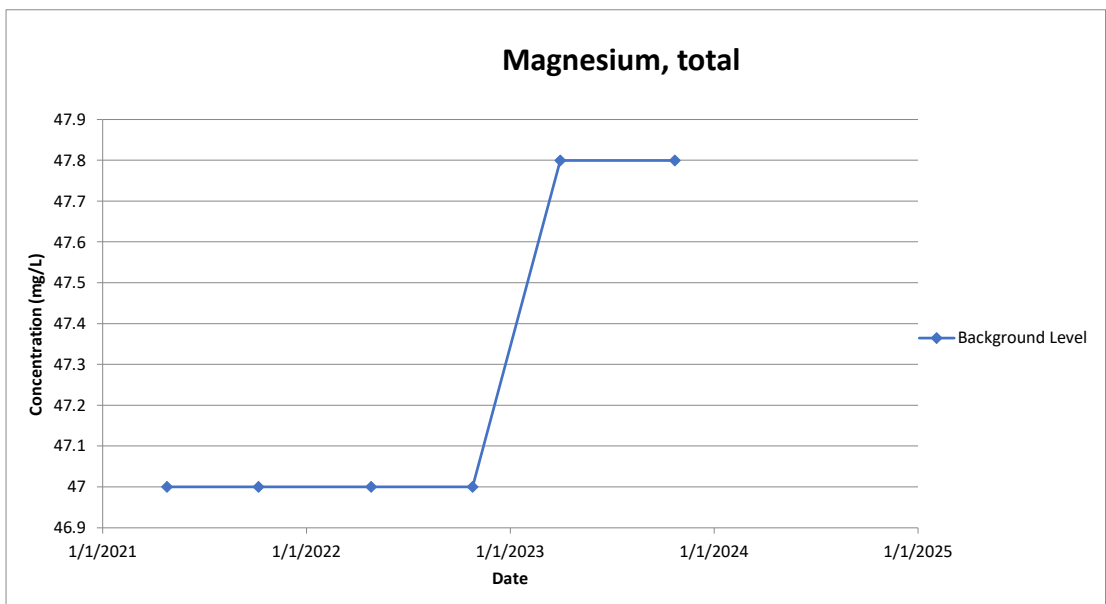
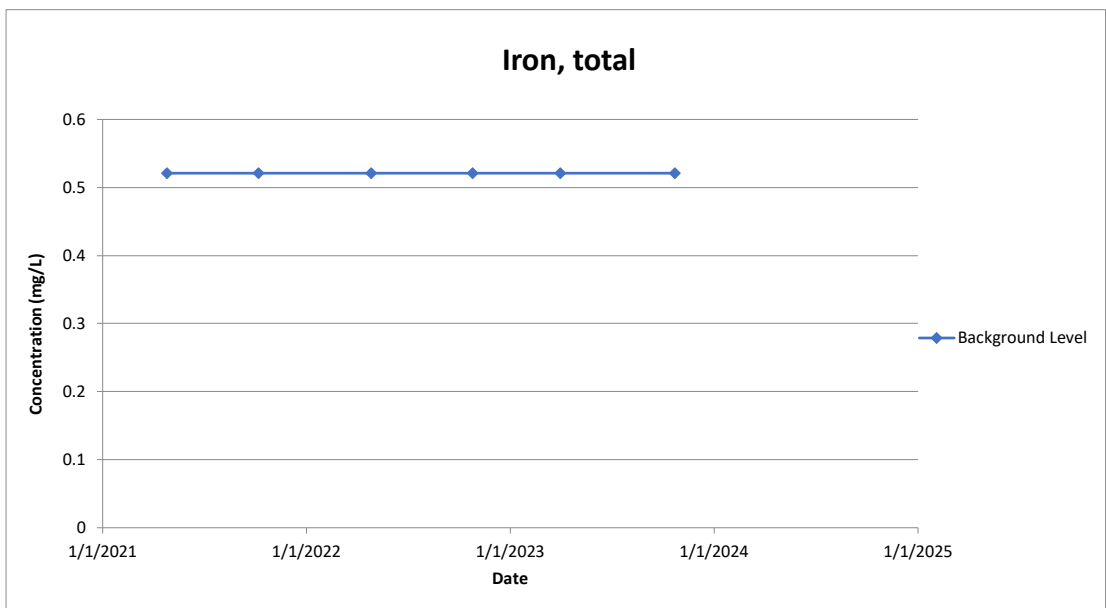
Order of Statistic, order	20	95% UTL with 95% Coverage	730
Approx, f used to compute achieved CC	1.053	Approximate Actual Confidence Coefficient achieved by UTL	0.642
		Approximate Sample Size needed to achieve specified CC	59
95% Percentile Bootstrap UTL with 95% Coverage	730	95% BCA Bootstrap UTL with 95% Coverage	730
95% UPL	726.8	90% Percentile	648.1
90% Chebyshev UPL	766	95% Percentile	668.3
95% Chebyshev UPL	836.2	99% Percentile	717.7
95% USL	730		

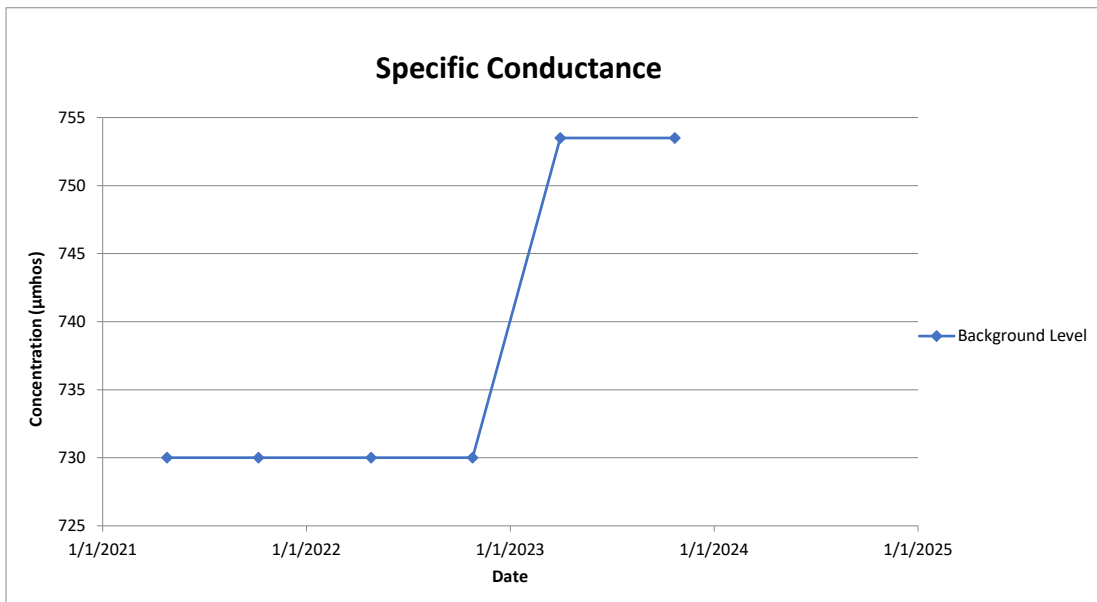
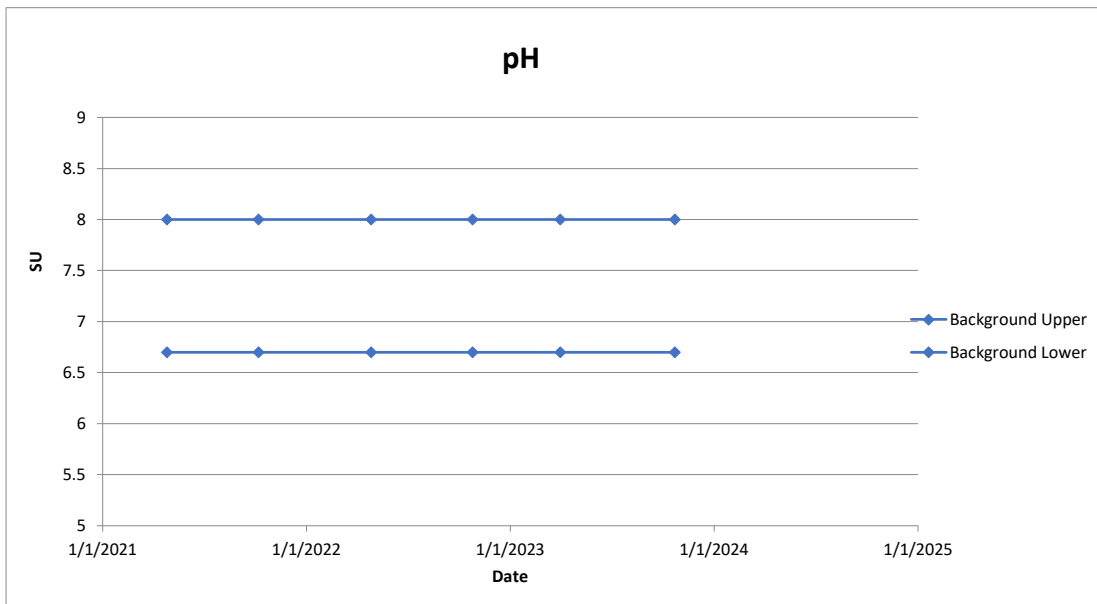
Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20. Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers and consists of observations collected from clean unimpacted locations.

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.









Updated by: L. Auner, 1/4/2024
 Checked by: M. Holicky 1/11/2024

Appendix D: Laboratory Reports

- April 2023
- October 2023
- November 2023

**Laboratory Analytical Report
April 2023**

 **ANALYTICAL REPORT****PREPARED FOR**

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

Generated 5/9/2023 4:47:35 PM

JOB DESCRIPTION

JD DUB Landfill- TRC

JOB NUMBER

310-254265-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



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5/9/2023 4:47:35 PM

Authorized for release by
Conner Calhoun, Project Management Assistant I
Conner.Calhoun@et.eurofinsus.com
(319)277-2401



Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	5
Detection Summary	6
Client Sample Results	8
Definitions	15
QC Sample Results	16
QC Association	19
Chronicle	21
Certification Summary	23
Method Summary	24
Chain of Custody	25
Receipt Checklists	27

Case Narrative

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Job ID: 310-254265-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-254265-1

Comments

No additional comments.

Receipt

The samples were received on 4/25/2023 8:50 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 was 5.4° C.

HPLC/IC

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

Metals

Methods 200.7 Rev 4.4, 6010D: The following sample was diluted due to the nature of the sample matrix: Combined (310-254265-6). 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.

General Chemistry

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

Job ID: 310-254265-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative
310-254265-2

Receipt

The samples were received on 4/25/2023 8:50 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 5.4°C

HPLC/IC

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

Sample Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-254265-1	MW-1	Water	04/24/23 13:24	04/25/23 08:50
310-254265-2	MW-2	Water	04/24/23 15:37	04/25/23 08:50
310-254265-3	MW-3	Water	04/24/23 16:41	04/25/23 08:50
310-254265-4	Dup-1	Water	04/24/23 00:00	04/25/23 08:50
310-254265-5	Underliner	Water	04/24/23 16:31	04/25/23 08:50
310-254265-6	Combined	Water	04/24/23 16:35	04/25/23 08:50
310-254265-7	EB-1	Water	04/24/23 00:00	04/25/23 08:50

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Detection Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-1

Lab Sample ID: 310-254265-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.45		1.00		mg/L	1		9056A	Total/NA
Barium	0.101		0.0100		mg/L	1		6010D	Total/NA
Magnesium	48.5		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	6.37		5.00		mg/L	1		5220D LL	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 310-254265-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.76		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	1.23		0.200		mg/L	1		9056A	Total/NA
Barium	0.107		0.0100		mg/L	1		6010D	Total/NA
Magnesium	51.3		1.00		mg/L	1		6010D	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 310-254265-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	100		10.0		mg/L	10		9056A	Total/NA
Nitrate as N	0.633		0.200		mg/L	1		9056A	Total/NA
Barium	0.0858		0.0100		mg/L	1		6010D	Total/NA
Magnesium	67.4		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	9.74		5.00		mg/L	1		5220D LL	Total/NA

Client Sample ID: Dup-1

Lab Sample ID: 310-254265-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	99.3		10.0		mg/L	10		9056A	Total/NA
Nitrate as N	1.26		0.200		mg/L	1		9056A	Total/NA
Barium	0.0817		0.0100		mg/L	1		6010D	Total/NA
Magnesium	64.0		1.00		mg/L	1		6010D	Total/NA

Client Sample ID: Underliner

Lab Sample ID: 310-254265-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	85.1		1.00		mg/L	1		9056A	Total/NA
Fluoride	0.305		0.200		mg/L	1		9056A	Total/NA
Barium	0.872		0.0100		mg/L	1		6010D	Total/NA
Iron	3.59		0.500		mg/L	1		6010D	Total/NA
Magnesium	47.8		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	3.69		0.200		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	32.2		5.00		mg/L	1		5220D LL	Total/NA

Client Sample ID: Combined

Lab Sample ID: 310-254265-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	114		10.0		mg/L	10		9056A	Total/NA
Nitrate as N	0.554		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.906		0.200		mg/L	1		9056A	Total/NA
Barium	0.350		0.0500		mg/L	5		6010D	Total/NA
Magnesium	90.9		5.00		mg/L	5		6010D	Total/NA
Ammonia as N	6.98		0.200		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	56.6		5.00		mg/L	1		5220D LL	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: EB-1

Lab Sample ID: 310-254265-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chemical Oxygen Demand	6.76		5.00		mg/L	1		5220D LL	Total/NA

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This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-1

Lab Sample ID: 310-254265-1

Date Collected: 04/24/23 13:24

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.45		1.00		mg/L			04/25/23 15:41	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 15:41	1
Fluoride	<0.200		0.200		mg/L			04/25/23 15:41	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.101		0.0100		mg/L		04/26/23 08:45	05/03/23 20:04	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:04	1
Magnesium	48.5		1.00		mg/L		04/26/23 08:45	05/03/23 20:04	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			04/26/23 19:23	1
Chemical Oxygen Demand (SM 5220D LL)	6.37		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-2

Lab Sample ID: 310-254265-2

Date Collected: 04/24/23 15:37

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.76		1.00		mg/L			04/25/23 15:57	1
Nitrate as N	1.23		0.200		mg/L			04/25/23 15:57	1
Fluoride	<0.200		0.200		mg/L			04/25/23 15:57	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.107		0.0100		mg/L		04/26/23 08:45	05/03/23 20:06	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:06	1
Magnesium	51.3		1.00		mg/L		04/26/23 08:45	05/03/23 20:06	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			04/26/23 19:24	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-3

Lab Sample ID: 310-254265-3

Date Collected: 04/24/23 16:41

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		10.0		mg/L			04/27/23 23:11	10
Nitrate as N	0.633		0.200		mg/L			04/25/23 16:12	1
Fluoride	<0.200		0.200		mg/L			04/25/23 16:12	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0858		0.0100		mg/L		04/26/23 08:45	05/03/23 20:08	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:08	1
Magnesium	67.4		1.00		mg/L		04/26/23 08:45	05/03/23 20:08	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			04/26/23 19:25	1
Chemical Oxygen Demand (SM 5220D LL)	9.74		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Dup-1

Lab Sample ID: 310-254265-4

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	99.3		10.0		mg/L			05/09/23 15:49	10
Nitrate as N	1.26		0.200		mg/L			04/25/23 16:28	1
Fluoride	<0.200		0.200		mg/L			04/25/23 16:28	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0817		0.0100		mg/L		04/26/23 08:45	05/03/23 20:10	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:10	1
Magnesium	64.0		1.00		mg/L		04/26/23 08:45	05/03/23 20:10	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			04/26/23 19:25	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Underliner

Lab Sample ID: 310-254265-5

Date Collected: 04/24/23 16:31

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	85.1		1.00		mg/L			04/25/23 16:44	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 16:44	1
Fluoride	0.305		0.200		mg/L			04/25/23 16:44	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.872		0.0100		mg/L		04/26/23 08:45	05/03/23 20:12	1
Iron	3.59		0.500		mg/L		04/26/23 08:45	05/03/23 20:12	1
Magnesium	47.8		1.00		mg/L		04/26/23 08:45	05/03/23 20:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.69		0.200		mg/L			04/26/23 19:27	1
Chemical Oxygen Demand (SM 5220D LL)	32.2		5.00		mg/L			04/27/23 10:55	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Combined

Lab Sample ID: 310-254265-6

Date Collected: 04/24/23 16:35

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	114		10.0		mg/L			04/26/23 16:25	10
Nitrate as N	0.554		0.200		mg/L			04/25/23 16:59	1
Fluoride	0.906		0.200		mg/L			04/25/23 16:59	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.350		0.0500		mg/L		04/26/23 08:45	04/27/23 14:10	5
Iron	<2.50		2.50		mg/L		04/26/23 08:45	04/27/23 14:10	5
Magnesium	90.9		5.00		mg/L		04/26/23 08:45	04/27/23 14:10	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	6.98		0.200		mg/L			04/26/23 19:27	1
Chemical Oxygen Demand (SM 5220D LL)	56.6		5.00		mg/L			04/27/23 10:55	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: EB-1

Lab Sample ID: 310-254265-7

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/25/23 17:15	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 17:15	1
Fluoride	<0.200		0.200		mg/L			04/25/23 17:15	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		04/26/23 08:45	05/03/23 20:20	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:20	1
Magnesium	<1.00		1.00		mg/L		04/26/23 08:45	05/03/23 20:20	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			04/26/23 19:29	1
Chemical Oxygen Demand (SM 5220D LL)	6.76		5.00		mg/L			04/27/23 10:55	1

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Definitions/Glossary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Qualifiers

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.
α	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: JD DUB Landfill- TRC

Job ID: 310-254265-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-386110/3
Matrix: Water
Analysis Batch: 386110

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			04/25/23 12:19	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 12:19	1
Fluoride	<0.200		0.200		mg/L			04/25/23 12:19	1

Lab Sample ID: LCS 310-386110/4
Matrix: Water
Analysis Batch: 386110

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	10.0	10.03		mg/L		100	90 - 110
Nitrate as N	2.00	2.152		mg/L		108	90 - 110
Fluoride	2.00	1.911		mg/L		96	90 - 110

Lab Sample ID: MB 310-386937/3
Matrix: Water
Analysis Batch: 386937

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			05/08/23 18:13	1
Fluoride	<0.200		0.200		mg/L			05/08/23 18:13	1

Lab Sample ID: LCS 310-386937/33
Matrix: Water
Analysis Batch: 386937

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	9.782		mg/L		98	90 - 110
Fluoride	2.00	2.206		mg/L		110	90 - 110

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-385477/1-A
Matrix: Water
Analysis Batch: 386615

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 385477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		04/26/23 08:45	05/05/23 14:52	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/05/23 14:52	1
Magnesium	<1.00		1.00		mg/L		04/26/23 08:45	05/05/23 14:52	1

Lab Sample ID: LCS 310-385477/2-A
Matrix: Water
Analysis Batch: 386615

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 385477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.8921		mg/L		89	80 - 120
Iron	2.00	1.719		mg/L		86	80 - 120
Magnesium	20.0	17.41		mg/L		87	80 - 120

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

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

Lab Sample ID: 310-254265-6 MS
Matrix: Water
Analysis Batch: 385743

Client Sample ID: Combined
Prep Type: Total/NA
Prep Batch: 385477

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Barium	0.350		1.00	1.393		mg/L		104	75 - 125
Iron	<2.50		2.00	4.347		mg/L		98	75 - 125
Magnesium	90.9		20.0	109.0	4	mg/L		90	75 - 125

Lab Sample ID: 310-254265-6 MSD
Matrix: Water
Analysis Batch: 385743

Client Sample ID: Combined
Prep Type: Total/NA
Prep Batch: 385477

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Barium	0.350		1.00	1.387		mg/L		104	75 - 125	0	20
Iron	<2.50		2.00	4.321		mg/L		97	75 - 125	1	20
Magnesium	90.9		20.0	108.3	4	mg/L		87	75 - 125	1	20

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-385629/82
Matrix: Water
Analysis Batch: 385629

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			04/26/23 19:10	1

Lab Sample ID: LCS 310-385629/83
Matrix: Water
Analysis Batch: 385629

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Ammonia as N	7.80	7.586		mg/L		97	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-385528/32
Matrix: Water
Analysis Batch: 385528

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			04/26/23 08:32	1

Lab Sample ID: LCS 310-385528/33
Matrix: Water
Analysis Batch: 385528

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Chemical Oxygen Demand	125	122.9		mg/L		98	85 - 115

QC Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Method: 5220D LL - COD (Continued)

Lab Sample ID: MB 310-385701/5
Matrix: Water
Analysis Batch: 385701

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			04/27/23 10:55	1

Lab Sample ID: LCS 310-385701/3
Matrix: Water
Analysis Batch: 385701

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 - 115

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QC Association Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

HPLC/IC

Analysis Batch: 386110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-1	MW-1	Total/NA	Water	9056A	
310-254265-2	MW-2	Total/NA	Water	9056A	
310-254265-3	MW-3	Total/NA	Water	9056A	
310-254265-3	MW-3	Total/NA	Water	9056A	
310-254265-4	Dup-1	Total/NA	Water	9056A	
310-254265-5	Underliner	Total/NA	Water	9056A	
310-254265-6	Combined	Total/NA	Water	9056A	
310-254265-6	Combined	Total/NA	Water	9056A	
310-254265-7	EB-1	Total/NA	Water	9056A	
MB 310-386110/3	Method Blank	Total/NA	Water	9056A	
LCS 310-386110/4	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 386937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-4	Dup-1	Total/NA	Water	9056A	
MB 310-386937/3	Method Blank	Total/NA	Water	9056A	
LCS 310-386937/33	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 385477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-1	MW-1	Total/NA	Water	3005A	
310-254265-2	MW-2	Total/NA	Water	3005A	
310-254265-3	MW-3	Total/NA	Water	3005A	
310-254265-4	Dup-1	Total/NA	Water	3005A	
310-254265-5	Underliner	Total/NA	Water	3005A	
310-254265-6	Combined	Total/NA	Water	3005A	
310-254265-7	EB-1	Total/NA	Water	3005A	
MB 310-385477/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-385477/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-254265-6 MS	Combined	Total/NA	Water	3005A	
310-254265-6 MSD	Combined	Total/NA	Water	3005A	

Analysis Batch: 385743

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-6	Combined	Total/NA	Water	6010D	385477
310-254265-6 MS	Combined	Total/NA	Water	6010D	385477
310-254265-6 MSD	Combined	Total/NA	Water	6010D	385477

Analysis Batch: 386377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-1	MW-1	Total/NA	Water	6010D	385477
310-254265-2	MW-2	Total/NA	Water	6010D	385477
310-254265-3	MW-3	Total/NA	Water	6010D	385477
310-254265-4	Dup-1	Total/NA	Water	6010D	385477
310-254265-5	Underliner	Total/NA	Water	6010D	385477
310-254265-7	EB-1	Total/NA	Water	6010D	385477

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Metals

Analysis Batch: 386615

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-385477/1-A	Method Blank	Total/NA	Water	6010D	385477
LCS 310-385477/2-A	Lab Control Sample	Total/NA	Water	6010D	385477

General Chemistry

Analysis Batch: 385528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-1	MW-1	Total/NA	Water	5220D LL	
310-254265-2	MW-2	Total/NA	Water	5220D LL	
310-254265-3	MW-3	Total/NA	Water	5220D LL	
310-254265-4	Dup-1	Total/NA	Water	5220D LL	
MB 310-385528/32	Method Blank	Total/NA	Water	5220D LL	
LCS 310-385528/33	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 385629

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-1	MW-1	Total/NA	Water	350.1	
310-254265-2	MW-2	Total/NA	Water	350.1	
310-254265-3	MW-3	Total/NA	Water	350.1	
310-254265-4	Dup-1	Total/NA	Water	350.1	
310-254265-5	Underliner	Total/NA	Water	350.1	
310-254265-6	Combined	Total/NA	Water	350.1	
310-254265-7	EB-1	Total/NA	Water	350.1	
MB 310-385629/82	Method Blank	Total/NA	Water	350.1	
LCS 310-385629/83	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 385701

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-254265-5	Underliner	Total/NA	Water	5220D LL	
310-254265-6	Combined	Total/NA	Water	5220D LL	
310-254265-7	EB-1	Total/NA	Water	5220D LL	
MB 310-385701/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-385701/3	Lab Control Sample	Total/NA	Water	5220D LL	

Lab Chronicle

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-1

Date Collected: 04/24/23 13:24

Date Received: 04/25/23 08:50

Lab Sample ID: 310-254265-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 15:41
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:04
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:23
Total/NA	Analysis	5220D LL		1	385528	D7CP	EET CF	04/26/23 08:32

Client Sample ID: MW-2

Date Collected: 04/24/23 15:37

Date Received: 04/25/23 08:50

Lab Sample ID: 310-254265-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 15:57
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:06
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:24
Total/NA	Analysis	5220D LL		1	385528	D7CP	EET CF	04/26/23 08:32

Client Sample ID: MW-3

Date Collected: 04/24/23 16:41

Date Received: 04/25/23 08:50

Lab Sample ID: 310-254265-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 16:12
Total/NA	Analysis	9056A		10	386110	QTZ5	EET CF	04/27/23 23:11
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:08
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:25
Total/NA	Analysis	5220D LL		1	385528	D7CP	EET CF	04/26/23 08:32

Client Sample ID: Dup-1

Date Collected: 04/24/23 00:00

Date Received: 04/25/23 08:50

Lab Sample ID: 310-254265-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 16:28
Total/NA	Analysis	9056A		10	386937	QTZ5	EET CF	05/09/23 15:49
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:10
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:25
Total/NA	Analysis	5220D LL		1	385528	D7CP	EET CF	04/26/23 08:32

Lab Chronicle

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Underliner

Lab Sample ID: 310-254265-5

Date Collected: 04/24/23 16:31

Matrix: Water

Date Received: 04/25/23 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 16:44
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:12
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:27
Total/NA	Analysis	5220D LL		1	385701	D7CP	EET CF	04/27/23 10:55

Client Sample ID: Combined

Lab Sample ID: 310-254265-6

Date Collected: 04/24/23 16:35

Matrix: Water

Date Received: 04/25/23 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 16:59
Total/NA	Analysis	9056A		10	386110	QTZ5	EET CF	04/26/23 16:25
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		5	385743	A6US	EET CF	04/27/23 14:10
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:27
Total/NA	Analysis	5220D LL		1	385701	D7CP	EET CF	04/27/23 10:55

Client Sample ID: EB-1

Lab Sample ID: 310-254265-7

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9056A		1	386110	QTZ5	EET CF	04/25/23 17:15
Total/NA	Prep	3005A			385477	DHM5	EET CF	04/26/23 08:45
Total/NA	Analysis	6010D		1	386377	A6US	EET CF	05/03/23 20:20
Total/NA	Analysis	350.1		1	385629	ZJX4	EET CF	04/26/23 19:29
Total/NA	Analysis	5220D LL		1	385701	D7CP	EET CF	04/27/23 10:55

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: JD DUB Landfill- TRC

Job ID: 310-254265-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

- 1
- 2
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Method Summary

Client: John Deere & Co
Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

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
5220D LL	COD	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

EPA = US Environmental Protection Agency

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

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

Laboratory References:

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





Environment Testing
America



310-254265 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>John Deere + Co</u>			
City/State:	CITY <u>Dubuque</u>	STATE <u>IA</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>4/25/23</u>	TIME <u>0850</u>	Received By: <u>J</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler ID:</i>			
Multiple Coolers? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler # _____ of _____</i>			
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler custody seals intact?</i> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Sample custody seals intact?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Which VOA samples are in cooler? ↓</i>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>W</u>		Correction Factor (°C): <u>TO</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>5.4</u>		Corrected Temp (°C): <u>5.4</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? <input type="checkbox"/> Yes <input type="checkbox"/> No a) <i>If yes: Is there evidence that the chilling process began?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



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

Client Information		Lab PM: Calhoun, Conner M		Carrier Tracking No(s):		COC No: 310-81302-20055.1	
Client Contact: Accounts Payable Shared Services		E-Mail: Conner.Calhoun@eurofins.com		State of Origin: IA		Page: Page 1 of 1	
Company: John Deere & Co		PWSID:		Analysis Requested		Job #:	
Address: 18600 S John Deere Road PO BOX 538		Due Date Requested:		Field Filtered Sample (Yes or No)		Total Number of Containers	
City: Dubuque		TAT Requested (days): 10		Perform MS/MSD (Yes or No)		Preservation Codes:	
State, Zip: IA, 52001		Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		S N D A		M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2SO4 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)	
Phone: 563-589-6133(Tel)		PO #: 4512050204		Matrix (Water, Soil, or Tissue, AAUP)		Other	
Email: Chriss.Frauen@TRCCompanies.com		WO #:		Sample Type (C=Comp, G=grab)			
Project Name: JD DUB Landfill - TRC		Project #: 31002706		Sample Time			
Site:		SSOW#:		Sample Date			
Sample Identification		Sample Date		Sample Time		Sample Type	
MW-1		4/24/23		13:24		Water	
MW-2		↓		15:37		Water	
MW-3		↓		16:41		Water	
DOR-1		↓		16:31		Water	
Underlines Combined		↓		16:35		Water	
EB-1		↓				Water	
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant		<input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Empty Kit Relinquished by:		Date/Time:		Special Instructions/QC Requirements:	
Relinquished by: CHRIS FRAUEN		Date/Time: 4/24/23 17:30		Company: TRC		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Relinquished by:		Date/Time:		Company:		Special Instructions/QC Requirements:	
Relinquished by:		Date/Time:		Company:		Special Instructions/QC Requirements:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.		Cooler Temperature(s) °C and Other Remarks:			



Login Sample Receipt Checklist

Client: John Deere & Co

Job Number: 310-254265-2

Login Number: 254265

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Costello, Mackenzie K

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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 <6mm (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 2023**



ANALYTICAL REPORT

PREPARED FOR

Attn: Chris Frauen
TRC Environmental Corporation
999 Fourier Drive, Suite 101
Madison, Wisconsin 53717

Generated 11/6/2023 3:38:08 PM Revision 1

JOB DESCRIPTION

JD DUB - TRC (Landfill)

JOB NUMBER

310-268049-1

Eurofins Cedar Falls

Job Notes

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

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

Authorization



Generated
11/6/2023 3:38:08 PM
Revision 1

Authorized for release by
Conner Calhoun, Project Management Assistant I
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(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	32
Surrogate Summary	33
QC Sample Results	34
QC Association	53
Chronicle	58
Certification Summary	62
Method Summary	63
Chain of Custody	64
Receipt Checklists	67

Case Narrative

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Job ID: 310-268049-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268049-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 10/25/2023 10:30 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 4.1°C and 5.8°C

GC/MS VOA

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

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.

Job ID: 310-268049-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268049-2

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 10/25/2023 10:30 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 4.1°C and 5.8°C

Case Narrative

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Job ID: 310-268049-2 (Continued)

Laboratory: Eurofins Cedar Falls (Continued)

HPLC/IC

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

Job ID: 310-268202-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268202-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 10/26/2023 8:45 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 9.4°C

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: S1 Leachate open (310-268202-1), S2 Leachate open (310-268202-2), S1 Underliner open (310-268202-3) and Combined Leachate (310-268202-4).

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-404379 recovered above the upper control limit for Propionitrile (22.4%D), m-Xylene & p-Xylene (26.2%D), 4-Methyl-2-pentanone (30.7%D), 1,2-Dichloropropane (23.8%D), and Ethyl methacrylate (20.7%D). The LCS associated with this CCV passed CCV criteria for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-404379/3).

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-404379 recovered above the upper control limit for 2-Hexanone (24.1%D). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-404379/3).

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

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.

Job ID: 310-268202-2

Case Narrative

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Job ID: 310-268202-2 (Continued)

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268202-2

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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 10/26/2023 8:45 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 9.4°C

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: S1 Leachate open (310-268202-1), S2 Leachate open (310-268202-2), S1 Underliner open (310-268202-3) and Combined Leachate (310-268202-4).

HPLC/IC

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

Job ID: 310-268333-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268333-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The sample was received on 10/27/2023 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.8°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-404379 recovered above the upper control limit for Propionitrile (22.4%D), m-Xylene & p-Xylene (26.2%D), 4-Methyl-2-pentanone (30.7%D), 1,2-Dichloropropane (23.8%D), and Ethyl methacrylate (20.7%D). The LCS associated with this CCV passed CCV criteria for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-404379/3).

Case Narrative

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Job ID: 310-268333-1 (Continued)

Laboratory: Eurofins Cedar Falls (Continued)

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-404379 recovered above the upper control limit for 2-Hexanone (24.1%D). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-404379/3).

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

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.

