

November 14, 2023
File No. 27223190.00

Mr. Mike Smith, P.E.
Iowa Department of Natural Resources
Land Quality Bureau
Wallace State Office Building
502 East 9th Street
Des Moines, Iowa 50319-0034

Subject: 2023 Annual Water Quality Report
City of Fort Madison Sanitary Landfill and Rodeo Park Dump (Closed)
Permit No. 56-SDP-05-88C

Dear Mike:

SCS Engineers, on behalf of the City of Fort Madison, has completed the water quality assessment for the closed City of Fort Madison Sanitary Landfill and Rodeo Park Dump for the year 2023. Our services were performed in general accordance with the requirements of the 1989 Iowa Administrative Code 567-103.2(8)"d," the site closure permit, and applicable permit amendments for implementation of the Hydrologic Monitoring System Plan. Please find enclosed a copy of the 2023 Annual Water Quality Report for the City of Fort Madison Sanitary Landfill and Rodeo Park Dump.

If you have any questions regarding this report, please contact Nathan Ohrt at (319) 331-9613.

Sincerely,



Nathan Ohrt
Senior Project Professional
SCS Engineers



Timothy C. Buelow, P.E.
Project Director
SCS Engineers

NPO/TCB

Copies: Mr. Mark Bousselot, City of Fort Madison Public Works

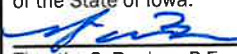


2023 ANNUAL WATER QUALITY REPORT
CITY OF FORT MADISON LANDFILL AND RODEO PARK DUMP
FORT MADISON, IA

PERMIT No. 56-SDP-05-88C
PROJECT No. 27223190.00
NOVEMBER 2023



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.


Timothy C. Buelow, P.E.

Date: 11/19/2023

License No. 14445

My license renewal date is December 31, 2023.

Pages or sheets covered by this seal:

All except Appendix B-1.

Table of Contents

Section 1.0 Introduction	1-1
1.1 REPORT PRIORITY	1-1
1.2 RESPONSE TO DNR CORRESPONDENCE.....	1-1
1.3 SITE LOCATION.....	1-1
1.4 BACKGROUND.....	1-1
1.5 SAMPLING SUMMARY.....	1-2
Section 2.0 Hydrogeologic Site Summary.....	2-1
2.1 GEOLOGY.....	2-1
2.2 HYDROGEOLOGY	2-2
Section 3.0 Monitoring Well Maintenance and Performance Evaluation.....	3-1
3.1 WATER LEVEL MEASUREMENTS	3-1
3.2 GROUNDWATER FLOW.....	3-1
3.3 WELL DEPTH EVALUATION.....	3-1
3.4 SAMPLING POINT OBSERVATIONS.....	3-2
Section 4.0 Evaluation of Water Quality Parameters	4-1
4.1 GROUNDWATER DATA EVALUATION	4-1
4.2 STATISTICAL EVALUATION	4-1
4.3 LEACHATE EVALUATION	4-2
4.4 GAS MONITORING EVALUATION	4-3
4.5 QA/QC INFORMATION	4-3
4.5.1 Sample Collection and Sample Handling.....	4-3
4.5.2 Analytical Sensitivity and Blanks.....	4-4
4.5.3 Accuracy	4-4
4.5.4 Precision	4-4
4.5.5 Data Quality Summary	4-5
4.6 RECOMMENDATIONS FOR FUTURE MONITORING	4-5
Section 5.0 General Comments	5-1
Section 6.0 References	6-1

List of Tables

TABLE 1-1	2023 AWQR REPORTING PERIOD MONITORING SUMMARY.....	1-2
TABLE 3-2	2023 WELL DEPTH SUMMARY TABLE.....	3-1
TABLE 4-1	STATISTICALLY SIGNIFICANT LEVELS ABOVE THE GWPS	4-1
TABLE 4-2	TYPICAL LEACHATE CONCENTRATIONS AND MEASURED LEACHATE CONCENTRATIONS	4-2
TABLE 4-3	2024 AWQR REPORTING PERIOD SAMPLING SCHEDULE.....	4-5

List of Figures

FIGURE 1-1	APPROVED MONITORING NETWORK.....	1-3
FIGURE 3-1	GROUNDWATER CONTOURS – WATER TABLE	3-3
FIGURE 3-2	GROUNDWATER CONTOURS – DEEP	3-5
FIGURE 4-1	REPORTING PERIOD DETECTION SUMMARY.....	4-7

List of Appendices

APPENDIX A	FIELD SAMPLING FORMS
APPENDIX B-1	LABORATORY ANALYTICAL DATA SHEETS
APPENDIX B-2	DATA VALIDATION DOCUMENTATION
APPENDIX C	SUMMARY OF GROUNDWATER CHEMISTRY
APPENDIX D	TIME SERIES PLOTS
APPENDIX E	CONFIDENCE INTERVAL SUMMARY TABLE AND GRAPHS
APPENDIX F	MAN-KENDALL SUMMARY TABLE AND GRAPHS
APPENDIX G	GAS MONITORING MAP AND RESULTS

Section 1.0 Introduction

SCS Engineers (SCS), on behalf of the City of Fort Madison, has completed the required groundwater monitoring and statistical evaluation for the closed Fort Madison Landfill and Rodeo Park Dump municipal solid waste landfill units (referred respectively to as City Landfill MSWLF unit and Rodeo Park MSWLF unit singularly and MSWLF units collectively). This Annual Water Quality Report (AWQR) was prepared in general accordance with the requirements of the 1989 Iowa Administrative Code (IAC) 567-103(455B), the closure permit dated May 26, 1994 (Doc #37209), and applicable amendments. This report summarizes the 2023 groundwater monitoring program for the MSWLF units.

1.1 Report Priority

The 30-year post-closure period for the MSWLF units ends on May 26, 1994. A recommendation will be sent under separate cover to end the post-closure period by preparing an environmental covenant to regulate usage and activities at the MSWLF units and eventual recission of the closure permit.

1.2 Response to DNR Correspondence

There is currently no correspondence from the Iowa Department of Natural Resources (DNR) requiring a response regarding AWQR items.

1.3 Site Location

The MSWLF units are depicted on Figure 1-1, Approved Monitoring Network. The facility is located approximately one mile north of Fort Madison, Iowa. The Rodeo Park MSWLF unit is located west of Lee County Highway X-32 and the City Landfill MSWLF unit is located east of Lee County Highway X-32. The closed MSWLF units are located in parts of the SW $\frac{1}{4}$ of Section 27, SE $\frac{1}{4}$ of Section 28, NE $\frac{1}{4}$ of Section 33, and NW $\frac{1}{4}$ of Section 34 of Township 68 North, Range 4 West of Lee County, Iowa.

1.4 Background

According to the Groundwater Investigation Report, dated March 29, 1991, and prepared by Brice, Petrides-Donohue, Co. (Doc #85378):

The Rodeo Park Dump was filled, starting with its north ravine, in the early part of the 1900s. The south ravine of the Dump site was filled throughout the 1960s. Rodeo Park Dump was used until the early 1970s, when the City of Fort Madison moved the operation across Highway X-32. The landfill site, called the City of Fort Madison Landfill, filled the north ravine first, then the south ravine. The City of Fort Madison Landfill closed in the early 1980s.

According to the 2021 AWQR, prepared by PDC Technical Services, Inc. (PDC, Doc #101842):

Neither the Rodeo Park Dump nor the City Landfill was subject to post-closure monitoring in 1980. However, IDNR documented regular releases of leachate from both sites into surface waters. Although the City had taken measures to prevent leachate releases to surface waters, the releases continued to occur throughout the 1980s. Therefore, the IDNR issued Administrative Order No. 89-WW-15 on May 2, 1989 to the City which outlined tasks and a compliance schedule to correct known environmental violations at the sites. The current groundwater monitoring program is a result of Administrative Order No. 89-WW-15.

1.5 Sampling Summary

Annual groundwater monitoring in accordance with the permit amendment dated April 1, 2022 (Doc #102700) was conducted in August 2023. Table 1-1 summarizes the HMSP monitoring points and sampling conducted during this reporting period.

Table 1-1
2023 AWQR Reporting Period Monitoring Summary

Monitoring Well	August 2023
City Landfill MSWLF Unit	
WT-106B	Arsenic, cobalt, lead, TSS
WT-107B	Arsenic, cobalt, lead, TSS
P-108A	Arsenic, cobalt, lead, TSS
WT-111B	Arsenic, cobalt, lead, TSS
P-111A	Arsenic, cobalt, lead, TSS
WT-112B	Arsenic, cobalt, lead, TSS
P-112A	Arsenic, cobalt, lead, TSS
Rodeo Park MSWLF Unit	
WT-105B	Arsenic, cobalt, lead, TSS
P-105A	Arsenic, cobalt, lead, TSS
WT-102B	Not sampled (insufficient water)
P-102A	Not sampled (insufficient water)
P-103A	Arsenic, cobalt, lead, TSS
P-104A	Arsenic, cobalt, lead, TSS
P-110A	Arsenic, cobalt, lead, TSS
WT-113B	Appendix I metals, TSS
Leachate Manholes	
Leachate Manhole #1	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #2	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #3	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #4	Appendix I, TSS, ammonia, BOD, COD
Leachate Mahole #5	Appendix I, TSS, ammonia, BOD, COD

TSS: Total Suspended Solids

BOD: Biochemical Oxygen Demand

COD: Chemical Oxygen Demand

The reporting period for this AWQR is the 2023 calendar year and includes the August 2023 sampling event. The field sampling forms and laboratory analytical data sheets for the August 2023 sampling event are included in Appendices A and B-1, respectively.

Path: C:\Users\hmadison\OneDrive - SCS Engineers\Desktop\GIS\Map\Site Maps\City\EM 2023 AMON\EarthImage 2022 AMON.aprx
User: hmadison
Date Saved: 10/20/2023 11:15 AM



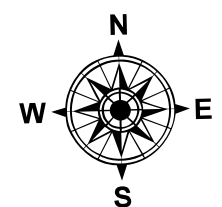
City Landfill
WT-106B
WT-107B
P-108A
WT-111B
P-111A
WT-112B
P-112A
Rodeo Park Dump
WT-105B
P-105A
WT-102B
P-102A
P-103A
P-104A
P-110A
WT-113B



Legend

- | | | |
|--|-------------------------------|-------------------------------|
| Monitoring Well | Gas Probe | Creek |
| HMSP Monitoring Well - City of Fort Madison Landfill | Approximate Gas Vent Location | Approximate Property Boundary |
| HMSP Monitoring Well - Rodeo Park Dump | Leachate Monitoring Well | Approximate Waste Boundary |
| | Manhole | |

City of Fort Madison Landfill &
Rodeo Park Dump
Fort Madison, Iowa
Project No: 27223190.00
Drawing Date: October 2023



0 140 280 560 840 Feet

Figure 1-1

Section 2.0

Hydrogeologic Site Summary

2.1 Geology

A hydrogeologic investigation of the site was conducted by Brice, Petrides-Donohue, Co. in March 1991. The report entitled *Groundwater Investigation Report for the Rodeo Park Dump and City of Fort Madison Landfill* (Doc #85378), provided a description of the geology for the area of the MSWLF units. Excerpts from the report are included below.

The stratigraphy of Lee County, Iowa can be divided into three main geologic time periods (from oldest to youngest): Precambrian, Paleozoic, and Cenezoic; Mesozoic rocks are absent in this area. Each time period has characteristic depositional environments and histories leading to distinct formations. The geology of the different time periods is discussed below.

Precambrian

The Precambrian geology of Iowa consists of undifferentiated coarse sandstones and crystalline rock. Precambrian rocks are mapped as outcrop in only two minor areas in the northwest corner of Iowa. The rocks that have been mapped are crystalline rocks, including granite, gneiss, gneissoid granite, quartzite, and slate (Hershey, 1969).

Paleozoic

Paleozoic rocks make up the majority of the bedrock in the State of Iowa. Cambrian, Ordovician, Devonian, Mississippian, and Pennsylvanian rocks have been encountered in Lee County. Cambrian rocks are made up of mainly sandstones overlain by Ordovician rocks, including dolomite, limestones, and sandstones and dolomite; overlain by Devonian rocks, which are interbedded shales, siltstones, evaporites, limestones and dolomites; overlain by Mississippian limestones and siltstones; and Pennsylvanian shales, sandstones, and limestones (Gordon, 1980). The sequence of Cambrian sandstone, Ordovician limestone, and Devonian limestone and shale are illustrated, however, only the lower portion of Mississippian rocks are shown near Fort Madison. These are within the Kinderhook Series and are limestones and siltstones. Above these Mississippian rocks, lying unconformably, are Quaternary glacial deposits and recent alluvium.

Cenezoic Units

Cenezoic deposits in Iowa consist of sediments from the Pleistocene and Holocene Epochs of the Quaternary Period. The Pleistocene deposits in southeastern Iowa are formally subdivided into three formations: the Alburnett and Wolf Creek Formations of Pre-Illinoian age and the Glasford Formation of Illinoian age (Hallberg, et al., 1980). The tills of Pre-Illinoian age were deposited by alpine glaciers that moved eastward from the Rocky Mountains, and the Illinoian tills are derived from glacial ice that moved westward from the Lake Michigan Lobe.

2.2 Hydrogeology

A hydrogeologic investigation of the site was conducted by Brice, Petrides-Donohue, Co. in March 1991. The report entitled *Groundwater Investigation Report for the Rodeo Park Dump and City of Fort Madison Landfill* (Doc #85378), provided a description of the hydrogeology for the area of the MSWLF units. Excerpts from the report are included below.

The hydrogeologic conditions at the Fort Madison sites are so complex that they are difficult to characterize. Four types of hydrogeologic conditions are present in the subsurface at the site as explained in the text. Groundwater elevations are extremely variable due to perched waters which are isolated and separated by unsaturated conditions. Groundwater elevations...mimic pre-landfilling surface elevations.

There are four principal water supply aquifers in Lee County. The upper surficial aquifer is comprised of unconsolidated materials, and below this there are three major rock aquifers: the Mississippian, the Devonian, and the Cambrian-Ordovician. Near the Mississippi River in Lee County, the Mississippian aquifer is absent (Gordon, 1980).

The surficial aquifer unit is composed of three different water-bearing materials: 1) alluvial sand and gravel deposited by modern streams that are found in the floodplains and terraces of major valleys; 2) drift material with variable composition and made up of several till units, usually containing irregularly shaped sand lenses that yield enough water for domestic needs; 3) buried-channel stream alluvium that partially fills valleys and was deposited before or between glacial periods (Gordon, 1980). Fort Madison's drinking water supply wells are located within these alluvial sands.

The Mississippian aquifer is the shallowest bedrock aquifer in the area; in this region it is separated from the surficial deposits by an aquiclude of Pennsylvanian shales. Below the Mississippian aquifer, the Devonian aquifer is found, the two being separated by a thick shale interval. Some Silurian aged rocks are included as part of the Devonian aquifer, where present, because they are hydrologically connected to the Devonian aquifer. The Cambrian-Ordovician aquifer is separated from the overlying Devonian aquifer by a thick shale and dolomite layer. The Cambrian-Ordovician aquifer is predominantly dolomite but includes two lower sandstone units. The Jordan Sandstone is the principal water-bearing unit in the aquifer and is responsible for the high yields reported (Coble & Roberts, 1971).

In the vicinity of the study area, the depth to bedrock is approximately 300 feet below ground surface. The major groundwater supply wells of the area are within the buried channel alluvium. This material immediately overlies bedrock and is separated by at least 300 feet of fine-grained glacial till from the Rodeo Park and City of Fort Madison Landfills.

Section 3.0

Monitoring Well Maintenance and Performance Evaluation

The hydrologic monitoring system was evaluated to determine the reliability of the performance of the monitoring wells based on the following tasks.

- The groundwater elevations were compared to the screened interval of the monitoring wells.
- Water level conditions in the monitoring wells were reviewed to evaluate possible changes in the hydrologic setting/flow paths.
- Well depths were measured to evaluate integrity and siltation.
- A visual inspection of well integrity was performed during the sampling event.

3.1 Water Level Measurements

A biennial evaluation of the 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 was last included in the 2022 AWQR and is currently scheduled to be included next in the 2024 AWQR.

3.2 Groundwater Flow

Groundwater flow direction was determined for the MSWLF units by using groundwater elevation data collected during the August 2023 sampling event. Groundwater elevations for the water table and the deep flow regimes are shown on Figures 3-1 and 3-2, respectively. The groundwater for the water table on Figure 3-1 shows a high ridge of groundwater near the center of the site between the MSWLF units, with flow predominantly easterly beneath the City Landfill MSWLF unit and southwesterly beneath the Rodeo Park MSWLF unit toward the adjacent streams. The deep flow shown on Figure 3-2 does not have the ridge shown in the water table contours, but flow is predominantly similar to that of the water table, easterly beneath the City Landfill MSWLF unit and southwesterly beneath the Rodeo Park MSWLF unit. The groundwater elevation measured in monitoring well P-108A appears uncharacteristically high for the general flow pattern developed using the deeper screened monitoring wells. The same would be true if included in the water table monitoring well grouping.

3.3 Well Depth Evaluation

The wells depths were measured by SCS during the August 2023 sampling event. The monitoring well depths measured during this reporting period are included in Table 3-2.

Table 3-2
2023 Well Depth Summary Table

Monitoring Well	Installed Well Depth (feet)	August 2023	
		Measured Well Depth (feet)	Difference from Installed Depth (feet)
City Landfill MSWLF Unit			
WT-106B	19.1	19.1	0.0
WT-107B	19.6	19.5	0.1
P-108A	99.6	100.0	-0.4
WT-111B	28.4	28.4	0.0
P-111A	39.9	39.9	0.0
WT-112B	20.3	20.4	-0.1

Monitoring Well	Installed Well Depth (feet)	August 2023	
		Measured Well Depth (feet)	Difference from Installed Depth (feet)
P-112A	35.2	35.5	-0.3
Rodeo Park MSWLF Unit			
WT-105B	19.0	19.0	0.0
P-105A	83.9	82.9	1.0
WT-102B	14.5	15.2	-0.7
P-102A	54.9	52.3	2.6
P-103A	50.7	50.8	-0.1
P-104A	110.0	110.3	-0.3
P-110A	49.6	49.8	-0.2
WT-113B	55.8	55.7	0.1

The measured well depths were within one foot of the installed depths with the exception of monitoring well P-102A, which had a measured depth 2.6 feet shallower than the installed depth. Although the water level measured during this reporting period in monitoring well P-102A was similar to the water levels measured during the 2021 sampling events, there was insufficient water to sample during the May 2022 and August 2023 sampling events. Samples were consistently collected from monitoring well P-102A during each sampling event during the period of record dating back to November 2016. The insufficient water to produce a sample in the monitoring well during this reporting period may be a result of the unusually dry weather conditions. It should be noted that water table monitoring well WT-102B, installed adjacent to P-102A, was also dry during the 2023 sampling event.. With the possible exception of monitoring well P-102A, it does not appear that siltation is adversely impacting the ability of the monitoring wells to consistently produce samples.

3.4 Sampling Point Observations

Problems regarding the integrity of the monitoring wells were not observed during this reporting period.

Path: C:\Users\hmadison\OneDrive - SCS Engineers\Desktop\GIS\Map\Site Maps\City\2023\AMQP\EarthMap_2023_AMQP.aprx
User: hmadison
Date Saved: 10/11/2023 1:43 PM



Groundwater Contours - Deep

Legend

- | | |
|-------------------------------|-------------------------------|
| Gas Probe | Manhole |
| Approximate Gas Vent Location | Creek |
| Leachate Monitoring Well | Approximate Property Boundary |
| Monitoring Well | Approximate Waste Boundary |

Approximate Deep Groundwater
Contours Based on Field
Measurements taken on August
15, 2023

City of Fort Madison Landfill
& Rodeo Park Dump
Fort Madison, Iowa
Project No: 27223190.00
Drawing Date: October 2023

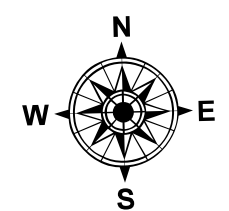


Figure 3-2

Section 4.0 Evaluation of Water Quality Parameters

4.1 Groundwater Data Evaluation

The groundwater monitoring networks for the MSWLF units consist of upgradient monitoring wells WT-106B and WT-107B for the City Landfill MSWLF unit and WT-105B and P-105A for the Rodeo Park MSWLF unit and monitoring wells along the downgradient boundaries. Surface water sampling is not currently required.

Constituent concentrations measured during this reporting period (including a range of concentration for monitoring well WT-111B and a duplicate) are included in Figure 4-1, Reporting Period Detection Summary. As stated earlier in this report, samples were not able to be obtained from monitoring wells P-102A and WT-102A during this reporting period due to insufficient water.

The monitoring wells, with the exception of MW-113B, are sampled for arsenic, cobalt, lead, and total suspended solids (TSS). Monitoring well MW-113B is sampled for the Appendix I metals and TSS. Of the thirteen sampled monitoring wells, only six had quantified concentrations of metals measured. The monitoring wells with quantified detections were near the southwest corner of the south cell of the Rodeo Park MSWLF unit and to the southwest, southeast, and east sides of the City Landfill MSWLF unit.

Maximum site-wide concentrations of one metal each were measured in monitoring wells WT-107B, WT-113B, and P-112A. No GWPS exceedances were measured during this reporting period.

4.2 Statistical Evaluation

Time series plots for the groundwater monitoring network are included in Appendix D. The statistical evaluation was performed using confidence intervals and Mann-Kendall trend testing on both upgradient and downgradient monitoring wells. The measured concentrations were compared to current Iowa Statewide Standards for protected groundwater sources (groundwater protection standards, GWPS). Table 4-1 summarizes the constituent-monitoring well pairs indicated at statistically significant levels (SSLs) above the GWPSs based on the confidence intervals developed from the most recent eight sample analyses.

**Table 4-1
Statistically Significant Levels Above the GWPS**

	P-102A	WT-102B
Cobalt	X	X

SSLs were indicated for cobalt in clustered monitoring wells P-102A and WT-102B, located to the west of the south cell of the Rodeo Park MSWLF unit. These findings are unchanged from the 2022 AWQR as samples were not collected from these two monitoring wells during this reporting period due to insufficient water as indicated previously. With regard to confidence interval interpretation, it should be noted that a large portion of the monitoring well samples collected prior to 2022 contained elevated TSS concentrations. A review of past monitoring well sampling practices indicated that predominantly disposable bailers were used to purge and sample the monitoring wells, likely resulting in higher TSS concentrations. Therefore, the most recent eight sample data set used to calculate confidence intervals is likely biased high. Despite this situation, only two SSLs were indicated. These SSL findings may in part be due to TSS influence. A confidence interval summary table and graphs are included in Appendix E.

To further evaluate groundwater conditions, Mann-Kendall trend testing was performed. No statistically significant trends were identified at 99% confidence ($\alpha = 0.01$). Negative Mann-Kendall statistics, although not necessarily statistically significant, indicate a decreasing concentration trend, while a positive Mann-Kendall statistic would indicate an increasing concentration trend. Of the SSLs shown in Table 4-1, cobalt had a positive Mann-Kendall statistic in both monitoring wells. The monitoring wells, with the exception of MW-113B, are sampled for arsenic, cobalt, and lead. Nine of the fifteen monitoring wells had only negative trends. The only monitoring well with more than one positive trend was monitoring well P-102A, which has an SSL for cobalt. Monitoring well MW-113B, which is sampled for the Appendix I metals, had 14 decreasing trends indicated with only selenium having a positive Mann-Kendall statistic. A Mann-Kendall summary table and graphs are included in Appendix F.

4.3 Leachate Evaluation

To evaluate the composition of the leachate measured at the MSWLF units compared to “young” (acid phase) and “mature” (methanogenic phase) leachates, typical leachate compositions were used as included in Present and Long-Term Composition of MSW Landfill Leachate: A Review (Kjeldsen, et al., 2002). The average and range of values for acid phase and methanogenic phase leachate, and averages for constituents including both phases, are included in Table 4-2 below compared to the measured leachate concentrations at the MSWLF unit’s leachate collection manholes during this reporting period.

Table 4-2
Typical Leachate Concentrations and Measured Leachate Concentrations

Parameter	Acid Phase		Methanogenic Phase		Ave.	LMH #1	LMH #2	LMH #3	LMH #4	LMH #5
	Ave.	Range	Ave.	Range						
pH	6.1	4.5-7.5	8	7.5-9		6.50	6.90	6.56	7.22	6.55
Biological Oxygen Demand (BOD ₅)	13,000	4,000-40,000	180	20-550		10.9	28.3	16.1	<12	<12
Chemical Oxygen Demand (COD)	22,000	6,000-60,000	3,000	500-4,500		167	332	110	26.2	110
BOD ₅ /COD	0.58		0.06			0.07	0.09	0.15	-	-
Ammonia as N					740	116	163	54.7	<0.5	75.8
Cadmium					0.005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Chromium					0.28	0.00228*	0.00302*	0.00217*	<0.005	0.00250*
Cobalt					0.05	0.00378	0.00446	0.00471	0.00164	0.00430
Copper					0.065	<0.005	<0.005	<0.005	0.00354*	<0.005
Lead					0.09	0.00273	0.00108	0.00278	<0.0005	0.000359*
Nickel					0.17	0.028	0.0711	0.0104	0.00742	0.00393*
Zinc	5	0.1-120	0.6	0.03-4		<0.02	<0.02	<0.02	<0.02	<0.02

* - Indicates a J flag. Concentration was above the method detection limit but below the reporting limit and the concentration was estimated.

As shown in Table 4-2, the pH values were within the reported range for acid phase leachate. However, most notably, the measured concentrations for biological and chemical oxygen demands, ammonia, and heavy metals were entirely below the ranges reported for both the acid and methanogenic phase leachates. The leachate from the MSWLF units is directly discharged to the sanitary sewer and conveyed to the City of Fort Madison publicly-owned treatment works (POTW) for

treatment. The leachate appears to be generally benign, and based on these results, it is unlikely the leachate is having a significant adverse effect on the groundwater quality at the MSWLF units.

4.4 Gas Monitoring Evaluation

Gas monitoring during this reporting period was performed in general accordance with Amendment #14, issued March 14, 2018, which states that monitoring at gas probes should be performed biannually, and monitoring of the gas vents should be performed annually no longer than one month preceding the rodeo. A map of methane monitoring points, a summary of methane monitoring results, and instances of submerged screens is included in Appendix G.

The gas probes were monitored during the May and August 2023 monitoring events. Gas probes GP-1-17, GP-2-17, and GP-3-17 had methane readings greater than 100% of the lower explosive limit (LEL) for methane during both monitoring events. The lower explosive limit for methane is 5% by volume. Methane concentrations in these gas probes ranged between 50% and 64% during this reporting period. These measurements are consistent with those measured since 2018. Gas probes GP-1-17, GP-2-17, and GP-3-17 appear in historical documentation to have been installed in waste or directly adjacent to waste, which likely contributes to the elevated methane concentrations. No methane was detected in gas probes GP-4-17, GP-5-17, and GP-6-17 during both 2023 sampling events, which is also generally consistent with the historical record.

The 2023 Tri-State Rodeo began on September 6, 2023. The gas vents were monitored on August 10, 2023. In accordance with DNR correspondence dated April 1, 2022, all purpose-built gas monitoring locations are to remain in the monitoring plan *“but vent locations that experienced no detections of methane >1.0% by volume within the last three years may be removed from the monitoring plan.”* The gas vent measurements in Appendix B of the 2021 AWQR contained measurements from the previous three years. Vents with a greater than 1% methane reading in the previous three years were monitored during the August 2023 monitoring event. Of the sixteen gas vents monitored, four had methane detections, with all four being >100% of the LEL. The City of Fort Madison Public Works Department was notified of the methane measurements via email on August 29, 2023.

4.5 QA/QC Information

The quality assurance/quality control (QA/QC) program for the MSWLF units is summarized in the paragraphs below. Data validation procedures are performed on analytical results for laboratory quality control samples and a quality assurance assessment of the data is conducted as the data are generated. The QA review procedure provides documentation of the accuracy and precision of the analytical data and confirms that the analyses, when possible based on the methods utilized, are sufficiently sensitive to detect constituents at levels below regulatory standards, where such standards exist. SCS then conducted QA/QC data validation of the produced data, which included a review of sample handling, analytical sensitivity, and blanks, accuracy, and precision. An explanation of the laboratory QA/QC and data validation procedures is described in more detail below.

4.5.1 Sample Collection and Sample Handling

Sample receipt forms were reviewed by SCS and checked to verify that samples were received in good condition and within the acceptable temperature range. Chain of custody records for the sampling event were reviewed and confirmed that information was complete, custody was not breached, and samples were analyzed within the acceptable hold time. The sample collection and sample handling procedures were within the acceptable criteria with the following exceptions:

- The samples Leachate Manhole #1, Leachate Manhole #2, Leachate Manhole #3, and Leachate Manhole #5 were received outside of the required preservation pH for metals; the samples were preserved to the appropriate pH by the laboratory.

4.5.2 Analytical Sensitivity and Blanks

Laboratory QA/QC procedures and post-analysis data validation assist in producing data of acceptable quality and reliability. Eurofins is a certified laboratory in Iowa and performed QA/QC procedures which included analyzing laboratory method blanks in association with samples collected for the project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. No method blank detections were indicated in the August 2023 laboratory analytical data sheets with the following exceptions:

- All the dilutions failed to deplete the method-required 2 mg O₂/L for the samples Leachate Manhole #4 and Leachate Manhole #5. Only a "less than" result could be calculated from the least dilute preparation.

4.5.3 Accuracy

Laboratory analytical accuracy can be assessed by evaluating the constituent recoveries from continuing calibration verification (CCV), laboratory control sample (LCS), and LCS duplicate (LCSD). LCS/LCSD samples assessed the accuracy of analytical procedures by checking the ability to recover constituents added to clean aqueous matrices. In some cases, the laboratory spiked project samples as matrix spike (MS) and MS duplicate (MSD) samples to assess the ability to recover constituents from a matrix similar to that of the project samples. The post-analysis data validation conducted by SCS confirmed that the laboratory had performed QA/QC of its laboratory control samples and made recommendations on how to proceed with data that had possibly been compromised. Analytical issues indicated by the laboratory indicated the following for the leachate samples:

- A CCV recovered above the upper control limit for multiple parameters; the associated samples were non-detect so the data was reported.
- A LCS recovered outside control limits for multiple analytes: the analytes were biased high in the LCS and were non-detect in the associated samples so the data was reported.

4.5.4 Precision

According to Practical Guide for Ground-Water Sampling, Barcelona et al, November 1985, prepared in cooperation with the Robert S. Kerr Environmental Research Laboratory and the United States Environmental Protection Agency's Environmental Monitoring System Laboratory:

"Duplicate sample values which differ by less than $\pm 50\%$ relative difference indicate good error control."

Duplicate samples were collected during the sampling event to evaluate the precision of analytical measurements, as well as the reproducibility of the sampling technique. Duplicate samples were chosen at random. The relative percent difference (RPD; difference between the sample and its field duplicate divided by the mean of the two) was calculated to evaluate the precision of the data. The RPD can be evaluated only if the results of the analyses for both duplicates are detected quantitatively (above the reporting limit).

The concentrations reported in the sample for monitoring point P-110A and duplicate sample MW-DR during the August 2023 sampling event had <50% relative difference for analyzed constituents. The concentrations reported in the sample for monitoring point WT-111B and duplicate sample MW-DC during the August 2023 sampling event had <50% relative difference for analyzed constituents. These results indicate that a problem with sampling or analysis is not likely to have occurred.

4.5.5 Data Quality Summary

Based on the above QA/QC procedures and SCS and field sampling standard operating procedures (SOPs), the groundwater samples collected during this reporting period are considered to be representative of site conditions at the locations and times they were obtained. Based on the QA review, no samples were rejected as unusable due to QC failures. Data validation checklists can be found in Appendix B-2, Data Validation Documentation. In general, the quality of the analytical data for this reporting period does not appear to have been compromised by analytical irregularities and results affected by QC anomalies are qualified with the appropriate data flags, which are listed in the laboratory reports in Appendix B-1.

4.6 Recommendations for Future Monitoring

The 30-year post-closure period for the MSWLF units ends on May 26, 1994. A recommendation will be provided under separate cover to end the post-closure period by preparing an environmental covenant to regulate usage and activities at the MSWLF units, leading to an eventual recission of the closure permit.

If it is determined that sampling is necessary during the 2024 reporting period, the recommended sampling schedule is summarized in Table 4-3.

Table 4-3
2024 AWQR Reporting Period Sampling Schedule

Monitoring Well	2024 Annual Event
City Landfill MSWLF Unit	
WT-106B	Arsenic, cobalt, lead, TSS
WT-107B	Arsenic, cobalt, lead, TSS
P-108A	Arsenic, cobalt, lead, TSS
WT-111B	Arsenic, cobalt, lead, TSS
P-111A	Arsenic, cobalt, lead, TSS
WT-112B	Arsenic, cobalt, lead, TSS
P-112A	Arsenic, cobalt, lead, TSS
Rodeo Park MSWLF Unit	
WT-105B	Arsenic, cobalt, lead, TSS
P-105A	Arsenic, cobalt, lead, TSS
WT-102B	Arsenic, cobalt, lead, TSS
P-102A	Arsenic, cobalt, lead, TSS
P-103A	Arsenic, cobalt, lead, TSS
P-104A	Arsenic, cobalt, lead, TSS
P-110A	Arsenic, cobalt, lead, TSS
WT-113B	Appendix I metals, TSS
Leachate Manholes	
Leachate Manhole #1	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #2	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #3	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #4	Appendix I, TSS, ammonia, BOD, COD
Leachate Manhole #5	Appendix I, TSS, ammonia, BOD, COD

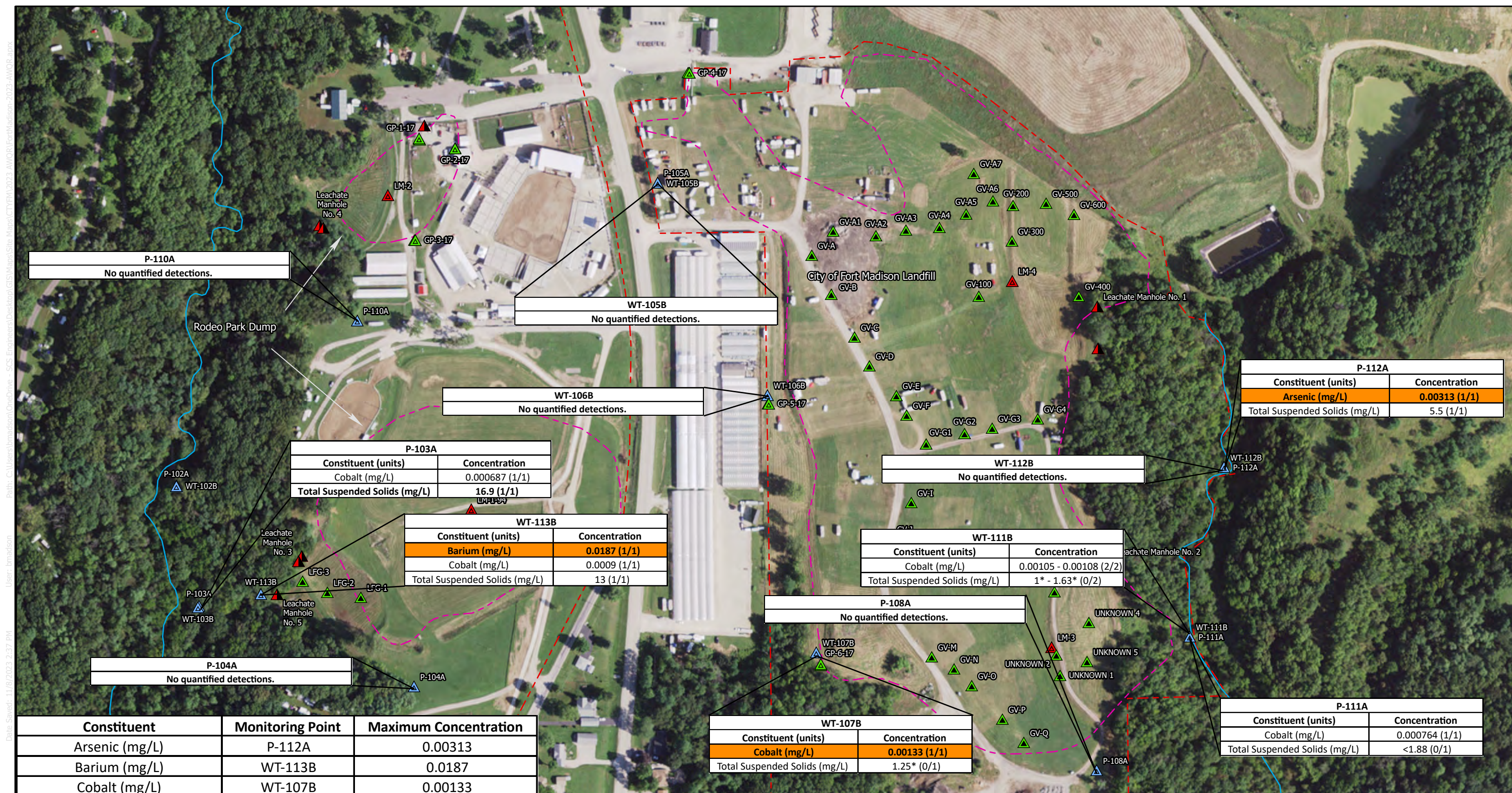
TSS: Total Suspended Solids

BOD: Biochemical Oxygen Demand

COD: Chemical Oxygen Demand

The groundwater quality at the City Landfill and Rodeo Park MSWLF units is generally stable and indicates that the threat to human health and the environment from groundwater impact associated with the waste in the MSWLF units has been reduced.

Path: C:\Users\hmadani\OneDrive - SCS Engineers\Desktop\GIS\Map\Site Maps\CTV\EM 2023 - AMOP\FortMadison 2023 - AMOP.aprx
User: hmadani
Date Saved: 11/8/2023 2:37 PM



Reporting Period Detection Summary

Legend

- Monitoring Well
- Gas Probe
- Approximate Gas Vent Location
- Leachate Monitoring Well
- Manhole
- Creek
- Approximate Property Boundary
- Approximate Waste Boundary

* J Flag concentrations are not included in the lists of detected parameters

City of Fort Madison Landfill &
Rodeo Park Dump
Fort Madison, Iowa
Project No: 27223190.00
Drawing Date: October 2023

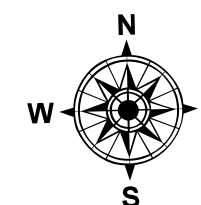


Figure 4-1



Section 5.0

General Comments

The analysis and opinions expressed in this report are based upon data obtained from the samples collected at the indicated locations and from any other information discussed in this report. This report does not reflect any variation in subsurface stratigraphy, hydrogeology, or chemical concentrations that may occur between sampling locations or across the site. Actual subsurface conditions may vary and may not become evident without further exploration.

SCS has prepared this report for the exclusive use of our client for the specific application to the project discussed. No warranty is expressly stated or implied in this report. SCS has relied upon information furnished by others as noted in the report, and SCS accepts no responsibility for any deficiency, misstatements, or inaccuracy in this report as a result of misstatements, omissions, misrepresentations, fraudulent, or inaccurate information or data provided by others.

This page intentionally left blank.