Job ID: 310-268333-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-268333-2

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The sample was received on 10/27/2023 9:20 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.8°C

HPLC/IC

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

Sample Summary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-268049-1	MW-1	Water	10/24/23 11:20	10/25/23 10:30
310-268049-2	MW-2	Water	10/24/23 14:15	10/25/23 10:30
310-268049-3	MW-3	Water	10/24/23 16:45	10/25/23 10:30
310-268049-4	Dup-1	Water	10/24/23 00:00	10/25/23 10:30
310-268049-5	EB-1	Water	10/24/23 16:50	10/25/23 10:30
310-268202-1	S1 Leachate open	Water	10/25/23 09:00	10/26/23 08:45
310-268202-2	S2 Leachate open	Water	10/25/23 08:55	10/26/23 08:45
310-268202-3	S1 Underliner open	Water	10/25/23 08:30	10/26/23 08:45
310-268202-4	Combined Leachate	Water	10/25/23 09:30	10/26/23 08:45
310-268333-1	S2 Underliner closed	Water	10/26/23 09:15	10/27/23 09:20

- 1
- 2
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- 11
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- 15

Detection Summary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Lab Sample ID: 310-268049-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	4.78		1.00		mg/L	1		9056A	Total/NA
Sulfate	28.4		1.00		mg/L	1		9056A	Total/NA
Barium	0.0894		0.0100		mg/L	1		6010D	Total/NA
Calcium	72.4		1.00		mg/L	1		6010D	Total/NA
Magnesium	42.3		1.00		mg/L	1		6010D	Total/NA
Total Dissolved Solids	330		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-2

Lab Sample ID: 310-268049-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	7.93		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	2.88		0.200		mg/L	1		9056A	Total/NA
Sulfate	19.9		1.00		mg/L	1		9056A	Total/NA
Barium	0.0915		0.0100		mg/L	1		6010D	Total/NA
Calcium	100		1.00		mg/L	1		6010D	Total/NA
Magnesium	44.2		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	7.07		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	420		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: MW-3

Lab Sample ID: 310-268049-3

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	0.935		0.200		mg/L	1		9056A	Total/NA
Sulfate	121		50.0		mg/L	50		9056A	Total/NA
Barium	0.0534		0.0100		mg/L	1		6010D	Total/NA
Boron	2.48		0.200		mg/L	1		6010D	Total/NA
Calcium	127		1.00		mg/L	1		6010D	Total/NA
Magnesium	58.6		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	5.70		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	730		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: Dup-1

Lab Sample ID: 310-268049-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	76.0		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	0.912		0.200		mg/L	1		9056A	Total/NA
Sulfate	119		50.0		mg/L	50		9056A	Total/NA
Barium	0.0544		0.0100		mg/L	1		6010D	Total/NA
Boron	2.54		0.200		mg/L	1		6010D	Total/NA
Calcium	129		1.00		mg/L	1		6010D	Total/NA
Magnesium	59.8		1.00		mg/L	1		6010D	Total/NA
Total Dissolved Solids	724		50.0		mg/L	1		SM 2540C	Total/NA

Client Sample ID: EB-1

Lab Sample ID: 310-268049-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ammonia as N	5.28		0.200		mg/L	1		350.1	Total/NA

Client Sample ID: S1 Leachate open

Lab Sample ID: 310-268202-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	78.8		1.00		mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Leachate open (Continued)

Lab Sample ID: 310-268202-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	0.363		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.442		0.200		mg/L	1		9056A	Total/NA
Sulfate	14.8		1.00		mg/L	1		9056A	Total/NA
Barium	0.945		0.0100		mg/L	1		6010D	Total/NA
Boron	8.08		0.200		mg/L	1		6010D	Total/NA
Calcium	126		1.00		mg/L	1		6010D	Total/NA
Iron	9.65		0.500		mg/L	1		6010D	Total/NA
Lithium	0.193		0.0500		mg/L	1		6010D	Total/NA
Magnesium	41.6		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	4.15		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	25.9		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	930		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	129		50.0		mg/L	50		9056A	Total/NA
Fluoride	0.884		0.200		mg/L	1		9056A	Total/NA
Sulfate	1180		50.0		mg/L	50		9056A	Total/NA
Barium	0.0334		0.0100		mg/L	1		6010D	Total/NA
Boron	24.2		0.200		mg/L	1		6010D	Total/NA
Calcium	172		1.00		mg/L	1		6010D	Total/NA
Iron	1.78		0.500		mg/L	1		6010D	Total/NA
Lithium	1.16		0.0500		mg/L	1		6010D	Total/NA
Magnesium	137		1.00		mg/L	1		6010D	Total/NA
Molybdenum	0.0624		0.0500		mg/L	1		6010D	Total/NA
Ammonia as N	9.28		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	69.5		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	2420		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	76.3		1.00		mg/L	1		9056A	Total/NA
Nitrate as N	3.80		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.472		0.200		mg/L	1		9056A	Total/NA
Sulfate	10.9		1.00		mg/L	1		9056A	Total/NA
Barium	0.662		0.0100		mg/L	1		6010D	Total/NA
Boron	5.28		0.200		mg/L	1		6010D	Total/NA
Calcium	86.7		1.00		mg/L	1		6010D	Total/NA
Iron	2.96		0.500		mg/L	1		6010D	Total/NA
Lithium	0.100		0.0500		mg/L	1		6010D	Total/NA
Magnesium	39.6		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	22.1	F1 F2	5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	700		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	108		5.00		mg/L	5		9056A	Total/NA
Nitrate as N	0.766		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.687		0.200		mg/L	1		9056A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate (Continued)

Lab Sample ID: 310-268202-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	678		50.0		mg/L	50		9056A	Total/NA
Barium	0.268		0.0100		mg/L	1		6010D	Total/NA
Boron	16.9		0.200		mg/L	1		6010D	Total/NA
Calcium	146		1.00		mg/L	1		6010D	Total/NA
Iron	2.14		0.500		mg/L	1		6010D	Total/NA
Lithium	0.724		0.0500		mg/L	1		6010D	Total/NA
Magnesium	95.1		1.00		mg/L	1		6010D	Total/NA
Ammonia as N	5.79		0.500		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	53.1		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	1600		250		mg/L	1		SM 2540C	Total/NA

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	127		100		mg/L	100		9056A	Total/NA
Nitrate as N	0.619		0.200		mg/L	1		9056A	Total/NA
Fluoride	0.890		0.200		mg/L	1		9056A	Total/NA
Sulfate	1020		100		mg/L	100		9056A	Total/NA
Barium	0.0279		0.0100		mg/L	1		6010D	Total/NA
Boron	20.4		0.200		mg/L	1		6010D	Total/NA
Calcium	139		1.00		mg/L	1		6010D	Total/NA
Iron	1.71		0.500		mg/L	1		6010D	Total/NA
Lithium	1.04		0.0500		mg/L	1		6010D	Total/NA
Magnesium	116		1.00		mg/L	1		6010D	Total/NA
Molybdenum	0.0575		0.0500		mg/L	1		6010D	Total/NA
Ammonia as N	7.28		0.200		mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	56.6		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	2090		250		mg/L	1		SM 2540C	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Lab Sample ID: 310-268049-1

Date Collected: 10/24/23 11:20

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/27/23 23:36	1
Acrolein	<10.0		10.0		ug/L			10/27/23 23:36	1
Acrylonitrile	<5.00		5.00		ug/L			10/27/23 23:36	1
Allyl chloride	<2.00		2.00		ug/L			10/27/23 23:36	1
Benzene	<0.500		0.500		ug/L			10/27/23 23:36	1
Bromochloromethane	<5.00		5.00		ug/L			10/27/23 23:36	1
Bromodichloromethane	<1.00		1.00		ug/L			10/27/23 23:36	1
Bromoform	<5.00		5.00		ug/L			10/27/23 23:36	1
Bromomethane	<4.00		4.00		ug/L			10/27/23 23:36	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/27/23 23:36	1
Carbon disulfide	<1.00		1.00		ug/L			10/27/23 23:36	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/27/23 23:36	1
Chlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/27/23 23:36	1
Chloroethane	<4.00		4.00		ug/L			10/27/23 23:36	1
Chloroform	<3.00		3.00		ug/L			10/27/23 23:36	1
Chloromethane	<3.00		3.00		ug/L			10/27/23 23:36	1
Chloroprene	<1.00		1.00		ug/L			10/27/23 23:36	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/27/23 23:36	1
Dibromomethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/27/23 23:36	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/27/23 23:36	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/27/23 23:36	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/27/23 23:36	1
Ethylbenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:36	1
2-Hexanone	<10.0		10.0		ug/L			10/27/23 23:36	1
Iodomethane	<10.0		10.0		ug/L			10/27/23 23:36	1
Methacrylonitrile	<10.0		10.0		ug/L			10/27/23 23:36	1
Methylene Chloride	<5.00		5.00		ug/L			10/27/23 23:36	1
Methyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:36	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/27/23 23:36	1
m,p-Xylene	<2.00		2.00		ug/L			10/27/23 23:36	1
Naphthalene	<5.00		5.00		ug/L			10/27/23 23:36	1
o-Xylene	<1.00		1.00		ug/L			10/27/23 23:36	1
Propionitrile	<10.0		10.0		ug/L			10/27/23 23:36	1
Styrene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Lab Sample ID: 310-268049-1

Date Collected: 10/24/23 11:20

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
Toluene	<1.00		1.00		ug/L			10/27/23 23:36	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/27/23 23:36	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
Trichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/27/23 23:36	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
Vinyl acetate	<10.0		10.0		ug/L			10/27/23 23:36	1
Vinyl chloride	<1.00		1.00		ug/L			10/27/23 23:36	1
Xylenes, Total	<3.00		3.00		ug/L			10/27/23 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					10/27/23 23:36	1
Dibromofluoromethane (Surr)	106		80 - 128					10/27/23 23:36	1
Toluene-d8 (Surr)	99		80 - 120					10/27/23 23:36	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.78		1.00		mg/L			10/25/23 12:20	1
Nitrate as N	<0.200		0.200		mg/L			10/25/23 12:20	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:20	1
Sulfate	28.4		1.00		mg/L			10/25/23 12:20	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0894		0.0100		mg/L		10/27/23 10:30	10/31/23 15:09	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:09	1
Calcium	72.4		1.00		mg/L		10/27/23 10:30	10/31/23 15:09	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:09	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:09	1
Magnesium	42.3		1.00		mg/L		10/27/23 10:30	10/31/23 15:09	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:09	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			10/31/23 21:43	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:54	1
Total Dissolved Solids (SM 2540C)	330		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-2

Lab Sample ID: 310-268049-2

Date Collected: 10/24/23 14:15

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/27/23 23:58	1
Acrolein	<10.0		10.0		ug/L			10/27/23 23:58	1
Acrylonitrile	<5.00		5.00		ug/L			10/27/23 23:58	1
Allyl chloride	<2.00		2.00		ug/L			10/27/23 23:58	1
Benzene	<0.500		0.500		ug/L			10/27/23 23:58	1
Bromochloromethane	<5.00		5.00		ug/L			10/27/23 23:58	1
Bromodichloromethane	<1.00		1.00		ug/L			10/27/23 23:58	1
Bromoform	<5.00		5.00		ug/L			10/27/23 23:58	1
Bromomethane	<4.00		4.00		ug/L			10/27/23 23:58	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/27/23 23:58	1
Carbon disulfide	<1.00		1.00		ug/L			10/27/23 23:58	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/27/23 23:58	1
Chlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/27/23 23:58	1
Chloroethane	<4.00		4.00		ug/L			10/27/23 23:58	1
Chloroform	<3.00		3.00		ug/L			10/27/23 23:58	1
Chloromethane	<3.00		3.00		ug/L			10/27/23 23:58	1
Chloroprene	<1.00		1.00		ug/L			10/27/23 23:58	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/27/23 23:58	1
Dibromomethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/27/23 23:58	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/27/23 23:58	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/27/23 23:58	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/27/23 23:58	1
Ethylbenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:58	1
2-Hexanone	<10.0		10.0		ug/L			10/27/23 23:58	1
Iodomethane	<10.0		10.0		ug/L			10/27/23 23:58	1
Methacrylonitrile	<10.0		10.0		ug/L			10/27/23 23:58	1
Methylene Chloride	<5.00		5.00		ug/L			10/27/23 23:58	1
Methyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:58	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/27/23 23:58	1
m,p-Xylene	<2.00		2.00		ug/L			10/27/23 23:58	1
Naphthalene	<5.00		5.00		ug/L			10/27/23 23:58	1
o-Xylene	<1.00		1.00		ug/L			10/27/23 23:58	1
Propionitrile	<10.0		10.0		ug/L			10/27/23 23:58	1
Styrene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-2

Lab Sample ID: 310-268049-2

Date Collected: 10/24/23 14:15

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
Toluene	<1.00		1.00		ug/L			10/27/23 23:58	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/27/23 23:58	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
Trichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/27/23 23:58	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
Vinyl acetate	<10.0		10.0		ug/L			10/27/23 23:58	1
Vinyl chloride	<1.00		1.00		ug/L			10/27/23 23:58	1
Xylenes, Total	<3.00		3.00		ug/L			10/27/23 23:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					10/27/23 23:58	1
Dibromofluoromethane (Surr)	103		80 - 128					10/27/23 23:58	1
Toluene-d8 (Surr)	96		80 - 120					10/27/23 23:58	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.93		1.00		mg/L			10/25/23 12:32	1
Nitrate as N	2.88		0.200		mg/L			10/25/23 12:32	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:32	1
Sulfate	19.9		1.00		mg/L			10/25/23 12:32	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0915		0.0100		mg/L		10/27/23 10:30	10/31/23 15:11	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:11	1
Calcium	100		1.00		mg/L		10/27/23 10:30	10/31/23 15:11	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:11	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:11	1
Magnesium	44.2		1.00		mg/L		10/27/23 10:30	10/31/23 15:11	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:11	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			10/31/23 21:45	1
Chemical Oxygen Demand (SM 5220D LL)	7.07		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0204		0.0204		mg/L		11/01/23 08:51	11/01/23 20:55	1
Total Dissolved Solids (SM 2540C)	420		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-3

Lab Sample ID: 310-268049-3

Date Collected: 10/24/23 16:45

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 00:20	1
Acrolein	<10.0		10.0		ug/L			10/28/23 00:20	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 00:20	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 00:20	1
Benzene	<0.500		0.500		ug/L			10/28/23 00:20	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 00:20	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 00:20	1
Bromoform	<5.00		5.00		ug/L			10/28/23 00:20	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 00:20	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 00:20	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 00:20	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 00:20	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 00:20	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 00:20	1
Chloroform	<3.00		3.00		ug/L			10/28/23 00:20	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 00:20	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 00:20	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 00:20	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 00:20	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 00:20	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 00:20	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 00:20	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:20	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 00:20	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 00:20	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 00:20	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 00:20	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:20	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 00:20	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 00:20	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 00:20	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 00:20	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 00:20	1
Styrene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-3

Lab Sample ID: 310-268049-3

Date Collected: 10/24/23 16:45

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
Toluene	<1.00		1.00		ug/L			10/28/23 00:20	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 00:20	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 00:20	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 00:20	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 00:20	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 00:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					10/28/23 00:20	1
Dibromofluoromethane (Surr)	102		80 - 128					10/28/23 00:20	1
Toluene-d8 (Surr)	98		80 - 120					10/28/23 00:20	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75.9		1.00		mg/L			10/25/23 12:44	1
Nitrate as N	0.935		0.200		mg/L			10/25/23 12:44	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:44	1
Sulfate	121		50.0		mg/L			10/26/23 10:11	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0534		0.0100		mg/L		10/27/23 10:30	10/31/23 15:13	1
Boron	2.48		0.200		mg/L		10/27/23 10:30	10/31/23 15:13	1
Calcium	127		1.00		mg/L		10/27/23 10:30	10/31/23 15:13	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:13	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:13	1
Magnesium	58.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:13	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:13	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			10/31/23 21:47	1
Chemical Oxygen Demand (SM 5220D LL)	5.70		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:56	1
Total Dissolved Solids (SM 2540C)	730		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Dup-1

Lab Sample ID: 310-268049-4

Date Collected: 10/24/23 00:00

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 01:04	1
Acrolein	<10.0		10.0		ug/L			10/28/23 01:04	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 01:04	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 01:04	1
Benzene	<0.500		0.500		ug/L			10/28/23 01:04	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 01:04	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 01:04	1
Bromoform	<5.00		5.00		ug/L			10/28/23 01:04	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 01:04	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 01:04	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 01:04	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 01:04	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 01:04	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 01:04	1
Chloroform	<3.00		3.00		ug/L			10/28/23 01:04	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 01:04	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 01:04	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 01:04	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 01:04	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 01:04	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 01:04	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 01:04	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 01:04	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 01:04	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 01:04	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 01:04	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 01:04	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 01:04	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 01:04	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 01:04	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 01:04	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 01:04	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 01:04	1
Styrene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Dup-1

Lab Sample ID: 310-268049-4

Date Collected: 10/24/23 00:00

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
Toluene	<1.00		1.00		ug/L			10/28/23 01:04	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 01:04	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 01:04	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 01:04	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 01:04	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 01:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		80 - 120					10/28/23 01:04	1
Dibromofluoromethane (Surr)	101		80 - 128					10/28/23 01:04	1
Toluene-d8 (Surr)	96		80 - 120					10/28/23 01:04	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.0		1.00		mg/L			10/25/23 12:56	1
Nitrate as N	0.912		0.200		mg/L			10/25/23 12:56	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:56	1
Sulfate	119		50.0		mg/L			10/26/23 10:22	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0544		0.0100		mg/L		10/27/23 10:30	10/31/23 15:15	1
Boron	2.54		0.200		mg/L		10/27/23 10:30	10/31/23 15:15	1
Calcium	129		1.00		mg/L		10/27/23 10:30	10/31/23 15:15	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:15	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:15	1
Magnesium	59.8		1.00		mg/L		10/27/23 10:30	10/31/23 15:15	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:15	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			10/31/23 21:47	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:56	1
Total Dissolved Solids (SM 2540C)	724		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: EB-1

Lab Sample ID: 310-268049-5

Date Collected: 10/24/23 16:50

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 00:42	1
Acrolein	<10.0		10.0		ug/L			10/28/23 00:42	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 00:42	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 00:42	1
Benzene	<0.500		0.500		ug/L			10/28/23 00:42	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 00:42	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 00:42	1
Bromoform	<5.00		5.00		ug/L			10/28/23 00:42	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 00:42	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 00:42	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 00:42	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 00:42	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 00:42	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 00:42	1
Chloroform	<3.00		3.00		ug/L			10/28/23 00:42	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 00:42	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 00:42	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 00:42	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 00:42	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 00:42	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 00:42	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 00:42	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:42	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 00:42	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 00:42	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 00:42	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 00:42	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:42	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 00:42	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 00:42	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 00:42	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 00:42	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 00:42	1
Styrene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: EB-1

Lab Sample ID: 310-268049-5

Date Collected: 10/24/23 16:50

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
Toluene	<1.00		1.00		ug/L			10/28/23 00:42	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 00:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 00:42	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 00:42	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 00:42	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 00:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		10/28/23 00:42	1
Dibromofluoromethane (Surr)	103		80 - 128		10/28/23 00:42	1
Toluene-d8 (Surr)	97		80 - 120		10/28/23 00:42	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/25/23 13:09	1
Nitrate as N	<0.200		0.200		mg/L			10/25/23 13:09	1
Fluoride	<0.200		0.200		mg/L			10/25/23 13:09	1
Sulfate	<1.00		1.00		mg/L			10/25/23 13:09	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/27/23 10:30	10/31/23 15:17	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:17	1
Calcium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 15:17	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:17	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:17	1
Magnesium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 15:17	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.28		0.200		mg/L			10/31/23 21:48	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:57	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Leachate open

Lab Sample ID: 310-268202-1

Date Collected: 10/25/23 09:00

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 07:51	1
Acrolein	<10.0		10.0		ug/L			11/01/23 07:51	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 07:51	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 07:51	1
Benzene	<0.500		0.500		ug/L			11/01/23 07:51	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 07:51	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 07:51	1
Bromoform	<5.00		5.00		ug/L			11/01/23 07:51	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 07:51	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 07:51	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 07:51	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 07:51	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 07:51	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 07:51	1
Chloroform	<3.00		3.00		ug/L			11/01/23 07:51	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 07:51	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 07:51	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 07:51	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 07:51	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 07:51	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 07:51	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 07:51	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:51	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 07:51	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 07:51	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 07:51	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 07:51	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:51	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 07:51	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 07:51	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 07:51	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 07:51	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 07:51	1
Styrene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Leachate open

Lab Sample ID: 310-268202-1

Date Collected: 10/25/23 09:00

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
Toluene	<1.00		1.00		ug/L			11/01/23 07:51	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 07:51	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 07:51	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 07:51	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 07:51	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 07:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		11/01/23 07:51	1
Dibromofluoromethane (Surr)	96		80 - 128		11/01/23 07:51	1
Toluene-d8 (Surr)	98		80 - 120		11/01/23 07:51	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	78.8		1.00		mg/L			10/26/23 17:39	1
Nitrate as N	0.363		0.200		mg/L			10/26/23 17:39	1
Fluoride	0.442		0.200		mg/L			10/26/23 17:39	1
Sulfate	14.8		1.00		mg/L			10/26/23 17:39	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.945		0.0100		mg/L		10/27/23 10:30	10/31/23 15:19	1
Boron	8.08		0.200		mg/L		10/27/23 10:30	10/31/23 15:19	1
Calcium	126		1.00		mg/L		10/27/23 10:30	10/31/23 15:19	1
Iron	9.65		0.500		mg/L		10/27/23 10:30	10/31/23 15:19	1
Lithium	0.193		0.0500		mg/L		10/27/23 10:30	10/31/23 15:19	1
Magnesium	41.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:19	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	4.15		0.500		mg/L		11/02/23 10:38	11/02/23 21:57	1
Chemical Oxygen Demand (SM 5220D LL)	25.9		5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:58	1
Total Dissolved Solids (SM 2540C)	930		250		mg/L			10/30/23 15:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Date Collected: 10/25/23 08:55

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 08:13	1
Acrolein	<10.0		10.0		ug/L			11/01/23 08:13	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 08:13	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 08:13	1
Benzene	<0.500		0.500		ug/L			11/01/23 08:13	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 08:13	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 08:13	1
Bromoform	<5.00		5.00		ug/L			11/01/23 08:13	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 08:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 08:13	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 08:13	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 08:13	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 08:13	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 08:13	1
Chloroform	<3.00		3.00		ug/L			11/01/23 08:13	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 08:13	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 08:13	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 08:13	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 08:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 08:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 08:13	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 08:13	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:13	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 08:13	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 08:13	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 08:13	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 08:13	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:13	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 08:13	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 08:13	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 08:13	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 08:13	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 08:13	1
Styrene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Date Collected: 10/25/23 08:55

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
Toluene	<1.00		1.00		ug/L			11/01/23 08:13	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 08:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 08:13	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 08:13	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 08:13	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 08:13	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120					11/01/23 08:13	1
Dibromofluoromethane (Surr)	96		80 - 128					11/01/23 08:13	1
Toluene-d8 (Surr)	97		80 - 120					11/01/23 08:13	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	129		50.0		mg/L			10/27/23 12:25	50
Nitrate as N	<0.200		0.200		mg/L			10/26/23 17:53	1
Fluoride	0.884		0.200		mg/L			10/26/23 17:53	1
Sulfate	1180		50.0		mg/L			10/27/23 12:25	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0334		0.0100		mg/L		10/27/23 10:30	10/31/23 15:21	1
Boron	24.2		0.200		mg/L		10/27/23 10:30	10/31/23 15:21	1
Calcium	172		1.00		mg/L		10/27/23 10:30	10/31/23 15:21	1
Iron	1.78		0.500		mg/L		10/27/23 10:30	10/31/23 15:21	1
Lithium	1.16		0.0500		mg/L		10/27/23 10:30	10/31/23 15:21	1
Magnesium	137		1.00		mg/L		10/27/23 10:30	10/31/23 15:21	1
Molybdenum	0.0624		0.0500		mg/L		10/27/23 10:30	10/31/23 15:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	9.28		0.500		mg/L		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	69.5		5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:58	1
Total Dissolved Solids (SM 2540C)	2420		250		mg/L			10/30/23 15:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Date Collected: 10/25/23 08:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 08:35	1
Acrolein	<10.0		10.0		ug/L			11/01/23 08:35	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 08:35	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 08:35	1
Benzene	<0.500		0.500		ug/L			11/01/23 08:35	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 08:35	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 08:35	1
Bromoform	<5.00		5.00		ug/L			11/01/23 08:35	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 08:35	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 08:35	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 08:35	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 08:35	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 08:35	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 08:35	1
Chloroform	<3.00		3.00		ug/L			11/01/23 08:35	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 08:35	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 08:35	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 08:35	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 08:35	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 08:35	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 08:35	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 08:35	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:35	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 08:35	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 08:35	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 08:35	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 08:35	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:35	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 08:35	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 08:35	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 08:35	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 08:35	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 08:35	1
Styrene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Date Collected: 10/25/23 08:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
Toluene	<1.00		1.00		ug/L			11/01/23 08:35	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 08:35	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 08:35	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 08:35	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 08:35	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 08:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		11/01/23 08:35	1
Dibromofluoromethane (Surr)	98		80 - 128		11/01/23 08:35	1
Toluene-d8 (Surr)	97		80 - 120		11/01/23 08:35	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.3		1.00		mg/L			10/26/23 17:09	1
Nitrate as N	3.80		0.200		mg/L			10/26/23 17:09	1
Fluoride	0.472		0.200		mg/L			10/26/23 17:09	1
Sulfate	10.9		1.00		mg/L			10/26/23 17:09	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.662		0.0100		mg/L		10/27/23 10:30	10/31/23 15:25	1
Boron	5.28		0.200		mg/L		10/27/23 10:30	10/31/23 15:25	1
Calcium	86.7		1.00		mg/L		10/27/23 10:30	10/31/23 15:25	1
Iron	2.96		0.500		mg/L		10/27/23 10:30	10/31/23 15:25	1
Lithium	0.100		0.0500		mg/L		10/27/23 10:30	10/31/23 15:25	1
Magnesium	39.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:25	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:25	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		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	22.1	F1 F2	5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:59	1
Total Dissolved Solids (SM 2540C)	700		250		mg/L			10/30/23 15:41	1

Eurolins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 07:30	1
Acrolein	<10.0		10.0		ug/L			11/01/23 07:30	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 07:30	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 07:30	1
Benzene	<0.500		0.500		ug/L			11/01/23 07:30	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 07:30	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 07:30	1
Bromoform	<5.00		5.00		ug/L			11/01/23 07:30	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 07:30	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 07:30	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 07:30	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 07:30	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 07:30	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 07:30	1
Chloroform	<3.00		3.00		ug/L			11/01/23 07:30	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 07:30	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 07:30	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 07:30	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 07:30	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 07:30	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 07:30	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 07:30	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:30	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 07:30	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 07:30	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 07:30	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 07:30	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:30	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 07:30	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 07:30	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 07:30	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 07:30	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 07:30	1
Styrene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
Toluene	<1.00		1.00		ug/L			11/01/23 07:30	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 07:30	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 07:30	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 07:30	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 07:30	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 07:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120					11/01/23 07:30	1
Dibromofluoromethane (Surr)	96		80 - 128					11/01/23 07:30	1
Toluene-d8 (Surr)	96		80 - 120					11/01/23 07:30	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	108		5.00		mg/L			10/26/23 18:23	5
Nitrate as N	0.766		0.200		mg/L			10/26/23 18:09	1
Fluoride	0.687		0.200		mg/L			10/26/23 18:09	1
Sulfate	678		50.0		mg/L			10/27/23 12:39	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.268		0.0100		mg/L		10/27/23 10:30	10/31/23 15:27	1
Boron	16.9		0.200		mg/L		10/27/23 10:30	10/31/23 15:27	1
Calcium	146		1.00		mg/L		10/27/23 10:30	10/31/23 15:27	1
Iron	2.14		0.500		mg/L		10/27/23 10:30	10/31/23 15:27	1
Lithium	0.724		0.0500		mg/L		10/27/23 10:30	10/31/23 15:27	1
Magnesium	95.1		1.00		mg/L		10/27/23 10:30	10/31/23 15:27	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.79		0.500		mg/L		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	53.1		5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:59	1
Total Dissolved Solids (SM 2540C)	1600		250		mg/L			10/30/23 15:41	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Date Collected: 10/26/23 09:15

Matrix: Water

Date Received: 10/27/23 09:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 10:02	1
Acrolein	<10.0		10.0		ug/L			11/01/23 10:02	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 10:02	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 10:02	1
Benzene	<0.500		0.500		ug/L			11/01/23 10:02	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 10:02	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 10:02	1
Bromoform	<5.00		5.00		ug/L			11/01/23 10:02	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 10:02	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 10:02	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 10:02	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 10:02	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 10:02	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 10:02	1
Chloroform	<3.00		3.00		ug/L			11/01/23 10:02	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 10:02	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 10:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 10:02	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 10:02	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 10:02	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 10:02	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 10:02	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 10:02	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 10:02	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 10:02	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 10:02	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 10:02	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 10:02	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 10:02	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 10:02	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 10:02	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 10:02	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 10:02	1
Styrene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1

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Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Date Collected: 10/26/23 09:15

Matrix: Water

Date Received: 10/27/23 09:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
Toluene	<1.00		1.00		ug/L			11/01/23 10:02	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 10:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 10:02	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 10:02	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 10:02	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 10:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120					11/01/23 10:02	1
Dibromofluoromethane (Surr)	98		80 - 128					11/01/23 10:02	1
Toluene-d8 (Surr)	97		80 - 120					11/01/23 10:02	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	127		100		mg/L			10/27/23 11:13	100
Nitrate as N	0.619		0.200		mg/L			10/27/23 15:42	1
Fluoride	0.890		0.200		mg/L			10/27/23 15:42	1
Sulfate	1020		100		mg/L			10/27/23 11:13	100

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0279		0.0100		mg/L		11/01/23 09:20	11/01/23 17:16	1
Boron	20.4		0.200		mg/L		11/01/23 09:20	11/01/23 17:16	1
Calcium	139		1.00		mg/L		11/01/23 09:20	11/01/23 17:16	1
Iron	1.71		0.500		mg/L		11/01/23 09:20	11/01/23 17:16	1
Lithium	1.04		0.0500		mg/L		11/01/23 09:20	11/01/23 17:16	1
Magnesium	116		1.00		mg/L		11/01/23 09:20	11/01/23 17:16	1
Molybdenum	0.0575		0.0500		mg/L		11/01/23 09:20	11/01/23 17:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	7.28		0.200		mg/L			10/31/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	56.6		5.00		mg/L			11/03/23 10:18	1
Phenols, Total (SW846 9066)	<0.0208		0.0208		mg/L		11/01/23 08:51	11/01/23 21:00	1
Total Dissolved Solids (SM 2540C)	2090		250		mg/L			10/31/23 14:51	1

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Definitions/Glossary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Surrogate Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)		
		BFB (80-120)	DBFM (80-128)	TOL (80-120)
310-268049-1	MW-1	101	106	99
310-268049-1 MS	MW-1	100	100	101
310-268049-1 MSD	MW-1	98	101	100
310-268049-2	MW-2	100	103	96
310-268049-3	MW-3	101	102	98
310-268049-4	Dup-1	103	101	96
310-268049-5	EB-1	100	103	97
310-268202-1	S1 Leachate open	106	96	98
310-268202-1 MS	S1 Leachate open	100	97	102
310-268202-1 MSD	S1 Leachate open	98	98	100
310-268202-2	S2 Leachate open	106	96	97
310-268202-3	S1 Underliner open	106	98	97
310-268202-4	Combined Leachate	104	96	96
310-268333-1	S2 Underliner closed	106	98	97
LCS 310-404058/6	Lab Control Sample	96	101	102
LCS 310-404058/7	Lab Control Sample	102	98	99
LCS 310-404379/6	Lab Control Sample	101	99	101
LCS 310-404379/7	Lab Control Sample	105	95	97
MB 310-404058/5	Method Blank	107	99	95
MB 310-404379/5	Method Blank	105	94	107

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
 DBFM = Dibromofluoromethane (Surr)
 TOL = Toluene-d8 (Surr)

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-404058/5
Matrix: Water
Analysis Batch: 404058

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			10/27/23 21:26	1
Acrolein	<10.0		10.0		ug/L			10/27/23 21:26	1
Acrylonitrile	<5.00		5.00		ug/L			10/27/23 21:26	1
Allyl chloride	<2.00		2.00		ug/L			10/27/23 21:26	1
Benzene	<0.500		0.500		ug/L			10/27/23 21:26	1
Bromochloromethane	<5.00		5.00		ug/L			10/27/23 21:26	1
Bromodichloromethane	<1.00		1.00		ug/L			10/27/23 21:26	1
Bromoform	<5.00		5.00		ug/L			10/27/23 21:26	1
Bromomethane	<4.00		4.00		ug/L			10/27/23 21:26	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/27/23 21:26	1
Carbon disulfide	<1.00		1.00		ug/L			10/27/23 21:26	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/27/23 21:26	1
Chlorobenzene	<1.00		1.00		ug/L			10/27/23 21:26	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/27/23 21:26	1
Chloroethane	<4.00		4.00		ug/L			10/27/23 21:26	1
Chloroform	<3.00		3.00		ug/L			10/27/23 21:26	1
Chloromethane	<3.00		3.00		ug/L			10/27/23 21:26	1
Chloroprene	<1.00		1.00		ug/L			10/27/23 21:26	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 21:26	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 21:26	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/27/23 21:26	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/27/23 21:26	1
Dibromomethane	<1.00		1.00		ug/L			10/27/23 21:26	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 21:26	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 21:26	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 21:26	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/27/23 21:26	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/27/23 21:26	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/27/23 21:26	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/27/23 21:26	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/27/23 21:26	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/27/23 21:26	1
Ethylbenzene	<1.00		1.00		ug/L			10/27/23 21:26	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/27/23 21:26	1
2-Hexanone	<10.0		10.0		ug/L			10/27/23 21:26	1
Iodomethane	<10.0		10.0		ug/L			10/27/23 21:26	1
Methacrylonitrile	<10.0		10.0		ug/L			10/27/23 21:26	1
Methylene Chloride	<5.00		5.00		ug/L			10/27/23 21:26	1
Methyl methacrylate	<2.00		2.00		ug/L			10/27/23 21:26	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/27/23 21:26	1
m,p-Xylene	<2.00		2.00		ug/L			10/27/23 21:26	1
Naphthalene	<5.00		5.00		ug/L			10/27/23 21:26	1
o-Xylene	<1.00		1.00		ug/L			10/27/23 21:26	1
Propionitrile	<10.0		10.0		ug/L			10/27/23 21:26	1
Styrene	<1.00		1.00		ug/L			10/27/23 21:26	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1

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QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-404058/5
Matrix: Water
Analysis Batch: 404058

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1
Tetrachloroethene	<1.00		1.00		ug/L			10/27/23 21:26	1
Toluene	<1.00		1.00		ug/L			10/27/23 21:26	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/27/23 21:26	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 21:26	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 21:26	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/27/23 21:26	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/27/23 21:26	1
Trichloroethene	<1.00		1.00		ug/L			10/27/23 21:26	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/27/23 21:26	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/27/23 21:26	1
Vinyl acetate	<10.0		10.0		ug/L			10/27/23 21:26	1
Vinyl chloride	<1.00		1.00		ug/L			10/27/23 21:26	1
Xylenes, Total	<3.00		3.00		ug/L			10/27/23 21:26	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		80 - 120		10/27/23 21:26	1
Dibromofluoromethane (Surr)	99		80 - 128		10/27/23 21:26	1
Toluene-d8 (Surr)	95		80 - 120		10/27/23 21:26	1

Lab Sample ID: LCS 310-404058/6
Matrix: Water
Analysis Batch: 404058

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	37.57		ug/L		94	50 - 150
Acrolein	94.8	85.85		ug/L		91	12 - 150
Acrylonitrile	200	189.2		ug/L		95	50 - 150
Allyl chloride	20.0	17.39		ug/L		87	50 - 150
Benzene	20.0	19.48		ug/L		97	73 - 122
Bromochloromethane	20.0	19.64		ug/L		98	68 - 132
Bromodichloromethane	20.0	19.12		ug/L		96	72 - 121
Bromoform	20.0	17.28		ug/L		86	55 - 129
2-Butanone (MEK)	40.0	37.89		ug/L		95	50 - 150
Carbon disulfide	20.0	19.79		ug/L		99	58 - 131
Carbon tetrachloride	20.0	19.87		ug/L		99	67 - 132
Chlorobenzene	20.0	19.23		ug/L		96	69 - 121
Chlorodibromomethane	20.0	18.63		ug/L		93	69 - 122
Chloroform	20.0	20.12		ug/L		101	72 - 120
Chloroprene	20.0	18.33		ug/L		92	67 - 131
cis-1,2-Dichloroethene	20.0	19.79		ug/L		99	74 - 120
cis-1,3-Dichloropropene	20.0	18.76		ug/L		94	71 - 126
1,2-Dibromo-3-Chloropropane	20.0	18.28		ug/L		91	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.14		ug/L		96	73 - 125
Dibromomethane	20.0	19.50		ug/L		97	72 - 123
1,2-Dichlorobenzene	20.0	18.46		ug/L		92	68 - 120
1,3-Dichlorobenzene	20.0	18.99		ug/L		95	67 - 123