Section 6.0 References

1. Brice, Petrides-Donohue, Co. *Groundwater Investigation Report for the Rodeo Park Dump and City of Fort Madison Landfill*. March 1991 (Doc #85378)
2. Critical Reviews in Environmental Science and Technology, 32(4):297-336 (2002). *Present and Long-Term Composition of MSW Landfill Leachate: A Review*. Peter Kjeldsen, Morton A. Barlaz, Alix P. Rooker, Anders Baun, Anna Ledin, and Thomas H. Christensen.
3. Evora Consulting. *2022 Annual Water Quality Report City of Fort Madison Landfill and Rodeo Park Dump*. September 2022 (Doc #104193)

Appendix A

Field Sampling Forms

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Landfill		
Monitoring Well/Piezometer ID:	WT-106B	Date:	8/14/2023
Gradient:	Up	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	19.1
Initial Static Water Level (feet):	4.12
Initial Groundwater Elevation (ft-amsl):	707.02
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
7:07 PM	Purging start time.						
7:10 PM	16.2	0.7	1039.5	6.87	56.3	2.6	
7:13 PM	16.2	0.3	1039.7	6.88	48.4	1.7	
7:16 PM	16.1	0.2	1040.2	6.89	43.8	1.8	
7:19 PM	16.0	0.1	1039.6	6.89	40.9	1.9	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	208.33

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project: City of Fort Madison Landfill	
Monitoring Well/Piezometer ID: WT-107B	Date: 8/14/2023
Gradient: Up	Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? Yes	
Litter/Standing Water? No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	19.5
Initial Static Water Level (feet):	12.42
Initial Groundwater Elevation (ft-amsl):	695.62
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
6:30 PM	Purging start time.						
6:33 PM	14.7	0.6	891.6	6.70	-30.7	2.3	
6:36 PM	14.7	0.3	869.0	6.74	-20.5	2.2	
6:39 PM	14.8	0.2	855.7	6.72	-22.0	2.7	
6:42 PM	14.8	0.1	779.6	6.38	-9.8	4.1	
6:45 PM	14.8	0.1	750.9	6.32	-9.3	4.0	
6:48 PM	14.8	0.1	748.6	6.31	-5.7	4.1	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	3.5
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	18:00
Average Purge Rate (mL/min):	194.44

D. WELL MAINTENANCE

Does the well require any future maintenance? No	
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project: City of Fort Madison Landfill	
Monitoring Well/Piezometer ID: P-108A	Date: 8/14/2023
Gradient: Down	Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped? Yes	
Litter/Standing Water? No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	100.0
Initial Static Water Level (feet):	25.43
Initial Groundwater Elevation (ft-amsl):	678.30
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
5:40 PM	Purging start time.						
5:43 PM	16.4	1.1	1267.0	6.84	-144.5	2.5	
5:46 PM	16.4	0.5	1274.1	6.87	-122.2	2.6	
5:49 PM	16.5	0.3	1274.1	6.89	-102.8	2.5	
5:52 PM	16.6	0.2	1275.8	6.90	-89.7	2.4	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.7
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	137.50

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project: City of Fort Madison Landfill	
Monitoring Well/Piezometer ID: P-111A	Date: 8/15/2023
Gradient: Down	Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes	
Litter/Standing Water?	No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	39.9
Initial Static Water Level (feet):	22.32
Initial Groundwater Elevation (ft-amsl):	590.18
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
12:27 PM	Purging start time.						
12:58 PM	19.0	5.3	1716.7	6.96	38.6	1.8	
1:01 PM	14.7	0.7	1713.5	6.80	11.4	7.1	
1:04 PM	14.8	0.3	1706.5	6.79	18.6	11.7	
1:07 PM	14.4	0.2	1711.9	6.79	23.8	8.5	
1:10 PM	14.4	0.1	1710.4	6.79	26.6	5.8	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	158.33

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Landfill		
Monitoring Well/Piezometer ID:	WT-111B	Date:	8/15/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	28.4
Initial Static Water Level (feet):	23.36
Initial Groundwater Elevation (ft-amsl):	590.68
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
12:15 PM	Purging start time.						
12:18 PM	14.2	0.8	1686.4	6.57	-58.8	7.4	
12:21 PM	14.5	0.3	1673.9	6.57	-52.2	8.0	
12:24 PM	14.6	0.2	1670.8	6.56	-45.7	6.9	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.9
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	158.33

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project: City of Fort Madison Landfill	
Monitoring Well/Piezometer ID: P-112A	Date: 8/15/2023
Gradient: Down	Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes	
Litter/Standing Water?	No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	35.5
Initial Static Water Level (feet):	13.68
Initial Groundwater Elevation (ft-amsl):	599.73
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:35 PM	Purging start time.						
2:38 PM	14.7	0.6	1782.7	7.23	-148.4	5.4	
2:41 PM	14.5	0.3	1783.8	7.24	-153.7	6.4	
2:44 PM	14.7	0.2	1783.8	7.24	-156.2	4.3	
2:47 PM	14.6	0.1	1783.4	7.25	-157.5	4.3	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	162.50

D. WELL MAINTENANCE

Does the well require any future maintenance?		No
If yes, explain:		
Additional Comments:		

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Landfill		
Monitoring Well/Piezometer ID:	WT-112B	Date:	8/15/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	20.4
Initial Static Water Level (feet):	12.90
Initial Groundwater Elevation (ft-amsl):	599.99
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
2:06 PM	Purging start time.						
2:09 PM	14.5	1.1	1421.4	6.87	57.2	1.7	
2:12 PM	14.4	0.5	1417.9	6.87	58.8	1.8	
2:15 PM	14.1	0.4	1415.4	6.87	58.9	1.7	
2:18 PM	14.1	0.3	1417.2	6.87	58.6	1.8	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	162.50

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	P-102A	Date:	8/10/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	52.3
Initial Static Water Level (feet):	50.96
Initial Groundwater Elevation (ft-amsl):	576.34
Equipment Used:	NA

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
	Purging start time.						
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	0.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	
Average Purge Rate (mL/min):	0.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Too little water to sample.

FORM FOR GROUNDWATER SAMPLING

Project: City of Fort Madison Rodeo Park Dump	
Monitoring Well/Piezometer ID: WT-102B	Date: 8/10/2023
Gradient: Down	Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped? Yes	
Litter/Standing Water? No	

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	15.2
Initial Static Water Level (feet):	14.48
Initial Groundwater Elevation (ft-amsl):	613.42
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
	Purging start time.						
	Parameters stabilized, sample collected.						

Quantity of Water Removed from Well (liters):	0.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	
Average Purge Rate (mL/min):	0.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	Well went dry while purging, no sample collected.

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	P-103A	Date:	8/15/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	50.8
Initial Static Water Level (feet):	45.50
Initial Groundwater Elevation (ft-amsl):	576.02
Equipment Used:	Non-Dedicated Bladder Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
9:32 AM	Purging start time.						
9:35 AM	13.5	1.0	1779.9	6.40	-95.3	77.8	
9:38 AM	13.6	0.5	1781.5	6.45	-96.5	42.1	
9:41 AM	13.8	0.4	1782.3	6.49	-97.1	36.3	
9:44 AM	13.8	0.4	1786.9	6.53	-98.5	25.1	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.3
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	191.67

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

[illegible]

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	P-105A	Date:	8/15/2023
Gradient:	Up	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	82.9
Initial Static Water Level (feet):	11.89
Initial Groundwater Elevation (ft-amsl):	705.98
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:29 AM	Purging start time.						
11:32 AM	16.4	0.5	764.5	7.30	-133.7	8.4	
11:35 AM	16.4	0.3	765.0	7.27	-123.3	7.4	
11:38 AM	16.5	0.2	763.6	7.26	-114.9	5.7	
11:41 AM	16.5	0.1	764.0	7.25	-111.2	7.2	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.1
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	175.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	WT-105B	Date:	8/15/2023
Gradient:	Up	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	19.0
Initial Static Water Level (feet):	9.55
Initial Groundwater Elevation (ft-amsl):	708.24
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
11:01 AM	Purging start time.						
11:04 AM	15.8	0.8	604.9	6.40	40.4	1.7	
11:07 AM	16.0	0.5	578.2	6.34	54.1	2.1	
11:10 AM	16.4	0.4	565.0	6.32	60.0	2.8	
11:13 AM	16.6	0.4	564.1	6.31	63.2	4.2	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.4
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	195.83

D. WELL MAINTENANCE

Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	P-110A	Date:	8/10/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	49.8
Initial Static Water Level (feet):	24.24
Initial Groundwater Elevation (ft-amsl):	689.09
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
7:50 PM	Purging start time.						
7:53 PM	15.9	1.1	910.8	6.92	-6.4	5.5	
7:56 PM	15.7	0.5	904.7	6.90	0.5	5.2	
7:59 PM	15.7	0.6	900.0	6.91	2.1	5.5	
8:02 PM	15.9	1.1	894.5	6.94	6.2	5.5	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	2.0
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	166.67

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	City of Fort Madison Rodeo Park Dump		
Monitoring Well/Piezometer ID:	WT-113B	Date:	8/15/2023
Gradient:	Down	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS	
Well/Piezometer Capped?	Yes
Litter/Standing Water?	No

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)	
Measured Well Total Depth (feet):	55.7
Initial Static Water Level (feet):	22.98
Initial Groundwater Elevation (ft-amsl):	610.66
Equipment Used:	Dedicated Tubing – Peristaltic Pump

C. WELL PURGING							
FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) 10%	Dissolved Oxygen (mg/L)	Specific Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	
10:15 AM	Purging start time.						
10:18 AM	14.8	0.9	3327.9	6.63	-115.2	9.3	
10:21 AM	14.6	0.4	3344.3	6.69	-116.8	14.9	
10:24 AM	14.4	0.2	3351.3	6.70	-116.6	21.6	
10:27 AM	14.3	0.2	3349.1	6.71	-116.8	21.7	
Parameters stabilized, sample collected.							

Quantity of Water Removed from Well (liters):	1.8
Was well pumped/bailed dry?	No
Total Amount of Time Purged (minutes:seconds):	12:00
Average Purge Rate (mL/min):	150.00

D. WELL MAINTENANCE	
Does the well require any future maintenance?	No
If yes, explain:	
Additional Comments:	

FORM FOR GROUNDWATER SAMPLING

Project:	CTYFM - 27223190		
Monitoring Well/Piezometer ID:	Manhole #1		Date: 8-10-23
Gradient (circle one):	Up / Down / Supp / Compliance	Sampler: Chad Dentlinger	

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? (circle one): Yes No If No, explain:

Litter/Standing Water? (circle one): Yes No If Yes, explain:

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	Peri Tubing Used (feet):
Initial Static Water Level (feet):	Sub Tubing Used (feet):
Equipment Used (check one):	☐ Dedicated Peristaltic Tubing ☐ Dedicated Submersible Pump*
☐ Dedicated Bailer ☐ Other:	*Controller Type: G / Y / BR

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] **RECORD EVERY 3 MINUTES**

Time	Temperature (°C) +/- 10%	Dissolved Oxygen (mg/L)	Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	Static Water Level (feet)
Purging start time							
17:20	17.0		2812	6.50			
Parameters stabilized for 3 consecutive readings, YSI stopped recording, sample collected							
← Final SWL Record Time Finished collecting sample Final SWL after sampling →							

Quantity of Water Removed from Well (circle units: liters / gallons):
Was well pumped/bailed dry?
Total Amount of Time Purged (minutes)
Color Describe:
Odor Describe:

D. WELL MAINTENANCE

Does the monitoring well/piezometer require any future maintenance? Yes / No
If yes, explain:

Is the monitoring well/piezometer correctly labeled with a physical tag visible on the outside of the protective well casing? Yes / No

Additional Comments/Sampling Issues:

FORM FOR GROUNDWATER SAMPLING

Project:	CTYFM - 27223190		
Monitoring Well/Piezometer ID:	Manhole #2	Date:	8-10-23
Gradient (circle one):	Up / Down / Supp / Compliance	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? (circle one): Yes No If No, explain:
Litter/Standing Water? (circle one): Yes No If Yes, explain:

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	Peri Tubing Used (feet):
Initial Static Water Level (feet):	Sub Tubing Used (feet):
Equipment Used (check one): ☐ Dedicated Peristaltic Tubing ☐ Dedicated Submersible Pump* ☐ Dedicated Bailer ☐ Other: *Controller Type: G / Y / BR	

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES							
Time	Temperature (°C) +/- 10%	Dissolved Oxygen (mg/L)	Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	Static Water Level (feet)
	Purging start time						
17:00	19.0		399 max	6.90	6.90		
Parameters stabilized for 3 consecutive readings, YSI stopped recording, sample collected							
← Final SWL Record Time		Finished collecting sample		Final SWL after sampling →			

Quantity of Water Removed from Well (circle units: liters / gallons):
Was well pumped/bailed dry?
Total Amount of Time Purged (minutes)
Color Describe:
Odor Describe:

D. WELL MAINTENANCE

Does the monitoring well/piezometer require any future maintenance? Yes / No
If yes, explain:

Is the monitoring well/piezometer correctly labeled with a physical tag visible on the outside of the protective well casing? Yes / No

Additional Comments/Sampling Issues:

FORM FOR GROUNDWATER SAMPLING

Project:	CTYFM - 27223190		
Monitoring Well/Piezometer ID:	Manhole #3		Date: 8-10-23
Gradient (circle one):	Up / Down / Supp / Compliance	Sampler:	Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? (circle one): Yes No If No, explain:

Litter/Standing Water? (circle one): Yes No If Yes, explain:

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet): Peri Tubing Used (feet):

Initial Static Water Level (feet): Sub Tubing Used (feet):

Equipment Used (check one): ☐ Dedicated Peristaltic Tubing ☐ Dedicated Submersible Pump*
☐ Dedicated Bailer ☐ Other: _____
 *Controller Type: G / Y / BR

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] **RECORD EVERY 3 MINUTES**

Time	Temperature (°C) +/- 10%	Dissolved Oxygen (mg/L)	Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	Static Water Level (feet)
Purging start time							
1625	17.6		2068	6.56			
Parameters stabilized for 3 consecutive readings, YSI stopped recording, sample collected							
←Final SWL Record Time Finished collecting sample Final SWL after sampling →							

Quantity of Water Removed from Well (circle units: liters / gallons):

Was well pumped/bailed dry?

Total Amount of Time Purged (minutes)

Color Describe:

Odor Describe:

D. WELL MAINTENANCE

Does the monitoring well/piezometer require any future maintenance? Yes / No

If yes, explain:

Is the monitoring well/piezometer correctly labeled with a physical tag visible on the outside of the protective well casing? Yes / No

Additional Comments/Sampling Issues:

FORM FOR GROUNDWATER SAMPLING

Project:	CTYFM - 27223190		
Monitoring Well/Piezometer ID:	B. Manhole #4		Date: 8-10-23
Gradient (circle one):	Up / Down / Supp / Compliance	Sampler: Chad Dentlinger	

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? (circle one): Yes No If No, explain:
Litter/Standing Water? (circle one): Yes No If Yes, explain:

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):	Peri Tubing Used (feet):
Initial Static Water Level (feet):	Sub Tubing Used (feet):
Equipment Used (check one): ☐ Dedicated Peristaltic Tubing ☐ Dedicated Submersible Pump* ☐ Dedicated Bailer ☐ Other: *Controller Type: G / Y / BR	

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] **RECORD EVERY 3 MINUTES**

Time	Temperature (°C) +/- 10%	Dissolved Oxygen (mg/L)	Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	Static Water Level (feet)
Purging start time							
15:40	16.5		1280	7.22			
Parameters stabilized for 3 consecutive readings, YSI stopped recording, sample collected							
← Final SWL Record Time Finished collecting sample Final SWL after sampling →							

Quantity of Water Removed from Well (circle units: liters / gallons):

Was well pumped/bailed dry?

Total Amount of Time Purged (minutes)

Color Describe:

Odor Describe:

D. WELL MAINTENANCE

Does the monitoring well/piezometer require any future maintenance? Yes / No
If yes, explain:

Is the monitoring well/piezometer correctly labeled with a physical tag visible on the outside of the protective well casing? Yes / No

Additional Comments/Sampling Issues:

FORM FOR GROUNDWATER SAMPLING

Project: CTYFM - 27223190

Monitoring Well/Piezometer ID: Manhole #5

Date: 8-10-23

Gradient (circle one): Up / Down / Supp / Compliance

Sampler: Chad Dentlinger

A. MW/PIEZOMETER CONDITIONS

Well/Piezometer Capped? (circle one): Yes No If No, explain:

Litter/Standing Water? (circle one): Yes No If Yes, explain:

B. GROUNDWATER ELEVATION MEASUREMENT (+/- 0.01 foot, MSL)

Measured Well Total Depth (feet):

Peri Tubing Used (feet):

Initial Static Water Level (feet):

Sub Tubing Used (feet):

Equipment Used (check one): ☐ Dedicated Peristaltic Tubing

☐ Dedicated Submersible Pump*

☐ Dedicated Bailer

☐ Other:

*Controller Type: G / Y / BR

C. WELL PURGING

FIELD PARAMETERS [stabilization criteria] RECORD EVERY 3 MINUTES

Time	Temperature (°C) +/- 10%	Dissolved Oxygen (mg/L)	Conductivity (µS/cm) +/- 10%	pH (S.U.) +/- 0.1	ORP (mV)	Turbidity (FNU)	Static Water Level (feet)
	Purging start time						
16:10	15.5		2305	6.55			
Parameters stabilized for 3 consecutive readings, YSI stopped recording, sample collected							
←Final SWL Record Time Finished collecting sample Final SWL after sampling →							

Quantity of Water Removed from Well (circle units: liters / gallons):

Was well pumped/bailed dry?

Total Amount of Time Purged (minutes)

Color Describe:

Odor Describe:

D. WELL MAINTENANCE

Does the monitoring well/piezometer require any future maintenance? Yes / No

If yes, explain:

Is the monitoring well/piezometer correctly labeled with a physical tag visible on the outside of the protective well casing? Yes / No

Additional Comments/Sampling Issues:

Appendix B-1

Laboratory Analytical Data Sheets

ANALYTICAL REPORT

PREPARED FOR

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

Generated 8/25/2023 2:26:43 PM

JOB DESCRIPTION

For Madison 2023 Annual Leachate Sampling

JOB NUMBER

310-262482-1

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
8/25/2023 2:26:43 PM

Authorized for release by
Meredith Liechti, Service Center Manager
meredith.liechti@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	20
Surrogate Summary	21
QC Sample Results	22
QC Association	31
Chronicle	34
Certification Summary	36
Method Summary	37
Chain of Custody	38
Receipt Checklists	40



Case Narrative

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Job ID: 310-262482-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-262482-1

Receipt

The samples were received on 8/11/2023 4:15 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.9°C

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-397500 recovered above the upper control limit for 2-Hexanone (36.2%D), 4-Methyl-2-pentanone (MIBK) (46.7%D) and Vinyl acetate (55.4%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated sample is impacted: (CCV 310-397500/3).

Method 8260D: The laboratory control sample (LCS) for analytical batch 310-397500 recovered outside control limits for the following analytes: 2-Hexanone, 4-Methyl-2-pentanone (MIBK) and Vinyl acetate. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported.

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

Metals

Method 6020B: The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation at a pH of >2: Leachate Manhole #1 (310-262482-1), Leachate Manhole #2 (310-262482-2), Leachate Manhole #3 (310-262482-3) and Leachate Manhole #5 (310-262482-5). The sample(s) was preserved to the appropriate pH in the laboratory.

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

General Chemistry

Method SM5210B_Calc: All the dilutions failed to deplete the method-required 2 mgO₂/L for the following samples: Leachate Manhole #4 (310-262482-4) and Leachate Manhole #5 (310-262482-5). Only a "less than" result could be calculated from the least dilute preparation.

Method SM5210B_Calc: The USB dilution water D.O. depletion was greater than 0.2 mg/L. The associated sample results in batch 310-396290 are qualified and reported. The USB depletion was 0.235 mg/L.