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QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-404058/6
Matrix: Water
Analysis Batch: 404058

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dichlorobenzene	20.0	18.46		ug/L		92	67 - 120
1,1-Dichloroethane	20.0	20.37		ug/L		102	71 - 123
1,2-Dichloroethane	20.0	18.60		ug/L		93	70 - 124
1,1-Dichloroethene	20.0	20.72		ug/L		104	61 - 129
1,2-Dichloropropane	20.0	19.69		ug/L		98	73 - 121
1,3-Dichloropropane	20.0	18.14		ug/L		91	72 - 124
2,2-Dichloropropane	20.0	19.82		ug/L		99	50 - 150
1,1-Dichloropropene	20.0	20.26		ug/L		101	70 - 131
Ethylbenzene	20.0	19.83		ug/L		99	69 - 122
Ethyl methacrylate	20.0	19.86		ug/L		99	64 - 131
2-Hexanone	40.0	40.69		ug/L		102	60 - 132
Iodomethane	20.0	13.12		ug/L		66	10 - 150
Methacrylonitrile	200	186.6		ug/L		93	70 - 126
Methylene Chloride	20.0	21.72		ug/L		109	50 - 150
Methyl methacrylate	40.0	38.68		ug/L		97	68 - 127
4-Methyl-2-pentanone (MIBK)	40.0	40.75		ug/L		102	62 - 130
Naphthalene	20.0	19.35		ug/L		97	50 - 150
Propionitrile	200	212.6		ug/L		106	66 - 125
Styrene	20.0	18.97		ug/L		95	67 - 125
1,1,1,2-Tetrachloroethane	20.0	17.75		ug/L		89	68 - 123
1,1,2,2-Tetrachloroethane	20.0	18.19		ug/L		91	64 - 124
Tetrachloroethene	20.0	20.08		ug/L		100	69 - 131
Toluene	20.0	19.49		ug/L		97	72 - 121
trans-1,4-Dichloro-2-butene	20.0	16.53		ug/L		83	48 - 150
trans-1,2-Dichloroethene	20.0	20.38		ug/L		102	68 - 125
trans-1,3-Dichloropropene	20.0	18.93		ug/L		95	68 - 124
1,2,4-Trichlorobenzene	20.0	19.10		ug/L		95	61 - 124
1,1,1-Trichloroethane	20.0	20.28		ug/L		101	71 - 128
1,1,2-Trichloroethane	20.0	18.78		ug/L		94	70 - 124
Trichloroethene	20.0	19.01		ug/L		95	73 - 126
1,2,3-Trichloropropane	20.0	18.64		ug/L		93	64 - 125
Vinyl acetate	40.0	34.98		ug/L		87	50 - 150
Xylenes, Total	40.0	39.97		ug/L		100	68 - 124

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	96		80 - 120
Dibromofluoromethane (Surr)	101		80 - 128
Toluene-d8 (Surr)	102		80 - 120

Lab Sample ID: LCS 310-404058/7
Matrix: Water
Analysis Batch: 404058

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	18.58		ug/L		93	24 - 150
Chloroethane	20.0	18.96		ug/L		95	51 - 137
Chloromethane	20.0	18.46		ug/L		92	37 - 150
Dichlorodifluoromethane	20.0	18.79		ug/L		94	37 - 150

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-404058/7
Matrix: Water
Analysis Batch: 404058

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichlorofluoromethane	20.0	20.43		ug/L		102	56 - 144
Vinyl chloride	20.0	19.55		ug/L		98	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	98		80 - 128
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: 310-268049-1 MS
Matrix: Water
Analysis Batch: 404058

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
Acetone	<10.0		50.0	45.54		ug/L		91	35 - 150
Acrolein	<10.0		119	75.84		ug/L		64	10 - 150
Acrylonitrile	<5.00		250	222.9		ug/L		89	50 - 150
Allyl chloride	<2.00		25.0	25.17		ug/L		101	35 - 150
Benzene	<0.500		25.0	22.44		ug/L		90	47 - 130
Bromochloromethane	<5.00		25.0	22.39		ug/L		90	54 - 132
Bromodichloromethane	<1.00		25.0	22.10		ug/L		88	58 - 130
Bromoform	<5.00		25.0	19.16		ug/L		77	42 - 130
2-Butanone (MEK)	<10.0		50.0	43.33		ug/L		87	47 - 150
Carbon disulfide	<1.00		25.0	24.29		ug/L		97	39 - 131
Carbon tetrachloride	<2.00		25.0	22.10		ug/L		88	45 - 132
Chlorobenzene	<1.00		25.0	21.65		ug/L		87	54 - 130
Chlorodibromomethane	<5.00		25.0	21.28		ug/L		85	53 - 130
Chloroform	<3.00		25.0	22.17		ug/L		89	55 - 130
Chloroprene	<1.00		25.0	21.62		ug/L		86	47 - 131
cis-1,2-Dichloroethene	<1.00		25.0	22.98		ug/L		92	52 - 130
cis-1,3-Dichloropropene	<5.00		25.0	22.59		ug/L		90	55 - 130
1,2-Dibromo-3-Chloropropane	<5.00		25.0	22.21		ug/L		89	45 - 150
1,2-Dibromoethane (EDB)	<1.00		25.0	21.88		ug/L		88	59 - 130
Dibromomethane	<1.00		25.0	22.19		ug/L		89	61 - 130
1,2-Dichlorobenzene	<1.00		25.0	21.95		ug/L		88	53 - 130
1,3-Dichlorobenzene	<1.00		25.0	21.03		ug/L		84	54 - 130
1,4-Dichlorobenzene	<1.00		25.0	21.46		ug/L		86	53 - 130
1,1-Dichloroethane	<1.00		25.0	22.91		ug/L		92	53 - 130
1,2-Dichloroethane	<1.00		25.0	21.39		ug/L		86	57 - 130
1,1-Dichloroethene	<2.00		25.0	22.48		ug/L		90	39 - 130
1,2-Dichloropropane	<1.00		25.0	23.71		ug/L		95	60 - 130
1,3-Dichloropropane	<1.00		25.0	21.49		ug/L		86	57 - 130
2,2-Dichloropropane	<4.00		25.0	21.83		ug/L		87	28 - 150
1,1-Dichloropropene	<1.00		25.0	23.24		ug/L		93	50 - 131
Ethylbenzene	<1.00		25.0	22.16		ug/L		89	48 - 130
Ethyl methacrylate	<2.00		25.0	23.06		ug/L		92	50 - 131
2-Hexanone	<10.0		50.0	46.21		ug/L		92	45 - 132
Iodomethane	<10.0		25.0	20.43		ug/L		82	10 - 150
Methacrylonitrile	<10.0		250	218.9		ug/L		88	57 - 130

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-268049-1 MS

Matrix: Water

Analysis Batch: 404058

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
Methylene Chloride	<5.00		25.0	25.06		ug/L		100	50 - 150
Methyl methacrylate	<2.00		50.0	44.46		ug/L		89	50 - 131
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	47.36		ug/L		95	46 - 132
Naphthalene	<5.00		25.0	27.24		ug/L		109	33 - 150
Propionitrile	<10.0		25.0	237.9		ug/L		95	53 - 130
Styrene	<1.00		25.0	21.75		ug/L		87	46 - 130
1,1,1,2-Tetrachloroethane	<1.00		25.0	20.71		ug/L		83	52 - 130
1,1,2,2-Tetrachloroethane	<1.00		25.0	20.17		ug/L		81	51 - 130
Tetrachloroethene	<1.00		25.0	21.77		ug/L		87	42 - 131
Toluene	<1.00		25.0	21.97		ug/L		88	48 - 130
trans-1,4-Dichloro-2-butene	<10.0		25.0	15.98		ug/L		64	33 - 150
trans-1,2-Dichloroethene	<1.00		25.0	22.64		ug/L		91	54 - 130
trans-1,3-Dichloropropene	<5.00		25.0	21.67		ug/L		87	51 - 130
1,2,4-Trichlorobenzene	<5.00		25.0	24.51		ug/L		98	45 - 130
1,1,1-Trichloroethane	<1.00		25.0	22.43		ug/L		90	49 - 130
1,1,2-Trichloroethane	<1.00		25.0	22.40		ug/L		90	56 - 130
Trichloroethene	<1.00		25.0	22.11		ug/L		88	55 - 130
1,2,3-Trichloropropane	<1.00		25.0	20.78		ug/L		83	50 - 130
Vinyl acetate	<10.0		50.0	39.57		ug/L		79	34 - 150
Xylenes, Total	<3.00		50.0	44.37		ug/L		89	44 - 130

Surrogate	MS %Recovery	MS Qualifier	MS Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	100		80 - 128
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: 310-268049-1 MSD

Matrix: Water

Analysis Batch: 404058

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
Acetone	<10.0		50.0	41.80		ug/L		84	35 - 150	9	26
Acrolein	<10.0		119	70.24		ug/L		59	10 - 150	8	27
Acrylonitrile	<5.00		25.0	215.9		ug/L		86	50 - 150	3	21
Allyl chloride	<2.00		25.0	19.17		ug/L		77	35 - 150	27	35
Benzene	<0.500		25.0	21.01		ug/L		84	47 - 130	7	20
Bromochloromethane	<5.00		25.0	21.32		ug/L		85	54 - 132	5	20
Bromodichloromethane	<1.00		25.0	21.20		ug/L		85	58 - 130	4	20
Bromoform	<5.00		25.0	18.29		ug/L		73	42 - 130	5	20
2-Butanone (MEK)	<10.0		50.0	42.22		ug/L		84	47 - 150	3	20
Carbon disulfide	<1.00		25.0	22.45		ug/L		90	39 - 131	8	32
Carbon tetrachloride	<2.00		25.0	20.60		ug/L		82	45 - 132	7	20
Chlorobenzene	<1.00		25.0	20.19		ug/L		81	54 - 130	7	20
Chlorodibromomethane	<5.00		25.0	20.03		ug/L		80	53 - 130	6	20
Chloroform	<3.00		25.0	21.18		ug/L		85	55 - 130	5	20
Chloroprene	<1.00		25.0	20.58		ug/L		82	47 - 131	5	20
cis-1,2-Dichloroethene	<1.00		25.0	21.67		ug/L		87	52 - 130	6	20
cis-1,3-Dichloropropene	<5.00		25.0	20.87		ug/L		83	55 - 130	8	20

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-268049-1 MSD

Client Sample ID: MW-1

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 404058

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dibromo-3-Chloropropane	<5.00		25.0	21.60		ug/L		86	45 - 150	3	20
1,2-Dibromoethane (EDB)	<1.00		25.0	20.97		ug/L		84	59 - 130	4	20
Dibromomethane	<1.00		25.0	21.16		ug/L		85	61 - 130	5	20
1,2-Dichlorobenzene	<1.00		25.0	21.03		ug/L		84	53 - 130	4	20
1,3-Dichlorobenzene	<1.00		25.0	21.07		ug/L		84	54 - 130	0	20
1,4-Dichlorobenzene	<1.00		25.0	20.52		ug/L		82	53 - 130	4	20
1,1-Dichloroethane	<1.00		25.0	22.65		ug/L		91	53 - 130	1	20
1,2-Dichloroethane	<1.00		25.0	20.33		ug/L		81	57 - 130	5	21
1,1-Dichloroethene	<2.00		25.0	22.06		ug/L		88	39 - 130	2	28
1,2-Dichloropropane	<1.00		25.0	22.36		ug/L		89	60 - 130	6	31
1,3-Dichloropropane	<1.00		25.0	20.39		ug/L		82	57 - 130	5	20
2,2-Dichloropropane	<4.00		25.0	21.02		ug/L		84	28 - 150	4	20
1,1-Dichloropropene	<1.00		25.0	21.40		ug/L		86	50 - 131	8	20
Ethylbenzene	<1.00		25.0	20.78		ug/L		83	48 - 130	6	20
Ethyl methacrylate	<2.00		25.0	21.74		ug/L		87	50 - 131	6	20
2-Hexanone	<10.0		50.0	43.60		ug/L		87	45 - 132	6	20
Iodomethane	<10.0		25.0	21.90		ug/L		88	10 - 150	7	35
Methacrylonitrile	<10.0		25.0	207.3		ug/L		83	57 - 130	5	20
Methylene Chloride	<5.00		25.0	24.46		ug/L		98	50 - 150	2	24
Methyl methacrylate	<2.00		50.0	42.46		ug/L		85	50 - 131	5	20
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	45.87		ug/L		92	46 - 132	3	20
Naphthalene	<5.00		25.0	25.85		ug/L		103	33 - 150	5	30
Propionitrile	<10.0		25.0	227.1		ug/L		91	53 - 130	5	20
Styrene	<1.00		25.0	20.83		ug/L		83	46 - 130	4	20
1,1,1,2-Tetrachloroethane	<1.00		25.0	19.04		ug/L		76	52 - 130	8	20
1,1,2,2-Tetrachloroethane	<1.00		25.0	20.08		ug/L		80	51 - 130	0	20
Tetrachloroethene	<1.00		25.0	20.91		ug/L		84	42 - 131	4	20
Toluene	<1.00		25.0	20.73		ug/L		83	48 - 130	6	20
trans-1,4-Dichloro-2-butene	<10.0		25.0	15.68		ug/L		63	33 - 150	2	20
trans-1,2-Dichloroethene	<1.00		25.0	22.26		ug/L		89	54 - 130	2	24
trans-1,3-Dichloropropene	<5.00		25.0	20.80		ug/L		83	51 - 130	4	20
1,2,4-Trichlorobenzene	<5.00		25.0	23.80		ug/L		95	45 - 130	3	20
1,1,1-Trichloroethane	<1.00		25.0	21.53		ug/L		86	49 - 130	4	20
1,1,2-Trichloroethane	<1.00		25.0	20.61		ug/L		82	56 - 130	8	20
Trichloroethene	<1.00		25.0	20.31		ug/L		81	55 - 130	9	20
1,2,3-Trichloropropane	<1.00		25.0	19.42		ug/L		78	50 - 130	7	20
Vinyl acetate	<10.0		50.0	36.94		ug/L		74	34 - 150	7	27
Xylenes, Total	<3.00		50.0	42.64		ug/L		85	44 - 130	4	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 128
Toluene-d8 (Surr)	100		80 - 120

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-404379/5
Matrix: Water
Analysis Batch: 404379

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			11/01/23 05:19	1
Acrolein	<10.0		10.0		ug/L			11/01/23 05:19	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 05:19	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 05:19	1
Benzene	<0.500		0.500		ug/L			11/01/23 05:19	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 05:19	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 05:19	1
Bromoform	<5.00		5.00		ug/L			11/01/23 05:19	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 05:19	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 05:19	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 05:19	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 05:19	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 05:19	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 05:19	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 05:19	1
Chloroform	<3.00		3.00		ug/L			11/01/23 05:19	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 05:19	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 05:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 05:19	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 05:19	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 05:19	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 05:19	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 05:19	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 05:19	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 05:19	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 05:19	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 05:19	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 05:19	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 05:19	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 05:19	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 05:19	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 05:19	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 05:19	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 05:19	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 05:19	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 05:19	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 05:19	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 05:19	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 05:19	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 05:19	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 05:19	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 05:19	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 05:19	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 05:19	1
Styrene	<1.00		1.00		ug/L			11/01/23 05:19	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-404379/5
Matrix: Water
Analysis Batch: 404379

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 05:19	1
Toluene	<1.00		1.00		ug/L			11/01/23 05:19	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 05:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 05:19	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 05:19	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 05:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 05:19	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 05:19	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 05:19	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 05:19	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 05:19	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 05:19	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 05:19	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	105		80 - 120		11/01/23 05:19	1
Dibromofluoromethane (Surr)	94		80 - 128		11/01/23 05:19	1
Toluene-d8 (Surr)	107		80 - 120		11/01/23 05:19	1

Lab Sample ID: LCS 310-404379/6
Matrix: Water
Analysis Batch: 404379

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	43.50		ug/L		109	50 - 150
Acrolein	94.8	95.93		ug/L		101	12 - 150
Acrylonitrile	200	195.8		ug/L		98	50 - 150
Allyl chloride	20.0	20.61		ug/L		103	50 - 150
Benzene	20.0	20.09		ug/L		100	73 - 122
Bromochloromethane	20.0	19.14		ug/L		96	68 - 132
Bromodichloromethane	20.0	19.32		ug/L		97	72 - 121
Bromoform	20.0	15.22		ug/L		76	55 - 129
2-Butanone (MEK)	40.0	43.18		ug/L		108	50 - 150
Carbon disulfide	20.0	20.20		ug/L		101	58 - 131
Carbon tetrachloride	20.0	19.88		ug/L		99	67 - 132
Chlorobenzene	20.0	18.75		ug/L		94	69 - 121
Chlorodibromomethane	20.0	17.96		ug/L		90	69 - 122
Chloroform	20.0	20.68		ug/L		103	72 - 120
Chloroprene	20.0	20.84		ug/L		104	67 - 131
cis-1,2-Dichloroethene	20.0	19.99		ug/L		100	74 - 120
cis-1,3-Dichloropropene	20.0	20.02		ug/L		100	71 - 126
1,2-Dibromo-3-Chloropropane	20.0	22.63		ug/L		113	50 - 150
1,2-Dibromoethane (EDB)	20.0	18.39		ug/L		92	73 - 125
Dibromomethane	20.0	18.79		ug/L		94	72 - 123
1,2-Dichlorobenzene	20.0	20.28		ug/L		101	68 - 120
1,3-Dichlorobenzene	20.0	17.80		ug/L		89	67 - 123

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-404379/6
Matrix: Water
Analysis Batch: 404379

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Dichlorobenzene	20.0	18.87		ug/L		94	67 - 120
1,1-Dichloroethane	20.0	21.50		ug/L		108	71 - 123
1,2-Dichloroethane	20.0	20.58		ug/L		103	70 - 124
1,1-Dichloroethene	20.0	21.99		ug/L		110	61 - 129
1,2-Dichloropropane	20.0	20.96		ug/L		105	73 - 121
1,3-Dichloropropane	20.0	20.95		ug/L		105	72 - 124
2,2-Dichloropropane	20.0	22.00		ug/L		110	50 - 150
1,1-Dichloropropene	20.0	21.32		ug/L		107	70 - 131
Ethylbenzene	20.0	20.22		ug/L		101	69 - 122
Ethyl methacrylate	20.0	23.51		ug/L		118	64 - 131
2-Hexanone	40.0	49.38		ug/L		123	60 - 132
Iodomethane	20.0	15.47		ug/L		77	10 - 150
Methacrylonitrile	200	185.8		ug/L		93	70 - 126
Methylene Chloride	20.0	21.61		ug/L		108	50 - 150
Methyl methacrylate	40.0	39.27		ug/L		98	68 - 127
4-Methyl-2-pentanone (MIBK)	40.0	47.77		ug/L		119	62 - 130
Naphthalene	20.0	21.64		ug/L		108	50 - 150
Propionitrile	200	213.5		ug/L		107	66 - 125
Styrene	20.0	18.97		ug/L		95	67 - 125
1,1,1,2-Tetrachloroethane	20.0	17.29		ug/L		86	68 - 123
1,1,2,2-Tetrachloroethane	20.0	17.77		ug/L		89	64 - 124
Tetrachloroethene	20.0	20.17		ug/L		101	69 - 131
Toluene	20.0	20.14		ug/L		101	72 - 121
trans-1,4-Dichloro-2-butene	20.0	17.47		ug/L		87	48 - 150
trans-1,2-Dichloroethene	20.0	19.97		ug/L		100	68 - 125
trans-1,3-Dichloropropene	20.0	21.73		ug/L		109	68 - 124
1,2,4-Trichlorobenzene	20.0	20.57		ug/L		103	61 - 124
1,1,1-Trichloroethane	20.0	20.75		ug/L		104	71 - 128
1,1,2-Trichloroethane	20.0	19.40		ug/L		97	70 - 124
Trichloroethene	20.0	19.50		ug/L		98	73 - 126
1,2,3-Trichloropropane	20.0	17.76		ug/L		89	64 - 125
Vinyl acetate	40.0	32.83		ug/L		82	50 - 150
Xylenes, Total	40.0	39.88		ug/L		100	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	99		80 - 128
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-404379/7
Matrix: Water
Analysis Batch: 404379

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	18.80		ug/L		94	24 - 150
Chloroethane	20.0	19.60		ug/L		98	51 - 137
Chloromethane	20.0	20.37		ug/L		102	37 - 150
Dichlorodifluoromethane	20.0	20.58		ug/L		103	37 - 150

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QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-404379/7
Matrix: Water
Analysis Batch: 404379

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichlorofluoromethane	20.0	18.61		ug/L		93	56 - 144
Vinyl chloride	20.0	20.59		ug/L		103	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	95		80 - 128
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: 310-268202-1 MS
Matrix: Water
Analysis Batch: 404379

Client Sample ID: S1 Leachate open
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	<10.0		50.0	47.52		ug/L		95	35 - 150
Acrolein	<10.0		119	78.84		ug/L		67	10 - 150
Acrylonitrile	<5.00		250	226.5		ug/L		91	50 - 150
Allyl chloride	<2.00		25.0	19.19		ug/L		77	35 - 150
Benzene	<0.500		25.0	22.16		ug/L		89	47 - 130
Bromochloromethane	<5.00		25.0	20.98		ug/L		84	54 - 132
Bromodichloromethane	<1.00		25.0	22.17		ug/L		89	58 - 130
Bromoform	<5.00		25.0	18.83		ug/L		75	42 - 130
2-Butanone (MEK)	<10.0		50.0	50.23		ug/L		100	47 - 150
Carbon disulfide	<1.00		25.0	22.34		ug/L		89	39 - 131
Carbon tetrachloride	<2.00		25.0	21.46		ug/L		86	45 - 132
Chlorobenzene	<1.00		25.0	21.48		ug/L		86	54 - 130
Chlorodibromomethane	<5.00		25.0	21.50		ug/L		86	53 - 130
Chloroform	<3.00		25.0	22.11		ug/L		88	55 - 130
Chloroprene	<1.00		25.0	22.99		ug/L		92	47 - 131
cis-1,2-Dichloroethene	<1.00		25.0	22.01		ug/L		88	52 - 130
cis-1,3-Dichloropropene	<5.00		25.0	22.73		ug/L		91	55 - 130
1,2-Dibromo-3-Chloropropane	<5.00		25.0	24.64		ug/L		99	45 - 150
1,2-Dibromoethane (EDB)	<1.00		25.0	21.97		ug/L		88	59 - 130
Dibromomethane	<1.00		25.0	21.77		ug/L		87	61 - 130
1,2-Dichlorobenzene	<1.00		25.0	21.71		ug/L		87	53 - 130
1,3-Dichlorobenzene	<1.00		25.0	20.71		ug/L		83	54 - 130
1,4-Dichlorobenzene	<1.00		25.0	20.83		ug/L		83	53 - 130
1,1-Dichloroethane	<1.00		25.0	23.55		ug/L		94	53 - 130
1,2-Dichloroethane	<1.00		25.0	22.85		ug/L		91	57 - 130
1,1-Dichloroethene	<2.00		25.0	22.08		ug/L		88	39 - 130
1,2-Dichloropropane	<1.00		25.0	23.59		ug/L		94	60 - 130
1,3-Dichloropropane	<1.00		25.0	22.59		ug/L		90	57 - 130
2,2-Dichloropropane	<4.00		25.0	21.52		ug/L		86	28 - 150
1,1-Dichloropropene	<1.00		25.0	23.04		ug/L		92	50 - 131
Ethylbenzene	<1.00		25.0	22.33		ug/L		89	48 - 130
Ethyl methacrylate	<2.00		25.0	25.88		ug/L		104	50 - 131
2-Hexanone	<10.0		50.0	54.13		ug/L		108	45 - 132
Iodomethane	<10.0		25.0	15.11		ug/L		60	10 - 150
Methacrylonitrile	<10.0		250	220.5		ug/L		88	57 - 130

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QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-268202-1 MS
Matrix: Water
Analysis Batch: 404379

Client Sample ID: S1 Leachate open
Prep Type: Total/NA

Analyte	Sample	Sample Qualifier	Spike Added	MS	MS	Unit	D	%Rec	%Rec Limits
	Result			Result	Qualifier				
Methylene Chloride	<5.00		25.0	23.44		ug/L		94	50 - 150
Methyl methacrylate	<2.00		50.0	46.56		ug/L		93	50 - 131
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	56.37		ug/L		113	46 - 132
Naphthalene	<5.00		25.0	29.02		ug/L		116	33 - 150
Propionitrile	<10.0		25.0	259.4		ug/L		104	53 - 130
Styrene	<1.00		25.0	22.51		ug/L		90	46 - 130
1,1,1,2-Tetrachloroethane	<1.00		25.0	20.39		ug/L		82	52 - 130
1,1,2,2-Tetrachloroethane	<1.00		25.0	21.60		ug/L		86	51 - 130
Tetrachloroethene	<1.00		25.0	20.27		ug/L		81	42 - 131
Toluene	<1.00		25.0	21.44		ug/L		86	48 - 130
trans-1,4-Dichloro-2-butene	<10.0		25.0	21.45		ug/L		86	33 - 150
trans-1,2-Dichloroethene	<1.00		25.0	21.71		ug/L		87	54 - 130
trans-1,3-Dichloropropene	<5.00		25.0	23.24		ug/L		93	51 - 130
1,2,4-Trichlorobenzene	<5.00		25.0	24.40		ug/L		98	45 - 130
1,1,1-Trichloroethane	<1.00		25.0	22.43		ug/L		90	49 - 130
1,1,2-Trichloroethane	<1.00		25.0	23.63		ug/L		95	56 - 130
Trichloroethene	<1.00		25.0	21.25		ug/L		85	55 - 130
1,2,3-Trichloropropane	<1.00		25.0	22.13		ug/L		89	50 - 130
Vinyl acetate	<10.0		50.0	37.32		ug/L		75	34 - 150
Xylenes, Total	<3.00		50.0	45.16		ug/L		90	44 - 130

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	97		80 - 128
Toluene-d8 (Surr)	102		80 - 120

Lab Sample ID: 310-268202-1 MSD
Matrix: Water
Analysis Batch: 404379

Client Sample ID: S1 Leachate open
Prep Type: Total/NA

Analyte	Sample	Sample Qualifier	Spike Added	MSD	MSD	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
	Result			Result	Qualifier						
Acetone	<10.0		50.0	47.71		ug/L		95	35 - 150	0	26
Acrolein	<10.0		119	93.82		ug/L		79	10 - 150	17	27
Acrylonitrile	<5.00		25.0	230.0		ug/L		92	50 - 150	2	21
Allyl chloride	<2.00		25.0	22.51		ug/L		90	35 - 150	16	35
Benzene	<0.500		25.0	21.68		ug/L		87	47 - 130	2	20
Bromochloromethane	<5.00		25.0	20.77		ug/L		83	54 - 132	1	20
Bromodichloromethane	<1.00		25.0	21.99		ug/L		88	58 - 130	1	20
Bromoform	<5.00		25.0	19.36		ug/L		77	42 - 130	3	20
2-Butanone (MEK)	<10.0		50.0	50.92		ug/L		102	47 - 150	1	20
Carbon disulfide	<1.00		25.0	21.46		ug/L		86	39 - 131	4	32
Carbon tetrachloride	<2.00		25.0	20.88		ug/L		84	45 - 132	3	20
Chlorobenzene	<1.00		25.0	21.13		ug/L		85	54 - 130	2	20
Chlorodibromomethane	<5.00		25.0	21.16		ug/L		85	53 - 130	2	20
Chloroform	<3.00		25.0	21.92		ug/L		88	55 - 130	1	20
Chloroprene	<1.00		25.0	21.73		ug/L		87	47 - 131	6	20
cis-1,2-Dichloroethene	<1.00		25.0	21.19		ug/L		85	52 - 130	4	20
cis-1,3-Dichloropropene	<5.00		25.0	22.61		ug/L		90	55 - 130	1	20

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 310-268202-1 MSD

Client Sample ID: S1 Leachate open

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 404379

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dibromo-3-Chloropropane	<5.00		25.0	25.29		ug/L		101	45 - 150	3	20
1,2-Dibromoethane (EDB)	<1.00		25.0	21.77		ug/L		87	59 - 130	1	20
Dibromomethane	<1.00		25.0	21.68		ug/L		87	61 - 130	0	20
1,2-Dichlorobenzene	<1.00		25.0	22.46		ug/L		90	53 - 130	3	20
1,3-Dichlorobenzene	<1.00		25.0	20.90		ug/L		84	54 - 130	1	20
1,4-Dichlorobenzene	<1.00		25.0	22.06		ug/L		88	53 - 130	6	20
1,1-Dichloroethane	<1.00		25.0	22.87		ug/L		91	53 - 130	3	20
1,2-Dichloroethane	<1.00		25.0	22.93		ug/L		92	57 - 130	0	21
1,1-Dichloroethene	<2.00		25.0	21.00		ug/L		84	39 - 130	5	28
1,2-Dichloropropane	<1.00		25.0	23.83		ug/L		95	60 - 130	1	31
1,3-Dichloropropane	<1.00		25.0	22.45		ug/L		90	57 - 130	1	20
2,2-Dichloropropane	<4.00		25.0	20.91		ug/L		84	28 - 150	3	20
1,1-Dichloropropene	<1.00		25.0	22.22		ug/L		89	50 - 131	4	20
Ethylbenzene	<1.00		25.0	21.69		ug/L		87	48 - 130	3	20
Ethyl methacrylate	<2.00		25.0	24.79		ug/L		99	50 - 131	4	20
2-Hexanone	<10.0		50.0	53.51		ug/L		107	45 - 132	1	20
Iodomethane	<10.0		25.0	18.78		ug/L		75	10 - 150	22	35
Methacrylonitrile	<10.0		25.0	224.2		ug/L		90	57 - 130	2	20
Methylene Chloride	<5.00		25.0	22.91		ug/L		92	50 - 150	2	24
Methyl methacrylate	<2.00		50.0	45.86		ug/L		92	50 - 131	2	20
4-Methyl-2-pentanone (MIBK)	<10.0		50.0	55.24		ug/L		110	46 - 132	2	20
Naphthalene	<5.00		25.0	30.93		ug/L		124	33 - 150	6	30
Propionitrile	<10.0		25.0	260.8		ug/L		104	53 - 130	1	20
Styrene	<1.00		25.0	22.13		ug/L		89	46 - 130	2	20
1,1,1,2-Tetrachloroethane	<1.00		25.0	20.01		ug/L		80	52 - 130	2	20
1,1,2,2-Tetrachloroethane	<1.00		25.0	21.29		ug/L		85	51 - 130	1	20
Tetrachloroethene	<1.00		25.0	19.70		ug/L		79	42 - 131	3	20
Toluene	<1.00		25.0	21.12		ug/L		84	48 - 130	1	20
trans-1,4-Dichloro-2-butene	<10.0		25.0	20.30		ug/L		81	33 - 150	6	20
trans-1,2-Dichloroethene	<1.00		25.0	21.46		ug/L		86	54 - 130	1	24
trans-1,3-Dichloropropene	<5.00		25.0	23.28		ug/L		93	51 - 130	0	20
1,2,4-Trichlorobenzene	<5.00		25.0	25.60		ug/L		102	45 - 130	5	20
1,1,1-Trichloroethane	<1.00		25.0	21.52		ug/L		86	49 - 130	4	20
1,1,2-Trichloroethane	<1.00		25.0	22.88		ug/L		92	56 - 130	3	20
Trichloroethene	<1.00		25.0	20.98		ug/L		84	55 - 130	1	20
1,2,3-Trichloropropane	<1.00		25.0	20.98		ug/L		84	50 - 130	5	20
Vinyl acetate	<10.0		50.0	37.71		ug/L		75	34 - 150	1	27
Xylenes, Total	<3.00		50.0	44.40		ug/L		89	44 - 130	2	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	98		80 - 128
Toluene-d8 (Surr)	100		80 - 120

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-404020/3
Matrix: Water
Analysis Batch: 404020

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			10/25/23 11:20	1
Nitrate as N	<0.200		0.200		mg/L			10/25/23 11:20	1
Fluoride	<0.200		0.200		mg/L			10/25/23 11:20	1
Sulfate	<1.00		1.00		mg/L			10/25/23 11:20	1

Lab Sample ID: LCS 310-404020/4
Matrix: Water
Analysis Batch: 404020

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	9.162		mg/L		92	90 - 110
Nitrate as N	2.00	1.911		mg/L		96	90 - 110
Fluoride	2.00	1.920		mg/L		96	90 - 110
Sulfate	10.0	9.814		mg/L		98	90 - 110

Lab Sample ID: MB 310-404079/3
Matrix: Water
Analysis Batch: 404079

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			10/26/23 14:07	1
Nitrate as N	<0.200		0.200		mg/L			10/26/23 14:07	1
Fluoride	<0.200		0.200		mg/L			10/26/23 14:07	1
Sulfate	<1.00		1.00		mg/L			10/26/23 14:07	1

Lab Sample ID: LCS 310-404079/4
Matrix: Water
Analysis Batch: 404079

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	9.811		mg/L		98	90 - 110
Nitrate as N	2.00	2.080		mg/L		104	90 - 110
Fluoride	2.00	2.089		mg/L		104	90 - 110
Sulfate	10.0	10.26		mg/L		103	90 - 110

Lab Sample ID: MB 310-404242/3
Matrix: Water
Analysis Batch: 404242

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			10/27/23 15:14	1
Nitrate as N	<0.200		0.200		mg/L			10/27/23 15:14	1
Fluoride	<0.200		0.200		mg/L			10/27/23 15:14	1
Sulfate	<1.00		1.00		mg/L			10/27/23 15:14	1

QC Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 310-404242/4
Matrix: Water
Analysis Batch: 404242

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	9.991		mg/L		100	90 - 110
Nitrate as N	2.00	2.098		mg/L		105	90 - 110
Fluoride	2.00	2.104		mg/L		105	90 - 110
Sulfate	10.0	10.42		mg/L		104	90 - 110

Lab Sample ID: 310-268333-1 MS
Matrix: Water
Analysis Batch: 404242

Client Sample ID: S2 Underliner closed
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chloride	127		500	581.2		mg/L		91	80 - 120
Nitrate as N	<20.0		100	99.95		mg/L		100	80 - 120
Sulfate	1020		500	1486		mg/L		93	80 - 120