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

Sample Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-262482-1	Leachate Manhole #1	Water	08/10/23 17:20	08/11/23 16:15
310-262482-2	Leachate Manhole #2	Water	08/10/23 17:00	08/11/23 16:15
310-262482-3	Leachate Manhole #3	Water	08/10/23 16:25	08/11/23 16:15
310-262482-4	Leachate Manhole #4	Water	08/10/23 15:40	08/11/23 16:15
310-262482-5	Leachate Manhole #5	Water	08/10/23 16:10	08/11/23 16:15
310-262482-6	Trip Blank	Water	08/10/23 00:00	08/11/23 16:15

Detection Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Client Sample ID: Leachate Manhole #1

Lab Sample ID: 310-262482-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,2-Dichlorobenzene	0.486	J	1.00	0.370	ug/L	1			8260D	Total/NA
1,4-Dichlorobenzene	4.14		1.00	0.230	ug/L	1			8260D	Total/NA
Benzene	3.80		0.500	0.220	ug/L	1			8260D	Total/NA
Chlorobenzene	8.03		1.00	0.400	ug/L	1			8260D	Total/NA
Chloroethane	4.44		4.00	0.790	ug/L	1			8260D	Total/NA
Ethylbenzene	1.67		1.00	0.310	ug/L	1			8260D	Total/NA
Toluene	1.04		1.00	0.430	ug/L	1			8260D	Total/NA
Xylenes, Total	6.86		3.00	0.400	ug/L	1			8260D	Total/NA
Antimony	0.00104	J	0.00200	0.00100	mg/L	1			6020B	Total/NA
Arsenic	0.00288		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.579		0.00200	0.000640	mg/L	1			6020B	Total/NA
Chromium	0.00228	J	0.00500	0.00110	mg/L	1			6020B	Total/NA
Cobalt	0.00378		0.000500	0.000170	mg/L	1			6020B	Total/NA
Lead	0.00273		0.000500	0.000240	mg/L	1			6020B	Total/NA
Nickel	0.0280		0.00500	0.00190	mg/L	1			6020B	Total/NA
Ammonia	116		23.5	10.3	mg/L	9.38			350.1	Total/NA
Chemical Oxygen Demand	167		50.0	48.0	mg/L	10			5220D LL	Total/NA
Total Suspended Solids	100		60.0	20.4	mg/L	1			I-3765-85	Total/NA
Biochemical Oxygen Demand	10.9	b	3.00	3.00	mg/L	1			SM 5210B	Total/NA

Client Sample ID: Leachate Manhole #2

Lab Sample ID: 310-262482-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,2-Dichlorobenzene	0.388	J	1.00	0.370	ug/L	1			8260D	Total/NA
1,4-Dichlorobenzene	3.13		1.00	0.230	ug/L	1			8260D	Total/NA
Acetone	10.5		10.0	3.10	ug/L	1			8260D	Total/NA
Benzene	6.10		0.500	0.220	ug/L	1			8260D	Total/NA
Chlorobenzene	8.12		1.00	0.400	ug/L	1			8260D	Total/NA
Chloroethane	1.83	J	4.00	0.790	ug/L	1			8260D	Total/NA
Ethylbenzene	1.71		1.00	0.310	ug/L	1			8260D	Total/NA
Xylenes, Total	7.33		3.00	0.400	ug/L	1			8260D	Total/NA
Arsenic	0.0134		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.595		0.00200	0.000640	mg/L	1			6020B	Total/NA
Chromium	0.00302	J	0.00500	0.00110	mg/L	1			6020B	Total/NA
Cobalt	0.00446		0.000500	0.000170	mg/L	1			6020B	Total/NA
Lead	0.00108		0.000500	0.000240	mg/L	1			6020B	Total/NA
Nickel	0.0711		0.00500	0.00190	mg/L	1			6020B	Total/NA
Vanadium	0.00186	J	0.00500	0.00110	mg/L	1			6020B	Total/NA
Ammonia	163		25.0	11.0	mg/L	1			350.1	Total/NA
Chemical Oxygen Demand	332		25.0	24.0	mg/L	5			5220D LL	Total/NA
Total Suspended Solids	46.0		30.0	10.2	mg/L	1			I-3765-85	Total/NA
Biochemical Oxygen Demand	28.3	b	3.00	3.00	mg/L	1			SM 5210B	Total/NA

Client Sample ID: Leachate Manhole #3

Lab Sample ID: 310-262482-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Acetone	4.99	J	10.0	3.10	ug/L	1			8260D	Total/NA
Xylenes, Total	0.428	J	3.00	0.400	ug/L	1			8260D	Total/NA
Arsenic	0.00561		0.00200	0.000530	mg/L	1			6020B	Total/NA
Barium	0.714		0.00200	0.000640	mg/L	1			6020B	Total/NA
Chromium	0.00217	J	0.00500	0.00110	mg/L	1			6020B	Total/NA
Cobalt	0.00471		0.000500	0.000170	mg/L	1			6020B	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Client Sample ID: Leachate Manhole #3 (Continued)

Lab Sample ID: 310-262482-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.00278		0.000500	0.000240	mg/L	1		6020B	Total/NA
Nickel	0.0104		0.00500	0.00190	mg/L	1		6020B	Total/NA
Ammonia	54.7		5.00	2.20	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	110		25.0	24.0	mg/L	5		5220D LL	Total/NA
Total Suspended Solids	142		30.0	10.2	mg/L	1		I-3765-85	Total/NA
Biochemical Oxygen Demand	16.1	b	3.00	3.00	mg/L	1		SM 5210B	Total/NA

Client Sample ID: Leachate Manhole #4

Lab Sample ID: 310-262482-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00148	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.156		0.00200	0.000640	mg/L	1		6020B	Total/NA
Cobalt	0.00164		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00354	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Nickel	0.00742		0.00500	0.00190	mg/L	1		6020B	Total/NA
Chemical Oxygen Demand	26.2		5.00	4.80	mg/L	1		5220D LL	Total/NA
Total Suspended Solids	6.00		5.00	1.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: Leachate Manhole #5

Lab Sample ID: 310-262482-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00557		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.786		0.00200	0.000640	mg/L	1		6020B	Total/NA
Chromium	0.00250	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Cobalt	0.00430		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.000359	J	0.000500	0.000240	mg/L	1		6020B	Total/NA
Nickel	0.00393	J	0.00500	0.00190	mg/L	1		6020B	Total/NA
Ammonia	75.8		5.00	2.20	mg/L	1		350.1	Total/NA
Chemical Oxygen Demand	110		25.0	24.0	mg/L	5		5220D LL	Total/NA
Total Suspended Solids	132		60.0	20.4	mg/L	1		I-3765-85	Total/NA

Client Sample ID: Trip Blank

Lab Sample ID: 310-262482-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #1

Lab Sample ID: 310-262482-1

Date Collected: 08/10/23 17:20

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/23/23 13:02	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/23/23 13:02	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/23/23 13:02	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/23/23 13:02	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/23/23 13:02	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/23/23 13:02	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/23/23 13:02	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/23/23 13:02	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/23/23 13:02	1
1,2-Dichlorobenzene	0.486	J	1.00	0.370	ug/L			08/23/23 13:02	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/23/23 13:02	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/23/23 13:02	1
1,4-Dichlorobenzene	4.14		1.00	0.230	ug/L			08/23/23 13:02	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/23/23 13:02	1
2-Hexanone	<10.0	*+	10.0	2.00	ug/L			08/23/23 13:02	1
4-Methyl-2-pentanone (MIBK)	<10.0	*+	10.0	2.10	ug/L			08/23/23 13:02	1
Acetone	<10.0		10.0	3.10	ug/L			08/23/23 13:02	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/23/23 13:02	1
Benzene	3.80		0.500	0.220	ug/L			08/23/23 13:02	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/23/23 13:02	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/23/23 13:02	1
Bromoform	<5.00		5.00	0.780	ug/L			08/23/23 13:02	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/23/23 13:02	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/23/23 13:02	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/23/23 13:02	1
Chlorobenzene	8.03		1.00	0.400	ug/L			08/23/23 13:02	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/23/23 13:02	1
Chloroethane	4.44		4.00	0.790	ug/L			08/23/23 13:02	1
Chloroform	<3.00		3.00	1.30	ug/L			08/23/23 13:02	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/23/23 13:02	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/23/23 13:02	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/23/23 13:02	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/23/23 13:02	1
Ethylbenzene	1.67		1.00	0.310	ug/L			08/23/23 13:02	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/23/23 13:02	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/23/23 13:02	1
Styrene	<1.00		1.00	0.370	ug/L			08/23/23 13:02	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/23/23 13:02	1
Toluene	1.04		1.00	0.430	ug/L			08/23/23 13:02	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/23/23 13:02	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/23/23 13:02	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/23/23 13:02	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/23/23 13:02	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/23/23 13:02	1
Vinyl acetate	<10.0	*+	10.0	2.50	ug/L			08/23/23 13:02	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/23/23 13:02	1
Xylenes, Total	6.86		3.00	0.400	ug/L			08/23/23 13:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	94		80 - 128		08/23/23 13:02	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #1

Lab Sample ID: 310-262482-1

Date Collected: 08/10/23 17:20

Matrix: Water

Date Received: 08/11/23 16:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		80 - 120		08/23/23 13:02	1
4-Bromofluorobenzene (Surr)	96		80 - 120		08/23/23 13:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	0.00104	J	0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:18	1
Arsenic	0.00288		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:24	1
Barium	0.579		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 12:24	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 12:24	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 12:24	1
Chromium	0.00228	J	0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 12:24	1
Cobalt	0.00378		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:24	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 12:24	1
Lead	0.00273		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:24	1
Nickel	0.0280		0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 12:24	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 12:24	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 12:24	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 12:24	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:18	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 12:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	116		23.5	10.3	mg/L		08/15/23 09:21	08/16/23 12:23	9.38
Chemical Oxygen Demand (SM 5220D LL)	167		50.0	48.0	mg/L			08/16/23 09:36	10
Total Suspended Solids (USGS I-3765-85)	100		60.0	20.4	mg/L			08/15/23 07:55	1
Biochemical Oxygen Demand (SM 5210B)	10.9	b	3.00	3.00	mg/L			08/11/23 17:43	1

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #2

Lab Sample ID: 310-262482-2

Date Collected: 08/10/23 17:00

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 19:40	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 19:40	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 19:40	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 19:40	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 19:40	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 19:40	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 19:40	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 19:40	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 19:40	1
1,2-Dichlorobenzene	0.388	J	1.00	0.370	ug/L			08/15/23 19:40	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 19:40	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 19:40	1
1,4-Dichlorobenzene	3.13		1.00	0.230	ug/L			08/15/23 19:40	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 19:40	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 19:40	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 19:40	1
Acetone	10.5		10.0	3.10	ug/L			08/15/23 19:40	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 19:40	1
Benzene	6.10		0.500	0.220	ug/L			08/15/23 19:40	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 19:40	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 19:40	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 19:40	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 19:40	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 19:40	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 19:40	1
Chlorobenzene	8.12		1.00	0.400	ug/L			08/15/23 19:40	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 19:40	1
Chloroethane	1.83	J	4.00	0.790	ug/L			08/15/23 19:40	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 19:40	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 19:40	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 19:40	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 19:40	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 19:40	1
Ethylbenzene	1.71		1.00	0.310	ug/L			08/15/23 19:40	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 19:40	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 19:40	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 19:40	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 19:40	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 19:40	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 19:40	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 19:40	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 19:40	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 19:40	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 19:40	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 19:40	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 19:40	1
Xylenes, Total	7.33		3.00	0.400	ug/L			08/15/23 19:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	100		80 - 128		08/15/23 19:40	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #2

Lab Sample ID: 310-262482-2

Date Collected: 08/10/23 17:00

Matrix: Water

Date Received: 08/11/23 16:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		80 - 120		08/15/23 19:40	1
4-Bromofluorobenzene (Surr)	100		80 - 120		08/15/23 19:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:20	1
Arsenic	0.0134		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:27	1
Barium	0.595		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 12:27	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 12:27	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 12:27	1
Chromium	0.00302	J	0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 12:27	1
Cobalt	0.00446		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:27	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 12:27	1
Lead	0.00108		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:27	1
Nickel	0.0711		0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 12:27	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 12:27	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 12:27	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 12:27	1
Vanadium	0.00186	J	0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:20	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 12:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	163		25.0	11.0	mg/L		08/15/23 09:21	08/16/23 11:41	1
Chemical Oxygen Demand (SM 5220D LL)	332		25.0	24.0	mg/L			08/16/23 09:36	5
Total Suspended Solids (USGS I-3765-85)	46.0		30.0	10.2	mg/L			08/14/23 09:56	1
Biochemical Oxygen Demand (SM 5210B)	28.3	b	3.00	3.00	mg/L			08/11/23 17:51	1

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #3

Lab Sample ID: 310-262482-3

Date Collected: 08/10/23 16:25

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 13:40	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 13:40	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 13:40	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 13:40	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 13:40	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 13:40	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 13:40	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 13:40	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 13:40	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/15/23 13:40	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 13:40	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 13:40	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/15/23 13:40	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 13:40	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 13:40	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 13:40	1
Acetone	4.99	J	10.0	3.10	ug/L			08/15/23 13:40	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 13:40	1
Benzene	<0.500		0.500	0.220	ug/L			08/15/23 13:40	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 13:40	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 13:40	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 13:40	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 13:40	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 13:40	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 13:40	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/15/23 13:40	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 13:40	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/15/23 13:40	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 13:40	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 13:40	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 13:40	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 13:40	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 13:40	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/15/23 13:40	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 13:40	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 13:40	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 13:40	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 13:40	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 13:40	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 13:40	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 13:40	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 13:40	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 13:40	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 13:40	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 13:40	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 13:40	1
Xylenes, Total	0.428	J	3.00	0.400	ug/L			08/15/23 13:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	99		80 - 128		08/15/23 13:40	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #3

Lab Sample ID: 310-262482-3

Date Collected: 08/10/23 16:25

Matrix: Water

Date Received: 08/11/23 16:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		80 - 120		08/15/23 13:40	1
4-Bromofluorobenzene (Surr)	102		80 - 120		08/15/23 13:40	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:22	1
Arsenic	0.00561		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:31	1
Barium	0.714		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 12:31	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 12:31	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 12:31	1
Chromium	0.00217	J	0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 12:31	1
Cobalt	0.00471		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:31	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 12:31	1
Lead	0.00278		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:31	1
Nickel	0.0104		0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 12:31	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 12:31	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 12:31	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 12:31	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:22	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 12:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	54.7		5.00	2.20	mg/L		08/15/23 09:21	08/16/23 11:37	1
Chemical Oxygen Demand (SM 5220D LL)	110		25.0	24.0	mg/L			08/16/23 09:36	5
Total Suspended Solids (USGS I-3765-85)	142		30.0	10.2	mg/L			08/14/23 09:56	1
Biochemical Oxygen Demand (SM 5210B)	16.1	b	3.00	3.00	mg/L			08/11/23 17:59	1

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #4

Lab Sample ID: 310-262482-4

Date Collected: 08/10/23 15:40

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 14:02	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 14:02	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 14:02	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 14:02	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 14:02	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 14:02	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 14:02	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 14:02	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 14:02	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/15/23 14:02	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 14:02	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 14:02	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/15/23 14:02	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 14:02	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 14:02	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 14:02	1
Acetone	<10.0		10.0	3.10	ug/L			08/15/23 14:02	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 14:02	1
Benzene	<0.500		0.500	0.220	ug/L			08/15/23 14:02	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 14:02	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 14:02	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 14:02	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 14:02	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 14:02	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 14:02	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/15/23 14:02	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 14:02	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/15/23 14:02	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 14:02	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 14:02	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 14:02	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 14:02	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 14:02	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/15/23 14:02	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 14:02	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 14:02	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 14:02	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 14:02	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 14:02	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 14:02	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 14:02	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 14:02	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 14:02	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 14:02	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 14:02	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 14:02	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/15/23 14:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	97		80 - 128		08/15/23 14:02	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #4

Lab Sample ID: 310-262482-4

Date Collected: 08/10/23 15:40

Matrix: Water

Date Received: 08/11/23 16:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	102		80 - 120		08/15/23 14:02	1
4-Bromofluorobenzene (Surr)	104		80 - 120		08/15/23 14:02	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:24	1
Arsenic	0.00148	J	0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:40	1
Barium	0.156		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 12:40	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 12:40	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 12:40	1
Chromium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 12:40	1
Cobalt	0.00164		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:40	1
Copper	0.00354	J	0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 12:40	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:40	1
Nickel	0.00742		0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 12:40	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 12:40	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 12:40	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 12:40	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:24	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 12:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	<0.500		0.500	0.220	mg/L		08/15/23 09:21	08/16/23 11:42	1
Chemical Oxygen Demand (SM 5220D LL)	26.2		5.00	4.80	mg/L			08/16/23 09:36	1
Total Suspended Solids (USGS I-3765-85)	6.00		5.00	1.70	mg/L			08/15/23 07:55	1
Biochemical Oxygen Demand (SM 5210B)	<12.0		12.0	12.0	mg/L			08/11/23 18:08	4

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #5

Lab Sample ID: 310-262482-5

Date Collected: 08/10/23 16:10

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 14:25	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 14:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 14:25	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 14:25	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 14:25	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 14:25	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 14:25	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 14:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 14:25	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/15/23 14:25	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 14:25	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 14:25	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/15/23 14:25	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 14:25	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 14:25	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 14:25	1
Acetone	<10.0		10.0	3.10	ug/L			08/15/23 14:25	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 14:25	1
Benzene	<0.500		0.500	0.220	ug/L			08/15/23 14:25	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 14:25	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 14:25	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 14:25	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 14:25	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 14:25	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 14:25	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/15/23 14:25	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 14:25	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/15/23 14:25	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 14:25	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 14:25	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 14:25	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 14:25	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 14:25	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/15/23 14:25	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 14:25	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 14:25	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 14:25	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 14:25	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 14:25	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 14:25	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 14:25	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 14:25	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 14:25	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 14:25	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 14:25	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 14:25	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/15/23 14:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	96		80 - 128		08/15/23 14:25	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #5

Lab Sample ID: 310-262482-5

Date Collected: 08/10/23 16:10

Matrix: Water

Date Received: 08/11/23 16:15

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		80 - 120		08/15/23 14:25	1
4-Bromofluorobenzene (Surr)	106		80 - 120		08/15/23 14:25	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:42	1
Arsenic	0.00557		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:45	1
Barium	0.786		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 12:45	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 12:45	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 12:45	1
Chromium	0.00250	J	0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 12:45	1
Cobalt	0.00430		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:45	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 12:45	1
Lead	0.000359	J	0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:45	1
Nickel	0.00393	J	0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 12:45	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 12:45	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 12:45	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 12:45	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:42	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 12:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (EPA 350.1)	75.8		5.00	2.20	mg/L		08/15/23 09:21	08/16/23 11:33	1
Chemical Oxygen Demand (SM 5220D LL)	110		25.0	24.0	mg/L			08/16/23 09:36	5
Total Suspended Solids (USGS I-3765-85)	132		60.0	20.4	mg/L			08/15/23 07:55	1
Biochemical Oxygen Demand (SM 5210B)	<12.0		12.0	12.0	mg/L			08/11/23 18:24	4

Client Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-262482-6

Date Collected: 08/10/23 00:00

Matrix: Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 12:32	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 12:32	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 12:32	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 12:32	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 12:32	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 12:32	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 12:32	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 12:32	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 12:32	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/15/23 12:32	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 12:32	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 12:32	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/15/23 12:32	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 12:32	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 12:32	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 12:32	1
Acetone	<10.0		10.0	3.10	ug/L			08/15/23 12:32	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 12:32	1
Benzene	<0.500		0.500	0.220	ug/L			08/15/23 12:32	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 12:32	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 12:32	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 12:32	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 12:32	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 12:32	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 12:32	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/15/23 12:32	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 12:32	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/15/23 12:32	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 12:32	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 12:32	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 12:32	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 12:32	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 12:32	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/15/23 12:32	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 12:32	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 12:32	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 12:32	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 12:32	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 12:32	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 12:32	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 12:32	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 12:32	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 12:32	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 12:32	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 12:32	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 12:32	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/15/23 12:32	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	105		80 - 128		08/15/23 12:32	1

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Client Sample ID: Trip Blank

Lab Sample ID: 310-262482-6

Date Collected: 08/10/23 00:00

Matrix: Water

Date Received: 08/11/23 16:15

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

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	96		80 - 120		08/15/23 12:32	1
<i>4-Bromofluorobenzene (Surr)</i>	108		80 - 120		08/15/23 12:32	1

Definitions/Glossary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^3+	Reporting Limit Check Standard is outside acceptance limits, high biased
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
b	Result Detected in the Unseeded Control blank (USB).