Lab Sample ID: 310-268333-1 MS
Matrix: Water
Analysis Batch: 404242

Client Sample ID: S2 Underliner closed
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate as N	0.619		1.00	1.578		mg/L		96	80 - 120
Fluoride	0.890		1.00	1.821		mg/L		93	80 - 120

Lab Sample ID: 310-268333-1 MSD
Matrix: Water
Analysis Batch: 404242

Client Sample ID: S2 Underliner closed
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride	127		500	590.9		mg/L		93	80 - 120	2	15
Sulfate	1020		500	1500		mg/L		96	80 - 120	1	15

Lab Sample ID: 310-268333-1 MSD
Matrix: Water
Analysis Batch: 404242

Client Sample ID: S2 Underliner closed
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Nitrate as N	0.619		1.00	1.586		mg/L		97	80 - 120	1	15
Fluoride	0.890		1.00	1.835		mg/L		95	80 - 120	1	15

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-403920/1-A
Matrix: Water
Analysis Batch: 404467

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 403920

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/27/23 10:30	10/31/23 14:45	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 14:45	1
Calcium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 14:45	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 14:45	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 14:45	1

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

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

Lab Sample ID: MB 310-403920/1-A
Matrix: Water
Analysis Batch: 404467

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 403920

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Magnesium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 14:45	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 14:45	1

Lab Sample ID: LCS 310-403920/2-A
Matrix: Water
Analysis Batch: 404467

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 403920

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	1.051		mg/L		105	80 - 120
Boron	2.00	2.094		mg/L		105	80 - 120
Calcium	20.0	19.79		mg/L		99	80 - 120
Iron	2.00	2.245		mg/L		112	80 - 120
Lithium	2.00	2.000		mg/L		100	80 - 120
Magnesium	20.0	20.43		mg/L		102	80 - 120
Molybdenum	2.00	2.068		mg/L		103	80 - 120

Lab Sample ID: 310-268202-2 DU
Matrix: Water
Analysis Batch: 404467

Client Sample ID: S2 Leachate open
Prep Type: Total/NA
Prep Batch: 403920

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Barium	0.0334		0.03294		mg/L		1	20
Boron	24.2		23.89		mg/L		1	20
Calcium	172		169.8		mg/L		1	20
Iron	1.78		1.481		mg/L		18	20
Lithium	1.16		1.150		mg/L		0.9	20
Magnesium	137		135.8		mg/L		1	20
Molybdenum	0.0624		0.06332		mg/L		1	20

Lab Sample ID: MB 310-404397/1-A
Matrix: Water
Analysis Batch: 404674

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404397

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		11/01/23 09:20	11/01/23 16:14	1
Boron	<0.200		0.200		mg/L		11/01/23 09:20	11/01/23 16:14	1
Calcium	<1.00		1.00		mg/L		11/01/23 09:20	11/01/23 16:14	1
Iron	<0.500		0.500		mg/L		11/01/23 09:20	11/01/23 16:14	1
Lithium	<0.0500		0.0500		mg/L		11/01/23 09:20	11/01/23 16:14	1
Magnesium	<1.00		1.00		mg/L		11/01/23 09:20	11/01/23 16:14	1
Molybdenum	<0.0500		0.0500		mg/L		11/01/23 09:20	11/01/23 16:14	1

Lab Sample ID: LCS 310-404397/2-A
Matrix: Water
Analysis Batch: 404674

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.9517		mg/L		95	80 - 120
Boron	2.00	1.901		mg/L		95	80 - 120
Calcium	20.0	18.17		mg/L		91	80 - 120

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

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

Lab Sample ID: LCS 310-404397/2-A
 Matrix: Water
 Analysis Batch: 404674

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 404397

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	2.00	1.896		mg/L		95	80 - 120
Lithium	2.00	1.838		mg/L		92	80 - 120
Magnesium	20.0	18.46		mg/L		92	80 - 120
Molybdenum	2.00	1.873		mg/L		94	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-404402/71
 Matrix: Water
 Analysis Batch: 404402

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			10/31/23 21:37	1

Lab Sample ID: LCS 310-404402/72
 Matrix: Water
 Analysis Batch: 404402

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	8.55	8.223		mg/L		96	90 - 110

Lab Sample ID: MB 310-404631/1-A
 Matrix: Water
 Analysis Batch: 404699

Client Sample ID: Method Blank
 Prep Type: Total/NA
 Prep Batch: 404631

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.500		0.500		mg/L		11/02/23 10:38	11/02/23 21:47	1

Lab Sample ID: LCS 310-404631/2-A
 Matrix: Water
 Analysis Batch: 404699

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 404631

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	4.130		mg/L		103	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-403817/60
 Matrix: Water
 Analysis Batch: 403817

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			10/26/23 09:13	1

Lab Sample ID: LCS 310-403817/63
 Matrix: Water
 Analysis Batch: 403817

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	126.0		mg/L		100	85 - 115

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 5220D LL - COD (Continued)

Lab Sample ID: MB 310-404454/32
Matrix: Water
Analysis Batch: 404454

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			11/01/23 09:46	1

Lab Sample ID: MB 310-404454/5
Matrix: Water
Analysis Batch: 404454

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			11/01/23 09:46	1

Lab Sample ID: LCS 310-404454/3
Matrix: Water
Analysis Batch: 404454

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	123.8		mg/L		99	85 - 115

Lab Sample ID: LCS 310-404454/33
Matrix: Water
Analysis Batch: 404454

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	125	123.8		mg/L		99	85 - 115

Lab Sample ID: 310-268202-3 MS
Matrix: Water
Analysis Batch: 404454

Client Sample ID: S1 Underliner open
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chemical Oxygen Demand	22.1	F1 F2	50.0	77.15		mg/L		110	80 - 148

Lab Sample ID: 310-268202-3 MSD
Matrix: Water
Analysis Batch: 404454

Client Sample ID: S1 Underliner open
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	22.1	F1 F2	50.0	59.73	F1 F2	mg/L		75	80 - 148	25	10

Lab Sample ID: MB 310-404793/32
Matrix: Water
Analysis Batch: 404793

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			11/03/23 10:18	1

Lab Sample ID: LCS 310-404793/33
Matrix: Water
Analysis Batch: 404793

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	124.3		mg/L		99	85 - 115

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QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method: 9066 - Phenolics, Total Recoverable

Lab Sample ID: MB 310-404441/1-A
Matrix: Water
Analysis Batch: 404553

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 404441

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:53	1

Lab Sample ID: LCS 310-404441/2-A
Matrix: Water
Analysis Batch: 404553

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 404441

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.09747		mg/L		97	90 - 110

Lab Sample ID: 310-268049-1 MS
Matrix: Water
Analysis Batch: 404553

Client Sample ID: MW-1
Prep Type: Total/NA
Prep Batch: 404441

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	<0.0200		0.100	0.09540		mg/L		95	76 - 124

Lab Sample ID: 310-268049-1 MSD
Matrix: Water
Analysis Batch: 404553

Client Sample ID: MW-1
Prep Type: Total/NA
Prep Batch: 404441

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	0.09806		mg/L		98	76 - 124	3	14

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

Lab Sample ID: MB 310-403877/1
Matrix: Water
Analysis Batch: 403877

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			10/26/23 13:48	1

Lab Sample ID: LCS 310-403877/2
Matrix: Water
Analysis Batch: 403877

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	980.0		mg/L		98	90 - 110

Lab Sample ID: MB 310-404259/1
Matrix: Water
Analysis Batch: 404259

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			10/30/23 15:35	1

Eurofins Cedar Falls

QC Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

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

Lab Sample ID: LCS 310-404259/2
Matrix: Water
Analysis Batch: 404259

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	90 - 110

Lab Sample ID: MB 310-404260/1
Matrix: Water
Analysis Batch: 404260

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			10/30/23 15:41	1

Lab Sample ID: LCS 310-404260/2
Matrix: Water
Analysis Batch: 404260

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	968.0		mg/L		97	90 - 110

Lab Sample ID: 310-268202-3 DU
Matrix: Water
Analysis Batch: 404260

Client Sample ID: S1 Underliner open
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Dissolved Solids	700		680.0		mg/L		3	20

Lab Sample ID: MB 310-404387/1
Matrix: Water
Analysis Batch: 404387

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			10/31/23 14:51	1

Lab Sample ID: LCS 310-404387/26
Matrix: Water
Analysis Batch: 404387

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	948.0		mg/L		95	90 - 110

QC Association Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

GC/MS VOA

Analysis Batch: 404058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	8260D	
310-268049-2	MW-2	Total/NA	Water	8260D	
310-268049-3	MW-3	Total/NA	Water	8260D	
310-268049-4	Dup-1	Total/NA	Water	8260D	
310-268049-5	EB-1	Total/NA	Water	8260D	
MB 310-404058/5	Method Blank	Total/NA	Water	8260D	
LCS 310-404058/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-404058/7	Lab Control Sample	Total/NA	Water	8260D	
310-268049-1 MS	MW-1	Total/NA	Water	8260D	
310-268049-1 MSD	MW-1	Total/NA	Water	8260D	

Analysis Batch: 404379

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	8260D	
310-268202-2	S2 Leachate open	Total/NA	Water	8260D	
310-268202-3	S1 Underliner open	Total/NA	Water	8260D	
310-268202-4	Combined Leachate	Total/NA	Water	8260D	
310-268333-1	S2 Underliner closed	Total/NA	Water	8260D	
MB 310-404379/5	Method Blank	Total/NA	Water	8260D	
LCS 310-404379/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-404379/7	Lab Control Sample	Total/NA	Water	8260D	
310-268202-1 MS	S1 Leachate open	Total/NA	Water	8260D	
310-268202-1 MSD	S1 Leachate open	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 404020

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	9056A	
310-268049-2	MW-2	Total/NA	Water	9056A	
310-268049-3	MW-3	Total/NA	Water	9056A	
310-268049-3	MW-3	Total/NA	Water	9056A	
310-268049-4	Dup-1	Total/NA	Water	9056A	
310-268049-4	Dup-1	Total/NA	Water	9056A	
310-268049-5	EB-1	Total/NA	Water	9056A	
MB 310-404020/3	Method Blank	Total/NA	Water	9056A	
LCS 310-404020/4	Lab Control Sample	Total/NA	Water	9056A	

Analysis Batch: 404079

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	9056A	
310-268202-2	S2 Leachate open	Total/NA	Water	9056A	
310-268202-2	S2 Leachate open	Total/NA	Water	9056A	
310-268202-3	S1 Underliner open	Total/NA	Water	9056A	
310-268202-4	Combined Leachate	Total/NA	Water	9056A	
310-268202-4	Combined Leachate	Total/NA	Water	9056A	
310-268202-4	Combined Leachate	Total/NA	Water	9056A	
MB 310-404079/3	Method Blank	Total/NA	Water	9056A	
LCS 310-404079/4	Lab Control Sample	Total/NA	Water	9056A	

QC Association Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

HPLC/IC

Analysis Batch: 404242

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268333-1	S2 Underliner closed	Total/NA	Water	9056A	
310-268333-1	S2 Underliner closed	Total/NA	Water	9056A	
MB 310-404242/3	Method Blank	Total/NA	Water	9056A	
LCS 310-404242/4	Lab Control Sample	Total/NA	Water	9056A	
310-268333-1 MS	S2 Underliner closed	Total/NA	Water	9056A	
310-268333-1 MS	S2 Underliner closed	Total/NA	Water	9056A	
310-268333-1 MSD	S2 Underliner closed	Total/NA	Water	9056A	
310-268333-1 MSD	S2 Underliner closed	Total/NA	Water	9056A	

Metals

Prep Batch: 403920

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	3005A	
310-268049-2	MW-2	Total/NA	Water	3005A	
310-268049-3	MW-3	Total/NA	Water	3005A	
310-268049-4	Dup-1	Total/NA	Water	3005A	
310-268049-5	EB-1	Total/NA	Water	3005A	
310-268202-1	S1 Leachate open	Total/NA	Water	3005A	
310-268202-2	S2 Leachate open	Total/NA	Water	3005A	
310-268202-3	S1 Underliner open	Total/NA	Water	3005A	
310-268202-4	Combined Leachate	Total/NA	Water	3005A	
MB 310-403920/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-403920/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-268202-2 DU	S2 Leachate open	Total/NA	Water	3005A	

Prep Batch: 404397

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268333-1	S2 Underliner closed	Total/NA	Water	3005A	
MB 310-404397/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-404397/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 404467

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	6010D	403920
310-268049-2	MW-2	Total/NA	Water	6010D	403920
310-268049-3	MW-3	Total/NA	Water	6010D	403920
310-268049-4	Dup-1	Total/NA	Water	6010D	403920
310-268049-5	EB-1	Total/NA	Water	6010D	403920
310-268202-1	S1 Leachate open	Total/NA	Water	6010D	403920
310-268202-2	S2 Leachate open	Total/NA	Water	6010D	403920
310-268202-3	S1 Underliner open	Total/NA	Water	6010D	403920
310-268202-4	Combined Leachate	Total/NA	Water	6010D	403920
MB 310-403920/1-A	Method Blank	Total/NA	Water	6010D	403920
LCS 310-403920/2-A	Lab Control Sample	Total/NA	Water	6010D	403920
310-268202-2 DU	S2 Leachate open	Total/NA	Water	6010D	403920

Analysis Batch: 404674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268333-1	S2 Underliner closed	Total/NA	Water	6010D	404397
MB 310-404397/1-A	Method Blank	Total/NA	Water	6010D	404397

Eurofins Cedar Falls

QC Association Summary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Metals (Continued)

Analysis Batch: 404674 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-404397/2-A	Lab Control Sample	Total/NA	Water	6010D	404397

General Chemistry

Analysis Batch: 403817

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	5220D LL	
310-268049-2	MW-2	Total/NA	Water	5220D LL	
310-268049-3	MW-3	Total/NA	Water	5220D LL	
310-268049-4	Dup-1	Total/NA	Water	5220D LL	
310-268049-5	EB-1	Total/NA	Water	5220D LL	
MB 310-403817/60	Method Blank	Total/NA	Water	5220D LL	
LCS 310-403817/63	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 403877

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	SM 2540C	
310-268049-2	MW-2	Total/NA	Water	SM 2540C	
310-268049-3	MW-3	Total/NA	Water	SM 2540C	
310-268049-4	Dup-1	Total/NA	Water	SM 2540C	
310-268049-5	EB-1	Total/NA	Water	SM 2540C	
MB 310-403877/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-403877/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 404259

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	SM 2540C	
310-268202-2	S2 Leachate open	Total/NA	Water	SM 2540C	
MB 310-404259/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-404259/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 404260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-3	S1 Underliner open	Total/NA	Water	SM 2540C	
310-268202-4	Combined Leachate	Total/NA	Water	SM 2540C	
MB 310-404260/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-404260/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-268202-3 DU	S1 Underliner open	Total/NA	Water	SM 2540C	

Analysis Batch: 404387

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268333-1	S2 Underliner closed	Total/NA	Water	SM 2540C	
MB 310-404387/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-404387/26	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 404402

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	350.1	
310-268049-2	MW-2	Total/NA	Water	350.1	
310-268049-3	MW-3	Total/NA	Water	350.1	
310-268049-4	Dup-1	Total/NA	Water	350.1	

Eurofins Cedar Falls

QC Association Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

General Chemistry (Continued)

Analysis Batch: 404402 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-5	EB-1	Total/NA	Water	350.1	
310-268333-1	S2 Underliner closed	Total/NA	Water	350.1	
MB 310-404402/71	Method Blank	Total/NA	Water	350.1	
LCS 310-404402/72	Lab Control Sample	Total/NA	Water	350.1	

Prep Batch: 404441

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	Distill/Phenol	
310-268049-2	MW-2	Total/NA	Water	Distill/Phenol	
310-268049-3	MW-3	Total/NA	Water	Distill/Phenol	
310-268049-4	Dup-1	Total/NA	Water	Distill/Phenol	
310-268049-5	EB-1	Total/NA	Water	Distill/Phenol	
310-268202-1	S1 Leachate open	Total/NA	Water	Distill/Phenol	
310-268202-2	S2 Leachate open	Total/NA	Water	Distill/Phenol	
310-268202-3	S1 Underliner open	Total/NA	Water	Distill/Phenol	
310-268202-4	Combined Leachate	Total/NA	Water	Distill/Phenol	
310-268333-1	S2 Underliner closed	Total/NA	Water	Distill/Phenol	
MB 310-404441/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-404441/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	
310-268049-1 MS	MW-1	Total/NA	Water	Distill/Phenol	
310-268049-1 MSD	MW-1	Total/NA	Water	Distill/Phenol	

Analysis Batch: 404454

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	5220D LL	
310-268202-2	S2 Leachate open	Total/NA	Water	5220D LL	
310-268202-3	S1 Underliner open	Total/NA	Water	5220D LL	
310-268202-4	Combined Leachate	Total/NA	Water	5220D LL	
MB 310-404454/32	Method Blank	Total/NA	Water	5220D LL	
MB 310-404454/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-404454/3	Lab Control Sample	Total/NA	Water	5220D LL	
LCS 310-404454/33	Lab Control Sample	Total/NA	Water	5220D LL	
310-268202-3 MS	S1 Underliner open	Total/NA	Water	5220D LL	
310-268202-3 MSD	S1 Underliner open	Total/NA	Water	5220D LL	

Analysis Batch: 404553

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268049-1	MW-1	Total/NA	Water	9066	404441
310-268049-2	MW-2	Total/NA	Water	9066	404441
310-268049-3	MW-3	Total/NA	Water	9066	404441
310-268049-4	Dup-1	Total/NA	Water	9066	404441
310-268049-5	EB-1	Total/NA	Water	9066	404441
310-268202-1	S1 Leachate open	Total/NA	Water	9066	404441
310-268202-2	S2 Leachate open	Total/NA	Water	9066	404441
310-268202-3	S1 Underliner open	Total/NA	Water	9066	404441
310-268202-4	Combined Leachate	Total/NA	Water	9066	404441
310-268333-1	S2 Underliner closed	Total/NA	Water	9066	404441
MB 310-404441/1-A	Method Blank	Total/NA	Water	9066	404441
LCS 310-404441/2-A	Lab Control Sample	Total/NA	Water	9066	404441
310-268049-1 MS	MW-1	Total/NA	Water	9066	404441
310-268049-1 MSD	MW-1	Total/NA	Water	9066	404441

Eurofins Cedar Falls

QC Association Summary

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

General Chemistry

Prep Batch: 404631

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	350.1	
310-268202-2	S2 Leachate open	Total/NA	Water	350.1	
310-268202-3	S1 Underliner open	Total/NA	Water	350.1	
310-268202-4	Combined Leachate	Total/NA	Water	350.1	
MB 310-404631/1-A	Method Blank	Total/NA	Water	350.1	
LCS 310-404631/2-A	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 404699

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268202-1	S1 Leachate open	Total/NA	Water	350.1	404631
310-268202-2	S2 Leachate open	Total/NA	Water	350.1	404631
310-268202-3	S1 Underliner open	Total/NA	Water	350.1	404631
310-268202-4	Combined Leachate	Total/NA	Water	350.1	404631
MB 310-404631/1-A	Method Blank	Total/NA	Water	350.1	404631
LCS 310-404631/2-A	Lab Control Sample	Total/NA	Water	350.1	404631

Analysis Batch: 404793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-268333-1	S2 Underliner closed	Total/NA	Water	5220D LL	
MB 310-404793/32	Method Blank	Total/NA	Water	5220D LL	
LCS 310-404793/33	Lab Control Sample	Total/NA	Water	5220D LL	

Lab Chronicle

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Date Collected: 10/24/23 11:20

Date Received: 10/25/23 10:30

Lab Sample ID: 310-268049-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404058	WSE8	EET CF	10/27/23 23:36
Total/NA	Analysis	9056A		1	404020	QTZ5	EET CF	10/25/23 12:20
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:09
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:43
Total/NA	Analysis	5220D LL		1	403817	ENB7	EET CF	10/26/23 09:13
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:54
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48

Client Sample ID: MW-2

Date Collected: 10/24/23 14:15

Date Received: 10/25/23 10:30

Lab Sample ID: 310-268049-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404058	WSE8	EET CF	10/27/23 23:58
Total/NA	Analysis	9056A		1	404020	QTZ5	EET CF	10/25/23 12:32
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:11
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:45
Total/NA	Analysis	5220D LL		1	403817	ENB7	EET CF	10/26/23 09:13
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:55
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48

Client Sample ID: MW-3

Date Collected: 10/24/23 16:45

Date Received: 10/25/23 10:30

Lab Sample ID: 310-268049-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404058	WSE8	EET CF	10/28/23 00:20
Total/NA	Analysis	9056A		1	404020	QTZ5	EET CF	10/25/23 12:44
Total/NA	Analysis	9056A		50	404020	QTZ5	EET CF	10/26/23 10:11
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:13
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:47
Total/NA	Analysis	5220D LL		1	403817	ENB7	EET CF	10/26/23 09:13
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:56
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48

Lab Chronicle

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Dup-1

Date Collected: 10/24/23 00:00

Date Received: 10/25/23 10:30

Lab Sample ID: 310-268049-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404058	WSE8	EET CF	10/28/23 01:04
Total/NA	Analysis	9056A		1	404020	QTZ5	EET CF	10/25/23 12:56
Total/NA	Analysis	9056A		50	404020	QTZ5	EET CF	10/26/23 10:22
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:15
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:47
Total/NA	Analysis	5220D LL		1	403817	ENB7	EET CF	10/26/23 09:13
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:56
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48

Client Sample ID: EB-1

Date Collected: 10/24/23 16:50

Date Received: 10/25/23 10:30

Lab Sample ID: 310-268049-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404058	WSE8	EET CF	10/28/23 00:42
Total/NA	Analysis	9056A		1	404020	QTZ5	EET CF	10/25/23 13:09
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:17
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:48
Total/NA	Analysis	5220D LL		1	403817	ENB7	EET CF	10/26/23 09:13
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:57
Total/NA	Analysis	SM 2540C		1	403877	DGU1	EET CF	10/26/23 13:48

Client Sample ID: S1 Leachate open

Date Collected: 10/25/23 09:00

Date Received: 10/26/23 08:45

Lab Sample ID: 310-268202-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404379	WSE8	EET CF	11/01/23 07:51
Total/NA	Analysis	9056A		1	404079	QTZ5	EET CF	10/26/23 17:39
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:19
Total/NA	Prep	350.1			404631	MQ8M	EET CF	11/02/23 10:38
Total/NA	Analysis	350.1		1	404699	ZJX4	EET CF	11/02/23 21:57
Total/NA	Analysis	5220D LL		1	404454	ENB7	EET CF	11/01/23 09:46
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:58
Total/NA	Analysis	SM 2540C		1	404259	D7CP	EET CF	10/30/23 15:35

Lab Chronicle

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Date Collected: 10/25/23 08:55

Matrix: Water

Date Received: 10/26/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404379	WSE8	EET CF	11/01/23 08:13
Total/NA	Analysis	9056A		1	404079	QTZ5	EET CF	10/26/23 17:53
Total/NA	Analysis	9056A		50	404079	QTZ5	EET CF	10/27/23 12:25
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:21
Total/NA	Prep	350.1			404631	MQ8M	EET CF	11/02/23 10:38
Total/NA	Analysis	350.1		1	404699	ZJX4	EET CF	11/02/23 21:59
Total/NA	Analysis	5220D LL		1	404454	ENB7	EET CF	11/01/23 09:46
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:58
Total/NA	Analysis	SM 2540C		1	404259	D7CP	EET CF	10/30/23 15:35

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Date Collected: 10/25/23 08:30

Matrix: Water

Date Received: 10/26/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404379	WSE8	EET CF	11/01/23 08:35
Total/NA	Analysis	9056A		1	404079	QTZ5	EET CF	10/26/23 17:09
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:25
Total/NA	Prep	350.1			404631	MQ8M	EET CF	11/02/23 10:38
Total/NA	Analysis	350.1		1	404699	ZJX4	EET CF	11/02/23 21:59
Total/NA	Analysis	5220D LL		1	404454	ENB7	EET CF	11/01/23 09:46
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:59
Total/NA	Analysis	SM 2540C		1	404260	D7CP	EET CF	10/30/23 15:41

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404379	WSE8	EET CF	11/01/23 07:30
Total/NA	Analysis	9056A		1	404079	QTZ5	EET CF	10/26/23 18:09
Total/NA	Analysis	9056A		5	404079	QTZ5	EET CF	10/26/23 18:23
Total/NA	Analysis	9056A		50	404079	QTZ5	EET CF	10/27/23 12:39
Total/NA	Prep	3005A			403920	KCK5	EET CF	10/27/23 10:30
Total/NA	Analysis	6010D		1	404467	ZRI4	EET CF	10/31/23 15:27
Total/NA	Prep	350.1			404631	MQ8M	EET CF	11/02/23 10:38
Total/NA	Analysis	350.1		1	404699	ZJX4	EET CF	11/02/23 21:59
Total/NA	Analysis	5220D LL		1	404454	ENB7	EET CF	11/01/23 09:46

Lab Chronicle

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 20:59
Total/NA	Analysis	SM 2540C		1	404260	D7CP	EET CF	10/30/23 15:41

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Date Collected: 10/26/23 09:15

Matrix: Water

Date Received: 10/27/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	404379	WSE8	EET CF	11/01/23 10:02
Total/NA	Analysis	9056A		100	404242	QTZ5	EET CF	10/27/23 11:13
Total/NA	Analysis	9056A		1	404242	QTZ5	EET CF	10/27/23 15:42
Total/NA	Prep	3005A			404397	KCK5	EET CF	11/01/23 09:20
Total/NA	Analysis	6010D		1	404674	ZRI4	EET CF	11/01/23 17:16
Total/NA	Analysis	350.1		1	404402	ZJX4	EET CF	10/31/23 21:59
Total/NA	Analysis	5220D LL		1	404793	ENB7	EET CF	11/03/23 10:18
Total/NA	Prep	Distill/Phenol			404441	A3GU	EET CF	11/01/23 08:51
Total/NA	Analysis	9066		1	404553	ZJX4	EET CF	11/01/23 21:00
Total/NA	Analysis	SM 2540C		1	404387	D7CP	EET CF	10/31/23 14:51

Laboratory References:

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

Accreditation/Certification Summary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8260D		Water	1,2,4-Trichlorobenzene
8260D		Water	Allyl chloride
8260D		Water	Ethyl methacrylate
8260D		Water	m,p-Xylene
8260D		Water	o-Xylene

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
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
350.1	Distillation, Ammonia	EPA	EET CF
5030B	Purge and Trap	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



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>TRC</u>			
City/State:	CITY	STATE <u>WI</u>	Project:
Receipt Information			
Date/Time Received:	DATE <u>10/25/23</u>	TIME <u>10:30</u>	Received By: <u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler ID:</i>			
Multiple Coolers? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Cooler # <u>1</u> of <u>2</u></i>			
Cooler Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Cooler custody seals intact?</i> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Sample Custody Seals Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>If yes: Sample custody seals intact?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes: Which VOA samples are in cooler? ↓</i>			
Temperature Record			
Coolant: <input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE			
Thermometer ID: <u>T</u>		Correction Factor (°C): <u>+0.0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>41</u>		Corrected Temp (°C): <u>41</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? <input type="checkbox"/> Yes <input type="checkbox"/> No a) <i>If yes: Is there evidence that the chilling process began?</i> <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>TRE</u>			
City/State:	CITY	STATE	Project:
		<u>WI</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>10/25/23</u>	<u>1030</u>	<u>[Signature]</u>
Delivery Type: <input type="checkbox"/> UPS <input type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID:	
Multiple Coolers?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler # <u>2</u> of <u>2</u>	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>T</u>	Correction Factor (°C): <u>+0.0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	<u>5.8</u>	Corrected Temp (°C): <u>5.8</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? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Login Sample Receipt Checklist

Client: TRC Environmental Corporation

Job Number: 310-268049-1

Login Number: 268049

List Number: 1

Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= 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 <6mm (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
November 2023**



ANALYTICAL REPORT

PREPARED FOR

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

Generated 12/4/2023 2:21:43 PM

JOB DESCRIPTION

JD DUB - TRC (Landfill)

JOB NUMBER

310-270467-2

Eurofins Cedar Falls

Job Notes

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

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

Authorization



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Table of Contents

Cover Page	1
Table of Contents	3
Case Narrative	4
Sample Summary	6
Detection Summary	7
Client Sample Results	8
Definitions	10
Surrogate Summary	11
QC Sample Results	12
QC Association	21
Chronicle	23
Certification Summary	24
Method Summary	25
Chain of Custody	26
Receipt Checklists	28

Case Narrative

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Job ID: 310-270467-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-270467-1

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The sample was received on 11/29/2023 11:35 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.0°C

GC/MS VOA

Method 8260D: The following sample was collected in a properly preserved vial; however, the pH was outside the required criteria when verified by the laboratory. The sample was analyzed within the 7-day holding time specified for unpreserved samples: S1 underliner closed (310-270467-1).

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

HPLC/IC

Method 9056A_ORGFM_28D: The following sample was diluted due to the nature of the sample matrix: S1 underliner closed (310-270467-1). 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.

Job ID: 310-270467-2

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-270467-2

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 are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

Matrix QC may not be reported if insufficient sample 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.

Case Narrative

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Job ID: 310-270467-2 (Continued)

Laboratory: Eurofins Cedar Falls (Continued)

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

Receipt

The sample was received on 11/29/2023 11:35 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 4.0°C

HPLC/IC

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

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Sample Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
310-270467-1	S1 underliner closed	Water	11/28/23 12:45	11/29/23 11:35

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Detection Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	82.0		5.00		mg/L	5		9056A	Total/NA
Nitrate as N	3.67		1.00		mg/L	5		9056A	Total/NA
Sulfate	14.2		5.00		mg/L	5		9056A	Total/NA
Barium	0.420		0.0100		mg/L	1		6010D	Total/NA
Boron	5.14		0.200		mg/L	1		6010D	Total/NA
Calcium	68.1		1.00		mg/L	1		6010D	Total/NA
Lithium	0.103		0.0500		mg/L	1		6010D	Total/NA
Magnesium	38.6		1.00		mg/L	1		6010D	Total/NA
Chemical Oxygen Demand	23.3		5.00		mg/L	1		5220D LL	Total/NA
Total Dissolved Solids	650		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: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Date Collected: 11/28/23 12:45

Matrix: Water

Date Received: 11/29/23 11:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			12/02/23 02:13	1
Acrolein	<10.0		10.0		ug/L			12/02/23 02:13	1
Acrylonitrile	<5.00		5.00		ug/L			12/02/23 02:13	1
Allyl chloride	<2.00		2.00		ug/L			12/02/23 02:13	1
Benzene	<0.500		0.500		ug/L			12/02/23 02:13	1
Bromochloromethane	<5.00		5.00		ug/L			12/02/23 02:13	1
Bromodichloromethane	<1.00		1.00		ug/L			12/02/23 02:13	1
Bromoform	<5.00		5.00		ug/L			12/02/23 02:13	1
Bromomethane	<4.00		4.00		ug/L			12/02/23 02:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/02/23 02:13	1
Carbon disulfide	<1.00		1.00		ug/L			12/02/23 02:13	1
Carbon tetrachloride	<2.00		2.00		ug/L			12/02/23 02:13	1
Chlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Chlorodibromomethane	<5.00		5.00		ug/L			12/02/23 02:13	1
Chloroethane	<4.00		4.00		ug/L			12/02/23 02:13	1
Chloroform	<3.00		3.00		ug/L			12/02/23 02:13	1
Chloromethane	<3.00		3.00		ug/L			12/02/23 02:13	1
Chloroprene	<1.00		1.00		ug/L			12/02/23 02:13	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			12/02/23 02:13	1
Dibromomethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			12/02/23 02:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1-Dichloroethene	<2.00		2.00		ug/L			12/02/23 02:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,3-Dichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
2,2-Dichloropropane	<4.00		4.00		ug/L			12/02/23 02:13	1
1,1-Dichloropropene	<1.00		1.00		ug/L			12/02/23 02:13	1
Ethylbenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Ethyl methacrylate	<2.00		2.00		ug/L			12/02/23 02:13	1
2-Hexanone	<10.0		10.0		ug/L			12/02/23 02:13	1
Iodomethane	<10.0		10.0		ug/L			12/02/23 02:13	1
Methacrylonitrile	<10.0		10.0		ug/L			12/02/23 02:13	1
Methylene Chloride	<5.00		5.00		ug/L			12/02/23 02:13	1
Methyl methacrylate	<2.00		2.00		ug/L			12/02/23 02:13	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/02/23 02:13	1
m,p-Xylene	<2.00		2.00		ug/L			12/02/23 02:13	1
Naphthalene	<5.00		5.00		ug/L			12/02/23 02:13	1
o-Xylene	<1.00		1.00		ug/L			12/02/23 02:13	1
Propionitrile	<10.0		10.0		ug/L			12/02/23 02:13	1
Styrene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1

Eurofins Cedar Falls

Client Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Date Collected: 11/28/23 12:45

Matrix: Water

Date Received: 11/29/23 11:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
Toluene	<1.00		1.00		ug/L			12/02/23 02:13	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			12/02/23 02:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
Trichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
Trichlorofluoromethane	<4.00		4.00		ug/L			12/02/23 02:13	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
Vinyl acetate	<10.0		10.0		ug/L			12/02/23 02:13	1
Vinyl chloride	<1.00		1.00		ug/L			12/04/23 12:35	1
Xylenes, Total	<3.00		3.00		ug/L			12/02/23 02:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		12/02/23 02:13	1
4-Bromofluorobenzene (Surr)	98		80 - 120		12/04/23 12:35	1
Dibromofluoromethane (Surr)	110		80 - 128		12/02/23 02:13	1
Dibromofluoromethane (Surr)	98		80 - 128		12/04/23 12:35	1
Toluene-d8 (Surr)	92		80 - 120		12/02/23 02:13	1
Toluene-d8 (Surr)	101		80 - 120		12/04/23 12:35	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	82.0		5.00		mg/L			11/29/23 14:50	5
Nitrate as N	3.67		1.00		mg/L			11/29/23 14:50	5
Fluoride	<1.00		1.00		mg/L			11/29/23 14:50	5
Sulfate	14.2		5.00		mg/L			11/29/23 14:50	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.420		0.0100		mg/L		11/30/23 09:30	11/30/23 15:58	1
Boron	5.14		0.200		mg/L		11/30/23 09:30	11/30/23 15:58	1
Calcium	68.1		1.00		mg/L		11/30/23 09:30	11/30/23 15:58	1
Iron	<0.500		0.500		mg/L		11/30/23 09:30	11/30/23 15:58	1
Lithium	0.103		0.0500		mg/L		11/30/23 09:30	11/30/23 15:58	1
Magnesium	38.6		1.00		mg/L		11/30/23 09:30	11/30/23 15:58	1
Molybdenum	<0.0500		0.0500		mg/L		11/30/23 09:30	11/30/23 15:58	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		12/01/23 11:33	12/01/23 21:06	1
Chemical Oxygen Demand (SM 5220D LL)	23.3		5.00		mg/L			11/30/23 08:43	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		12/01/23 09:00	12/01/23 16:21	1
Total Dissolved Solids (SM 2540C)	650		250		mg/L			11/30/23 13:59	1