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
SQL	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: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

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	DBFM (80-128)	TOL (80-120)	BFB (80-120)
310-262482-1	Leachate Manhole #1	94	105	96
310-262482-2	Leachate Manhole #2	100	101	100
310-262482-3	Leachate Manhole #3	99	104	102
310-262482-4	Leachate Manhole #4	97	102	104
310-262482-5	Leachate Manhole #5	96	100	106
310-262482-6	Trip Blank	105	96	108
LCS 310-396649/6	Lab Control Sample	98	103	98
LCS 310-396649/7	Lab Control Sample	96	98	106
LCS 310-397500/6	Lab Control Sample	93	106	97
LCS 310-397500/7	Lab Control Sample	89	104	99
MB 310-396649/5	Method Blank	93	99	108
MB 310-397500/5	Method Blank	91	103	101
Surrogate Legend				
DBFM = Dibromofluoromethane (Surr)				
TOL = Toluene-d8 (Surr)				
BFB = 4-Bromofluorobenzene (Surr)				

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: MB 310-396649/5

Matrix: Water

Analysis Batch: 396649

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/15/23 11:25	1
1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/15/23 11:25	1
1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/15/23 11:25	1
1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/15/23 11:25	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/15/23 11:25	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/15/23 11:25	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/15/23 11:25	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/15/23 11:25	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/15/23 11:25	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/15/23 11:25	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/15/23 11:25	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/15/23 11:25	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/15/23 11:25	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/15/23 11:25	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/15/23 11:25	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/15/23 11:25	1
Acetone	<10.0		10.0	3.10	ug/L			08/15/23 11:25	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/15/23 11:25	1
Benzene	<0.500		0.500	0.220	ug/L			08/15/23 11:25	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/15/23 11:25	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/15/23 11:25	1
Bromoform	<5.00		5.00	0.780	ug/L			08/15/23 11:25	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/15/23 11:25	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/15/23 11:25	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/15/23 11:25	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/15/23 11:25	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/15/23 11:25	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/15/23 11:25	1
Chloroform	<3.00		3.00	1.30	ug/L			08/15/23 11:25	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/15/23 11:25	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/15/23 11:25	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/15/23 11:25	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/15/23 11:25	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/15/23 11:25	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/15/23 11:25	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/15/23 11:25	1
Styrene	<1.00		1.00	0.370	ug/L			08/15/23 11:25	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/15/23 11:25	1
Toluene	<1.00		1.00	0.430	ug/L			08/15/23 11:25	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/15/23 11:25	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/15/23 11:25	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/15/23 11:25	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/15/23 11:25	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/15/23 11:25	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/15/23 11:25	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/15/23 11:25	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/15/23 11:25	1

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: MB 310-396649/5

Matrix: Water

Analysis Batch: 396649

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	93		80 - 128		08/15/23 11:25	1
Toluene-d8 (Surr)	99		80 - 120		08/15/23 11:25	1
4-Bromofluorobenzene (Surr)	108		80 - 120		08/15/23 11:25	1

Lab Sample ID: LCS 310-396649/6

Matrix: Water

Analysis Batch: 396649

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	18.94		ug/L		95	68 - 123
1,1,1-Trichloroethane	20.0	19.91		ug/L		100	71 - 128
1,1,2,2-Tetrachloroethane	20.0	18.47		ug/L		92	64 - 124
1,1,2-Trichloroethane	20.0	20.30		ug/L		101	70 - 124
1,1-Dichloroethane	20.0	20.30		ug/L		102	71 - 123
1,1-Dichloroethene	20.0	19.98		ug/L		100	61 - 129
1,2,3-Trichloropropane	20.0	17.82		ug/L		89	64 - 125
1,2-Dibromo-3-chloropropane	20.0	18.97		ug/L		95	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.17		ug/L		96	73 - 125
1,2-Dichlorobenzene	20.0	18.22		ug/L		91	68 - 120
1,2-Dichloroethane	20.0	18.01		ug/L		90	70 - 124
1,2-Dichloropropane	20.0	18.37		ug/L		92	73 - 121
1,4-Dichlorobenzene	20.0	18.64		ug/L		93	67 - 120
2-Butanone (MEK)	40.0	32.23		ug/L		81	50 - 150
2-Hexanone	40.0	38.61		ug/L		97	60 - 132
4-Methyl-2-pentanone (MIBK)	40.0	37.84		ug/L		95	62 - 130
Acetone	40.0	32.57		ug/L		81	50 - 150
Acrylonitrile	200	202.5		ug/L		101	50 - 150
Benzene	20.0	21.06		ug/L		105	73 - 122
Bromochloromethane	20.0	18.38		ug/L		92	68 - 132
Bromodichloromethane	20.0	19.09		ug/L		95	72 - 121
Bromoform	20.0	18.01		ug/L		90	55 - 129
Carbon disulfide	20.0	20.27		ug/L		101	58 - 131
Carbon tetrachloride	20.0	20.11		ug/L		101	67 - 132
Chlorobenzene	20.0	19.31		ug/L		97	69 - 121
Chlorodibromomethane	20.0	19.00		ug/L		95	69 - 122
Chloroform	20.0	19.52		ug/L		98	72 - 120
cis-1,2-Dichloroethene	20.0	19.52		ug/L		98	74 - 120
cis-1,3-Dichloropropene	20.0	18.25		ug/L		91	71 - 126
Dibromomethane	20.0	19.28		ug/L		96	72 - 123
Ethylbenzene	20.0	19.55		ug/L		98	69 - 122
Iodomethane	20.0	21.04		ug/L		105	10 - 150
Methylene chloride	20.0	18.74		ug/L		94	50 - 150
Styrene	20.0	18.60		ug/L		93	67 - 125
Tetrachloroethene	20.0	20.73		ug/L		104	69 - 131
Toluene	20.0	20.05		ug/L		100	72 - 121
trans-1,2-Dichloroethene	20.0	19.51		ug/L		98	68 - 125
trans-1,3-Dichloropropene	20.0	16.35		ug/L		82	68 - 124
trans-1,4-Dichloro-2-butene	20.0	17.75		ug/L		89	48 - 150

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: LCS 310-396649/6

Matrix: Water

Analysis Batch: 396649

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichloroethene	20.0	18.73		ug/L		94	73 - 126
Vinyl acetate	40.0	42.59		ug/L		106	50 - 150
Xylenes, Total	40.0	38.23		ug/L		96	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	98		80 - 128
Toluene-d8 (Surr)	103		80 - 120
4-Bromofluorobenzene (Surr)	98		80 - 120

Lab Sample ID: LCS 310-396649/7

Matrix: Water

Analysis Batch: 396649

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	13.65		ug/L		68	24 - 150
Chloroethane	20.0	18.25		ug/L		91	51 - 137
Chloromethane	20.0	18.10		ug/L		90	37 - 150
Trichlorofluoromethane	20.0	19.90		ug/L		100	56 - 144
Vinyl chloride	20.0	19.54		ug/L		98	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	96		80 - 128
Toluene-d8 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	106		80 - 120

Lab Sample ID: MB 310-397500/5

Matrix: Water

Analysis Batch: 397500

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1,2-Tetrachloroethane	<1.00		1.00	0.380	ug/L			08/23/23 11:53	1
1,1,1,1-Trichloroethane	<1.00		1.00	0.190	ug/L			08/23/23 11:53	1
1,1,1,2,2-Tetrachloroethane	<1.00		1.00	0.470	ug/L			08/23/23 11:53	1
1,1,1,2-Trichloroethane	<1.00		1.00	0.450	ug/L			08/23/23 11:53	1
1,1-Dichloroethane	<1.00		1.00	0.220	ug/L			08/23/23 11:53	1
1,1-Dichloroethene	<2.00		2.00	0.560	ug/L			08/23/23 11:53	1
1,2,3-Trichloropropane	<1.00		1.00	0.590	ug/L			08/23/23 11:53	1
1,2-Dibromo-3-chloropropane	<5.00		5.00	1.20	ug/L			08/23/23 11:53	1
1,2-Dibromoethane (EDB)	<1.00		1.00	0.340	ug/L			08/23/23 11:53	1
1,2-Dichlorobenzene	<1.00		1.00	0.370	ug/L			08/23/23 11:53	1
1,2-Dichloroethane	<1.00		1.00	0.390	ug/L			08/23/23 11:53	1
1,2-Dichloropropane	<1.00		1.00	0.270	ug/L			08/23/23 11:53	1
1,4-Dichlorobenzene	<1.00		1.00	0.230	ug/L			08/23/23 11:53	1
2-Butanone (MEK)	<10.0		10.0	2.10	ug/L			08/23/23 11:53	1
2-Hexanone	<10.0		10.0	2.00	ug/L			08/23/23 11:53	1
4-Methyl-2-pentanone (MIBK)	<10.0		10.0	2.10	ug/L			08/23/23 11:53	1
Acetone	<10.0		10.0	3.10	ug/L			08/23/23 11:53	1
Acrylonitrile	<5.00		5.00	2.20	ug/L			08/23/23 11:53	1

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: MB 310-397500/5

Matrix: Water

Analysis Batch: 397500

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<0.500		0.500	0.220	ug/L			08/23/23 11:53	1
Bromochloromethane	<5.00		5.00	0.540	ug/L			08/23/23 11:53	1
Bromodichloromethane	<1.00		1.00	0.390	ug/L			08/23/23 11:53	1
Bromoform	<5.00		5.00	0.780	ug/L			08/23/23 11:53	1
Bromomethane	<4.00		4.00	1.10	ug/L			08/23/23 11:53	1
Carbon disulfide	<1.00		1.00	0.450	ug/L			08/23/23 11:53	1
Carbon tetrachloride	<2.00		2.00	0.650	ug/L			08/23/23 11:53	1
Chlorobenzene	<1.00		1.00	0.400	ug/L			08/23/23 11:53	1
Chlorodibromomethane	<5.00		5.00	0.750	ug/L			08/23/23 11:53	1
Chloroethane	<4.00		4.00	0.790	ug/L			08/23/23 11:53	1
Chloroform	<3.00		3.00	1.30	ug/L			08/23/23 11:53	1
Chloromethane	<3.00		3.00	0.610	ug/L			08/23/23 11:53	1
cis-1,2-Dichloroethene	<1.00		1.00	0.210	ug/L			08/23/23 11:53	1
cis-1,3-Dichloropropene	<5.00		5.00	0.250	ug/L			08/23/23 11:53	1
Dibromomethane	<1.00		1.00	0.330	ug/L			08/23/23 11:53	1
Ethylbenzene	<1.00		1.00	0.310	ug/L			08/23/23 11:53	1
Iodomethane	<10.0		10.0	7.00	ug/L			08/23/23 11:53	1
Methylene chloride	<5.00		5.00	1.70	ug/L			08/23/23 11:53	1
Styrene	<1.00		1.00	0.370	ug/L			08/23/23 11:53	1
Tetrachloroethene	<1.00		1.00	0.480	ug/L			08/23/23 11:53	1
Toluene	<1.00		1.00	0.430	ug/L			08/23/23 11:53	1
trans-1,2-Dichloroethene	<1.00		1.00	0.270	ug/L			08/23/23 11:53	1
trans-1,3-Dichloropropene	<5.00		5.00	0.560	ug/L			08/23/23 11:53	1
trans-1,4-Dichloro-2-butene	<10.0		10.0	1.10	ug/L			08/23/23 11:53	1
Trichloroethene	<1.00		1.00	0.430	ug/L			08/23/23 11:53	1
Trichlorofluoromethane	<4.00		4.00	0.380	ug/L			08/23/23 11:53	1
Vinyl acetate	<10.0		10.0	2.50	ug/L			08/23/23 11:53	1
Vinyl chloride	<1.00		1.00	0.180	ug/L			08/23/23 11:53	1
Xylenes, Total	<3.00		3.00	0.400	ug/L			08/23/23 11:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	91		80 - 128		08/23/23 11:53	1
Toluene-d8 (Surr)	103		80 - 120		08/23/23 11:53	1
4-Bromofluorobenzene (Surr)	101		80 - 120		08/23/23 11:53	1

Lab Sample ID: LCS 310-397500/6

Matrix: Water

Analysis Batch: 397500

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1,2-Tetrachloroethane	20.0	19.30		ug/L		96	68 - 123
1,1,1-Trichloroethane	20.0	21.21		ug/L		106	71 - 128
1,1,2,2-Tetrachloroethane	20.0	20.10		ug/L		100	64 - 124
1,1,2-Trichloroethane	20.0	20.77		ug/L		104	70 - 124
1,1-Dichloroethane	20.0	22.63		ug/L		113	71 - 123
1,1-Dichloroethene	20.0	24.06		ug/L		120	61 - 129
1,2,3-Trichloropropane	20.0	19.53		ug/L		98	64 - 125
1,2-Dibromo-3-chloropropane	20.0	26.06		ug/L		130	50 - 150

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: LCS 310-397500/6

Matrix: Water

Analysis Batch: 397500

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2-Dibromoethane (EDB)	20.0	19.78		ug/L		99	73 - 125
1,2-Dichlorobenzene	20.0	20.35		ug/L		102	68 - 120
1,2-Dichloroethane	20.0	20.88		ug/L		104	70 - 124
1,2-Dichloropropane	20.0	22.22		ug/L		111	73 - 121
1,4-Dichlorobenzene	20.0	20.38		ug/L		102	67 - 120
2-Butanone (MEK)	40.0	52.45		ug/L		131	50 - 150
2-Hexanone	40.0	55.18	*+	ug/L		138	60 - 132
4-Methyl-2-pentanone (MIBK)	40.0	56.65	*+	ug/L		142	62 - 130
Acetone	40.0	52.58		ug/L		131	50 - 150
Acrylonitrile	200	253.3		ug/L		127	50 - 150
Benzene	20.0	21.72		ug/L		109	73 - 122
Bromochloromethane	20.0	18.83		ug/L		94	68 - 132
Bromodichloromethane	20.0	20.58		ug/L		103	72 - 121
Bromoform	20.0	16.16		ug/L		81	55 - 129
Carbon disulfide	20.0	20.49		ug/L		102	58 - 131
Carbon tetrachloride	20.0	19.59		ug/L		98	67 - 132
Chlorobenzene	20.0	20.54		ug/L		103	69 - 121
Chlorodibromomethane	20.0	17.28		ug/L		86	69 - 122
Chloroform	20.0	20.69		ug/L		103	72 - 120
cis-1,2-Dichloroethene	20.0	21.40		ug/L		107	74 - 120
cis-1,3-Dichloropropene	20.0	22.45		ug/L		112	71 - 126
Dibromomethane	20.0	18.43		ug/L		92	72 - 123
Ethylbenzene	20.0	21.91		ug/L		110	69 - 122
Iodomethane	20.0	12.81		ug/L		64	10 - 150
Methylene chloride	20.0	21.02		ug/L		105	50 - 150
Styrene	20.0	21.61		ug/L		108	67 - 125
Tetrachloroethene	20.0	21.19		ug/L		106	69 - 131
Toluene	20.0	21.34		ug/L		107	72 - 121
trans-1,2-Dichloroethene	20.0	22.66		ug/L		113	68 - 125
trans-1,3-Dichloropropene	20.0	21.19		ug/L		106	68 - 124
trans-1,4-Dichloro-2-butene	20.0	25.68		ug/L		128	48 - 150
Trichloroethene	20.0	20.20		ug/L		101	73 - 126
Vinyl acetate	40.0	61.34	*+	ug/L		153	50 - 150
Xylenes, Total	40.0	42.35		ug/L		106	68 - 124

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	93		80 - 128
Toluene-d8 (Surr)	106		80 - 120
4-Bromofluorobenzene (Surr)	97		80 - 120

Lab Sample ID: LCS 310-397500/7

Matrix: Water

Analysis Batch: 397500

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	18.69		ug/L		93	24 - 150
Chloroethane	20.0	22.59		ug/L		113	51 - 137
Chloromethane	20.0	20.72		ug/L		104	37 - 150

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: LCS 310-397500/7

Matrix: Water

Analysis Batch: 397500

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	23.71		ug/L		119	56 - 144
Vinyl chloride	20.0	19.62		ug/L		98	57 - 136

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Dibromofluoromethane (Surr)	89		80 - 128
Toluene-d8 (Surr)	104		80 - 120
4-Bromofluorobenzene (Surr)	99		80 - 120

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-396571/1-A

Matrix: Water

Analysis Batch: 397316

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 396571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 11:45	1
Barium	<0.00200		0.00200	0.000640	mg/L		08/15/23 10:11	08/21/23 11:45	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/15/23 10:11	08/21/23 11:45	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/15/23 10:11	08/21/23 11:45	1
Chromium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/21/23 11:45	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 11:45	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/15/23 10:11	08/21/23 11:45	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 11:45	1
Nickel	<0.00500		0.00500	0.00190	mg/L		08/15/23 10:11	08/21/23 11:45	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/15/23 10:11	08/21/23 11:45	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/15/23 10:11	08/21/23 11:45	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/15/23 10:11	08/21/23 11:45	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/15/23 10:11	08/21/23 11:45	1

Lab Sample ID: MB 310-396571/1-A

Matrix: Water

Analysis Batch: 397438

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 396571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/15/23 10:11	08/22/23 13:06	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/15/23 10:11	08/22/23 13:06	1

Lab Sample ID: LCS 310-396571/2-A

Matrix: Water

Analysis Batch: 397316

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 396571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2031		mg/L		102	80 - 120
Barium	0.100	0.1012		mg/L		101	80 - 120
Beryllium	0.100	0.1005		mg/L		101	80 - 120
Cadmium	0.100	0.09908		mg/L		99	80 - 120
Chromium	0.100	0.1047		mg/L		105	80 - 120
Cobalt	0.100	0.1093		mg/L		109	80 - 120
Copper	0.200	0.2179		mg/L		109	80 - 120

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: LCS 310-396571/2-A

Matrix: Water

Analysis Batch: 397316

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 396571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Lead	0.200	0.2072		mg/L		104	80 - 120
Nickel	0.200	0.2161		mg/L		108	80 - 120
Selenium	0.400	0.3913		mg/L		98	80 - 120
Silver	0.100	0.1015		mg/L		101	80 - 120
Thallium	0.200	0.1733		mg/L		87	80 - 120
Zinc	0.200	0.1852		mg/L		93	80 - 120

Lab Sample ID: LCS 310-396571/2-A

Matrix: Water

Analysis Batch: 397438

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 396571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2103		mg/L		105	80 - 120
Vanadium	0.100	0.1038		mg/L		104	80 - 120

Lab Sample ID: 310-262482-4 DU

Matrix: Water

Analysis Batch: 397316

Client Sample ID: Leachate Manhole #4

Prep Type: Total/NA

Prep Batch: 396571

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00200	^3+	<0.00200	^3+	mg/L		NC	20
Arsenic	0.00148	J	0.001454	J	mg/L		2	20
Barium	0.156		0.1530		mg/L		2	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.00164		0.001582		mg/L		4	20
Copper	0.00354	J	0.003450	J	mg/L		2	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Nickel	0.00742		0.007474		mg/L		0.7	20
Selenium	<0.00500		<0.00500		mg/L		NC	20
Silver	<0.00100		<0.00100		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Zinc	<0.0200		<0.0200		mg/L		NC	20

Lab Sample ID: 310-262482-4 DU

Matrix: Water

Analysis Batch: 397438

Client Sample ID: Leachate Manhole #4

Prep Type: Total/NA

Prep Batch: 396571

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 310-396633/1-A
Matrix: Water
Analysis Batch: 396828

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 396633

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	<0.500		0.500	0.220	mg/L		08/15/23 09:21	08/16/23 11:21	1

Lab Sample ID: LCS 310-396633/2-A
Matrix: Water
Analysis Batch: 396828

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 396633

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia	4.00	3.749		mg/L		94	90 - 110

Method: 5220D LL - COD

Lab Sample ID: MB 310-396778/32
Matrix: Water
Analysis Batch: 396778

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	4.80	mg/L			08/16/23 09:36	1

Lab Sample ID: MB 310-396778/5
Matrix: Water
Analysis Batch: 396778

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	4.80	mg/L			08/16/23 09:36	1