Definitions/Glossary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Surrogate Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB	DBFM	TOL
		(80-120)	(80-128)	(80-120)
310-270467-1	S1 underliner closed	106	110	92
310-270467-1	S1 underliner closed	98	98	101
LCS 310-407598/6	Lab Control Sample	105	101	98
LCS 310-407598/7	Lab Control Sample	106	109	91
LCS 310-407733/6	Lab Control Sample	101	102	101
LCS 310-407733/7	Lab Control Sample	100	100	100
MB 310-407598/5	Method Blank	108	111	92
MB 310-407733/5	Method Blank	99	101	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

DBFM = Dibromofluoromethane (Surr)

TOL = Toluene-d8 (Surr)

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-407598/5
Matrix: Water
Analysis Batch: 407598

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			12/01/23 20:46	1
Acrolein	<10.0		10.0		ug/L			12/01/23 20:46	1
Acrylonitrile	<5.00		5.00		ug/L			12/01/23 20:46	1
Allyl chloride	<2.00		2.00		ug/L			12/01/23 20:46	1
Benzene	<0.500		0.500		ug/L			12/01/23 20:46	1
Bromochloromethane	<5.00		5.00		ug/L			12/01/23 20:46	1
Bromodichloromethane	<1.00		1.00		ug/L			12/01/23 20:46	1
Bromoform	<5.00		5.00		ug/L			12/01/23 20:46	1
Bromomethane	<4.00		4.00		ug/L			12/01/23 20:46	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/01/23 20:46	1
Carbon disulfide	<1.00		1.00		ug/L			12/01/23 20:46	1
Carbon tetrachloride	<2.00		2.00		ug/L			12/01/23 20:46	1
Chlorobenzene	<1.00		1.00		ug/L			12/01/23 20:46	1
Chlorodibromomethane	<5.00		5.00		ug/L			12/01/23 20:46	1
Chloroethane	<4.00		4.00		ug/L			12/01/23 20:46	1
Chloroform	<3.00		3.00		ug/L			12/01/23 20:46	1
Chloromethane	<3.00		3.00		ug/L			12/01/23 20:46	1
Chloroprene	<1.00		1.00		ug/L			12/01/23 20:46	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/01/23 20:46	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			12/01/23 20:46	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			12/01/23 20:46	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			12/01/23 20:46	1
Dibromomethane	<1.00		1.00		ug/L			12/01/23 20:46	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/01/23 20:46	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/01/23 20:46	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/01/23 20:46	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			12/01/23 20:46	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1
1,1-Dichloroethene	<2.00		2.00		ug/L			12/01/23 20:46	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/01/23 20:46	1
1,3-Dichloropropane	<1.00		1.00		ug/L			12/01/23 20:46	1
2,2-Dichloropropane	<4.00		4.00		ug/L			12/01/23 20:46	1
1,1-Dichloropropene	<1.00		1.00		ug/L			12/01/23 20:46	1
Ethylbenzene	<1.00		1.00		ug/L			12/01/23 20:46	1
Ethyl methacrylate	<2.00		2.00		ug/L			12/01/23 20:46	1
2-Hexanone	<10.0		10.0		ug/L			12/01/23 20:46	1
Iodomethane	<10.0		10.0		ug/L			12/01/23 20:46	1
Methacrylonitrile	<10.0		10.0		ug/L			12/01/23 20:46	1
Methylene Chloride	<5.00		5.00		ug/L			12/01/23 20:46	1
Methyl methacrylate	<2.00		2.00		ug/L			12/01/23 20:46	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/01/23 20:46	1
m,p-Xylene	<2.00		2.00		ug/L			12/01/23 20:46	1
Naphthalene	<5.00		5.00		ug/L			12/01/23 20:46	1
o-Xylene	<1.00		1.00		ug/L			12/01/23 20:46	1
Propionitrile	<10.0		10.0		ug/L			12/01/23 20:46	1
Styrene	<1.00		1.00		ug/L			12/01/23 20:46	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-407598/5
Matrix: Water
Analysis Batch: 407598

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1
Tetrachloroethene	<1.00		1.00		ug/L			12/01/23 20:46	1
Toluene	<1.00		1.00		ug/L			12/01/23 20:46	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			12/01/23 20:46	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/01/23 20:46	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			12/01/23 20:46	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			12/01/23 20:46	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/01/23 20:46	1
Trichloroethene	<1.00		1.00		ug/L			12/01/23 20:46	1
Trichlorofluoromethane	<4.00		4.00		ug/L			12/01/23 20:46	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			12/01/23 20:46	1
Vinyl acetate	<10.0		10.0		ug/L			12/01/23 20:46	1
Xylenes, Total	<3.00		3.00		ug/L			12/01/23 20:46	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	108		80 - 120		12/01/23 20:46	1
Dibromofluoromethane (Surr)	111		80 - 128		12/01/23 20:46	1
Toluene-d8 (Surr)	92		80 - 120		12/01/23 20:46	1

Lab Sample ID: LCS 310-407598/6
Matrix: Water
Analysis Batch: 407598

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acrolein	94.8	70.33		ug/L		74	12 - 150
Acrylonitrile	200	156.8		ug/L		78	50 - 150
Allyl chloride	20.0	15.53		ug/L		78	50 - 150
Benzene	20.0	17.21		ug/L		86	73 - 122
Bromochloromethane	20.0	20.55		ug/L		103	68 - 132
Bromodichloromethane	20.0	17.45		ug/L		87	72 - 121
Bromoform	20.0	19.23		ug/L		96	55 - 129
2-Butanone (MEK)	40.0	32.18		ug/L		80	50 - 150
Carbon disulfide	20.0	16.34		ug/L		82	58 - 131
Carbon tetrachloride	20.0	19.22		ug/L		96	67 - 132
Chlorobenzene	20.0	17.82		ug/L		89	69 - 121
Chlorodibromomethane	20.0	19.58		ug/L		98	69 - 122
Chloroform	20.0	16.73		ug/L		84	72 - 120
Chloroprene	20.0	17.74		ug/L		89	67 - 131
cis-1,2-Dichloroethene	20.0	18.06		ug/L		90	74 - 120
cis-1,3-Dichloropropene	20.0	18.20		ug/L		91	71 - 126
1,2-Dibromo-3-Chloropropane	20.0	17.85		ug/L		89	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.19		ug/L		96	73 - 125
Dibromomethane	20.0	18.27		ug/L		91	72 - 123
1,2-Dichlorobenzene	20.0	17.73		ug/L		89	68 - 120
1,3-Dichlorobenzene	20.0	19.41		ug/L		97	67 - 123
1,4-Dichlorobenzene	20.0	18.18		ug/L		91	67 - 120

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-407598/6
Matrix: Water
Analysis Batch: 407598

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1-Dichloroethane	20.0	16.66		ug/L		83	71 - 123
1,2-Dichloroethane	20.0	17.04		ug/L		85	70 - 124
1,1-Dichloroethene	20.0	17.83		ug/L		89	61 - 129
1,2-Dichloropropane	20.0	16.44		ug/L		82	73 - 121
1,3-Dichloropropane	20.0	17.66		ug/L		88	72 - 124
2,2-Dichloropropane	20.0	18.66		ug/L		93	50 - 150
1,1-Dichloropropene	20.0	17.60		ug/L		88	70 - 131
Ethylbenzene	20.0	17.61		ug/L		88	69 - 122
Ethyl methacrylate	20.0	18.39		ug/L		92	64 - 131
2-Hexanone	40.0	36.34		ug/L		91	60 - 132
Iodomethane	20.0	12.93		ug/L		65	10 - 150
Methacrylonitrile	200	183.9		ug/L		92	70 - 126
Methylene Chloride	20.0	16.80		ug/L		84	50 - 150
Methyl methacrylate	40.0	36.92		ug/L		92	68 - 127
4-Methyl-2-pentanone (MIBK)	40.0	34.75		ug/L		87	62 - 130
Naphthalene	20.0	19.31		ug/L		97	50 - 150
Propionitrile	200	161.4		ug/L		81	66 - 125
Styrene	20.0	19.26		ug/L		96	67 - 125
1,1,1,2-Tetrachloroethane	20.0	18.70		ug/L		93	68 - 123
1,1,2,2-Tetrachloroethane	20.0	16.91		ug/L		85	64 - 124
Tetrachloroethene	20.0	20.95		ug/L		105	69 - 131
Toluene	20.0	18.19		ug/L		91	72 - 121
trans-1,4-Dichloro-2-butene	20.0	15.91		ug/L		80	48 - 150
trans-1,2-Dichloroethene	20.0	18.34		ug/L		92	68 - 125
trans-1,3-Dichloropropene	20.0	18.50		ug/L		93	68 - 124
1,2,4-Trichlorobenzene	20.0	20.20		ug/L		101	61 - 124
1,1,1-Trichloroethane	20.0	18.11		ug/L		91	71 - 128
1,1,2-Trichloroethane	20.0	17.79		ug/L		89	70 - 124
Trichloroethene	20.0	18.21		ug/L		91	73 - 126
1,2,3-Trichloropropane	20.0	17.50		ug/L		87	64 - 125
Vinyl acetate	40.0	39.59		ug/L		99	50 - 150
Xylenes, Total	40.0	37.32		ug/L		93	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	101		80 - 128
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCS 310-407598/7
Matrix: Water
Analysis Batch: 407598

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	15.23		ug/L		76	24 - 150
Chloroethane	20.0	16.33		ug/L		82	51 - 137
Chloromethane	20.0	13.56		ug/L		68	37 - 150
Dichlorodifluoromethane	20.0	15.41		ug/L		77	37 - 150
Trichlorofluoromethane	20.0	18.23		ug/L		91	56 - 144

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QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-407598/7
Matrix: Water
Analysis Batch: 407598

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

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	109		80 - 128
Toluene-d8 (Surr)	91		80 - 120

Lab Sample ID: MB 310-407733/5
Matrix: Water
Analysis Batch: 407733

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

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Acetone	<10.0		10.0		ug/L			12/04/23 10:15	1
Acrolein	<10.0		10.0		ug/L			12/04/23 10:15	1
Acrylonitrile	<5.00		5.00		ug/L			12/04/23 10:15	1
Benzene	<0.500		0.500		ug/L			12/04/23 10:15	1
Bromochloromethane	<5.00		5.00		ug/L			12/04/23 10:15	1
Bromodichloromethane	<1.00		1.00		ug/L			12/04/23 10:15	1
Bromoform	<5.00		5.00		ug/L			12/04/23 10:15	1
Bromomethane	<4.00		4.00		ug/L			12/04/23 10:15	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/04/23 10:15	1
Carbon disulfide	<1.00		1.00		ug/L			12/04/23 10:15	1
Carbon tetrachloride	<2.00		2.00		ug/L			12/04/23 10:15	1
Chlorobenzene	<1.00		1.00		ug/L			12/04/23 10:15	1
Chlorodibromomethane	<5.00		5.00		ug/L			12/04/23 10:15	1
Chloroethane	<4.00		4.00		ug/L			12/04/23 10:15	1
Chloroform	<3.00		3.00		ug/L			12/04/23 10:15	1
Chloromethane	<3.00		3.00		ug/L			12/04/23 10:15	1
Chloroprene	<1.00		1.00		ug/L			12/04/23 10:15	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/04/23 10:15	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			12/04/23 10:15	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			12/04/23 10:15	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			12/04/23 10:15	1
Dibromomethane	<1.00		1.00		ug/L			12/04/23 10:15	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/04/23 10:15	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/04/23 10:15	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/04/23 10:15	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			12/04/23 10:15	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/04/23 10:15	1
1,1-Dichloroethene	<2.00		2.00		ug/L			12/04/23 10:15	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/04/23 10:15	1
1,3-Dichloropropane	<1.00		1.00		ug/L			12/04/23 10:15	1
2,2-Dichloropropane	<4.00		4.00		ug/L			12/04/23 10:15	1
1,1-Dichloropropene	<1.00		1.00		ug/L			12/04/23 10:15	1
Ethylbenzene	<1.00		1.00		ug/L			12/04/23 10:15	1
Ethyl methacrylate	<2.00		2.00		ug/L			12/04/23 10:15	1
2-Hexanone	<10.0		10.0		ug/L			12/04/23 10:15	1
Methacrylonitrile	<10.0		10.0		ug/L			12/04/23 10:15	1
Methylene Chloride	<5.00		5.00		ug/L			12/04/23 10:15	1
Methyl methacrylate	<2.00		2.00		ug/L			12/04/23 10:15	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/04/23 10:15	1

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-407733/5
Matrix: Water
Analysis Batch: 407733

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m,p-Xylene	<2.00		2.00		ug/L			12/04/23 10:15	1
Naphthalene	<5.00		5.00		ug/L			12/04/23 10:15	1
o-Xylene	<1.00		1.00		ug/L			12/04/23 10:15	1
Propionitrile	<10.0		10.0		ug/L			12/04/23 10:15	1
Styrene	<1.00		1.00		ug/L			12/04/23 10:15	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			12/04/23 10:15	1
1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/04/23 10:15	1
Tetrachloroethene	<1.00		1.00		ug/L			12/04/23 10:15	1
Toluene	<1.00		1.00		ug/L			12/04/23 10:15	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			12/04/23 10:15	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/04/23 10:15	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			12/04/23 10:15	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			12/04/23 10:15	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/04/23 10:15	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/04/23 10:15	1
Trichloroethene	<1.00		1.00		ug/L			12/04/23 10:15	1
Trichlorofluoromethane	<4.00		4.00		ug/L			12/04/23 10:15	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			12/04/23 10:15	1
Vinyl acetate	<10.0		10.0		ug/L			12/04/23 10:15	1
Vinyl chloride	<1.00		1.00		ug/L			12/04/23 10:15	1
Xylenes, Total	<3.00		3.00		ug/L			12/04/23 10:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		12/04/23 10:15	1
Dibromofluoromethane (Surr)	101		80 - 128		12/04/23 10:15	1
Toluene-d8 (Surr)	100		80 - 120		12/04/23 10:15	1

Lab Sample ID: LCS 310-407733/6
Matrix: Water
Analysis Batch: 407733

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	40.29		ug/L		101	50 - 150
Acrolein	94.8	91.22		ug/L		96	12 - 150
Acrylonitrile	200	184.2		ug/L		92	50 - 150
Benzene	20.0	18.16		ug/L		91	73 - 122
Bromochloromethane	20.0	18.37		ug/L		92	68 - 132
Bromodichloromethane	20.0	18.11		ug/L		91	72 - 121
Bromoform	20.0	17.16		ug/L		86	55 - 129
2-Butanone (MEK)	40.0	40.91		ug/L		102	50 - 150
Carbon disulfide	20.0	18.29		ug/L		91	58 - 131
Carbon tetrachloride	20.0	21.11		ug/L		106	67 - 132
Chlorobenzene	20.0	19.17		ug/L		96	69 - 121
Chlorodibromomethane	20.0	18.73		ug/L		94	69 - 122
Chloroform	20.0	18.74		ug/L		94	72 - 120
Chloroprene	20.0	19.39		ug/L		97	67 - 131
cis-1,2-Dichloroethene	20.0	19.13		ug/L		96	74 - 120
cis-1,3-Dichloropropene	20.0	19.84		ug/L		99	71 - 126

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-407733/6
Matrix: Water
Analysis Batch: 407733

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromo-3-Chloropropane	20.0	19.37		ug/L		97	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.85		ug/L		99	73 - 125
Dibromomethane	20.0	18.31		ug/L		92	72 - 123
1,2-Dichlorobenzene	20.0	18.65		ug/L		93	68 - 120
1,3-Dichlorobenzene	20.0	19.02		ug/L		95	67 - 123
1,4-Dichlorobenzene	20.0	18.64		ug/L		93	67 - 120
1,2-Dichloroethane	20.0	18.24		ug/L		91	70 - 124
1,1-Dichloroethene	20.0	18.65		ug/L		93	61 - 129
1,2-Dichloropropane	20.0	18.45		ug/L		92	73 - 121
1,3-Dichloropropane	20.0	19.03		ug/L		95	72 - 124
2,2-Dichloropropane	20.0	24.12		ug/L		121	50 - 150
1,1-Dichloropropene	20.0	18.86		ug/L		94	70 - 131
Ethylbenzene	20.0	19.10		ug/L		95	69 - 122
Ethyl methacrylate	20.0	17.87		ug/L		89	64 - 131
2-Hexanone	40.0	38.88		ug/L		97	60 - 132
Methacrylonitrile	200	193.4		ug/L		97	70 - 126
Methylene Chloride	20.0	18.84		ug/L		94	50 - 150
Methyl methacrylate	40.0	37.11		ug/L		93	68 - 127
4-Methyl-2-pentanone (MIBK)	40.0	37.31		ug/L		93	62 - 130
Naphthalene	20.0	19.21		ug/L		96	50 - 150
Propionitrile	200	195.9		ug/L		98	66 - 125
Styrene	20.0	18.10		ug/L		90	67 - 125
1,1,1,2-Tetrachloroethane	20.0	18.59		ug/L		93	68 - 123
1,1,2,2-Tetrachloroethane	20.0	18.96		ug/L		95	64 - 124
Tetrachloroethene	20.0	19.18		ug/L		96	69 - 131
Toluene	20.0	17.92		ug/L		90	72 - 121
trans-1,4-Dichloro-2-butene	20.0	19.61		ug/L		98	48 - 150
trans-1,2-Dichloroethene	20.0	18.55		ug/L		93	68 - 125
trans-1,3-Dichloropropene	20.0	18.75		ug/L		94	68 - 124
1,2,4-Trichlorobenzene	20.0	18.93		ug/L		95	61 - 124
1,1,1-Trichloroethane	20.0	19.48		ug/L		97	71 - 128
1,1,2-Trichloroethane	20.0	18.77		ug/L		94	70 - 124
Trichloroethene	20.0	18.22		ug/L		91	73 - 126
1,2,3-Trichloropropane	20.0	18.67		ug/L		93	64 - 125
Vinyl acetate	40.0	37.24		ug/L		93	50 - 150
Xylenes, Total	40.0	37.02		ug/L		93	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	102		80 - 128
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-407733/7
Matrix: Water
Analysis Batch: 407733

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	13.62		ug/L		68	24 - 150

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-407733/7
Matrix: Water
Analysis Batch: 407733

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Chloroethane	20.0	20.29		ug/L		101	51 - 137
Chloromethane	20.0	22.25		ug/L		111	37 - 150
Dichlorodifluoromethane	20.0	24.01		ug/L		120	37 - 150
Trichlorofluoromethane	20.0	21.08		ug/L		105	56 - 144
Vinyl chloride	20.0	21.10		ug/L		106	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	100		80 - 128
Toluene-d8 (Surr)	100		80 - 120

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-407481/3
Matrix: Water
Analysis Batch: 407481

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			11/29/23 11:22	1
Nitrate as N	<0.200		0.200		mg/L			11/29/23 11:22	1
Fluoride	<0.200		0.200		mg/L			11/29/23 11:22	1
Sulfate	<1.00		1.00		mg/L			11/29/23 11:22	1

Lab Sample ID: LCS 310-407481/4
Matrix: Water
Analysis Batch: 407481

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	9.918		mg/L		99	90 - 110
Nitrate as N	2.00	2.093		mg/L		105	90 - 110
Fluoride	2.00	2.110		mg/L		105	90 - 110
Sulfate	10.0	10.38		mg/L		104	90 - 110

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-407385/1-A
Matrix: Water
Analysis Batch: 407528

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 407385

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		11/30/23 09:30	11/30/23 15:38	1
Boron	<0.200		0.200		mg/L		11/30/23 09:30	11/30/23 15:38	1
Calcium	<1.00		1.00		mg/L		11/30/23 09:30	11/30/23 15:38	1
Iron	<0.500		0.500		mg/L		11/30/23 09:30	11/30/23 15:38	1
Lithium	<0.0500		0.0500		mg/L		11/30/23 09:30	11/30/23 15:38	1
Magnesium	<1.00		1.00		mg/L		11/30/23 09:30	11/30/23 15:38	1
Molybdenum	<0.0500		0.0500		mg/L		11/30/23 09:30	11/30/23 15:38	1

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

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

Lab Sample ID: LCS 310-407385/2-A
Matrix: Water
Analysis Batch: 407528

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 407385

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Barium	1.00	0.9504		mg/L		95	80 - 120
Boron	2.00	1.927		mg/L		96	80 - 120
Calcium	20.0	19.46		mg/L		97	80 - 120
Iron	2.00	2.054		mg/L		103	80 - 120
Lithium	2.00	1.995		mg/L		100	80 - 120
Magnesium	20.0	19.85		mg/L		99	80 - 120
Molybdenum	2.00	2.106		mg/L		105	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-407609/1-A
Matrix: Water
Analysis Batch: 407655

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 407609

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N	<0.500		0.500		mg/L		12/01/23 11:33	12/01/23 21:02	1

Lab Sample ID: LCS 310-407609/2-A
Matrix: Water
Analysis Batch: 407655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 407609

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia as N	4.00	3.860		mg/L		96	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-407428/32
Matrix: Water
Analysis Batch: 407428

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			11/30/23 08:43	1

Lab Sample ID: MB 310-407428/5
Matrix: Water
Analysis Batch: 407428

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			11/30/23 08:43	1

Lab Sample ID: LCS 310-407428/3
Matrix: Water
Analysis Batch: 407428

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	126.1		mg/L		101	85 - 115

Eurofins Cedar Falls

QC Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method: 5220D LL - COD (Continued)

Lab Sample ID: LCS 310-407428/33
Matrix: Water
Analysis Batch: 407428

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	124.4		mg/L		99	85 - 115

Method: 9066 - Phenolics, Total Recoverable

Lab Sample ID: MB 310-407570/1-A
Matrix: Water
Analysis Batch: 407640

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 407570

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	<0.0200		0.0200		mg/L		12/01/23 09:00	12/01/23 16:18	1

Lab Sample ID: LCS 310-407570/2-A
Matrix: Water
Analysis Batch: 407640

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 407570

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.100	0.09117		mg/L		91	90 - 110

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

Lab Sample ID: MB 310-407511/1
Matrix: Water
Analysis Batch: 407511

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			11/30/23 13:59	1

Lab Sample ID: LCS 310-407511/2
Matrix: Water
Analysis Batch: 407511

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	956.0		mg/L		96	90 - 110

Lab Sample ID: 310-270467-1 DU
Matrix: Water
Analysis Batch: 407511

Client Sample ID: S1 underliner closed
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Dissolved Solids	650		720.0		mg/L		10	20

QC Association Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

GC/MS VOA

Analysis Batch: 407598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	8260D	
MB 310-407598/5	Method Blank	Total/NA	Water	8260D	
LCS 310-407598/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-407598/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 407733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	8260D	
MB 310-407733/5	Method Blank	Total/NA	Water	8260D	
LCS 310-407733/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-407733/7	Lab Control Sample	Total/NA	Water	8260D	

HPLC/IC

Analysis Batch: 407481

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	9056A	
MB 310-407481/3	Method Blank	Total/NA	Water	9056A	
LCS 310-407481/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 407385

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	3005A	
MB 310-407385/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-407385/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 407528

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	6010D	407385
MB 310-407385/1-A	Method Blank	Total/NA	Water	6010D	407385
LCS 310-407385/2-A	Lab Control Sample	Total/NA	Water	6010D	407385

General Chemistry

Analysis Batch: 407428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	5220D LL	
MB 310-407428/32	Method Blank	Total/NA	Water	5220D LL	
MB 310-407428/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-407428/3	Lab Control Sample	Total/NA	Water	5220D LL	
LCS 310-407428/33	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 407511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	SM 2540C	
MB 310-407511/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-407511/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-270467-1 DU	S1 underliner closed	Total/NA	Water	SM 2540C	

Eurofins Cedar Falls

QC Association Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

General Chemistry

Prep Batch: 407570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	Distill/Phenol	
MB 310-407570/1-A	Method Blank	Total/NA	Water	Distill/Phenol	
LCS 310-407570/2-A	Lab Control Sample	Total/NA	Water	Distill/Phenol	

Prep Batch: 407609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	350.1	
MB 310-407609/1-A	Method Blank	Total/NA	Water	350.1	
LCS 310-407609/2-A	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 407640

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	9066	407570
MB 310-407570/1-A	Method Blank	Total/NA	Water	9066	407570
LCS 310-407570/2-A	Lab Control Sample	Total/NA	Water	9066	407570

Analysis Batch: 407655

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-270467-1	S1 underliner closed	Total/NA	Water	350.1	407609
MB 310-407609/1-A	Method Blank	Total/NA	Water	350.1	407609
LCS 310-407609/2-A	Lab Control Sample	Total/NA	Water	350.1	407609

Lab Chronicle

Client: John Deere & Co
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Date Collected: 11/28/23 12:45

Matrix: Water

Date Received: 11/29/23 11:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	407598	WSE8	EET CF	12/02/23 02:13
Total/NA	Analysis	8260D		1	407733	WSE8	EET CF	12/04/23 12:35
Total/NA	Analysis	9056A		5	407481	QTZ5	EET CF	11/29/23 14:50
Total/NA	Prep	3005A			407385	KCK5	EET CF	11/30/23 09:30
Total/NA	Analysis	6010D		1	407528	ZRI4	EET CF	11/30/23 15:58
Total/NA	Prep	350.1			407609	ENB7	EET CF	12/01/23 11:33
Total/NA	Analysis	350.1		1	407655	ZJX4	EET CF	12/01/23 21:06
Total/NA	Analysis	5220D LL		1	407428	ENB7	EET CF	11/30/23 08:43
Total/NA	Prep	Distill/Phenol			407570	ENB7	EET CF	12/01/23 09:00
Total/NA	Analysis	9066		1	407640	ZJX4	EET CF	12/01/23 16:21
Total/NA	Analysis	SM 2540C		1	407511	D7CP	EET CF	11/30/23 13:59

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: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Laboratory: Eurofins Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-23

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
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
350.1	Distillation, Ammonia	EPA	EET CF
5030B	Purge and Trap	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



310-270467 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

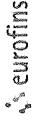
Client Information			
Client: <u>TRC Environmental</u>			
City/State:	CITY	STATE	Project:
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>11-29-23</u>	<u>1135</u>	<u>MY</u>
Delivery Type: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> FedEx Ground <input type="checkbox"/> US Mail <input type="checkbox"/> Spee-Dee <input type="checkbox"/> Lab Courier <input type="checkbox"/> Lab Field Services <input type="checkbox"/> Client Drop-off <input type="checkbox"/> Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler ID: _____	
Multiple Coolers?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Cooler # ____ of ____	
Cooler Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes: Cooler custody seals intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Custody Seals Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Sample custody seals intact? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank Present?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes: Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant:	<input checked="" type="checkbox"/> Wet ice <input type="checkbox"/> Blue ice <input type="checkbox"/> Dry ice <input type="checkbox"/> Other: _____ <input type="checkbox"/> NONE		
Thermometer ID:	<u>X</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>3.9</u>	Corrected Temp (°C):	<u>3.9</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? <input type="checkbox"/> Yes <input type="checkbox"/> No a) If yes: Is there evidence that the chilling process began? <input type="checkbox"/> Yes <input type="checkbox"/> No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) <input type="checkbox"/> Yes <input type="checkbox"/> No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Eurofins Cedar Falls

309 Venture Way
Cedar Falls IA 50613
Phone (319) 277-2401 Fax (319) 277-2125

Chain of Custody Record



Client Information
 Client Name: Wesley Bray
 Address: TRC Environmental Corporation, 993 Fourn Drive Suite 101, Madison, WI 53717
 Contact: CFrauen@trcenvironmental.com, JD DUB - RC (La refill)

Sample Information
 Sample ID: 11/29/23
 Sample Type: G: grab
 Matrix: Water

Analysis Requested

Method	3501 Ammonia and 5220D_LL COP	9056A_ORFM_20D_Chloride, Fluoride, Sulfate	9056A_ORFM_49H_Nitrate	8260D - Volatile Appendix 2 Sublist	Total 6010D Metals- Ba, B, Ca, Fe, Li, Mg, Mo	9066 - Total Recoverable Phenolics	Total Dissolved Solids
Field Filtered Sample (Yes or No)	X	X	X	X	X	X	X
Perform MS/MSD (Yes or No)	X	X	X	X	X	X	X
Total Number of Containers	6						

Special Instructions/Note:
Nitrate- 48HR Hold time

Preservation Codes:
 M Hexane
 N None
 O AS/EO2
 P Na2CO3
 Q Na2SO3
 R Na2S2O3
 S H2SO4
 T TSP Dodecahydrate
 U Acetone
 V MCAA
 W pH 4-5
 X EDTA
 Y Tizra
 Z other (specify)

Carrier (Tracing Note): Calhour
State of Origin: Iowa
Job #: 608-334-7374

Analysis Requested: Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/OC Requirements:

Received by: TRC Company
 Date: 11/28/23 1730
 Date/Time: 11/28/23 1730

Company: TRC Company

Temperature(s): °C and Other Remarks:

Login Sample Receipt Checklist

Client: John Deere & Co

Job Number: 310-270467-2

Login Number: 270467

List Number: 1

Creator: Homolar, Dana J

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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

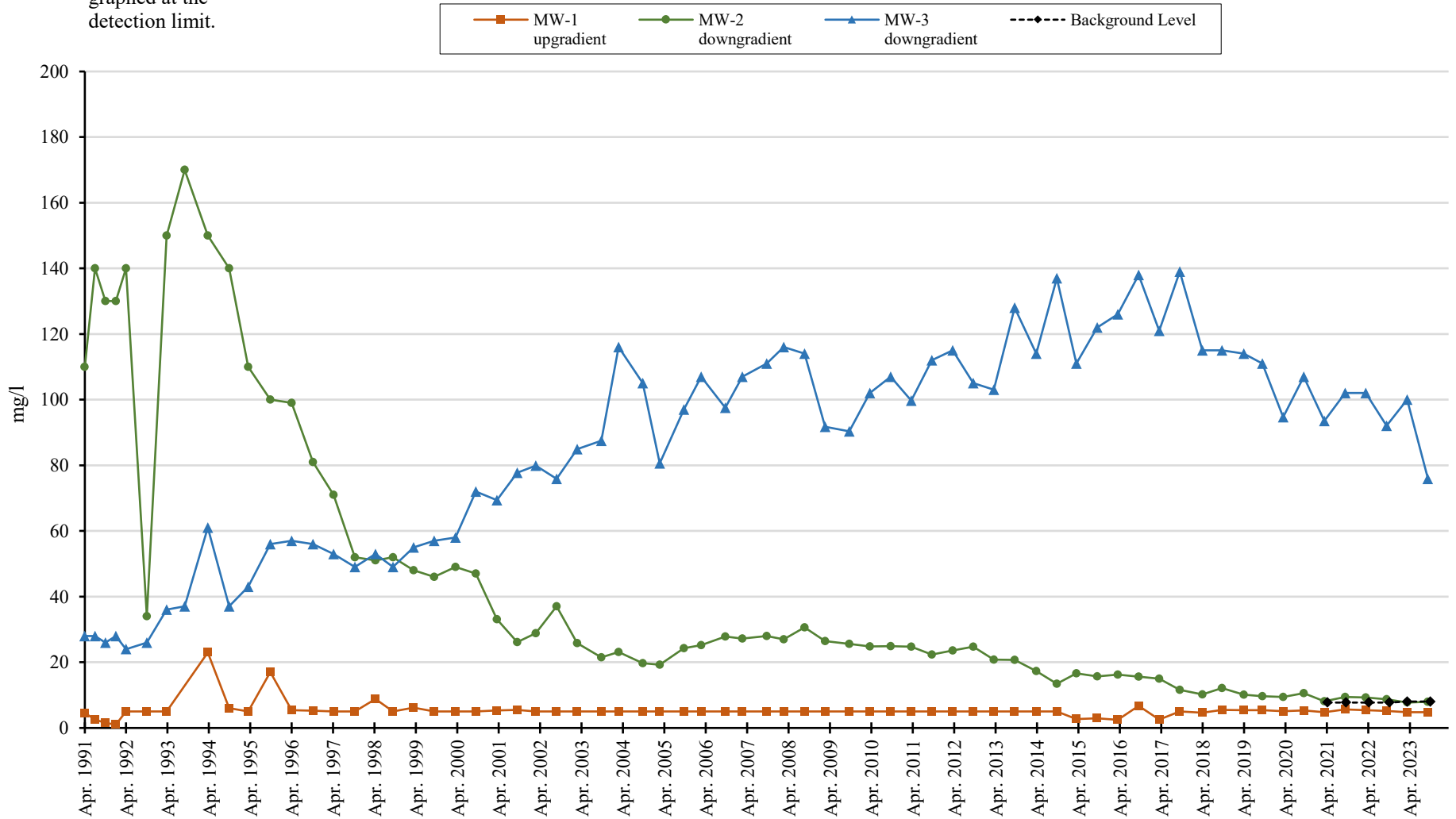


Appendix E: Groundwater Results Graphs

Landfill Monitoring

Chloride

Nondetect results are graphed at the detection limit.