Lab Sample ID: LCS 310-396778/3
Matrix: Water
Analysis Batch: 396778

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	123.5		mg/L		98	85 - 115

Lab Sample ID: LCS 310-396778/33
Matrix: Water
Analysis Batch: 396778

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	126.3		mg/L		101	85 - 115

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

Lab Sample ID: MB 310-396501/1
Matrix: Water
Analysis Batch: 396501

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			08/14/23 09:56	1

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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

Lab Sample ID: LCS 310-396501/2

Matrix: Water

Analysis Batch: 396501

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	95.00		mg/L		95	75 - 116

Lab Sample ID: MB 310-396612/1

Matrix: Water

Analysis Batch: 396612

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			08/15/23 07:55	1

Lab Sample ID: LCS 310-396612/2

Matrix: Water

Analysis Batch: 396612

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	94.00		mg/L		94	75 - 116

Lab Sample ID: 310-262482-5 DU

Matrix: Water

Analysis Batch: 396612

Client Sample ID: Leachate Manhole #5

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	132		136.0		mg/L		3	35

Method: SM 5210B - BOD, 5-Day

Lab Sample ID: USB 310-396290/1

Matrix: Water

Analysis Batch: 396290

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	<3.00		3.00	3.00	mg/L			08/11/23 06:18	1

Lab Sample ID: LCS 310-396290/2

Matrix: Water

Analysis Batch: 396290

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Biochemical Oxygen Demand	198	209.0		mg/L		106	85 - 115

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

GC/MS VOA

Analysis Batch: 396649

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-2	Leachate Manhole #2	Total/NA	Water	8260D	
310-262482-3	Leachate Manhole #3	Total/NA	Water	8260D	
310-262482-4	Leachate Manhole #4	Total/NA	Water	8260D	
310-262482-5	Leachate Manhole #5	Total/NA	Water	8260D	
310-262482-6	Trip Blank	Total/NA	Water	8260D	
MB 310-396649/5	Method Blank	Total/NA	Water	8260D	
LCS 310-396649/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-396649/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 397500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	8260D	
MB 310-397500/5	Method Blank	Total/NA	Water	8260D	
LCS 310-397500/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-397500/7	Lab Control Sample	Total/NA	Water	8260D	

Metals

Prep Batch: 396571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	3005A	
310-262482-2	Leachate Manhole #2	Total/NA	Water	3005A	
310-262482-3	Leachate Manhole #3	Total/NA	Water	3005A	
310-262482-4	Leachate Manhole #4	Total/NA	Water	3005A	
310-262482-5	Leachate Manhole #5	Total/NA	Water	3005A	
MB 310-396571/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-396571/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-262482-4 DU	Leachate Manhole #4	Total/NA	Water	3005A	

Analysis Batch: 397316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	6020B	396571
310-262482-2	Leachate Manhole #2	Total/NA	Water	6020B	396571
310-262482-3	Leachate Manhole #3	Total/NA	Water	6020B	396571
310-262482-4	Leachate Manhole #4	Total/NA	Water	6020B	396571
310-262482-5	Leachate Manhole #5	Total/NA	Water	6020B	396571
MB 310-396571/1-A	Method Blank	Total/NA	Water	6020B	396571
LCS 310-396571/2-A	Lab Control Sample	Total/NA	Water	6020B	396571
310-262482-4 DU	Leachate Manhole #4	Total/NA	Water	6020B	396571

Analysis Batch: 397438

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	6020B	396571
310-262482-2	Leachate Manhole #2	Total/NA	Water	6020B	396571
310-262482-3	Leachate Manhole #3	Total/NA	Water	6020B	396571
310-262482-4	Leachate Manhole #4	Total/NA	Water	6020B	396571
310-262482-5	Leachate Manhole #5	Total/NA	Water	6020B	396571
MB 310-396571/1-A	Method Blank	Total/NA	Water	6020B	396571
LCS 310-396571/2-A	Lab Control Sample	Total/NA	Water	6020B	396571
310-262482-4 DU	Leachate Manhole #4	Total/NA	Water	6020B	396571

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

General Chemistry

Analysis Batch: 396290

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	SM 5210B	
310-262482-2	Leachate Manhole #2	Total/NA	Water	SM 5210B	
310-262482-3	Leachate Manhole #3	Total/NA	Water	SM 5210B	
310-262482-4	Leachate Manhole #4	Total/NA	Water	SM 5210B	
310-262482-5	Leachate Manhole #5	Total/NA	Water	SM 5210B	
USB 310-396290/1	Method Blank	Total/NA	Water	SM 5210B	
LCS 310-396290/2	Lab Control Sample	Total/NA	Water	SM 5210B	

Analysis Batch: 396501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-2	Leachate Manhole #2	Total/NA	Water	I-3765-85	
310-262482-3	Leachate Manhole #3	Total/NA	Water	I-3765-85	
MB 310-396501/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-396501/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Analysis Batch: 396612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	I-3765-85	
310-262482-4	Leachate Manhole #4	Total/NA	Water	I-3765-85	
310-262482-5	Leachate Manhole #5	Total/NA	Water	I-3765-85	
MB 310-396612/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-396612/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-262482-5 DU	Leachate Manhole #5	Total/NA	Water	I-3765-85	

Prep Batch: 396633

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	Distill/Ammonia	
310-262482-2	Leachate Manhole #2	Total/NA	Water	Distill/Ammonia	
310-262482-3	Leachate Manhole #3	Total/NA	Water	Distill/Ammonia	
310-262482-4	Leachate Manhole #4	Total/NA	Water	Distill/Ammonia	
310-262482-5	Leachate Manhole #5	Total/NA	Water	Distill/Ammonia	
MB 310-396633/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 310-396633/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 396778

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	5220D LL	
310-262482-2	Leachate Manhole #2	Total/NA	Water	5220D LL	
310-262482-3	Leachate Manhole #3	Total/NA	Water	5220D LL	
310-262482-4	Leachate Manhole #4	Total/NA	Water	5220D LL	
310-262482-5	Leachate Manhole #5	Total/NA	Water	5220D LL	
MB 310-396778/32	Method Blank	Total/NA	Water	5220D LL	
MB 310-396778/5	Method Blank	Total/NA	Water	5220D LL	
LCS 310-396778/3	Lab Control Sample	Total/NA	Water	5220D LL	
LCS 310-396778/33	Lab Control Sample	Total/NA	Water	5220D LL	

Analysis Batch: 396828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-1	Leachate Manhole #1	Total/NA	Water	350.1	396633
310-262482-2	Leachate Manhole #2	Total/NA	Water	350.1	396633
310-262482-3	Leachate Manhole #3	Total/NA	Water	350.1	396633

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

General Chemistry (Continued)

Analysis Batch: 396828 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262482-4	Leachate Manhole #4	Total/NA	Water	350.1	396633
310-262482-5	Leachate Manhole #5	Total/NA	Water	350.1	396633
MB 310-396633/1-A	Method Blank	Total/NA	Water	350.1	396633
LCS 310-396633/2-A	Lab Control Sample	Total/NA	Water	350.1	396633

Lab Chronicle

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #1

Lab Sample ID: 310-262482-1

Date Collected: 08/10/23 17:20

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	397500	FE5V	EET CF	08/23/23 13:02
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:24
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397438	A6US	EET CF	08/22/23 13:18
Total/NA	Prep	Distill/Ammonia			396633	MQ8M	EET CF	08/15/23 09:21
Total/NA	Analysis	350.1		9.38	396828	WZC8	EET CF	08/16/23 12:23
Total/NA	Analysis	5220D LL		10	396778	ENB7	EET CF	08/16/23 09:36
Total/NA	Analysis	I-3765-85		1	396612	DGU1	EET CF	08/15/23 07:55
Total/NA	Analysis	SM 5210B		1	396290	W9YR	EET CF	08/11/23 17:43

Client Sample ID: Leachate Manhole #2

Lab Sample ID: 310-262482-2

Date Collected: 08/10/23 17:00

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	396649	FE5V	EET CF	08/15/23 19:40
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:27
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397438	A6US	EET CF	08/22/23 13:20
Total/NA	Prep	Distill/Ammonia			396633	MQ8M	EET CF	08/15/23 09:21
Total/NA	Analysis	350.1		1	396828	WZC8	EET CF	08/16/23 11:41
Total/NA	Analysis	5220D LL		5	396778	ENB7	EET CF	08/16/23 09:36
Total/NA	Analysis	I-3765-85		1	396501	T8GC	EET CF	08/14/23 09:56
Total/NA	Analysis	SM 5210B		1	396290	W9YR	EET CF	08/11/23 17:51

Client Sample ID: Leachate Manhole #3

Lab Sample ID: 310-262482-3

Date Collected: 08/10/23 16:25

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	396649	FE5V	EET CF	08/15/23 13:40
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:31
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397438	A6US	EET CF	08/22/23 13:22
Total/NA	Prep	Distill/Ammonia			396633	MQ8M	EET CF	08/15/23 09:21
Total/NA	Analysis	350.1		1	396828	WZC8	EET CF	08/16/23 11:37
Total/NA	Analysis	5220D LL		5	396778	ENB7	EET CF	08/16/23 09:36
Total/NA	Analysis	I-3765-85		1	396501	T8GC	EET CF	08/14/23 09:56
Total/NA	Analysis	SM 5210B		1	396290	W9YR	EET CF	08/11/23 17:59

Eurofins Cedar Falls

Lab Chronicle

Client: SCS Engineers
Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

Client Sample ID: Leachate Manhole #4

Lab Sample ID: 310-262482-4

Date Collected: 08/10/23 15:40

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	396649	FE5V	EET CF	08/15/23 14:02
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:40
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397438	A6US	EET CF	08/22/23 13:24
Total/NA	Prep	Distill/Ammonia			396633	MQ8M	EET CF	08/15/23 09:21
Total/NA	Analysis	350.1		1	396828	WZC8	EET CF	08/16/23 11:42
Total/NA	Analysis	5220D LL		1	396778	ENB7	EET CF	08/16/23 09:36
Total/NA	Analysis	I-3765-85		1	396612	DGU1	EET CF	08/15/23 07:55
Total/NA	Analysis	SM 5210B		4	396290	W9YR	EET CF	08/11/23 18:08

Client Sample ID: Leachate Manhole #5

Lab Sample ID: 310-262482-5

Date Collected: 08/10/23 16:10

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	396649	FE5V	EET CF	08/15/23 14:25
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:45
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397438	A6US	EET CF	08/22/23 13:42
Total/NA	Prep	Distill/Ammonia			396633	MQ8M	EET CF	08/15/23 09:21
Total/NA	Analysis	350.1		1	396828	WZC8	EET CF	08/16/23 11:33
Total/NA	Analysis	5220D LL		5	396778	ENB7	EET CF	08/16/23 09:36
Total/NA	Analysis	I-3765-85		1	396612	DGU1	EET CF	08/15/23 07:55
Total/NA	Analysis	SM 5210B		4	396290	W9YR	EET CF	08/11/23 18:24

Client Sample ID: Trip Blank

Lab Sample ID: 310-262482-6

Date Collected: 08/10/23 00:00

Matrix: Water

Date Received: 08/11/23 16:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	396649	FE5V	EET CF	08/15/23 12:32

Laboratory References:

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

Eurofins Cedar Falls

Accreditation/Certification Summary

Client: SCS Engineers

Project/Site: For Madison 2023 Annual Leachate Sampling

Job ID: 310-262482-1

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
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15

Method Summary

Client: SCS Engineers

Job ID: 310-262482-1

Project/Site: For Madison 2023 Annual Leachate Sampling

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
350.1	Nitrogen, Ammonia	EPA	EET CF
5220D LL	COD	SM	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
SM 5210B	BOD, 5-Day	SM	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
Distill/Ammonia	Distillation, Ammonia	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.

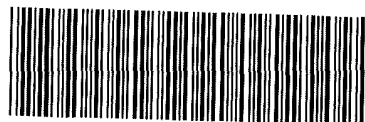
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

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



Environment Testing
America



310-262482 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>8/11/23</u>	<u>1615</u>	<u>SS</u>
Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee			
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID: _____			
Multiple Coolers? ☐ Yes ☒ No If yes: Cooler # _____ of _____			
Cooler Custody Seals Present? ☐ Yes ☒ No If yes: Cooler custody seals intact? ☐ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes: Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☒ Yes ☐ No If yes: Which VOA samples are in cooler? ↓			
<u>HCL - All</u>			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>R</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.9</u>		Corrected Temp (°C): <u>0.9</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? ☐ Yes ☐ No			
a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-262482-1

Login Number: 262482

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Tucker, Sarah L

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



ANALYTICAL REPORT

PREPARED FOR

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

Generated 8/22/2023 3:21:01 PM

JOB DESCRIPTION

Fort Madison 2023 Annual Sampling

JOB NUMBER

310-262487-1

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
8/22/2023 3:21:01 PM

Authorized for release by
Meredith Liechti, Service Center Manager
meredith.liechti@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	7
Definitions	9
QC Sample Results	10
QC Association	11
Chronicle	12
Certification Summary	13
Method Summary	14
Chain of Custody	15
Receipt Checklists	17



Case Narrative

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Job ID: 310-262487-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-262487-1

Receipt

The samples were received on 8/11/2023 4:15 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.9°C

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.

Sample Summary

Client: SCS Engineers

Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-262487-1	P-110A	Ground Water	08/10/23 20:02	08/11/23 16:15
310-262487-2	MW-DR	Ground Water	08/10/23 20:02	08/11/23 16:15

1

2

3

4

5

6

7

8

9

10

11

12

13

14

Detection Summary

Client: SCS Engineers

Job ID: 310-262487-1

Project/Site: Fort Madison 2023 Annual Sampling

Client Sample ID: P-110A

Lab Sample ID: 310-262487-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000648	J	0.00200	0.000530	mg/L	1		6020B	Total/NA

Client Sample ID: MW-DR

Lab Sample ID: 310-262487-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000569	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Total Suspended Solids	1.25	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Client Sample ID: P-110A

Lab Sample ID: 310-262487-1

Date Collected: 08/10/23 20:02

Matrix: Ground Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.000648	J	0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:47	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:47	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<5.00		5.00	1.70	mg/L			08/14/23 09:56	1

Client Sample Results

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Client Sample ID: MW-DR

Lab Sample ID: 310-262487-2

Date Collected: 08/10/23 20:02

Matrix: Ground Water

Date Received: 08/11/23 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.000569	J	0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 12:49	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 12:49	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 12:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	1.25	J	1.88	0.638	mg/L			08/14/23 09:56	1

Definitions/Glossary

Client: SCS Engineers

Job ID: 310-262487-1

Project/Site: Fort Madison 2023 Annual Sampling

Qualifiers

Metals

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

General Chemistry

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

Glossary

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

QC Sample Results

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-396571/1-A
Matrix: Water
Analysis Batch: 397316

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 396571

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/15/23 10:11	08/21/23 11:45	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/15/23 10:11	08/21/23 11:45	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/15/23 10:11	08/21/23 11:45	1

Lab Sample ID: LCS 310-396571/2-A
Matrix: Water
Analysis Batch: 397316

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 396571

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	0.200	0.2031		mg/L		102	80 - 120
Cobalt	0.100	0.1093		mg/L		109	80 - 120
Lead	0.200	0.2072		mg/L		104	80 - 120

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

Lab Sample ID: MB 310-396501/1
Matrix: Water
Analysis Batch: 396501

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			08/14/23 09:56	1

Lab Sample ID: LCS 310-396501/2
Matrix: Water
Analysis Batch: 396501

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	95.00		mg/L		95	75 - 116

QC Association Summary

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Metals

Prep Batch: 396571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262487-1	P-110A	Total/NA	Ground Water	3005A	
310-262487-2	MW-DR	Total/NA	Ground Water	3005A	
MB 310-396571/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-396571/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 397316

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262487-1	P-110A	Total/NA	Ground Water	6020B	396571
310-262487-2	MW-DR	Total/NA	Ground Water	6020B	396571
MB 310-396571/1-A	Method Blank	Total/NA	Water	6020B	396571
LCS 310-396571/2-A	Lab Control Sample	Total/NA	Water	6020B	396571

General Chemistry

Analysis Batch: 396501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262487-1	P-110A	Total/NA	Ground Water	I-3765-85	
310-262487-2	MW-DR	Total/NA	Ground Water	I-3765-85	
MB 310-396501/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-396501/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Lab Chronicle

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

Client Sample ID: P-110A
Date Collected: 08/10/23 20:02
Date Received: 08/11/23 16:15

Lab Sample ID: 310-262487-1
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:47
Total/NA	Analysis	I-3765-85		1	396501	T8GC	EET CF	08/14/23 09:56

Client Sample ID: MW-DR
Date Collected: 08/10/23 20:02
Date Received: 08/11/23 16:15

Lab Sample ID: 310-262487-2
Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			396571	KCK5	EET CF	08/15/23 10:11
Total/NA	Analysis	6020B		1	397316	A6US	EET CF	08/21/23 12:49
Total/NA	Analysis	I-3765-85		1	396501	T8GC	EET CF	08/14/23 09:56

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

Accreditation/Certification Summary

Client: SCS Engineers
Project/Site: Fort Madison 2023 Annual Sampling

Job ID: 310-262487-1

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

Method Summary

Client: SCS Engineers

Job ID: 310-262487-1

Project/Site: Fort Madison 2023 Annual Sampling

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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

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

Laboratory References:

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



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>GS-C/O Fort Dodge</u>			
City/State:	CITY	STATE	Project:
<u>IA</u> <u>1A</u>			
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
<u>8/11/23</u> <u>1615</u> <u>ST</u>			
Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☒ Yes ☐ No If yes: Cooler ID: _____			
Multiple Coolers? ☐ Yes ☒ No If yes: Cooler # _____ of _____			
Cooler Custody Seals Present? ☐ Yes ☒ No If yes: Cooler custody seals intact? ☐ Yes ☐ No			
Sample Custody Seals Present? ☐ Yes ☒ No If yes: Sample custody seals intact? ☐ Yes ☐ No			
Trip Blank Present? ☐ Yes ☒ No If yes: Which VOA samples are in cooler? ↓			
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID: <u>R</u>		Correction Factor (°C): <u>0</u>	
• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C): <u>0.9</u>		Corrected Temp (°C): <u>0.9</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? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

704 Enterprise Drive
Cedar Falls, Iowa 50613

319.277.2401 (phone)
515.792.7989 (fax)

SAMPLER: _____
SITE NAME: _____
ADDRESS: _____
CITY/STATE/ZIP: _____
TELEPHONE NUMBER: _____
SAMPLED BY: (PRINT NAME) _____
SIGNATURE: _____

SAMPLER: Chad Ventinger
SITE NAME: City of Fort Madison/Rodeo Park Dump
ADDRESS: _____
STATE/ZIP: _____
E NUMBER: _____
PRINT NAME: Chad Ventinger
SIGNATURE: [Signature]

Fax: _____

REPORT TO:	
NAME:	Nathan Ohrt
COMPANY NAME:	SCS Engineers
PROJECT NAME:	Fort Madison 2023 Annual Sampling
PROJECT NUMBER:	27223190.00
ADDRESS:	1690 All State Court, Suite 100
CITY/STATE/ZIP:	West Des Moines, IA 50265

TestAmerica Des Moines SC
214
DSM 214

Page 1 of 1

	# of Containers Ordered	Date Sampled	Time Sampled	# of Containers Shipped	Grab	Composite	Field Filtered	Preservative						Matrix							Analyze For:							
Sample ID								Ice	MNO ₃ , (Red & White Label)	HCl (Blue & White Label)	NH ₄ OH (Orange & White Label)	MgSO ₄ , Plastic (Yellow & White Label)	H ₂ SO ₄ , Glass (Yellow & White Label)	PNone (Black & White Label)	Trip Blank	Groundwater	Wastewater	Surface Water	Sludge	Soil	Trip Blank	Appendix I metals	Arsenic	Cobalt	Lead	Total Suspended Solids		
WT-106B							X	X								X							X	X	X	X		
WT-107B							X									X							X	X	X	X		
P-108A							X									X							X	X	X	X		
WT-111B							X									X							X	X	X	X		
P-111A							X									X							X	X	X	X		
WT-112B							X									X							X	X	X	X		
P-112A							X									X							X	X	X	X		
P-105A							X									X							X	X	X	X		
WT-105B							X									X							X	X	X	X		
WT-102B							X									X							X	X	X	X		
P-102A							X									X							X	X	X	X		
WT-113B							X									X							X			X		
P-103A							X									X							X	X	X	X		
P-104A							X									X							X	X	X	X		
P-110A		8-10	20:02		X		X									X							X	X	X	X		
MW-DC							X									X							X	X	X	X		
MW-DR <i>[Signature]</i>		8-10	20:02		X		X									X							X	X	X	X		

Shipped Via:
Date: 8-11-23 Time: 14:00

Comments:
[Handwritten Notes]

For Appendix I and II analysis, report to the reporting limits, not the detection limits. Make sure that the reporting limits are below the EPA's MCL.
(2) For analytes other than Appendix I and II, report to the detection limits. Please make sure that the detection limits are below the EPA's MCL.
(3) In the "Result" column for all EDO files, when non-detect, please report "<" the reporting limit or the detection limit instead of indicating with "ND".