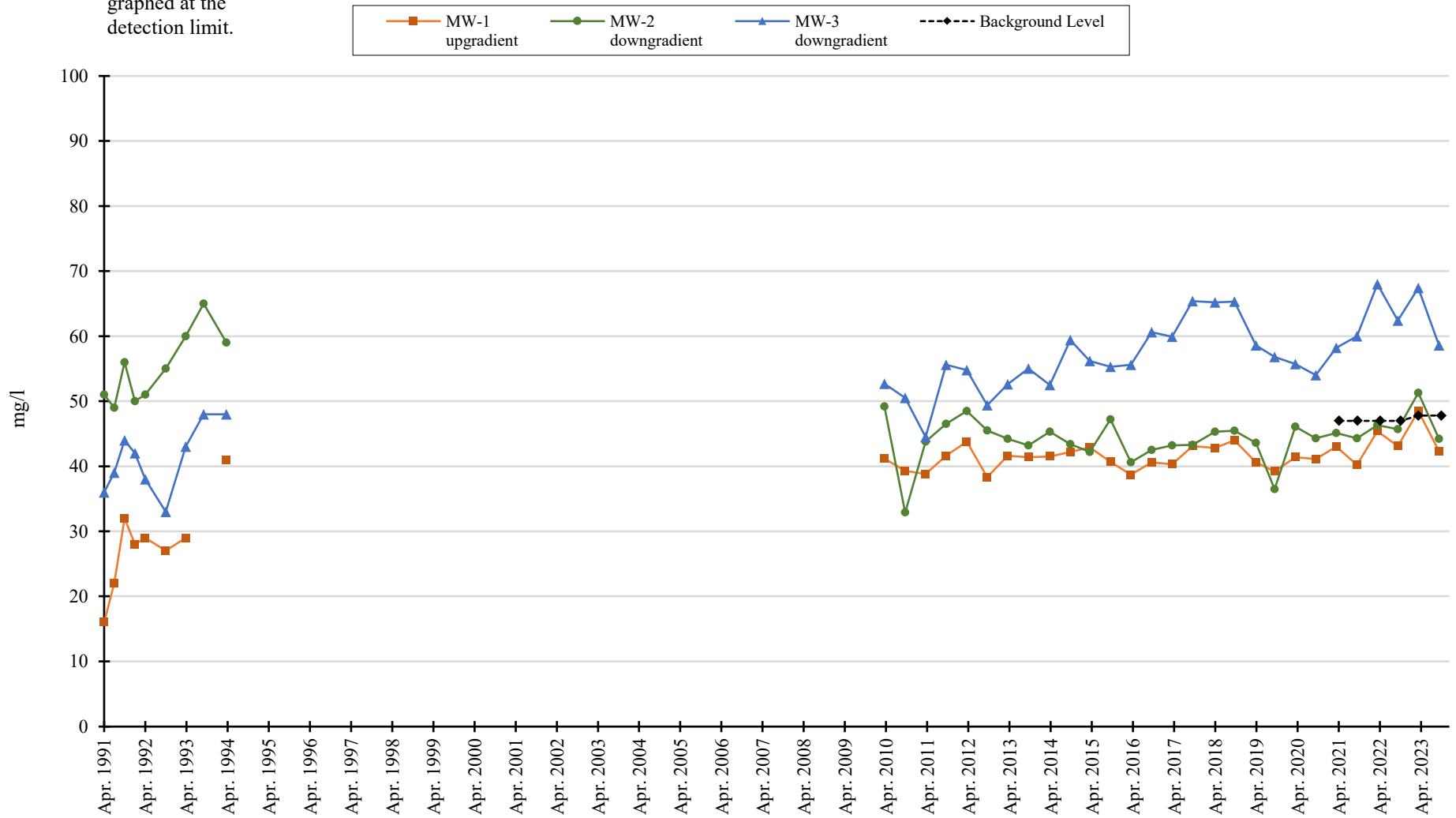


Landfill Monitoring

* Starting in April 2019, the sample results are for total Mg.

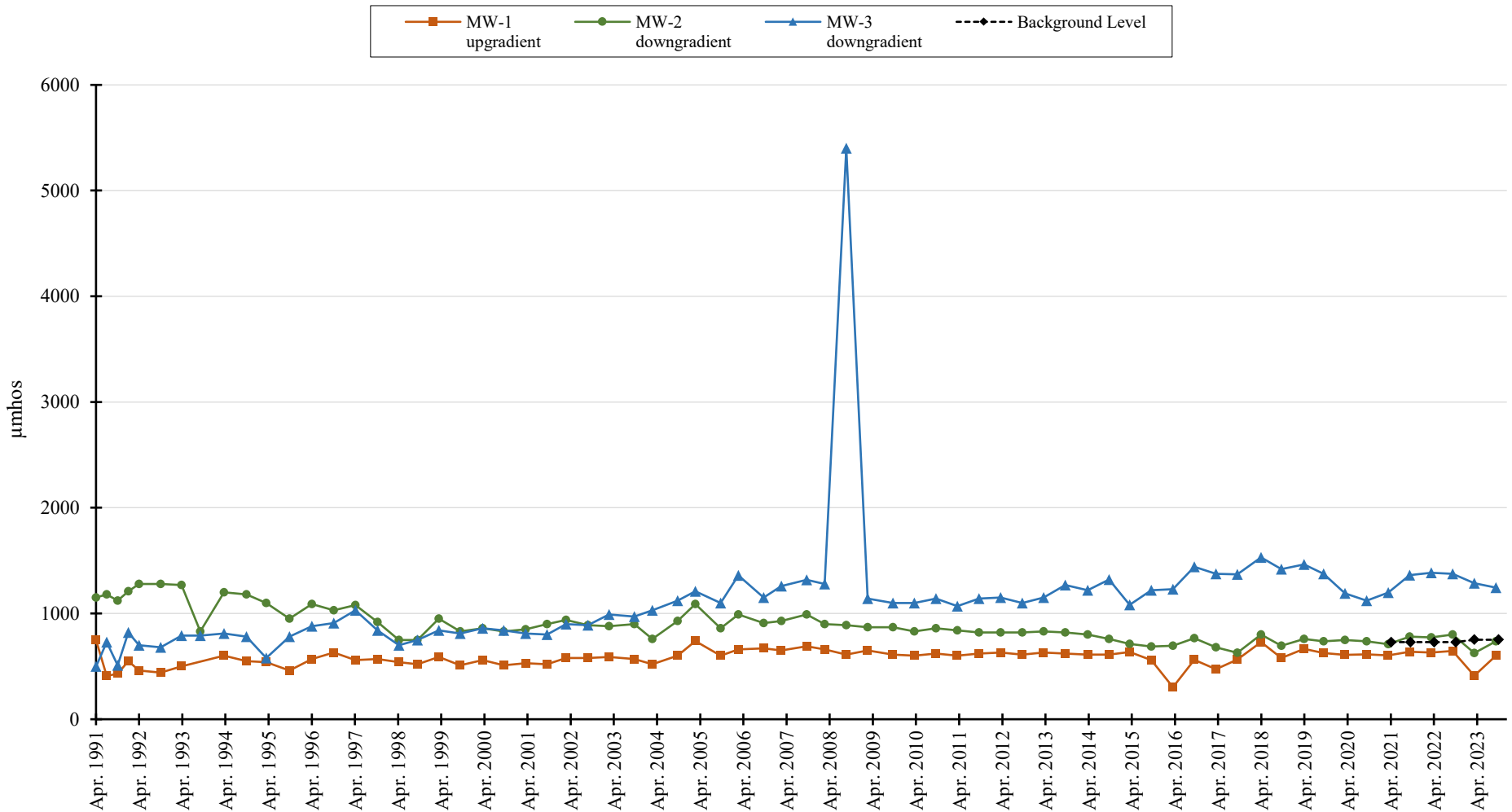
Magnesium (Dissolved and Total*)

Nondetect results are graphed at the detection limit.



Landfill Monitoring

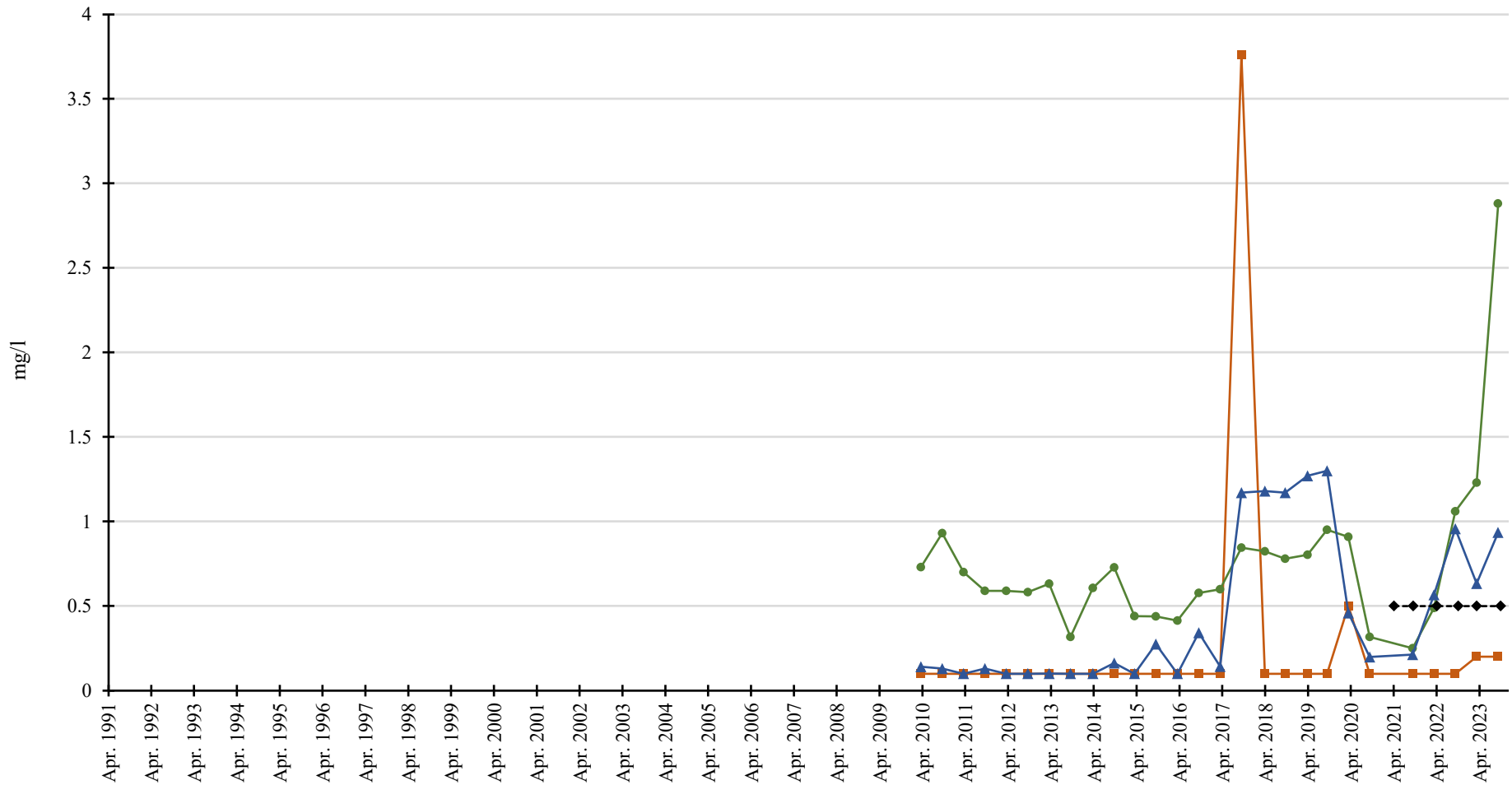
Specific Conductance



Landfill Monitoring

Nitrates

Nondetect results are graphed at the detection limit.

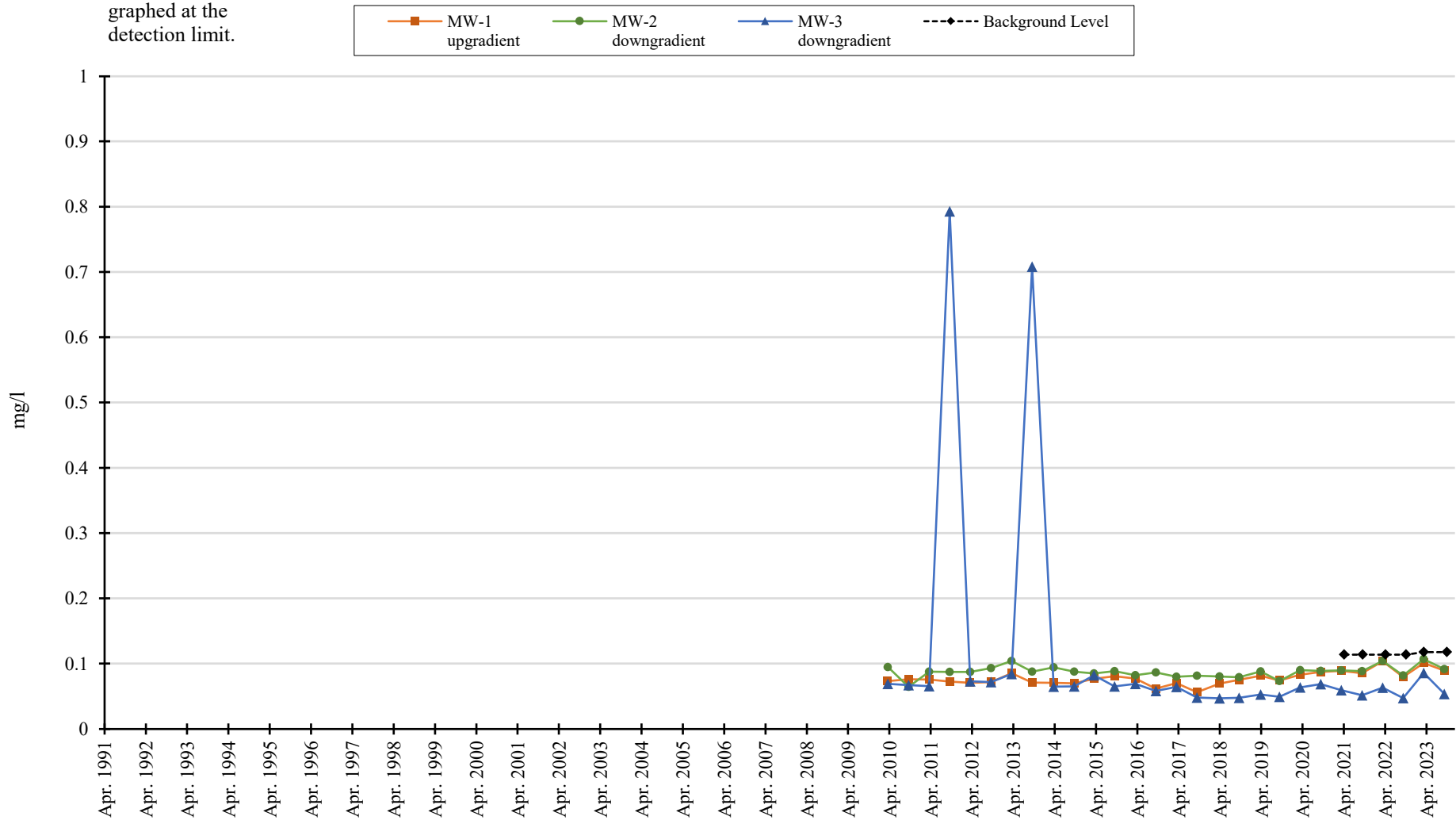


Landfill Monitoring

Barium (Dissolved and Total*)

* Starting in April 2019, the sample results are for total Ba.

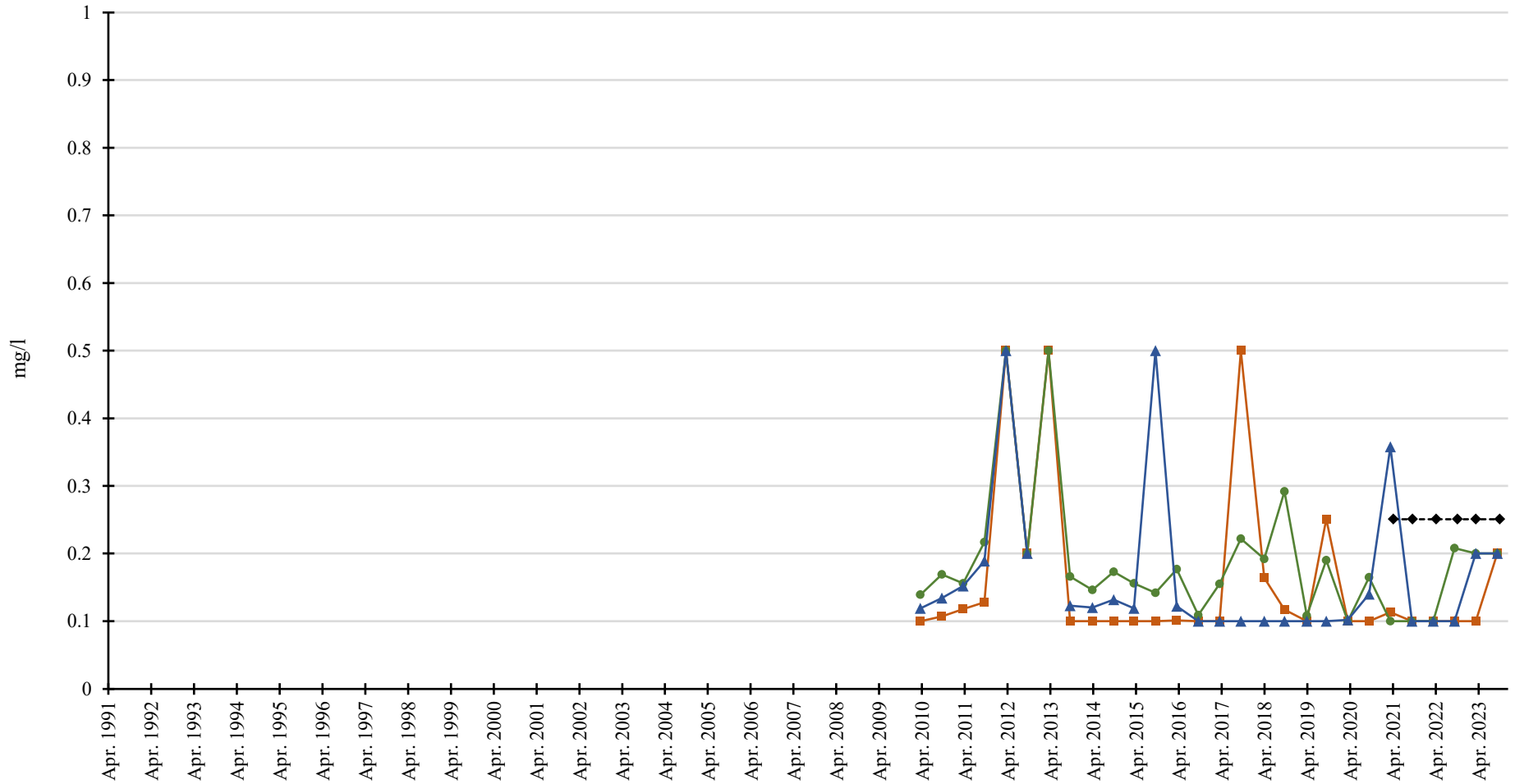
Nondetect results are graphed at the detection limit.



Landfill Monitoring

Fluoride

Nondetect results are graphed at the detection limit.

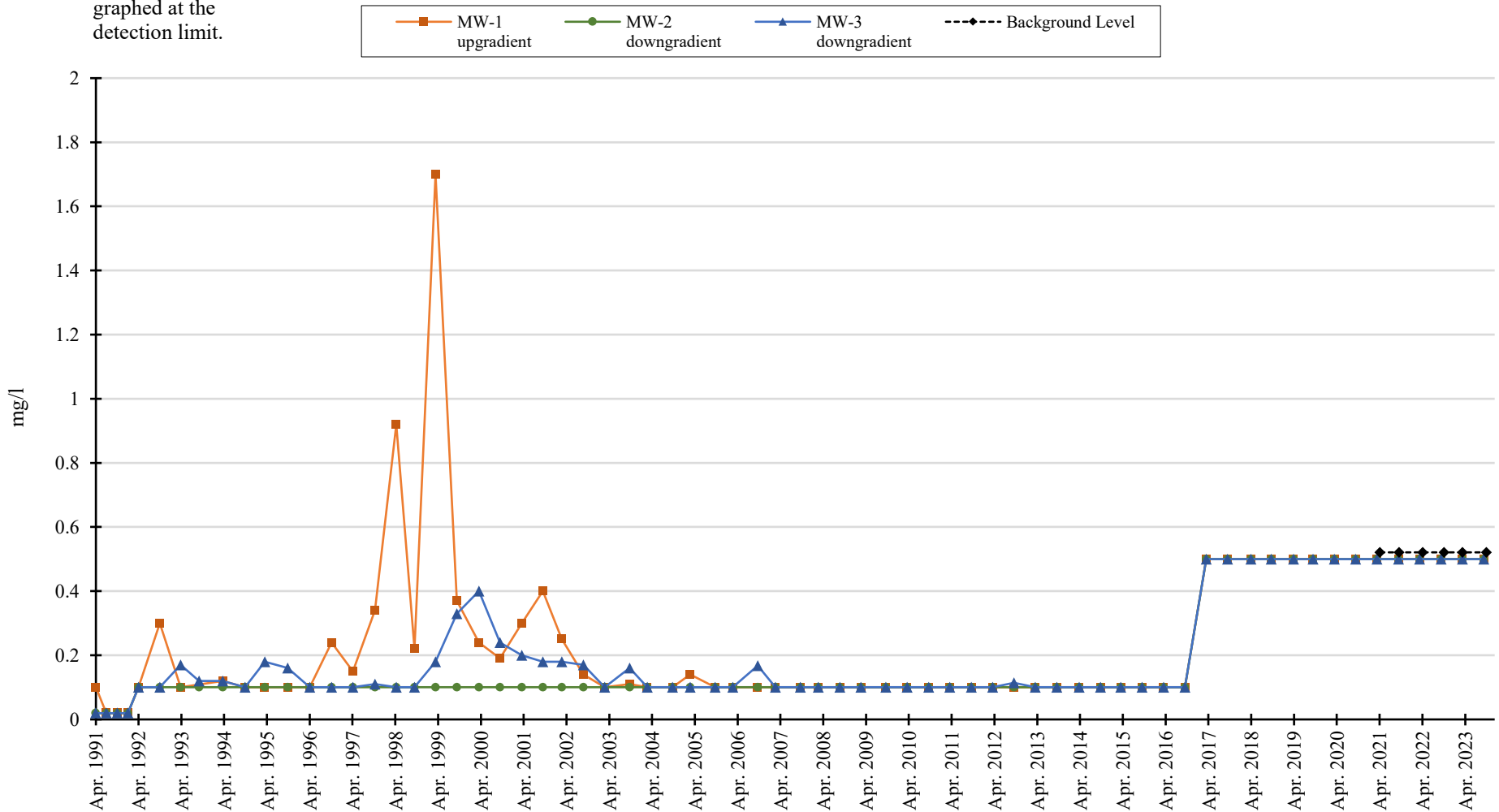


Landfill Monitoring

* Starting in April 2019, the sample results are for total iron.

Iron (Dissolved and Total*)

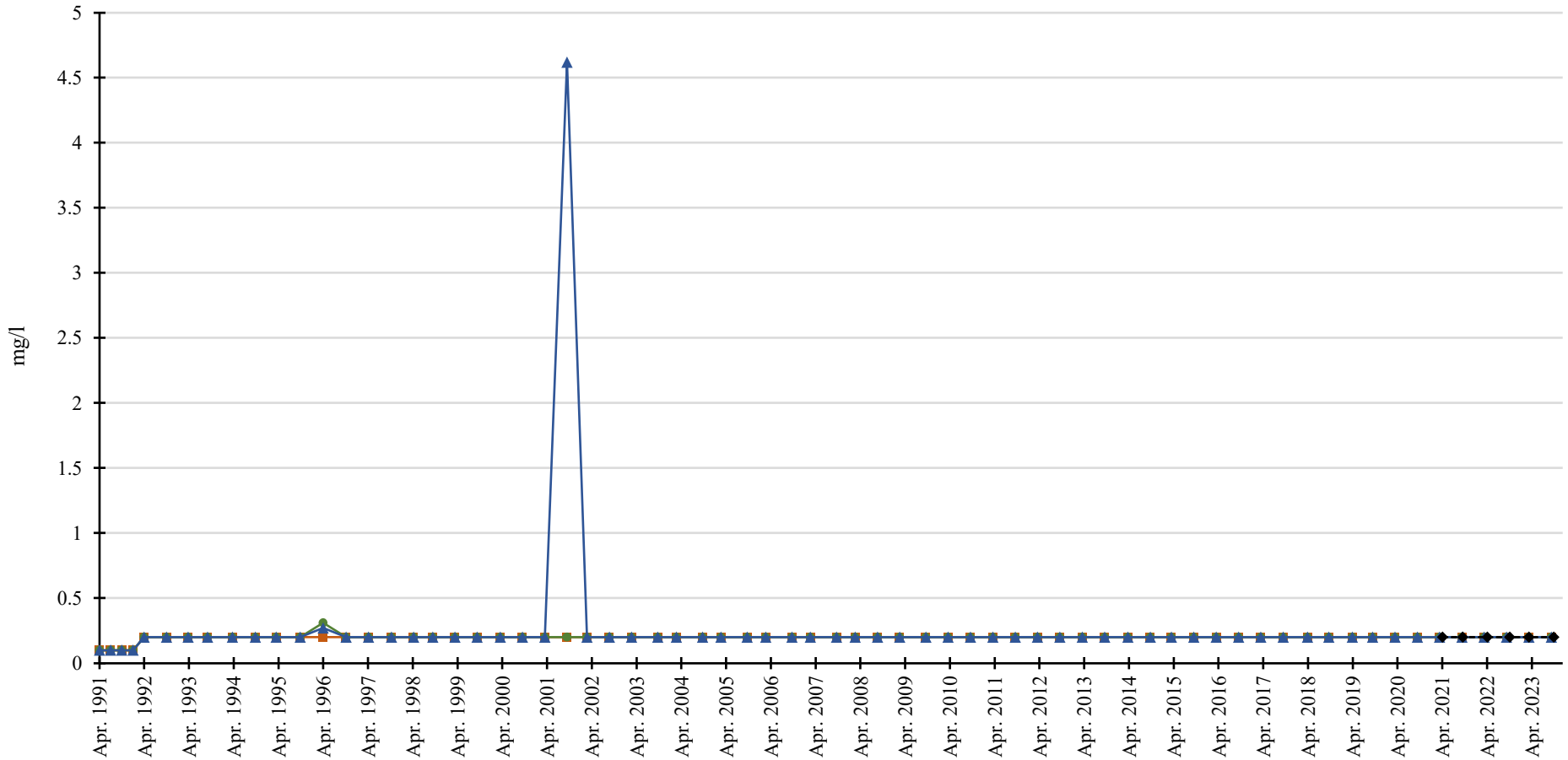
Nondetect results are graphed at the detection limit.



Landfill Monitoring

Ammonia Nitrogen

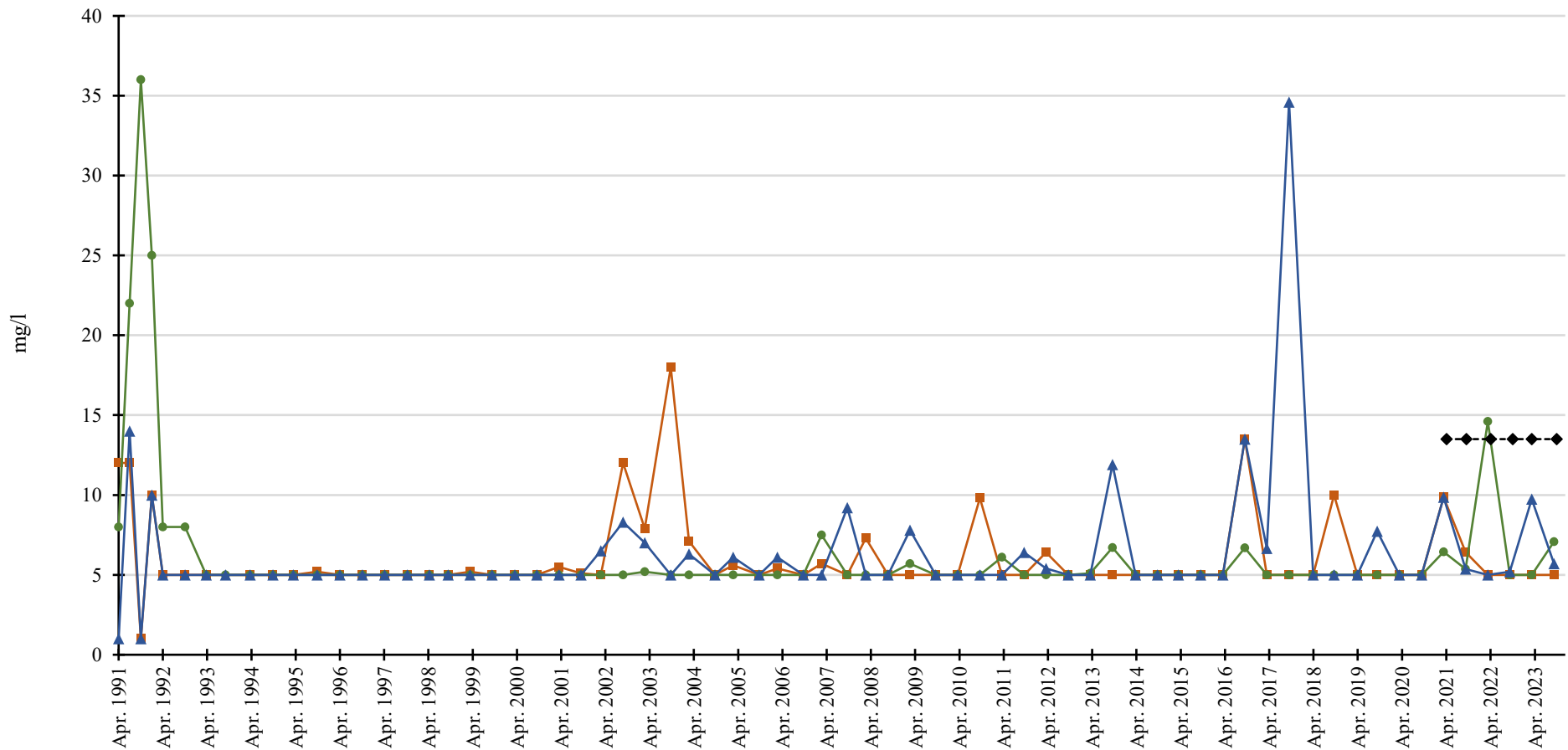
Nondetect results are graphed at the detection limit.



Landfill Monitoring

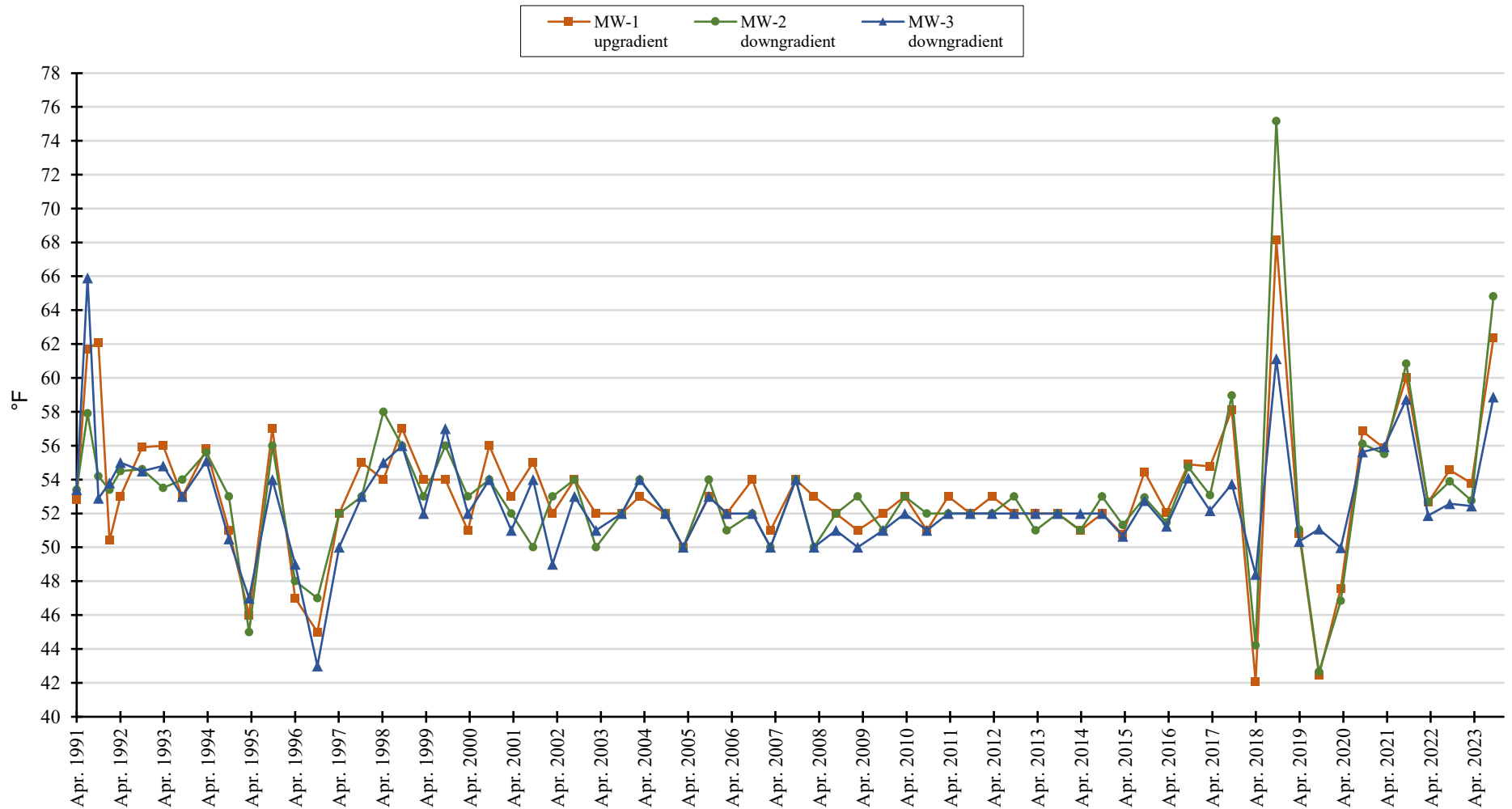
Chemical Oxygen Demand

Nondetect results are graphed at the detection limit.



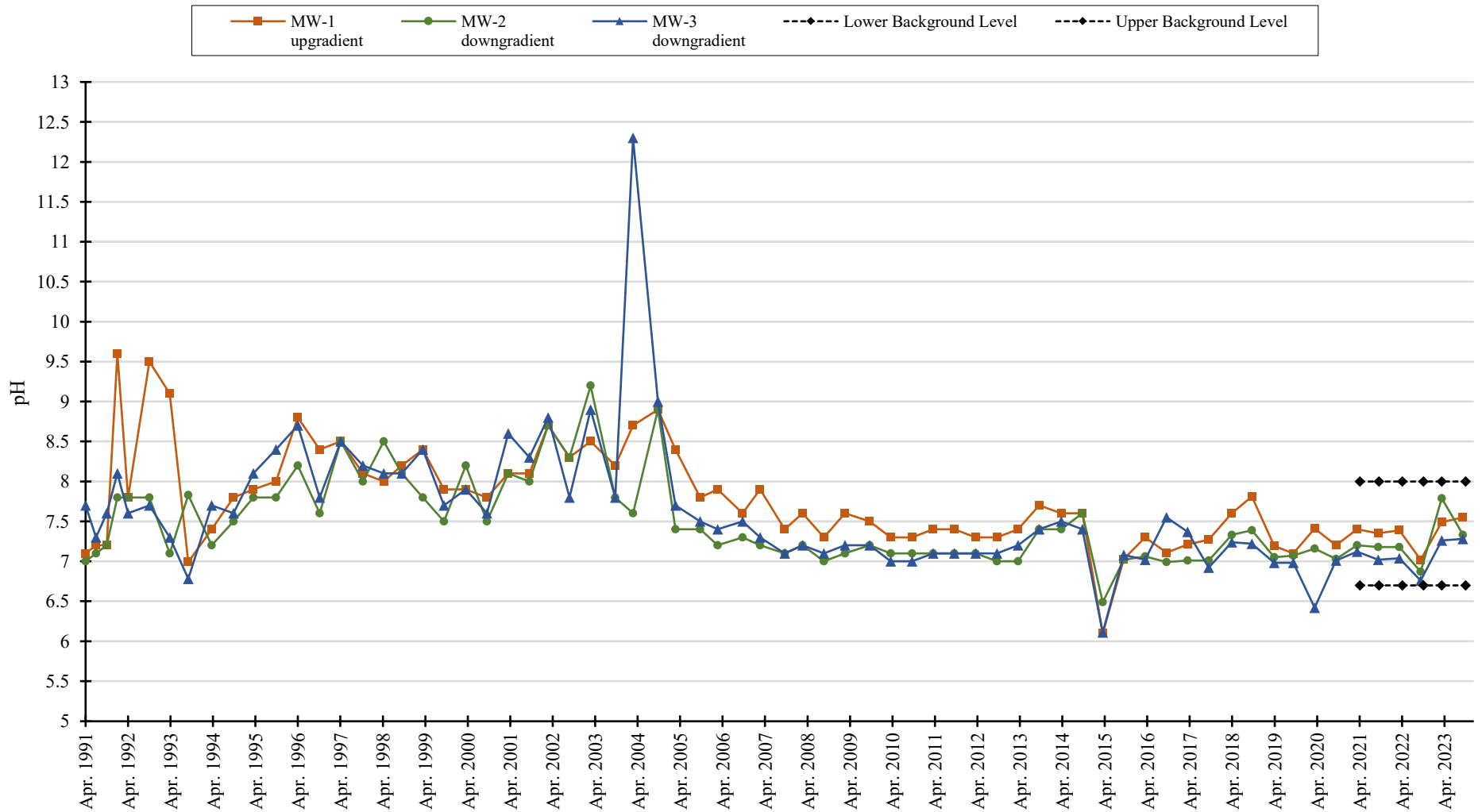
Landfill Monitoring

Temperature



Landfill Monitoring

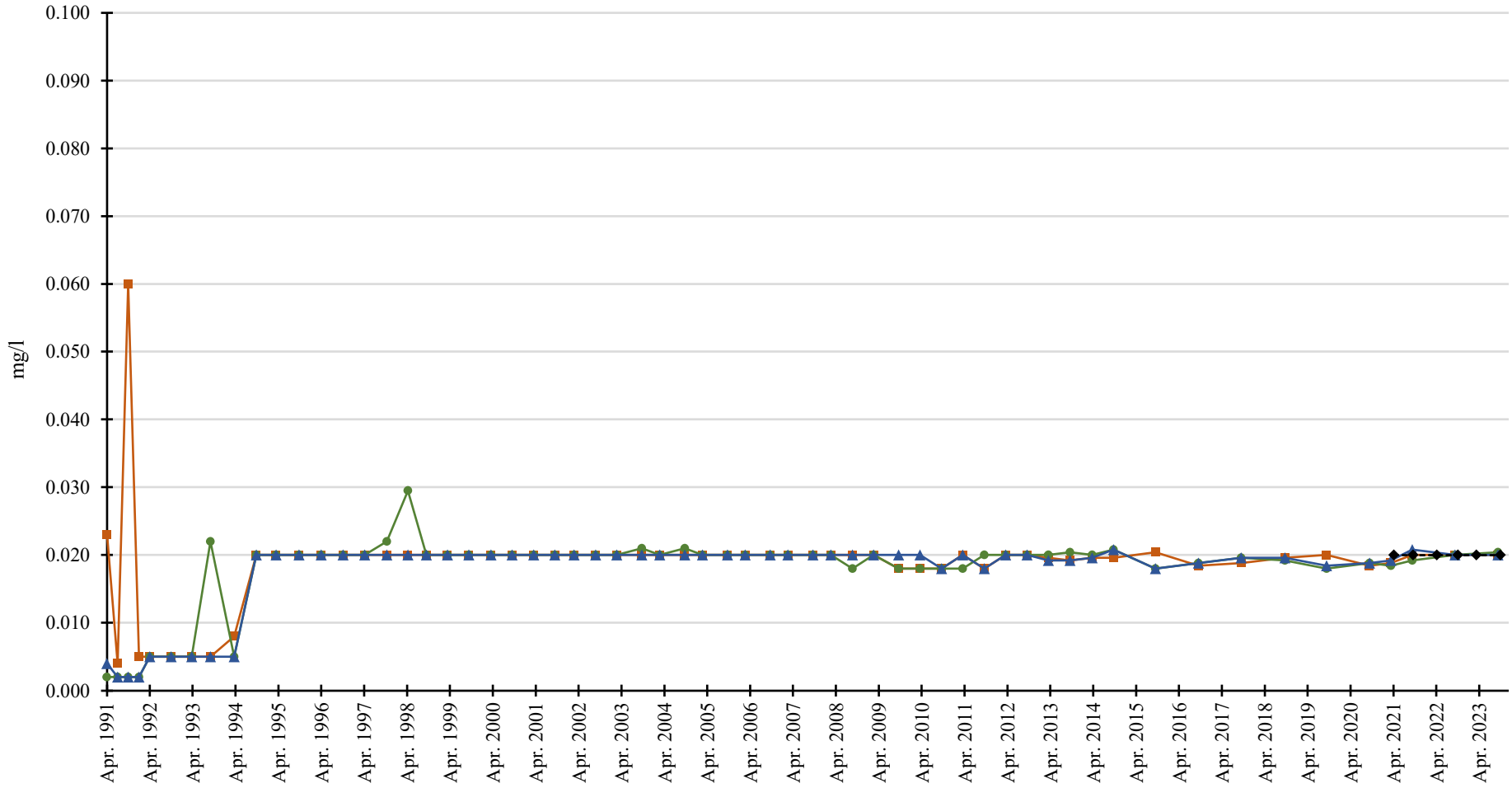
pH



Landfill Monitoring

Phenols

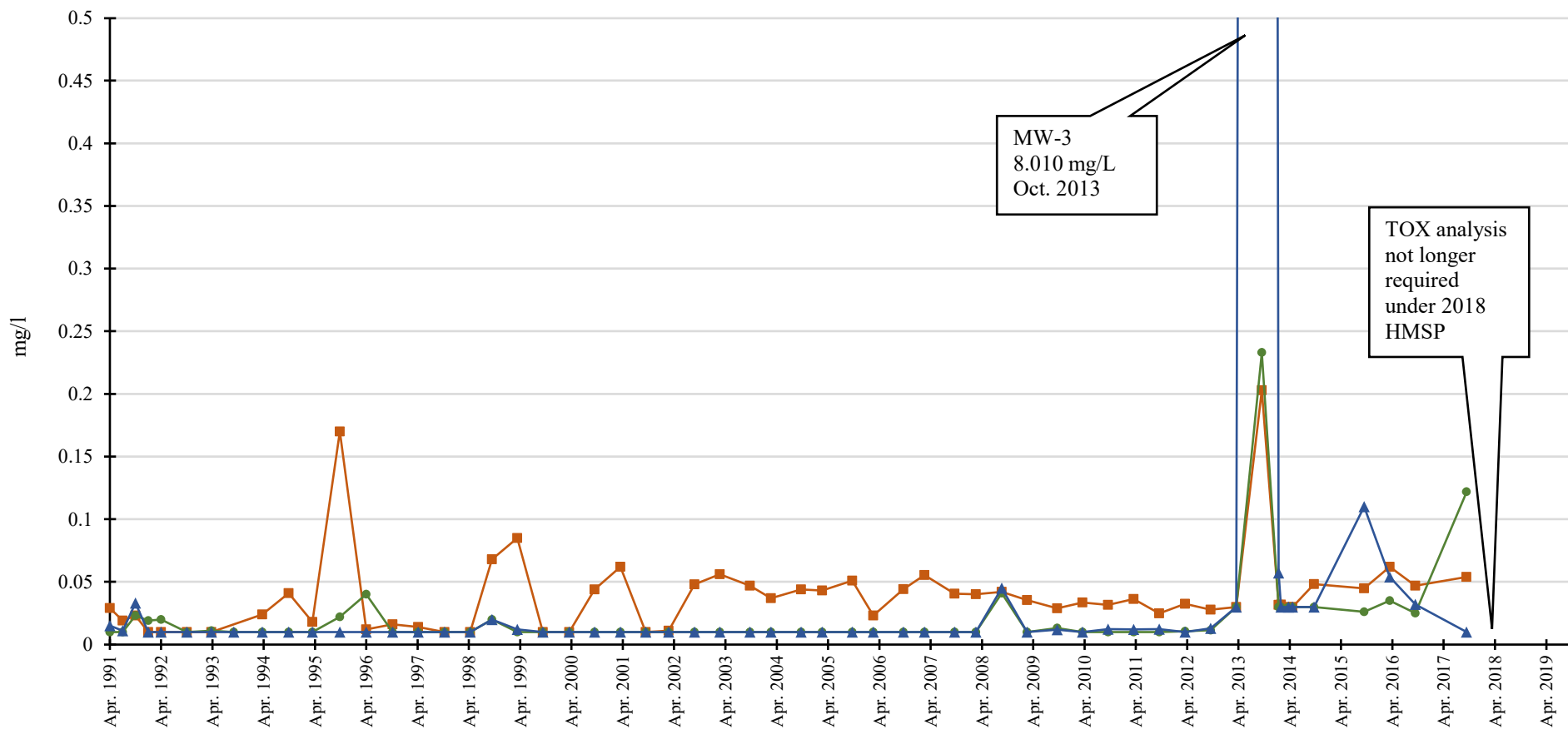
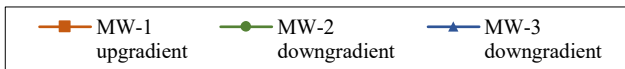
Nondetect results are graphed at the detection limit.



Landfill Monitoring

Total Organic Halogen

Nondetect results are graphed at the detection limit.



MW-3
8.010 mg/L
Oct. 2013

TOX analysis
not longer
required
under 2018
HMSP

Appendix F: Data Validation



Memorandum

To: Erica Lawson
From: David DiGena-Segal (Data Reviewer)
Elizabeth Denly (Peer Reviewer)
Date: May 22, 2023
Subject: Data Validation Review
Groundwater and Leachate Samples
John Deere, Dubuque Works Landfill
Eurofins-Test America – Cedar Falls, IA
Laboratory Job ID 310-254265-1

SUMMARY

Limited validation was performed on the data for four groundwater samples, two leachate samples, and one equipment blank sample collected at the John Deere, Dubuque Works Landfill in Dubuque, Iowa. The samples were collected on April 24, 2023 and were submitted to Eurofins-Test America in Cedar Falls, Iowa for analysis. The samples were analyzed for one or more of the following parameters:

- Chloride, fluoride, and nitrate using SW-846 Method 9056A
- Select total metals (barium, iron, and magnesium) using SW-846 Method 6010D
- Ammonia using EPA Method 350.1
- Chemical oxygen demand (COD) using Standard Methods 5220D

The laboratory reported the results under laboratory job ID 310-254265-1.

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 issue was noted which may have an impact on the data usability:

- The positive results for nitrate in samples MW-2, MW-3, and DUP-1 were qualified as estimated (J) due to field duplicate variability.

SAMPLES

Samples included in this review are listed below:

- MW-1
- MW-2
- MW-3
- DUP-1¹
- Underliner
- Combined
- EB-1

¹Field duplicate of MW-3

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 with the following exception.

- The laboratory did not provide method blank and LCS results for the diluted analysis of chloride in samples MW-3 and Combined.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method-specified holding times. The cooler temperature was within the acceptance criteria ($<6^{\circ}\text{C}$) upon sample receipt at the laboratory. The samples were received at the laboratory with the proper preservation, where applicable.

Blanks

There were no analytes detected in the laboratory method blanks. COD (6.76 mg/L) was detected in the equipment blank (EB-1). However, the COD measurement of the equipment blank sample is not used to qualify field sample results; no validation action was required on this basis.

The laboratory did not provide method blank results for the diluted analysis of chloride in samples MW-3 and Combined. The result for chloride in the method blank from the original analysis that was performed >24 hours prior to the diluted analysis was used to evaluate the diluted analysis. No validation action was taken on this basis.

MS/MSD Results

MS/MSD analyses were performed on sample Combined for total metals. The percent recoveries (%Rs) and relative percent differences (RPDs) met the laboratory acceptance criteria.

LCS Results

The LCS %Rs met the laboratory acceptance criteria.

The laboratory did not provide LCS results for the diluted analysis of chloride in samples MW-3 and Combined. The result for chloride in the LCS from the original analysis that was performed >24 hours prior to the diluted analysis was used to evaluate the diluted analysis. No validation action was taken on this basis.

Laboratory Duplicate Results

Laboratory duplicates were not performed on samples in this data set.

Field Duplicate Results

Samples MW-3/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-3 (mg/L)	DUP-1 (mg/L)	RPD (%) or AbsD (mg/L)	Validation Actions
Nitrate as N	0.2	0.633	1.26	AbsD = 0.627	The positive results for nitrate were qualified as estimated (J) in samples MW-2, MW-3, and DUP-1. Qualification of the data in sample MW-1 was not required since nitrate was not detected in this sample.
Chloride	10.0	100	99.3	RPD = 0.7	None; all criteria were met
Total Barium	0.0100	0.0858	0.0817	RPD = 4.9	
Total Magnesium	1.00	67.4	64.0	RPD = 5.2	
COD	5.00	9.74	< 5.00	AbsD = 4.74	
Criteria: When both results are > 5x the QL, RPDs must be <30%. When one or both results are <5x the QL, AbsD must be <QL.					

Quantitation Limits and Sample Results

The table below summarizes the samples that were analyzed with a dilution. The QLs for these samples were elevated accordingly and may exceed the project action levels.

Sample IDs	Parameter	Dilution	Reason for Dilution
MW-3	Chloride	10-fold	A dilution was likely performed due to the concentration of chloride which would have exceeded the calibration range if analyzed undiluted.
DUP-1			
Combined			

Sample IDs	Parameter	Dilution	Reason for Dilution
Combined	Barium	5-fold	A dilution was performed due to the nature of the sample matrix.
	Iron		
	Magnesium		

QUALIFIED FORM 1s

Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-1

Lab Sample ID: 310-254265-1

Date Collected: 04/24/23 13:24

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	5.45		1.00		mg/L			04/25/23 15:41	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 15:41	1
Fluoride	<0.200		0.200		mg/L			04/25/23 15:41	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.101		0.0100		mg/L		04/26/23 08:45	05/03/23 20:04	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:04	1
Magnesium	48.5		1.00		mg/L		04/26/23 08:45	05/03/23 20:04	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			04/26/23 19:23	1
Chemical Oxygen Demand (SM 5220D LL)	6.37		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-2

Lab Sample ID: 310-254265-2

Date Collected: 04/24/23 15:37

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.76		1.00		mg/L			04/25/23 15:57	1
Nitrate as N	1.23	J	0.200		mg/L			04/25/23 15:57	1
Fluoride	<0.200		0.200		mg/L			04/25/23 15:57	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.107		0.0100		mg/L		04/26/23 08:45	05/03/23 20:06	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:06	1
Magnesium	51.3		1.00		mg/L		04/26/23 08:45	05/03/23 20:06	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			04/26/23 19:24	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: MW-3

Lab Sample ID: 310-254265-3

Date Collected: 04/24/23 16:41

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		10.0		mg/L			04/27/23 23:11	10
Nitrate as N	0.633	J	0.200		mg/L			04/25/23 16:12	1
Fluoride	<0.200		0.200		mg/L			04/25/23 16:12	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0858		0.0100		mg/L		04/26/23 08:45	05/03/23 20:08	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:08	1
Magnesium	67.4		1.00		mg/L		04/26/23 08:45	05/03/23 20:08	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			04/26/23 19:25	1
Chemical Oxygen Demand (SM 5220D LL)	9.74		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Dup-1

Lab Sample ID: 310-254265-4

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	99.3		10.0		mg/L			05/09/23 15:49	10
Nitrate as N	1.26	J	0.200		mg/L			04/25/23 16:28	1
Fluoride	<0.200		0.200		mg/L			04/25/23 16:28	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0817		0.0100		mg/L		04/26/23 08:45	05/03/23 20:10	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:10	1
Magnesium	64.0		1.00		mg/L		04/26/23 08:45	05/03/23 20:10	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			04/26/23 19:25	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			04/26/23 08:32	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Underliner

Lab Sample ID: 310-254265-5

Date Collected: 04/24/23 16:31

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	85.1		1.00		mg/L			04/25/23 16:44	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 16:44	1
Fluoride	0.305		0.200		mg/L			04/25/23 16:44	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.872		0.0100		mg/L		04/26/23 08:45	05/03/23 20:12	1
Iron	3.59		0.500		mg/L		04/26/23 08:45	05/03/23 20:12	1
Magnesium	47.8		1.00		mg/L		04/26/23 08:45	05/03/23 20:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	3.69		0.200		mg/L			04/26/23 19:27	1
Chemical Oxygen Demand (SM 5220D LL)	32.2		5.00		mg/L			04/27/23 10:55	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: Combined

Lab Sample ID: 310-254265-6

Date Collected: 04/24/23 16:35

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	114		10.0		mg/L			04/26/23 16:25	10
Nitrate as N	0.554		0.200		mg/L			04/25/23 16:59	1
Fluoride	0.906		0.200		mg/L			04/25/23 16:59	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.350		0.0500		mg/L		04/26/23 08:45	04/27/23 14:10	5
Iron	<2.50		2.50		mg/L		04/26/23 08:45	04/27/23 14:10	5
Magnesium	90.9		5.00		mg/L		04/26/23 08:45	04/27/23 14:10	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	6.98		0.200		mg/L			04/26/23 19:27	1
Chemical Oxygen Demand (SM 5220D LL)	56.6		5.00		mg/L			04/27/23 10:55	1

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Client Sample Results

Client: John Deere & Co
 Project/Site: JD DUB Landfill- TRC

Job ID: 310-254265-1

Client Sample ID: EB-1

Lab Sample ID: 310-254265-7

Date Collected: 04/24/23 00:00

Matrix: Water

Date Received: 04/25/23 08:50

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			04/25/23 17:15	1
Nitrate as N	<0.200		0.200		mg/L			04/25/23 17:15	1
Fluoride	<0.200		0.200		mg/L			04/25/23 17:15	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		04/26/23 08:45	05/03/23 20:20	1
Iron	<0.500		0.500		mg/L		04/26/23 08:45	05/03/23 20:20	1
Magnesium	<1.00		1.00		mg/L		04/26/23 08:45	05/03/23 20:20	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			04/26/23 19:29	1
Chemical Oxygen Demand (SM 5220D LL)	6.76		5.00		mg/L			04/27/23 10:55	1

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Memorandum

To: Erica Lawson

From: David DiGena-Segal (Data Reviewer)
Elizabeth Denly (Peer Reviewer)

Date: January 5, 2024

Subject: Data Validation Review
Groundwater and Leachate Samples
John Deere, Dubuque Works Landfill
Eurofins-Test America – Cedar Falls, IA
Laboratory Job IDs 310-268049-1 Revision 1 (includes Job IDs 310-268202-1, 310-268333-1) and 310-270467-2 (includes Job IDs 310-270467-1 and 310-270467-2)

SUMMARY

Limited validation was performed on the data for four groundwater samples, five leachate samples, and one equipment blank sample collected at the John Deere, Dubuque Works Landfill in Dubuque, Iowa. The samples were collected on October 24-26, and November 28, 2023 and were submitted to Eurofins-Test America in Cedar Falls, Iowa for analysis. The samples were analyzed for one or more of the following parameters:

- Volatile organic compounds (VOCs) using SW-846 Method 8260D
- 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
- Total phenolics using SW-846 Method 9066
- Ammonia using EPA Method 350.1
- Chemical oxygen demand (COD) using Standard Methods (SM) 5220D
- Total dissolved solids (TDS) using SM 2540C

The laboratory reported the results under laboratory job IDs 310-268049-1 (includes job IDs 310-268202-1, 310-268333-1) and 310-270467-2 (includes Job IDs 310-270467-1 and 310-270467-2).

The sample results were assessed using the *USEPA National Functional Guidelines for Organic Superfund Methods Data Review* and *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 and nondetect results for VOCs, anions, total phenolics, ammonia, COD, and TDS in samples S1 Leachate open, S2 Leachate open, S1 Underliner open, and Combined Leachate were qualified as estimated (J-/UJ) with potential low bias due to an elevated cooler temperature. It should be noted that results for COD in these samples were also qualified as

estimated (J) due to matrix spike (MS)/matrix spike duplicate (MSD) variability and low MSD recovery; the overall qualification for COD in these samples was J.

SAMPLES

Samples included in this review are listed below:

310-268049-1 (collected 10/24/23)

- MW-1
- MW-2
- MW-3
- DUP-1¹
- EB-1

¹Field duplicate of MW-3

SDG 310-268202-1 (collected 10/25/23)

- S1 Leachate open
- S2 Leachate open
- S1 Underliner open
- Combined Leachate

SDG 310-268333-1 (collected 10/26/23)

- S2 Underliner closed

SDG 310-270467-2 (collected 11/28/23)

- S1 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
- Surrogate recoveries
- 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 packages were found to be complete as received from the laboratory with the following exceptions.

- The COC and sample login forms were missing for SDGs 310-268202-1 and 310-268333-1. The laboratory was contacted about this issue and provided the missing information on 11/17/2023.
- The time relinquished was not included on the COCs. No validation action was taken on this basis.
- The laboratory noted select VOC continuing calibration verification (CCV) nonconformances in the case narrative. No validation actions were taken on this basis since the actual CCV results were not provided for review.
- The laboratory only spiked a subset of the VOCs in the MS/MSDs. Thus, accuracy and/or precision could not be evaluated for select VOCs. No validation actions were taken on the basis of this issue.

Holding Times and Sample Preservation

All samples were prepared and analyzed within the method-specified holding times. The cooler temperature was within the acceptance criteria ($<6^{\circ}\text{C}$) upon sample receipt at the laboratory with the following exception.

- Samples S1 Leachate open, S2 Leachate open, S1 Underliner open, and Combined Leachate were received with a cooler temperature ($9.4\text{-}11.3^{\circ}\text{C}$) outside of the acceptance criteria. The positive and nondetect results for VOCs, anions, total phenolics, ammonia, COD, and TDS in these samples were qualified as estimated (J-/UJ) with a potential low bias. It should be noted that the results for COD in these samples were also qualified as estimated (J) due to MS/MSD nonconformances; therefore the overall qualification for COD in these samples was J. No qualification was required on this basis for metals.
- The VOC sample S1 underliner closed had a pH that was outside of the method required criteria. No validation action was required on this basis since the VOC analysis was performed within 7 days of collection.

Blanks

There were no analytes detected in the laboratory method blanks. Ammonia (5.28 mg/L) was detected in the equipment blank (EB-1). Qualification was not required for the associated samples (MW-1, MW-2, MW-3, and Dup-1) since ammonia was not detected in these samples.

Surrogate Recoveries

All criteria were met in the VOC analyses.

MS/MSD Results

MS/MSD analyses were performed on sample MW-1 and S1 Leachate open for VOCs, MW-1 for total phenolics, S1 Underliner open for COD, and S2 Underliner closed for anions. The percent recoveries

(%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
S1 Underliner open	COD	-	75	25	80-148/10	The positive results for COD were qualified as estimated (J) in the associated samples due to low MSD recovery and MS/MSD variability.
Associated Samples: S1 Leachate open, S2 Leachate open, S1 Underliner open, S2 Underliner closed, and Combined Leachate met criteria						

Note that the laboratory only spiked a subset of VOCs in the MS/MSDs. Thus, accuracy and precision could not be evaluated for the following VOCs (which were not spiked) in the groundwater and leachate samples MW-1 and S1 Leachate open, respectively: bromomethane, chloroethane, chloromethane, dichlorodifluoromethane, trichlorofluoromethane, and vinyl chloride. No validation action was taken on this basis.

LCS Results

The LCS %Rs met the laboratory acceptance criteria.

Laboratory Duplicate Results

Laboratory duplicate analyses were performed on sample S2 Leachate open for metals and sample S1 Underliner open and S1 underliner closed for TDS. The RPDs met the laboratory acceptance criteria.

Field Duplicate Results

Samples MW-3/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-3 (mg/L)	DUP-1 (mg/L)	RPD (%) or AbsD (mg/L)	Validation Actions
Chloride	1	75.9	76	RPD = 0.1	None; all criteria were met
Nitrate as N	0.2	0.935	0.912	AbsD = 0.023	
Sulfate	50	121	119	AbsD = 2.0	None; all criteria were met
Barium	0.01	0.0534	0.0544	RPD = 1.9	
Boron	0.2	2.48	2.54	RPD = 2.4	
Calcium	1	127	129	RPD = 1.6	
Magnesium	1	58.6	59.8	RPD = 2.0	
COD	5	5.7	ND	AbsD = 0.7	
TDS	50	730	724	RPD = 0.8	
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 $\leq QL$.					

Quantitation Limits and Sample Results

The table below summarizes the samples that were analyzed on dilution. 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
S1 underliner closed	Sulfate	5-fold	A dilution was likely performed due to the concentrations of sulfate and/or chloride which would have exceeded the calibration range if analyzed undiluted.
MW-3		50-fold	
DUP-1			
Combined Leachate			
S2 Leachate open		100-fold	
S2 Underliner closed			
Combined Leachate	Chloride	5-fold	
S1 underliner closed		50-fold	
S2 Leachate open			
S2 Underliner closed		100-fold	
S1 underliner closed	Nitrate as N	5-fold	A reason for dilution was not provided but likely due to concentrations of interfering analytes (e.g., chloride, sulfate).
	Fluoride		

It should be noted that the TDS analyses of samples S1 Leachate open, S2 Leachate open, S1 Underliner open, S2 Underliner closed, Combined Leachate, and S1 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.

Additionally, it should be noted that the RLs 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

QUALIFIED FORM 1s

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Lab Sample ID: 310-268049-1

Date Collected: 10/24/23 11:20

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/27/23 23:36	1
Acrolein	<10.0		10.0		ug/L			10/27/23 23:36	1
Acrylonitrile	<5.00		5.00		ug/L			10/27/23 23:36	1
Allyl chloride	<2.00		2.00		ug/L			10/27/23 23:36	1
Benzene	<0.500		0.500		ug/L			10/27/23 23:36	1
Bromochloromethane	<5.00		5.00		ug/L			10/27/23 23:36	1
Bromodichloromethane	<1.00		1.00		ug/L			10/27/23 23:36	1
Bromoform	<5.00		5.00		ug/L			10/27/23 23:36	1
Bromomethane	<4.00		4.00		ug/L			10/27/23 23:36	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/27/23 23:36	1
Carbon disulfide	<1.00		1.00		ug/L			10/27/23 23:36	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/27/23 23:36	1
Chlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/27/23 23:36	1
Chloroethane	<4.00		4.00		ug/L			10/27/23 23:36	1
Chloroform	<3.00		3.00		ug/L			10/27/23 23:36	1
Chloromethane	<3.00		3.00		ug/L			10/27/23 23:36	1
Chloroprene	<1.00		1.00		ug/L			10/27/23 23:36	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/27/23 23:36	1
Dibromomethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/27/23 23:36	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/27/23 23:36	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/27/23 23:36	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/27/23 23:36	1
Ethylbenzene	<1.00		1.00		ug/L			10/27/23 23:36	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:36	1
2-Hexanone	<10.0		10.0		ug/L			10/27/23 23:36	1
Iodomethane	<10.0		10.0		ug/L			10/27/23 23:36	1
Methacrylonitrile	<10.0		10.0		ug/L			10/27/23 23:36	1
Methylene Chloride	<5.00		5.00		ug/L			10/27/23 23:36	1
Methyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:36	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/27/23 23:36	1
m,p-Xylene	<2.00		2.00		ug/L			10/27/23 23:36	1
Naphthalene	<5.00		5.00		ug/L			10/27/23 23:36	1
o-Xylene	<1.00		1.00		ug/L			10/27/23 23:36	1
Propionitrile	<10.0		10.0		ug/L			10/27/23 23:36	1
Styrene	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1

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Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-1

Lab Sample ID: 310-268049-1

Date Collected: 10/24/23 11:20

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
Toluene	<1.00		1.00		ug/L			10/27/23 23:36	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/27/23 23:36	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/27/23 23:36	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:36	1
Trichloroethene	<1.00		1.00		ug/L			10/27/23 23:36	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/27/23 23:36	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/27/23 23:36	1
Vinyl acetate	<10.0		10.0		ug/L			10/27/23 23:36	1
Vinyl chloride	<1.00		1.00		ug/L			10/27/23 23:36	1
Xylenes, Total	<3.00		3.00		ug/L			10/27/23 23:36	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					10/27/23 23:36	1
Dibromofluoromethane (Surr)	106		80 - 128					10/27/23 23:36	1
Toluene-d8 (Surr)	99		80 - 120					10/27/23 23:36	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	4.78		1.00		mg/L			10/25/23 12:20	1
Nitrate as N	<0.200		0.200		mg/L			10/25/23 12:20	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:20	1
Sulfate	28.4		1.00		mg/L			10/25/23 12:20	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0894		0.0100		mg/L		10/27/23 10:30	10/31/23 15:09	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:09	1
Calcium	72.4		1.00		mg/L		10/27/23 10:30	10/31/23 15:09	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:09	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:09	1
Magnesium	42.3		1.00		mg/L		10/27/23 10:30	10/31/23 15:09	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:09	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			10/31/23 21:43	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:54	1
Total Dissolved Solids (SM 2540C)	330		50.0		mg/L			10/26/23 13:48	1

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Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-2

Lab Sample ID: 310-268049-2

Date Collected: 10/24/23 14:15

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/27/23 23:58	1
Acrolein	<10.0		10.0		ug/L			10/27/23 23:58	1
Acrylonitrile	<5.00		5.00		ug/L			10/27/23 23:58	1
Allyl chloride	<2.00		2.00		ug/L			10/27/23 23:58	1
Benzene	<0.500		0.500		ug/L			10/27/23 23:58	1
Bromochloromethane	<5.00		5.00		ug/L			10/27/23 23:58	1
Bromodichloromethane	<1.00		1.00		ug/L			10/27/23 23:58	1
Bromoform	<5.00		5.00		ug/L			10/27/23 23:58	1
Bromomethane	<4.00		4.00		ug/L			10/27/23 23:58	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/27/23 23:58	1
Carbon disulfide	<1.00		1.00		ug/L			10/27/23 23:58	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/27/23 23:58	1
Chlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/27/23 23:58	1
Chloroethane	<4.00		4.00		ug/L			10/27/23 23:58	1
Chloroform	<3.00		3.00		ug/L			10/27/23 23:58	1
Chloromethane	<3.00		3.00		ug/L			10/27/23 23:58	1
Chloroprene	<1.00		1.00		ug/L			10/27/23 23:58	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/27/23 23:58	1
Dibromomethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/27/23 23:58	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/27/23 23:58	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/27/23 23:58	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/27/23 23:58	1
Ethylbenzene	<1.00		1.00		ug/L			10/27/23 23:58	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:58	1
2-Hexanone	<10.0		10.0		ug/L			10/27/23 23:58	1
Iodomethane	<10.0		10.0		ug/L			10/27/23 23:58	1
Methacrylonitrile	<10.0		10.0		ug/L			10/27/23 23:58	1
Methylene Chloride	<5.00		5.00		ug/L			10/27/23 23:58	1
Methyl methacrylate	<2.00		2.00		ug/L			10/27/23 23:58	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/27/23 23:58	1
m,p-Xylene	<2.00		2.00		ug/L			10/27/23 23:58	1
Naphthalene	<5.00		5.00		ug/L			10/27/23 23:58	1
o-Xylene	<1.00		1.00		ug/L			10/27/23 23:58	1
Propionitrile	<10.0		10.0		ug/L			10/27/23 23:58	1
Styrene	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-2

Lab Sample ID: 310-268049-2

Date Collected: 10/24/23 14:15

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
Toluene	<1.00		1.00		ug/L			10/27/23 23:58	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/27/23 23:58	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/27/23 23:58	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/27/23 23:58	1
Trichloroethene	<1.00		1.00		ug/L			10/27/23 23:58	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/27/23 23:58	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/27/23 23:58	1
Vinyl acetate	<10.0		10.0		ug/L			10/27/23 23:58	1
Vinyl chloride	<1.00		1.00		ug/L			10/27/23 23:58	1
Xylenes, Total	<3.00		3.00		ug/L			10/27/23 23:58	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					10/27/23 23:58	1
Dibromofluoromethane (Surr)	103		80 - 128					10/27/23 23:58	1
Toluene-d8 (Surr)	96		80 - 120					10/27/23 23:58	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	7.93		1.00		mg/L			10/25/23 12:32	1
Nitrate as N	2.88		0.200		mg/L			10/25/23 12:32	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:32	1
Sulfate	19.9		1.00		mg/L			10/25/23 12:32	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0915		0.0100		mg/L		10/27/23 10:30	10/31/23 15:11	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:11	1
Calcium	100		1.00		mg/L		10/27/23 10:30	10/31/23 15:11	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:11	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:11	1
Magnesium	44.2		1.00		mg/L		10/27/23 10:30	10/31/23 15:11	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:11	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			10/31/23 21:45	1
Chemical Oxygen Demand (SM 5220D LL)	7.07		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0204		0.0204		mg/L		11/01/23 08:51	11/01/23 20:55	1
Total Dissolved Solids (SM 2540C)	420		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-3

Lab Sample ID: 310-268049-3

Date Collected: 10/24/23 16:45

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 00:20	1
Acrolein	<10.0		10.0		ug/L			10/28/23 00:20	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 00:20	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 00:20	1
Benzene	<0.500		0.500		ug/L			10/28/23 00:20	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 00:20	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 00:20	1
Bromoform	<5.00		5.00		ug/L			10/28/23 00:20	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 00:20	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 00:20	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 00:20	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 00:20	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 00:20	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 00:20	1
Chloroform	<3.00		3.00		ug/L			10/28/23 00:20	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 00:20	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 00:20	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 00:20	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 00:20	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 00:20	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 00:20	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 00:20	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 00:20	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:20	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 00:20	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 00:20	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 00:20	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 00:20	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:20	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 00:20	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 00:20	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 00:20	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 00:20	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 00:20	1
Styrene	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: MW-3

Lab Sample ID: 310-268049-3

Date Collected: 10/24/23 16:45

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
Toluene	<1.00		1.00		ug/L			10/28/23 00:20	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 00:20	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 00:20	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:20	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 00:20	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 00:20	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 00:20	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 00:20	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 00:20	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 00:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120					10/28/23 00:20	1
Dibromofluoromethane (Surr)	102		80 - 128					10/28/23 00:20	1
Toluene-d8 (Surr)	98		80 - 120					10/28/23 00:20	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	75.9		1.00		mg/L			10/25/23 12:44	1
Nitrate as N	0.935		0.200		mg/L			10/25/23 12:44	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:44	1
Sulfate	121		50.0		mg/L			10/26/23 10:11	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0534		0.0100		mg/L		10/27/23 10:30	10/31/23 15:13	1
Boron	2.48		0.200		mg/L		10/27/23 10:30	10/31/23 15:13	1
Calcium	127		1.00		mg/L		10/27/23 10:30	10/31/23 15:13	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:13	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:13	1
Magnesium	58.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:13	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:13	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			10/31/23 21:47	1
Chemical Oxygen Demand (SM 5220D LL)	5.70		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:56	1
Total Dissolved Solids (SM 2540C)	730		50.0		mg/L			10/26/23 13:48	1

Euofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Dup-1

Lab Sample ID: 310-268049-4

Date Collected: 10/24/23 00:00

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 01:04	1
Acrolein	<10.0		10.0		ug/L			10/28/23 01:04	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 01:04	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 01:04	1
Benzene	<0.500		0.500		ug/L			10/28/23 01:04	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 01:04	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 01:04	1
Bromoform	<5.00		5.00		ug/L			10/28/23 01:04	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 01:04	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 01:04	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 01:04	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 01:04	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 01:04	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 01:04	1
Chloroform	<3.00		3.00		ug/L			10/28/23 01:04	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 01:04	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 01:04	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 01:04	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 01:04	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 01:04	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 01:04	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 01:04	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 01:04	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 01:04	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 01:04	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 01:04	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 01:04	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 01:04	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 01:04	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 01:04	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 01:04	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 01:04	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 01:04	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 01:04	1
Styrene	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Dup-1

Lab Sample ID: 310-268049-4

Date Collected: 10/24/23 00:00

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
Toluene	<1.00		1.00		ug/L			10/28/23 01:04	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 01:04	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 01:04	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 01:04	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 01:04	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 01:04	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 01:04	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 01:04	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 01:04	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 01:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		80 - 120					10/28/23 01:04	1
Dibromofluoromethane (Surr)	101		80 - 128					10/28/23 01:04	1
Toluene-d8 (Surr)	96		80 - 120					10/28/23 01:04	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.0		1.00		mg/L			10/25/23 12:56	1
Nitrate as N	0.912		0.200		mg/L			10/25/23 12:56	1
Fluoride	<0.200		0.200		mg/L			10/25/23 12:56	1
Sulfate	119		50.0		mg/L			10/26/23 10:22	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0544		0.0100		mg/L		10/27/23 10:30	10/31/23 15:15	1
Boron	2.54		0.200		mg/L		10/27/23 10:30	10/31/23 15:15	1
Calcium	129		1.00		mg/L		10/27/23 10:30	10/31/23 15:15	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:15	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:15	1
Magnesium	59.8		1.00		mg/L		10/27/23 10:30	10/31/23 15:15	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:15	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			10/31/23 21:47	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:56	1
Total Dissolved Solids (SM 2540C)	724		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: EB-1

Lab Sample ID: 310-268049-5

Date Collected: 10/24/23 16:50

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			10/28/23 00:42	1
Acrolein	<10.0		10.0		ug/L			10/28/23 00:42	1
Acrylonitrile	<5.00		5.00		ug/L			10/28/23 00:42	1
Allyl chloride	<2.00		2.00		ug/L			10/28/23 00:42	1
Benzene	<0.500		0.500		ug/L			10/28/23 00:42	1
Bromochloromethane	<5.00		5.00		ug/L			10/28/23 00:42	1
Bromodichloromethane	<1.00		1.00		ug/L			10/28/23 00:42	1
Bromoform	<5.00		5.00		ug/L			10/28/23 00:42	1
Bromomethane	<4.00		4.00		ug/L			10/28/23 00:42	1
2-Butanone (MEK)	<10.0		10.0		ug/L			10/28/23 00:42	1
Carbon disulfide	<1.00		1.00		ug/L			10/28/23 00:42	1
Carbon tetrachloride	<2.00		2.00		ug/L			10/28/23 00:42	1
Chlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Chlorodibromomethane	<5.00		5.00		ug/L			10/28/23 00:42	1
Chloroethane	<4.00		4.00		ug/L			10/28/23 00:42	1
Chloroform	<3.00		3.00		ug/L			10/28/23 00:42	1
Chloromethane	<3.00		3.00		ug/L			10/28/23 00:42	1
Chloroprene	<1.00		1.00		ug/L			10/28/23 00:42	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			10/28/23 00:42	1
Dibromomethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			10/28/23 00:42	1
1,1-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1-Dichloroethene	<2.00		2.00		ug/L			10/28/23 00:42	1
1,2-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,3-Dichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
2,2-Dichloropropane	<4.00		4.00		ug/L			10/28/23 00:42	1
1,1-Dichloropropene	<1.00		1.00		ug/L			10/28/23 00:42	1
Ethylbenzene	<1.00		1.00		ug/L			10/28/23 00:42	1
Ethyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:42	1
2-Hexanone	<10.0		10.0		ug/L			10/28/23 00:42	1
Iodomethane	<10.0		10.0		ug/L			10/28/23 00:42	1
Methacrylonitrile	<10.0		10.0		ug/L			10/28/23 00:42	1
Methylene Chloride	<5.00		5.00		ug/L			10/28/23 00:42	1
Methyl methacrylate	<2.00		2.00		ug/L			10/28/23 00:42	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			10/28/23 00:42	1
m,p-Xylene	<2.00		2.00		ug/L			10/28/23 00:42	1
Naphthalene	<5.00		5.00		ug/L			10/28/23 00:42	1
o-Xylene	<1.00		1.00		ug/L			10/28/23 00:42	1
Propionitrile	<10.0		10.0		ug/L			10/28/23 00:42	1
Styrene	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: EB-1

Lab Sample ID: 310-268049-5

Date Collected: 10/24/23 16:50

Matrix: Water

Date Received: 10/25/23 10:30

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
Toluene	<1.00		1.00		ug/L			10/28/23 00:42	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			10/28/23 00:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			10/28/23 00:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			10/28/23 00:42	1
Trichloroethene	<1.00		1.00		ug/L			10/28/23 00:42	1
Trichlorofluoromethane	<4.00		4.00		ug/L			10/28/23 00:42	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			10/28/23 00:42	1
Vinyl acetate	<10.0		10.0		ug/L			10/28/23 00:42	1
Vinyl chloride	<1.00		1.00		ug/L			10/28/23 00:42	1
Xylenes, Total	<3.00		3.00		ug/L			10/28/23 00:42	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120					10/28/23 00:42	1
Dibromofluoromethane (Surr)	103		80 - 128					10/28/23 00:42	1
Toluene-d8 (Surr)	97		80 - 120					10/28/23 00:42	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<1.00		1.00		mg/L			10/25/23 13:09	1
Nitrate as N	<0.200		0.200		mg/L			10/25/23 13:09	1
Fluoride	<0.200		0.200		mg/L			10/25/23 13:09	1
Sulfate	<1.00		1.00		mg/L			10/25/23 13:09	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.0100		0.0100		mg/L		10/27/23 10:30	10/31/23 15:17	1
Boron	<0.200		0.200		mg/L		10/27/23 10:30	10/31/23 15:17	1
Calcium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 15:17	1
Iron	<0.500		0.500		mg/L		10/27/23 10:30	10/31/23 15:17	1
Lithium	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:17	1
Magnesium	<1.00		1.00		mg/L		10/27/23 10:30	10/31/23 15:17	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.28		0.200		mg/L			10/31/23 21:48	1
Chemical Oxygen Demand (SM 5220D LL)	<5.00		5.00		mg/L			10/26/23 09:13	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		11/01/23 08:51	11/01/23 20:57	1
Total Dissolved Solids (SM 2540C)	<50.0		50.0		mg/L			10/26/23 13:48	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Leachate open

Lab Sample ID: 310-268202-1

Date Collected: 10/25/23 09:00

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0	UJ	10.0		ug/L			11/01/23 07:51	1
Acrolein	<10.0		10.0		ug/L			11/01/23 07:51	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 07:51	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 07:51	1
Benzene	<0.500		0.500		ug/L			11/01/23 07:51	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 07:51	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 07:51	1
Bromoform	<5.00		5.00		ug/L			11/01/23 07:51	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 07:51	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 07:51	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 07:51	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 07:51	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 07:51	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 07:51	1
Chloroform	<3.00		3.00		ug/L			11/01/23 07:51	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 07:51	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 07:51	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 07:51	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 07:51	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 07:51	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 07:51	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 07:51	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 07:51	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:51	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 07:51	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 07:51	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 07:51	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 07:51	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:51	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 07:51	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 07:51	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 07:51	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 07:51	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 07:51	1
Styrene	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Leachate open

Lab Sample ID: 310-268202-1

Date Collected: 10/25/23 09:00

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00	UJ	1.00		ug/L			11/01/23 07:51	1
Toluene	<1.00		1.00		ug/L			11/01/23 07:51	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 07:51	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 07:51	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:51	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 07:51	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 07:51	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 07:51	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 07:51	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 07:51	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 07:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		11/01/23 07:51	1
Dibromofluoromethane (Surr)	96		80 - 128		11/01/23 07:51	1
Toluene-d8 (Surr)	98		80 - 120		11/01/23 07:51	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	78.8	J-	1.00		mg/L			10/26/23 17:39	1
Nitrate as N	0.363		0.200		mg/L			10/26/23 17:39	1
Fluoride	0.442		0.200		mg/L			10/26/23 17:39	1
Sulfate	14.8		1.00		mg/L			10/26/23 17:39	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.945		0.0100		mg/L		10/27/23 10:30	10/31/23 15:19	1
Boron	8.08		0.200		mg/L		10/27/23 10:30	10/31/23 15:19	1
Calcium	126		1.00		mg/L		10/27/23 10:30	10/31/23 15:19	1
Iron	9.65		0.500		mg/L		10/27/23 10:30	10/31/23 15:19	1
Lithium	0.193		0.0500		mg/L		10/27/23 10:30	10/31/23 15:19	1
Magnesium	41.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:19	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	4.15	J-	0.500		mg/L		11/02/23 10:38	11/02/23 21:57	1
Chemical Oxygen Demand (SM 5220D LL)	25.9	J	5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200	UJ	0.0200		mg/L		11/01/23 08:51	11/01/23 20:58	1
Total Dissolved Solids (SM 2540C)	930	J-	250		mg/L			10/30/23 15:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Date Collected: 10/25/23 08:55

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0	UJ	10.0		ug/L			11/01/23 08:13	1
Acrolein	<10.0		10.0		ug/L			11/01/23 08:13	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 08:13	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 08:13	1
Benzene	<0.500		0.500		ug/L			11/01/23 08:13	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 08:13	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 08:13	1
Bromoform	<5.00		5.00		ug/L			11/01/23 08:13	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 08:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 08:13	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 08:13	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 08:13	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 08:13	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 08:13	1
Chloroform	<3.00		3.00		ug/L			11/01/23 08:13	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 08:13	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 08:13	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 08:13	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 08:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 08:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 08:13	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 08:13	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 08:13	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:13	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 08:13	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 08:13	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 08:13	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 08:13	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:13	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 08:13	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 08:13	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 08:13	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 08:13	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 08:13	1
Styrene	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Leachate open

Lab Sample ID: 310-268202-2

Date Collected: 10/25/23 08:55

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00	UJ	1.00		ug/L			11/01/23 08:13	1
Toluene	<1.00		1.00		ug/L			11/01/23 08:13	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 08:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 08:13	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:13	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 08:13	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 08:13	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 08:13	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 08:13	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 08:13	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 08:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		11/01/23 08:13	1
Dibromofluoromethane (Surr)	96		80 - 128		11/01/23 08:13	1
Toluene-d8 (Surr)	97		80 - 120		11/01/23 08:13	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	129	J-	50.0		mg/L			10/27/23 12:25	50
Nitrate as N	<0.200	UJ	0.200		mg/L			10/26/23 17:53	1
Fluoride	0.884	J-	0.200		mg/L			10/26/23 17:53	1
Sulfate	1180	J-	50.0		mg/L			10/27/23 12:25	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0334		0.0100		mg/L		10/27/23 10:30	10/31/23 15:21	1
Boron	24.2		0.200		mg/L		10/27/23 10:30	10/31/23 15:21	1
Calcium	172		1.00		mg/L		10/27/23 10:30	10/31/23 15:21	1
Iron	1.78		0.500		mg/L		10/27/23 10:30	10/31/23 15:21	1
Lithium	1.16		0.0500		mg/L		10/27/23 10:30	10/31/23 15:21	1
Magnesium	137		1.00		mg/L		10/27/23 10:30	10/31/23 15:21	1
Molybdenum	0.0624		0.0500		mg/L		10/27/23 10:30	10/31/23 15:21	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	9.28	J-	0.500		mg/L		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	69.5	J	5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200	UJ	0.0200		mg/L		11/01/23 08:51	11/01/23 20:58	1
Total Dissolved Solids (SM 2540C)	2420	J-	250		mg/L			10/30/23 15:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Date Collected: 10/25/23 08:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0	UJ	10.0		ug/L			11/01/23 08:35	1
Acrolein	<10.0		10.0		ug/L			11/01/23 08:35	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 08:35	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 08:35	1
Benzene	<0.500		0.500		ug/L			11/01/23 08:35	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 08:35	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 08:35	1
Bromoform	<5.00		5.00		ug/L			11/01/23 08:35	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 08:35	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 08:35	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 08:35	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 08:35	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 08:35	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 08:35	1
Chloroform	<3.00		3.00		ug/L			11/01/23 08:35	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 08:35	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 08:35	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 08:35	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 08:35	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 08:35	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 08:35	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 08:35	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 08:35	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:35	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 08:35	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 08:35	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 08:35	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 08:35	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 08:35	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 08:35	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 08:35	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 08:35	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 08:35	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 08:35	1
Styrene	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S1 Underliner open

Lab Sample ID: 310-268202-3

Date Collected: 10/25/23 08:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00	UJ	1.00		ug/L			11/01/23 08:35	1
Toluene	<1.00		1.00		ug/L			11/01/23 08:35	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 08:35	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 08:35	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 08:35	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 08:35	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 08:35	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 08:35	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 08:35	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 08:35	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 08:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120					11/01/23 08:35	1
Dibromofluoromethane (Surr)	98		80 - 128					11/01/23 08:35	1
Toluene-d8 (Surr)	97		80 - 120					11/01/23 08:35	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	76.3	J-	1.00		mg/L			10/26/23 17:09	1
Nitrate as N	3.80		0.200		mg/L			10/26/23 17:09	1
Fluoride	0.472		0.200		mg/L			10/26/23 17:09	1
Sulfate	10.9		1.00		mg/L			10/26/23 17:09	1

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.662		0.0100		mg/L		10/27/23 10:30	10/31/23 15:25	1
Boron	5.28		0.200		mg/L		10/27/23 10:30	10/31/23 15:25	1
Calcium	86.7		1.00		mg/L		10/27/23 10:30	10/31/23 15:25	1
Iron	2.96		0.500		mg/L		10/27/23 10:30	10/31/23 15:25	1
Lithium	0.100		0.0500		mg/L		10/27/23 10:30	10/31/23 15:25	1
Magnesium	39.6		1.00		mg/L		10/27/23 10:30	10/31/23 15:25	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	<0.500	UJ	0.500		mg/L		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	22.1	F1-F2 J	5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200	UJ	0.0200		mg/L		11/01/23 08:51	11/01/23 20:59	1
Total Dissolved Solids (SM 2540C)	700	J-	250		mg/L			10/30/23 15:41	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0	UJ	10.0		ug/L			11/01/23 07:30	1
Acrolein	<10.0		10.0		ug/L			11/01/23 07:30	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 07:30	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 07:30	1
Benzene	<0.500		0.500		ug/L			11/01/23 07:30	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 07:30	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 07:30	1
Bromoform	<5.00		5.00		ug/L			11/01/23 07:30	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 07:30	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 07:30	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 07:30	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 07:30	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 07:30	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 07:30	1
Chloroform	<3.00		3.00		ug/L			11/01/23 07:30	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 07:30	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 07:30	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 07:30	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 07:30	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 07:30	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 07:30	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 07:30	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 07:30	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:30	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 07:30	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 07:30	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 07:30	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 07:30	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 07:30	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 07:30	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 07:30	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 07:30	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 07:30	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 07:30	1
Styrene	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: Combined Leachate

Lab Sample ID: 310-268202-4

Date Collected: 10/25/23 09:30

Matrix: Water

Date Received: 10/26/23 08:45

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00	UJ	1.00		ug/L			11/01/23 07:30	1
Toluene	<1.00		1.00		ug/L			11/01/23 07:30	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 07:30	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 07:30	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 07:30	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 07:30	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 07:30	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 07:30	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 07:30	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 07:30	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 07:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		80 - 120		11/01/23 07:30	1
Dibromofluoromethane (Surr)	96		80 - 128		11/01/23 07:30	1
Toluene-d8 (Surr)	96		80 - 120		11/01/23 07:30	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	108	J-	5.00		mg/L			10/26/23 18:23	5
Nitrate as N	0.766		0.200		mg/L			10/26/23 18:09	1
Fluoride	0.687		0.200		mg/L			10/26/23 18:09	1
Sulfate	678	J-	50.0		mg/L			10/27/23 12:39	50

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.268		0.0100		mg/L		10/27/23 10:30	10/31/23 15:27	1
Boron	16.9		0.200		mg/L		10/27/23 10:30	10/31/23 15:27	1
Calcium	146		1.00		mg/L		10/27/23 10:30	10/31/23 15:27	1
Iron	2.14		0.500		mg/L		10/27/23 10:30	10/31/23 15:27	1
Lithium	0.724		0.0500		mg/L		10/27/23 10:30	10/31/23 15:27	1
Magnesium	95.1		1.00		mg/L		10/27/23 10:30	10/31/23 15:27	1
Molybdenum	<0.0500		0.0500		mg/L		10/27/23 10:30	10/31/23 15:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	5.79	J-	0.500		mg/L		11/02/23 10:38	11/02/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	53.1	J	5.00		mg/L			11/01/23 09:46	1
Phenols, Total (SW846 9066)	<0.0200	UJ	0.0200		mg/L		11/01/23 08:51	11/01/23 20:59	1
Total Dissolved Solids (SM 2540C)	1600	J-	250		mg/L			10/30/23 15:41	1

Eurofins Cedar Falls

Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Date Collected: 10/26/23 09:15

Matrix: Water

Date Received: 10/27/23 09:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			11/01/23 10:02	1
Acrolein	<10.0		10.0		ug/L			11/01/23 10:02	1
Acrylonitrile	<5.00		5.00		ug/L			11/01/23 10:02	1
Allyl chloride	<2.00		2.00		ug/L			11/01/23 10:02	1
Benzene	<0.500		0.500		ug/L			11/01/23 10:02	1
Bromochloromethane	<5.00		5.00		ug/L			11/01/23 10:02	1
Bromodichloromethane	<1.00		1.00		ug/L			11/01/23 10:02	1
Bromoform	<5.00		5.00		ug/L			11/01/23 10:02	1
Bromomethane	<4.00		4.00		ug/L			11/01/23 10:02	1
2-Butanone (MEK)	<10.0		10.0		ug/L			11/01/23 10:02	1
Carbon disulfide	<1.00		1.00		ug/L			11/01/23 10:02	1
Carbon tetrachloride	<2.00		2.00		ug/L			11/01/23 10:02	1
Chlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Chlorodibromomethane	<5.00		5.00		ug/L			11/01/23 10:02	1
Chloroethane	<4.00		4.00		ug/L			11/01/23 10:02	1
Chloroform	<3.00		3.00		ug/L			11/01/23 10:02	1
Chloromethane	<3.00		3.00		ug/L			11/01/23 10:02	1
Chloroprene	<1.00		1.00		ug/L			11/01/23 10:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			11/01/23 10:02	1
Dibromomethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			11/01/23 10:02	1
1,1-Dichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			11/01/23 10:02	1
1,2-Dichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,3-Dichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
2,2-Dichloropropane	<4.00		4.00		ug/L			11/01/23 10:02	1
1,1-Dichloropropene	<1.00		1.00		ug/L			11/01/23 10:02	1
Ethylbenzene	<1.00		1.00		ug/L			11/01/23 10:02	1
Ethyl methacrylate	<2.00		2.00		ug/L			11/01/23 10:02	1
2-Hexanone	<10.0		10.0		ug/L			11/01/23 10:02	1
Iodomethane	<10.0		10.0		ug/L			11/01/23 10:02	1
Methacrylonitrile	<10.0		10.0		ug/L			11/01/23 10:02	1
Methylene Chloride	<5.00		5.00		ug/L			11/01/23 10:02	1
Methyl methacrylate	<2.00		2.00		ug/L			11/01/23 10:02	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			11/01/23 10:02	1
m,p-Xylene	<2.00		2.00		ug/L			11/01/23 10:02	1
Naphthalene	<5.00		5.00		ug/L			11/01/23 10:02	1
o-Xylene	<1.00		1.00		ug/L			11/01/23 10:02	1
Propionitrile	<10.0		10.0		ug/L			11/01/23 10:02	1
Styrene	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1

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Client Sample Results

Client: TRC Environmental Corporation
 Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-268049-1

Client Sample ID: S2 Underliner closed

Lab Sample ID: 310-268333-1

Date Collected: 10/26/23 09:15

Matrix: Water

Date Received: 10/27/23 09:20

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
Toluene	<1.00		1.00		ug/L			11/01/23 10:02	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			11/01/23 10:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			11/01/23 10:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			11/01/23 10:02	1
Trichloroethene	<1.00		1.00		ug/L			11/01/23 10:02	1
Trichlorofluoromethane	<4.00		4.00		ug/L			11/01/23 10:02	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			11/01/23 10:02	1
Vinyl acetate	<10.0		10.0		ug/L			11/01/23 10:02	1
Vinyl chloride	<1.00		1.00		ug/L			11/01/23 10:02	1
Xylenes, Total	<3.00		3.00		ug/L			11/01/23 10:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120					11/01/23 10:02	1
Dibromofluoromethane (Surr)	98		80 - 128					11/01/23 10:02	1
Toluene-d8 (Surr)	97		80 - 120					11/01/23 10:02	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	127		100		mg/L			10/27/23 11:13	100
Nitrate as N	0.619		0.200		mg/L			10/27/23 15:42	1
Fluoride	0.890		0.200		mg/L			10/27/23 15:42	1
Sulfate	1020		100		mg/L			10/27/23 11:13	100

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.0279		0.0100		mg/L		11/01/23 09:20	11/01/23 17:16	1
Boron	20.4		0.200		mg/L		11/01/23 09:20	11/01/23 17:16	1
Calcium	139		1.00		mg/L		11/01/23 09:20	11/01/23 17:16	1
Iron	1.71		0.500		mg/L		11/01/23 09:20	11/01/23 17:16	1
Lithium	1.04		0.0500		mg/L		11/01/23 09:20	11/01/23 17:16	1
Magnesium	116		1.00		mg/L		11/01/23 09:20	11/01/23 17:16	1
Molybdenum	0.0575		0.0500		mg/L		11/01/23 09:20	11/01/23 17:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia as N (EPA 350.1)	7.28		0.200		mg/L			10/31/23 21:59	1
Chemical Oxygen Demand (SM 5220D LL)	56.6		5.00		mg/L			11/03/23 10:18	1
Phenols, Total (SW846 9066)	<0.0208		0.0208		mg/L		11/01/23 08:51	11/01/23 21:00	1
Total Dissolved Solids (SM 2540C)	2090		250		mg/L			10/31/23 14:51	1

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The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This not only helps in tracking expenses but also ensures compliance with tax regulations.

In the second section, the author provides a detailed breakdown of the company's revenue streams. This includes sales from various product lines and services. The analysis shows that while some areas are performing well, others need more attention to improve profitability.

The third section focuses on the company's financial health. It includes a balance sheet and a profit and loss statement. The data indicates that the company is in a stable financial position, with a strong cash flow and manageable debt levels.

Finally, the document concludes with recommendations for future growth. The author suggests investing in research and development to create new products and expanding into new markets. Additionally, improving operational efficiency is seen as a key strategy to reduce costs and increase margins.

Client Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Date Collected: 11/28/23 12:45

Matrix: Water

Date Received: 11/29/23 11:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<10.0		10.0		ug/L			12/02/23 02:13	1
Acrolein	<10.0		10.0		ug/L			12/02/23 02:13	1
Acrylonitrile	<5.00		5.00		ug/L			12/02/23 02:13	1
Allyl chloride	<2.00		2.00		ug/L			12/02/23 02:13	1
Benzene	<0.500		0.500		ug/L			12/02/23 02:13	1
Bromochloromethane	<5.00		5.00		ug/L			12/02/23 02:13	1
Bromodichloromethane	<1.00		1.00		ug/L			12/02/23 02:13	1
Bromoform	<5.00		5.00		ug/L			12/02/23 02:13	1
Bromomethane	<4.00		4.00		ug/L			12/02/23 02:13	1
2-Butanone (MEK)	<10.0		10.0		ug/L			12/02/23 02:13	1
Carbon disulfide	<1.00		1.00		ug/L			12/02/23 02:13	1
Carbon tetrachloride	<2.00		2.00		ug/L			12/02/23 02:13	1
Chlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Chlorodibromomethane	<5.00		5.00		ug/L			12/02/23 02:13	1
Chloroethane	<4.00		4.00		ug/L			12/02/23 02:13	1
Chloroform	<3.00		3.00		ug/L			12/02/23 02:13	1
Chloromethane	<3.00		3.00		ug/L			12/02/23 02:13	1
Chloroprene	<1.00		1.00		ug/L			12/02/23 02:13	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
cis-1,3-Dichloropropene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2-Dibromo-3-Chloropropane	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2-Dibromoethane (EDB)	<1.00		1.00		ug/L			12/02/23 02:13	1
Dibromomethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,2-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,3-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,4-Dichlorobenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Dichlorodifluoromethane	<3.00		3.00		ug/L			12/02/23 02:13	1
1,1-Dichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,2-Dichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1-Dichloroethene	<2.00		2.00		ug/L			12/02/23 02:13	1
1,2-Dichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,3-Dichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
2,2-Dichloropropane	<4.00		4.00		ug/L			12/02/23 02:13	1
1,1-Dichloropropene	<1.00		1.00		ug/L			12/02/23 02:13	1
Ethylbenzene	<1.00		1.00		ug/L			12/02/23 02:13	1
Ethyl methacrylate	<2.00		2.00		ug/L			12/02/23 02:13	1
2-Hexanone	<10.0		10.0		ug/L			12/02/23 02:13	1
Iodomethane	<10.0		10.0		ug/L			12/02/23 02:13	1
Methacrylonitrile	<10.0		10.0		ug/L			12/02/23 02:13	1
Methylene Chloride	<5.00		5.00		ug/L			12/02/23 02:13	1
Methyl methacrylate	<2.00		2.00		ug/L			12/02/23 02:13	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0		ug/L			12/02/23 02:13	1
m,p-Xylene	<2.00		2.00		ug/L			12/02/23 02:13	1
Naphthalene	<5.00		5.00		ug/L			12/02/23 02:13	1
o-Xylene	<1.00		1.00		ug/L			12/02/23 02:13	1
Propionitrile	<10.0		10.0		ug/L			12/02/23 02:13	1
Styrene	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,1,2-Tetrachloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1

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Client Sample Results

Client: John Deere & Co
Project/Site: JD DUB - TRC (Landfill)

Job ID: 310-270467-2

Client Sample ID: S1 underliner closed

Lab Sample ID: 310-270467-1

Date Collected: 11/28/23 12:45

Matrix: Water

Date Received: 11/29/23 11:35

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
Toluene	<1.00		1.00		ug/L			12/02/23 02:13	1
trans-1,4-Dichloro-2-butene	<10.0		10.0		ug/L			12/02/23 02:13	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
trans-1,3-Dichloropropene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,2,4-Trichlorobenzene	<5.00		5.00		ug/L			12/02/23 02:13	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
1,1,2-Trichloroethane	<1.00		1.00		ug/L			12/02/23 02:13	1
Trichloroethene	<1.00		1.00		ug/L			12/02/23 02:13	1
Trichlorofluoromethane	<4.00		4.00		ug/L			12/02/23 02:13	1
1,2,3-Trichloropropane	<1.00		1.00		ug/L			12/02/23 02:13	1
Vinyl acetate	<10.0		10.0		ug/L			12/02/23 02:13	1
Vinyl chloride	<1.00		1.00		ug/L			12/04/23 12:35	1
Xylenes, Total	<3.00		3.00		ug/L			12/02/23 02:13	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		80 - 120		12/02/23 02:13	1
4-Bromofluorobenzene (Surr)	98		80 - 120		12/04/23 12:35	1
Dibromofluoromethane (Surr)	110		80 - 128		12/02/23 02:13	1
Dibromofluoromethane (Surr)	98		80 - 128		12/04/23 12:35	1
Toluene-d8 (Surr)	92		80 - 120		12/02/23 02:13	1
Toluene-d8 (Surr)	101		80 - 120		12/04/23 12:35	1

Method: SW846 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	82.0		5.00		mg/L			11/29/23 14:50	5
Nitrate as N	3.67		1.00		mg/L			11/29/23 14:50	5
Fluoride	<1.00		1.00		mg/L			11/29/23 14:50	5
Sulfate	14.2		5.00		mg/L			11/29/23 14:50	5

Method: SW846 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.420		0.0100		mg/L		11/30/23 09:30	11/30/23 15:58	1
Boron	5.14		0.200		mg/L		11/30/23 09:30	11/30/23 15:58	1
Calcium	68.1		1.00		mg/L		11/30/23 09:30	11/30/23 15:58	1
Iron	<0.500		0.500		mg/L		11/30/23 09:30	11/30/23 15:58	1
Lithium	0.103		0.0500		mg/L		11/30/23 09:30	11/30/23 15:58	1
Magnesium	38.6		1.00		mg/L		11/30/23 09:30	11/30/23 15:58	1
Molybdenum	<0.0500		0.0500		mg/L		11/30/23 09:30	11/30/23 15:58	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		12/01/23 11:33	12/01/23 21:06	1
Chemical Oxygen Demand (SM 5220D LL)	23.3		5.00		mg/L			11/30/23 08:43	1
Phenols, Total (SW846 9066)	<0.0200		0.0200		mg/L		12/01/23 09:00	12/01/23 16:21	1
Total Dissolved Solids (SM 2540C)	650		250		mg/L			11/30/23 13:59	1

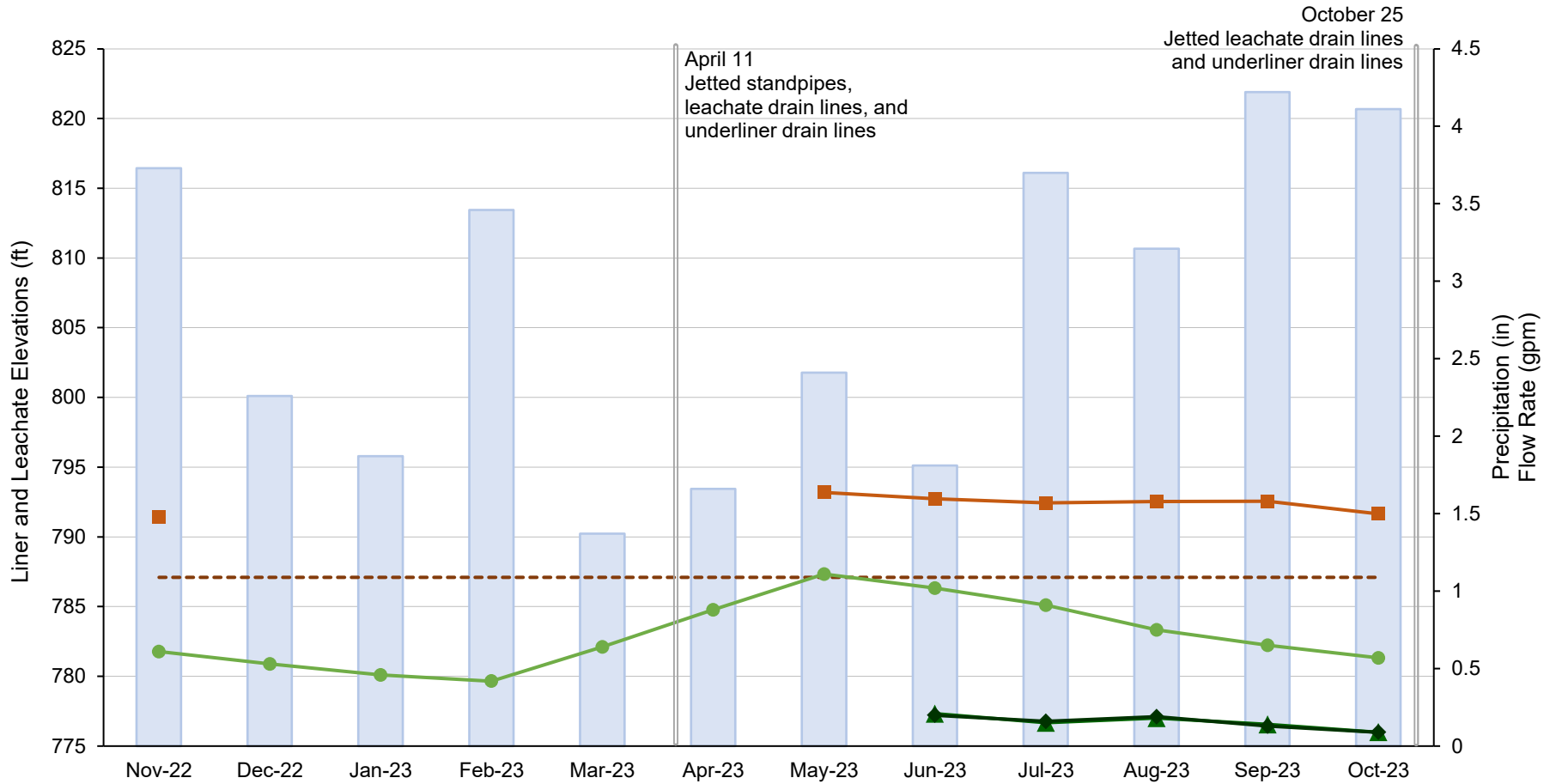
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Appendix G: Leachate Collection System Evaluation Graphs

Landfill Monitoring Stage 1 Leachate Collection Evaluation

Elevation of saturated waste was not measured following standard procedures (leachate recovery test not performed) for December 2022 through April 2023 and is therefore not included on graph for those dates.

- 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)