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-262487-1

Login Number: 262487

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Tucker, Sarah L

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

ANALYTICAL REPORT

PREPARED FOR

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

Generated 9/5/2023 8:46:25 AM

JOB DESCRIPTION

City of Fort Madison Landfills

JOB NUMBER

310-262925-1

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
9/5/2023 8:46:25 AM

Authorized for release by
Meredith Liechti, Service Center Manager
meredith.liechti@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	21
QC Sample Results	22
QC Association	24
Chronicle	26
Certification Summary	29
Method Summary	30
Chain of Custody	31
Receipt Checklists	34



Case Narrative

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Job ID: 310-262925-1

Laboratory: Eurofins Cedar Falls

Narrative

Job Narrative 310-262925-1

Receipt

The samples were received on 8/18/2023 8:25 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 0.8°C and 1.1°C

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.

Sample Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-262925-1	WT-106B	Ground Water	08/14/23 19:19	08/18/23 08:25
310-262925-2	WT-107B	Ground Water	08/14/23 18:48	08/18/23 08:25
310-262925-3	P-108A	Ground Water	08/14/23 17:52	08/18/23 08:25
310-262925-4	WT-111B	Ground Water	08/15/23 12:27	08/18/23 08:25
310-262925-5	P-111A	Ground Water	08/15/23 13:10	08/18/23 08:25
310-262925-6	WT-112B	Ground Water	08/15/23 14:18	08/18/23 08:25
310-262925-7	P-112A	Ground Water	08/15/23 14:57	08/18/23 08:25
310-262925-8	P-105A	Ground Water	08/15/23 11:41	08/18/23 08:25
310-262925-9	WT-105B	Ground Water	08/15/23 11:13	08/18/23 08:25
310-262925-10	WT-113B	Ground Water	08/15/23 10:27	08/18/23 08:25
310-262925-11	P-103A	Ground Water	08/15/23 09:44	08/18/23 08:25
310-262925-12	P104A	Ground Water	08/14/23 19:56	08/18/23 08:25
310-262925-13	MW-DC	Ground Water	08/15/23 12:27	08/18/23 08:25

Detection Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-106B

Lab Sample ID: 310-262925-1

No Detections.

Client Sample ID: WT-107B

Lab Sample ID: 310-262925-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00133		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	1.25	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: P-108A

Lab Sample ID: 310-262925-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00135	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.000286	J	0.000500	0.000170	mg/L	1		6020B	Total/NA

Client Sample ID: WT-111B

Lab Sample ID: 310-262925-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00108		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	1.63	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: P-111A

Lab Sample ID: 310-262925-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.000632	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.000764		0.000500	0.000170	mg/L	1		6020B	Total/NA

Client Sample ID: WT-112B

Lab Sample ID: 310-262925-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.000230	J	0.000500	0.000170	mg/L	1		6020B	Total/NA

Client Sample ID: P-112A

Lab Sample ID: 310-262925-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00313		0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.000236	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.50		1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: P-105A

Lab Sample ID: 310-262925-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00108	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.000358	J	0.000500	0.000170	mg/L	1		6020B	Total/NA

Client Sample ID: WT-105B

Lab Sample ID: 310-262925-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	0.750	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: WT-113B

Lab Sample ID: 310-262925-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00174	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0187		0.00200	0.000640	mg/L	1		6020B	Total/NA
Cobalt	0.000900		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	13.0		3.75	1.28	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Detection Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-103A

Lab Sample ID: 310-262925-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.000687		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.000399	J	0.000500	0.000240	mg/L	1		6020B	Total/NA
Total Suspended Solids	16.9		1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: P104A

Lab Sample ID: 310-262925-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00154	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Cobalt	0.000238	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.63		1.88	0.638	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-DC

Lab Sample ID: 310-262925-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	0.00105		0.000500	0.000170	mg/L	1		6020B	Total/NA
Total Suspended Solids	1.00	J	1.88	0.638	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Cedar Falls

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-106B

Lab Sample ID: 310-262925-1

Date Collected: 08/14/23 19:19

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:31	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:31	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-107B

Lab Sample ID: 310-262925-2

Date Collected: 08/14/23 18:48

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:33	1
Cobalt	0.00133		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:33	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	1.25	J	1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-108A

Lab Sample ID: 310-262925-3

Date Collected: 08/14/23 17:52

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00135	J	0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:35	1
Cobalt	0.000286	J	0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:35	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-111B

Lab Sample ID: 310-262925-4

Date Collected: 08/15/23 12:27

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:38	1
Cobalt	0.00108		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:38	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:38	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	1.63	J	1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-111A

Lab Sample ID: 310-262925-5

Date Collected: 08/15/23 13:10

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.000632	J	0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:40	1
Cobalt	0.000764		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:40	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-112B

Lab Sample ID: 310-262925-6

Date Collected: 08/15/23 14:18

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:43	1
Cobalt	0.000230	J	0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:43	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-112A

Lab Sample ID: 310-262925-7

Date Collected: 08/15/23 14:57

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00313		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:45	1
Cobalt	0.000236	J	0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:45	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:45	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	5.50		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-105A

Lab Sample ID: 310-262925-8

Date Collected: 08/15/23 11:41

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00108	J	0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:48	1
Cobalt	0.000358	J	0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:48	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:48	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	<1.88		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-105B

Lab Sample ID: 310-262925-9

Date Collected: 08/15/23 11:13

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 01:50	1
Cobalt	<0.000500		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 01:50	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 01:50	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	0.750	J	1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-113B

Lab Sample ID: 310-262925-10

Date Collected: 08/15/23 10:27

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00200		0.00200	0.00100	mg/L		08/21/23 09:50	08/24/23 16:40	1
Arsenic	0.00174	J	0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 02:00	1
Barium	0.0187		0.00200	0.000640	mg/L		08/30/23 09:30	09/01/23 15:17	1
Beryllium	<0.00100		0.00100	0.000330	mg/L		08/21/23 09:50	08/24/23 02:00	1
Cadmium	<0.000200		0.000200	0.000100	mg/L		08/21/23 09:50	08/24/23 02:00	1
Chromium	<0.00500		0.00500	0.00110	mg/L		08/21/23 09:50	08/24/23 02:00	1
Cobalt	0.000900		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 02:00	1
Copper	<0.00500		0.00500	0.00180	mg/L		08/21/23 09:50	08/24/23 02:00	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 02:00	1
Nickel	<0.00500		0.00500	0.00190	mg/L		08/21/23 09:50	08/24/23 02:00	1
Selenium	<0.00500		0.00500	0.00140	mg/L		08/21/23 09:50	08/24/23 02:00	1
Silver	<0.00100		0.00100	0.000500	mg/L		08/21/23 09:50	08/24/23 02:00	1
Thallium	<0.00100		0.00100	0.000260	mg/L		08/21/23 09:50	08/24/23 02:00	1
Vanadium	<0.00500		0.00500	0.00110	mg/L		08/21/23 09:50	08/24/23 02:00	1
Zinc	<0.0200		0.0200	0.00640	mg/L		08/21/23 09:50	08/24/23 02:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	13.0		3.75	1.28	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-103A

Lab Sample ID: 310-262925-11

Date Collected: 08/15/23 09:44

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 02:05	1
Cobalt	0.000687		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 02:05	1
Lead	0.000399	J	0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 02:05	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	16.9		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P104A

Lab Sample ID: 310-262925-12

Date Collected: 08/14/23 19:56

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.00154	J	0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 02:08	1
Cobalt	0.000238	J	0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 02:08	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 02:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	5.63		1.88	0.638	mg/L			08/18/23 09:40	1

Client Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: MW-DC

Lab Sample ID: 310-262925-13

Date Collected: 08/15/23 12:27

Matrix: Ground Water

Date Received: 08/18/23 08:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.00200		0.00200	0.000530	mg/L		08/21/23 09:50	08/24/23 02:10	1
Cobalt	0.00105		0.000500	0.000170	mg/L		08/21/23 09:50	08/24/23 02:10	1
Lead	<0.000500		0.000500	0.000240	mg/L		08/21/23 09:50	08/24/23 02:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	1.00	J	1.88	0.638	mg/L			08/18/23 09:40	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Qualifiers

Metals

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

General Chemistry

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

Glossary

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

QC Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: LCS 310-397167/2-A

Matrix: Water

Analysis Batch: 397560

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 397167

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Antimony	0.200	0.2063		mg/L		103	80 - 120	
Arsenic	0.200	0.2002		mg/L		100	80 - 120	
Barium	0.100	0.09843		mg/L		98	80 - 120	
Beryllium	0.100	0.1006		mg/L		101	80 - 120	
Cadmium	0.100	0.09941		mg/L		99	80 - 120	
Chromium	0.100	0.09859		mg/L		99	80 - 120	
Cobalt	0.100	0.09861		mg/L		99	80 - 120	
Copper	0.200	0.2039		mg/L		102	80 - 120	
Lead	0.200	0.1975		mg/L		99	80 - 120	
Nickel	0.200	0.2034		mg/L		102	80 - 120	
Selenium	0.400	0.4005		mg/L		100	80 - 120	
Silver	0.100	0.1004		mg/L		100	80 - 120	
Vanadium	0.100	0.09838		mg/L		98	80 - 120	
Zinc	0.200	0.1981		mg/L		99	80 - 120	

Lab Sample ID: LCS 310-397167/2-A

Matrix: Water

Analysis Batch: 397703

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 397167

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits	
Antimony	0.200	0.2175		mg/L		109	80 - 120	
Arsenic	0.200	0.2133		mg/L		107	80 - 120	
Barium	0.100	0.1021		mg/L		102	80 - 120	
Beryllium	0.100	0.1047		mg/L		105	80 - 120	
Cadmium	0.100	0.1019		mg/L		102	80 - 120	
Chromium	0.100	0.1055		mg/L		106	80 - 120	
Cobalt	0.100	0.1027		mg/L		103	80 - 120	
Copper	0.200	0.2205		mg/L		110	80 - 120	
Lead	0.200	0.2073		mg/L		104	80 - 120	
Nickel	0.200	0.2178		mg/L		109	80 - 120	
Selenium	0.400	0.4158		mg/L		104	80 - 120	
Silver	0.100	0.1002		mg/L		100	80 - 120	
Thallium	0.200	0.1612		mg/L		81	80 - 120	
Vanadium	0.100	0.1052		mg/L		105	80 - 120	
Zinc	0.200	0.1967		mg/L		98	80 - 120	

Lab Sample ID: 310-262925-10 DU

Matrix: Ground Water

Analysis Batch: 397621

Client Sample ID: WT-113B

Prep Type: Total/NA

Prep Batch: 397167

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	0.00174	J	0.001590	J	mg/L		9	20
Beryllium	<0.00100		<0.00100		mg/L		NC	20
Cadmium	<0.000200		<0.000200		mg/L		NC	20
Chromium	<0.00500		<0.00500		mg/L		NC	20
Cobalt	0.000900		0.0008240		mg/L		9	20
Copper	<0.00500		<0.00500		mg/L		NC	20
Lead	<0.000500		<0.000500		mg/L		NC	20
Nickel	<0.00500		<0.00500		mg/L		NC	20

Eurofins Cedar Falls

QC Sample Results

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

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

Lab Sample ID: 310-262925-10 DU

Matrix: Ground Water

Analysis Batch: 397621

Client Sample ID: WT-113B

Prep Type: Total/NA

Prep Batch: 397167

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Selenium	<0.00500		<0.00500		mg/L		NC	20
Silver	<0.00100		<0.00100		mg/L		NC	20
Thallium	<0.00100		<0.00100		mg/L		NC	20
Vanadium	<0.00500		<0.00500		mg/L		NC	20
Zinc	<0.0200		<0.0200		mg/L		NC	20

Lab Sample ID: 310-262925-10 DU

Matrix: Ground Water

Analysis Batch: 397703

Client Sample ID: WT-113B

Prep Type: Total/NA

Prep Batch: 397167

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Antimony	<0.00200		<0.00200		mg/L		NC	20

Lab Sample ID: MB 310-398134/1-A

Matrix: Water

Analysis Batch: 398502

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 398134

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	<0.00200		0.00200	0.000640	mg/L		08/30/23 09:30	09/01/23 14:46	1

Lab Sample ID: LCS 310-398134/2-A

Matrix: Water

Analysis Batch: 398502

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 398134

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Barium	0.100	0.09434		mg/L		94	80 - 120

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

Lab Sample ID: MB 310-397088/1

Matrix: Water

Analysis Batch: 397088

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<5.00		5.00	1.70	mg/L			08/18/23 09:40	1

Lab Sample ID: LCS 310-397088/2

Matrix: Water

Analysis Batch: 397088

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Total Suspended Solids	100	102.0		mg/L		102	75 - 116

Lab Sample ID: 310-262925-10 DU

Matrix: Ground Water

Analysis Batch: 397088

Client Sample ID: WT-113B

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Total Suspended Solids	13.0		14.00		mg/L		7	35

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Metals

Prep Batch: 397167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-1	WT-106B	Total/NA	Ground Water	3005A	
310-262925-2	WT-107B	Total/NA	Ground Water	3005A	
310-262925-3	P-108A	Total/NA	Ground Water	3005A	
310-262925-4	WT-111B	Total/NA	Ground Water	3005A	
310-262925-5	P-111A	Total/NA	Ground Water	3005A	
310-262925-6	WT-112B	Total/NA	Ground Water	3005A	
310-262925-7	P-112A	Total/NA	Ground Water	3005A	
310-262925-8	P-105A	Total/NA	Ground Water	3005A	
310-262925-9	WT-105B	Total/NA	Ground Water	3005A	
310-262925-10	WT-113B	Total/NA	Ground Water	3005A	
310-262925-11	P-103A	Total/NA	Ground Water	3005A	
310-262925-12	P104A	Total/NA	Ground Water	3005A	
310-262925-13	MW-DC	Total/NA	Ground Water	3005A	
LCS 310-397167/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-262925-10 DU	WT-113B	Total/NA	Ground Water	3005A	

Analysis Batch: 397560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-397167/2-A	Lab Control Sample	Total/NA	Water	6020B	397167

Analysis Batch: 397621

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-1	WT-106B	Total/NA	Ground Water	6020B	397167
310-262925-2	WT-107B	Total/NA	Ground Water	6020B	397167
310-262925-3	P-108A	Total/NA	Ground Water	6020B	397167
310-262925-4	WT-111B	Total/NA	Ground Water	6020B	397167
310-262925-5	P-111A	Total/NA	Ground Water	6020B	397167
310-262925-6	WT-112B	Total/NA	Ground Water	6020B	397167
310-262925-7	P-112A	Total/NA	Ground Water	6020B	397167
310-262925-8	P-105A	Total/NA	Ground Water	6020B	397167
310-262925-9	WT-105B	Total/NA	Ground Water	6020B	397167
310-262925-10	WT-113B	Total/NA	Ground Water	6020B	397167
310-262925-11	P-103A	Total/NA	Ground Water	6020B	397167
310-262925-12	P104A	Total/NA	Ground Water	6020B	397167
310-262925-13	MW-DC	Total/NA	Ground Water	6020B	397167
310-262925-10 DU	WT-113B	Total/NA	Ground Water	6020B	397167

Analysis Batch: 397703

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-10	WT-113B	Total/NA	Ground Water	6020B	397167
LCS 310-397167/2-A	Lab Control Sample	Total/NA	Water	6020B	397167
310-262925-10 DU	WT-113B	Total/NA	Ground Water	6020B	397167

Prep Batch: 398134

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-10	WT-113B	Total/NA	Ground Water	3005A	
MB 310-398134/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-398134/2-A	Lab Control Sample	Total/NA	Water	3005A	

Eurofins Cedar Falls

QC Association Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Metals

Analysis Batch: 398502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-10	WT-113B	Total/NA	Ground Water	6020B	398134
MB 310-398134/1-A	Method Blank	Total/NA	Water	6020B	398134
LCS 310-398134/2-A	Lab Control Sample	Total/NA	Water	6020B	398134

General Chemistry

Analysis Batch: 397088

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-262925-1	WT-106B	Total/NA	Ground Water	I-3765-85	
310-262925-2	WT-107B	Total/NA	Ground Water	I-3765-85	
310-262925-3	P-108A	Total/NA	Ground Water	I-3765-85	
310-262925-4	WT-111B	Total/NA	Ground Water	I-3765-85	
310-262925-5	P-111A	Total/NA	Ground Water	I-3765-85	
310-262925-6	WT-112B	Total/NA	Ground Water	I-3765-85	
310-262925-7	P-112A	Total/NA	Ground Water	I-3765-85	
310-262925-8	P-105A	Total/NA	Ground Water	I-3765-85	
310-262925-9	WT-105B	Total/NA	Ground Water	I-3765-85	
310-262925-10	WT-113B	Total/NA	Ground Water	I-3765-85	
310-262925-11	P-103A	Total/NA	Ground Water	I-3765-85	
310-262925-12	P104A	Total/NA	Ground Water	I-3765-85	
310-262925-13	MW-DC	Total/NA	Ground Water	I-3765-85	
MB 310-397088/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-397088/2	Lab Control Sample	Total/NA	Water	I-3765-85	
310-262925-10 DU	WT-113B	Total/NA	Ground Water	I-3765-85	

Lab Chronicle

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-106B

Date Collected: 08/14/23 19:19

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-1

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:31
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: WT-107B

Date Collected: 08/14/23 18:48

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-2

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:33
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: P-108A

Date Collected: 08/14/23 17:52

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-3

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:35
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: WT-111B

Date Collected: 08/15/23 12:27

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-4

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:38
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: P-111A

Date Collected: 08/15/23 13:10

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-5

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:40
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Lab Chronicle

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: WT-112B

Date Collected: 08/15/23 14:18

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-6

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:43
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: P-112A

Date Collected: 08/15/23 14:57

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-7

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:45
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: P-105A

Date Collected: 08/15/23 11:41

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-8

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:48
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: WT-105B

Date Collected: 08/15/23 11:13

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-9

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 01:50
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: WT-113B

Date Collected: 08/15/23 10:27

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-10

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 02:00
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397703	A6US	EET CF	08/24/23 16:40
Total/NA	Prep	3005A			398134	KCK5	EET CF	08/30/23 09:30
Total/NA	Analysis	6020B		1	398502	DHM5	EET CF	09/01/23 15:17
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Eurofins Cedar Falls

Lab Chronicle

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

Client Sample ID: P-103A

Date Collected: 08/15/23 09:44

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-11

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 02:05
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: P104A

Date Collected: 08/14/23 19:56

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-12

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 02:08
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Client Sample ID: MW-DC

Date Collected: 08/15/23 12:27

Date Received: 08/18/23 08:25

Lab Sample ID: 310-262925-13

Matrix: Ground Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			397167	QTZ5	EET CF	08/21/23 09:50
Total/NA	Analysis	6020B		1	397621	A6US	EET CF	08/24/23 02:10
Total/NA	Analysis	I-3765-85		1	397088	DGU1	EET CF	08/18/23 09:40

Laboratory References:

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

Accreditation/Certification Summary

Client: SCS Engineers
Project/Site: City of Fort Madison Landfills

Job ID: 310-262925-1

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

Method Summary

Client: SCS Engineers

Job ID: 310-262925-1

Project/Site: City of Fort Madison Landfills

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET CF
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF

Protocol References:

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

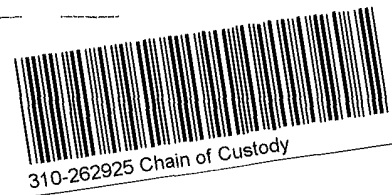
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

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



Environment Testing
America



Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>8/18/23</u>	<u>0825</u>	<u>[Signature]</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>1</u> of <u>2</u>
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID:		Correction Factor (°C):	
<u>T</u>		<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):		Corrected Temp (°C):	
<u>0.8</u>		<u>0.8</u>	
• Sample Container Temperature			
Container(s) used:	<u>CONTAINER 1</u>		<u>CONTAINER 2</u>
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			



Environment Testing
America

Place COC scanning label
here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: <u>SCS</u>			
City/State:	CITY	STATE	Project:
		<u>IA</u>	
Receipt Information			
Date/Time Received:	DATE	TIME	Received By:
	<u>8/18/23</u>	<u>0825</u>	<u>[Signature]</u>
Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?		☒ Yes ☐ No	If yes: Cooler ID: _____
Multiple Coolers?		☒ Yes ☐ No	If yes: Cooler # <u>2</u> of <u>2</u>
Cooler Custody Seals Present?		☒ Yes ☐ No	If yes: Cooler custody seals intact? ☒ Yes ☐ No
Sample Custody Seals Present?		☐ Yes ☒ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?		☐ Yes ☒ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record			
Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE			
Thermometer ID:		Correction Factor (°C):	
<u>J</u>		<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):		Corrected Temp (°C):	
<u>1.1</u>		<u>1.1</u>	
• Sample Container Temperature			
Container(s) used:	CONTAINER 1		CONTAINER 2
Uncorrected Temp (°C):			
Corrected Temp (°C):			
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) If yes: Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

TestAmerica

704 Enterprise Drive
Cedar Falls, Iowa 50613

319 277 2401 (phone)
515 792 7989 (fax)

SAMPLE: Chad Dentlinger
SITE NAME: City of Fort Madison/Rodeo Park Dump
ADDRESS: _____
CITY/STATE/ZIP: _____
TELEPHONE NUMBER: _____
FAX: _____
SAMPLED BY (PRINT NAME): _____
SIGNATURE: [Signature]

REPORT TO: _____
NAME: Nathan Dht
COMPANY NAME: SCS Engineers
PROJECT NAME: Fort Madison 2023 Annual Sampling
PROJECT NUMBER: 27223190.00
ADDRESS: 1690 All State Court, Suite 100
CITY/STATE/ZIP: West Des Moines, IA 50265

Sample ID	# of Containers Ordered	Date Sampled	Time Sampled	# of Containers Shipped	Grab	Composite	Field Filtered	PRESERVATIVE							MATRIX						ANALYZE FOR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
								Ice	H ₂ O ₂ (Red & White Label)	HCl (Blue & White Label)	NaOH (Orange & White Label)	H ₂ SO ₄ Plastic (Yellow & White Label)	H ₂ SO ₄ Glass (Yellow & White Label)	None (Black & White Label)	Trip Blank	Groundwater	Wastewater	Surface Water	Sludge	Soil	Trip Blank	Appendix I metals	Arsenic	Cobalt	Lead	Total Suspended Solids																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-262925-1

Login Number: 262925

List Source: Eurofins Cedar Falls

List Number: 1

Creator: Homolar, Dana J

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

Appendix B-2

Data Validation Documentation

Completed by: Nathan Ohrt
Sample Date: 8/10/2023
Lab Report Date: 8/25/2023
Site Name: City of Ford Madison/Rodeo Park Dump
Project Type: Leachate - Annual
Lab Report Number: 310-262482

OK NO N/A NOTES

Sample Collection and Sample Handling

Chain of Custody

Temperature

Preservation

Condition

Case Narrative

Holding Times

Analytical Sensitivity and Blanks

Method Blank Detections

Trip Blank Detections

Accuracy

ICV/CCV

LCS/LCSD

MS/MSD

Surrogates (organics only)

Precision

QA/QC Sample RPDs

Field Duplicates

X			
X			
X			Samples Leachate Manhole #1, Leachate Manhole #2, Leachate Manhole #3, and Leachate Manhole #5 were preserved to the appropriate pH by the laboratory.
X			
X			All the dilutions failed to deplete the method-required 2 mg O2/L for Leachate Manhole #4 and Leachate Manhole #5; only a "less than" result could be calculated from the least dilute preparation.
X			

X			No detections.
X			No detections.

	X		A CCV recovered above the upper control limit for multiple parameters; the associated samples were non-detect so the data was reported.
	X		A LCS recovered outside control limits for multiple analytes: the analytes were biased high in the LCS and were non-detect in the associated samples so the data was reported.
X			
X			

X			
		X	

Completed by: Nathan Ohrt
 Sample Date: 8/10/2023
 Lab Report Date: 8/22/2023
 Site Name: City of Ford Madison/Rodeo Park Dump
 Project Type: HMSP - Annual
 Lab Report Number: 310-262487

OK NO N/A NOTES

Sample Collection and Sample Handling

Chain of Custody
 Temperature
 Preservation
 Condition
 Case Narrative
 Holding Times

X			
X			
X			
X			
X			
X			

Analytical Sensitivity and Blanks

Method Blank Detections
 Trip Blank Detections

X			No detections.
		X	No organic parameters are sampled.

Accuracy

ICV/CCV
 LCS/LCSD
 MS/MSD
 Surrogates (organics only)

X			
X			
X			
X			

Precision

QA/QC Sample RPDs
 Field Duplicates

X			
X			Sample P-110A and duplicate sample MW-DR had <50% RPD for analyzed parameters.

Completed by: Nathan Ohrt
 Sample Date: 8/14-15/2023
 Lab Report Date: 9/5/2023
 Site Name: City of Ford Madison/Rodeo Park Dump
 Project Type: HMSP - Annual
 Lab Report Number: 310-262925

OK NO N/A NOTES

Sample Collection and Sample Handling

Chain of Custody
 Temperature
 Preservation
 Condition
 Case Narrative
 Holding Times

X			
X			
X			
X			
X			
X			

Analytical Sensitivity and Blanks

Method Blank Detections
 Trip Blank Detections

X			No detections.
		X	No organic parameters are sampled.

Accuracy

ICV/CCV
 LCS/LCSD
 MS/MSD
 Surrogates (organics only)

X			
X			
X			
X			

Precision

QA/QC Sample RPDs
 Field Duplicates

X			
X			Sample WT-111B and duplicate sample MW-DR had <50% RPD for analyzed parameters.

Appendix C

Summary of Groundwater Chemistry

SCS ENGINEERS

Summary of Groundwater Chemistry City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C

	Sample Date	P-105A UPG	WT-105B UPG	WT-106B UPG	WT-107B UPG	P-102A DNG	P-103A DNG	P-104A DNG	P-108A DNG	P-110A DNG	P-111A DNG	P-112A DNG	WT-102B DNG	WT-111B DNG	WT-112B DNG	WT-113B DNG
Total Metals Constituents																
Antimony, mg/L (CAS NO - 7440-36-0)		11/10/2016	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.012
		5/30/2017	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		9/12/2017	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	< 0.003	< 0.003
		3/14/2018	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		8/29/2018	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	< 0.003	< 0.003
		3/11/2019	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		9/23/2019	0.0032	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	< 0.003	< 0.003
		3/10/2020	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		9/29/2020	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	< 0.003	< 0.003
		6/23/2021	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		9/29/2021	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
		5/25/2022	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.000781*	< 0.002	< 0.002	< 0.002
		5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A	N/A	N/A	< 0.002	N/A	N/A
		8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.002
Arsenic, mg/L (CAS NO - 7440-38-2)		11/10/2016	0.0022	0.0046	< 0.001	0.0087	0.0019	< 0.001	0.0085	0.0075	< 0.001	0.0014	0.0036	0.03	0.012	0.0074
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.33
		5/30/2017	0.0017	< 0.001	< 0.001	< 0.001	0.0016	0.001	0.012	< 0.001	< 0.001	0.0011	0.0053	< 0.001	< 0.001	< 0.001
		9/12/2017	0.0022	< 0.001	< 0.001	0.0011	0.0016	0.0012	< 0.001	0.0051	< 0.001	< 0.001	0.0021	N/A	0.0024	0.0021
		3/14/2018	0.0021	< 0.001	< 0.001	< 0.001	0.0019	0.0015	< 0.001	0.002	< 0.001	< 0.001	0.0048	< 0.001	< 0.001	< 0.001
		8/29/2018	0.0019	< 0.001	< 0.001	< 0.001	0.0023	< 0.001	0.0014	0.0024	< 0.001	< 0.001	< 0.001	N/A	< 0.001	0.0026
		3/11/2019	0.0017	< 0.001	< 0.001	< 0.001	0.015	0.0022	0.0066	0.01	< 0.001	< 0.001	0.0013	0.0036	0.0027	< 0.001
		9/23/2019	0.0074	0.0067	< 0.001	0.0076	0.013	0.0059	0.026	0.043	0.0063	0.0097	0.019	N/A	< 0.001	0.0072
		3/10/2020	0.005	0.0017	0.001	0.0018	0.0088	0.0034	0.0028	0.0016	< 0.001	0.0043	0.032	0.011	0.0022	0.0062
		9/29/2020	0.0019	0.0017	< 0.001	0.0012	0.0048	0.0023	0.0036	0.011	0.0064	0.0011	0.0083	N/A	0.0026	0.0024
		12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	0.006	N/A	N/A	N/A	N/A	N/A	N/A	0.0091
		6/23/2021	0.0016	0.001	< 0.001	0.0011	0.0054	0.0038	0.0032	0.0016	< 0.001	0.0017	0.0087	0.0073	0.0018	0.0036
		9/29/2021	0.0016	0.0014	< 0.001	< 0.001	0.0035	0.0046	0.0035	< 0.001	0.0016	< 0.001	0.0026	0.0052	< 0.001	< 0.001
		5/25/2022	0.00132*	< 0.002	< 0.002	< 0.002	N/A	0.00275	0.00157*	0.000908*	< 0.002	0.00115*	0.00145*	0.0059	< 0.002	< 0.002
		5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	0.00092*	N/A	N/A	N/A	0.00591	N/A	N/A	N/A
		8/10/2023	0.00108*	< 0.002	< 0.002	< 0.002	N/A	< 0.002	0.00154*	0.00135*	0.000569*	0.000632*	0.00313	N/A	< 0.002	< 0.002
		8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.000648*	N/A	N/A	N/A	N/A	< 0.002	N/A
Barium, mg/L (CAS NO - 7440-39-3)		11/10/2016	0.2	0.33	0.16	0.25	0.14	0.083	0.66	0.13	0.37	0.088	0.16	0.35	0.36	0.24
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.5
		5/30/2017	0.17	0.13	0.15	0.097	0.12	0.093	0.43	0.056	0.32	0.046	0.02	0.13	0.052	0.029
		9/12/2017	0.2	0.16	0.15	0.14	0.13	0.099	0.38	0.083	0.31	0.065	0.022	N/A	0.099	0.097
		3/14/2018	0.16	0.12	0.12	0.12	0.095	0.36	0.063	0.26	0.04	0.015	0.13	0.051	0.036	0.027
		8/29/2018	0.17	0.13	0.13	0.093	0.17	0.072	0.2	0.068	0.28	0.044	0.014	N/A	0.033	0.073
		3/11/2019	0.17	0.11	0.13	0.12	0.14	0.12	0.27	0.076	0.26	0.048	0.015	0.091	0.068	0.043
		9/23/2019	0.7	0.45	0.16	0.27	0.58	0.2	0.59	0.22	0.39	0.76	0.17	N/A	< 0.001	0.21
		3/10/2020	0.39	0.38	0.15	0.23	0.14	0.17	0.47	0.07	0.34	0.47	0.86	0.14	0.076	0.2
		9/29/2020	0.2	0.16	0.15	0.14	0.2	0.095	0.43	0.18	0.39	0.092	0.21	N/A	0.054	0.11
		6/23/2021	0.19	0.16	0.15	0.14	0.2	0.06	0.39	0.093	0.31	0.1	0.23	0.11	0.06	0.086
		9/29/2021	0.21	0.22	0.16	0.16	0.15	0.15	0.41	0.061	0.34	0.07	0.055	0.13	0.041	0.045
		5/25/2022	0.186	0.0979	0.165	0.11	N/A	0.0625	0.456	0.0638	0.348	0.0479	0.0186	0.0982	0.0387	0.0226
		5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	0.0633	N/A	N/A	N/A	0.101	N/A	N/A	N/A
		8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0187
Beryllium, mg/L (CAS NO - 7440-41-7)		11/10/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.027
		5/30/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
		9/12/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
		3/14/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
		8/29/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
		3/11/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
		9/23/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0045
		3/10/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
		9/29/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0048
		12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001

SCS ENGINEERS

Summary of Groundwater Chemistry
City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C

Total Metals Constituents	Sample Date	P-105A UPG	WT-105B UPG	WT-106B UPG	WT-107B UPG	P-102A DNG	P-103A DNG	P-104A DNG	P-108A DNG	P-110A DNG	P-111A DNG	P-112A DNG	WT-102B DNG	WT-111B DNG	WT-112B DNG	WT-113B DNG
Beryllium, mg/L (CAS NO - 7440-41-7)	6/23/2021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	9/29/2021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0012
	5/25/2022	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
Cadmium, mg/L (CAS NO - 7440-43-9)	11/10/2016	< 0.001	< 0.001	< 0.001	0.0018	< 0.001	< 0.001	0.0021	< 0.001	< 0.001	< 0.001	< 0.001	0.007	0.0036	< 0.001	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.013
	5/30/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	9/12/2017	< 0.001	< 0.001	< 0.001	< 0.001	0.003	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
	3/14/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	8/29/2018	< 0.001	< 0.001	< 0.001	< 0.001	0.003	0.0011	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
	3/11/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	9/23/2019	0.0038	< 0.001	< 0.001	< 0.001	0.0025	0.0032	0.0038	0.0028	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0023
	3/10/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0019	< 0.001	< 0.001	< 0.001	0.0012	0.0023	< 0.001	< 0.001	< 0.001	< 0.001
	9/29/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0014	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0025
	6/23/2021	< 0.001	< 0.001	< 0.001	< 0.001	0.0019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0011	< 0.001	< 0.001	< 0.001
	9/29/2021	< 0.001	< 0.001	< 0.001	< 0.001	0.0022	0.0021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	5/25/2022	< 0.0001	0.000088*	0.000062*	0.000155	N/A	< 0.0001	< 0.0001	< 0.0001	0.00006*	0.000065*	< 0.0001	< 0.0001	0.000087*	< 0.0001	< 0.0001
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0001	N/A	N/A	N/A	< 0.0001	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0002
Chromium, mg/L (CAS NO - 7440-47-3)	11/10/2016	< 0.004	0.012	< 0.004	0.014	< 0.004	< 0.004	0.0074	< 0.004	< 0.004	< 0.004	0.0067	0.006	0.016	0.013	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.8
	5/30/2017	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
	9/12/2017	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	N/A	< 0.004	< 0.004	< 0.004
	3/14/2018	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.0041	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
	8/29/2018	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	N/A	< 0.004	< 0.004	< 0.004
	3/11/2019	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.0064	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004
	9/23/2019	0.025	0.015	< 0.004	0.019	< 0.004	0.0093	0.031	0.0054	0.019	0.03	0.0095	N/A	< 0.004	0.016	0.1
	3/10/2020	0.013	< 0.004	< 0.004	0.0064	< 0.004	0.0045	0.0049	< 0.004	< 0.004	0.0076	0.03	< 0.004	< 0.004	0.0081	< 0.004
	9/29/2020	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.02	< 0.004	0.01	N/A	< 0.004	0.0042	0.13
	12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.037
	6/23/2021	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.017	< 0.004	< 0.004	0.0049	0.0073
	9/29/2021	< 0.004	< 0.004	< 0.004	< 0.004	0.005	0.0065	< 0.004	0.0091	0.0069	< 0.004	< 0.004	< 0.004	< 0.004	< 0.004	0.03
	5/25/2022	< 0.005	< 0.005	< 0.005	< 0.005	N/A	0.757	0.00118*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
Cobalt, mg/L (CAS NO - 7440-48-4)	11/10/2016	< 0.002	0.0093	< 0.002	0.013	< 0.002	< 0.002	0.004	< 0.002	< 0.002	0.0038	0.0021	0.016	0.016	0.0083	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.36
	5/30/2017	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0023	0.0028	< 0.002	< 0.002
	9/12/2017	< 0.002	< 0.002	< 0.002	0.0021	0.0023	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	0.004	0.003	< 0.002
	3/14/2018	< 0.002	< 0.002	< 0.002	< 0.002	0.0035	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0022	0.0023	< 0.002	< 0.002
	8/29/2018	< 0.002	< 0.002	< 0.002	< 0.002	0.0044	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	N/A	< 0.002	0.0036	< 0.002
	3/11/2019	< 0.002	< 0.002	< 0.002	< 0.002	0.005	0.0032	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0048	0.0022	< 0.002	< 0.002
	9/23/2019	0.013	0.013	< 0.002	0.017	0.0033	0.013	0.014	0.011	0.0088	0.011	0.0023	N/A	< 0.002	0.0097	0.048
	3/10/2020	0.01	0.0067	< 0.002	0.011	0.0046	0.017	0.002	< 0.002	< 0.002	0.006	0.0067	0.0051	< 0.002	0.013	0.0041
	9/29/2020	< 0.002	0.0042	< 0.002	< 0.002	0.0054	< 0.002	< 0.002	0.003	0.0097	< 0.002	0.0031	N/A	< 0.002	0.0034	0.058
	12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.007
	6/23/2021	< 0.002	0.0033	< 0.002	0.0033	0.0073	< 0.002	< 0.002	< 0.002	< 0.002	0.0026	0.0056	0.0038	< 0.002	0.0039	< 0.002
	9/29/2021	< 0.002	0.0056	< 0.002	0.0031	0.0042	0.0077	< 0.002	< 0.002	0.0037	0.0023	< 0.002	0.0044	< 0.002	< 0.002	0.017
	5/25/2022	0.000345*	< 0.0005	< 0.0005	< 0.0005	N/A	0.00819	0.000561	< 0.0005	< 0.0005	0.000964	< 0.0005	0.00502	0.00121	< 0.0005	0.000923
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	0.0051	N/A	N/A	N/A
	8/10/2023	0.000358*	< 0.0005	< 0.0005	0.00133	N/A	0.000687	0.000238*	0.000286*	< 0.0005	0.000764	0.000236*	N/A	0.00108	0.00023*	0.0009
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	N/A	N/A	N/A
Copper, mg/L (CAS NO - 7440-50-8)	11/10/2016	< 0.003	0.008	< 0.003	0.016	< 0.003	< 0.003	0.01	< 0.003	< 0.003	< 0.003	0.0071	0.016	0.034	0.011	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4
	5/30/2017	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
	9/12/2017	< 0.003	< 0.003	< 0.003	< 0.003	0.003	0.0038	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	0.0047	0.0042	0.0033
	3/14/2018	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.0051	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003

SCS ENGINEERS

Summary of Groundwater Chemistry City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C

	Sample Date	P-105A UPG	WT-105B UPG	WT-106B UPG	WT-107B UPG	P-102A DNG	P-103A DNG	P-104A DNG	P-108A DNG	P-110A DNG	P-111A DNG	P-112A DNG	WT-102B DNG	WT-111B DNG	WT-112B DNG	WT-113B DNG	
Total Metals Constituents																	
Copper, mg/L (CAS NO - 7440-50-8)	8/29/2018	< 0.003	< 0.003	< 0.003	< 0.003	0.0053	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	N/A	< 0.003	0.0036	< 0.003	
	3/11/2019	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.0081	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	
	9/23/2019	0.037	0.012	< 0.003	0.02	0.0035	0.021	0.022	0.012	0.014	0.044	0.009	N/A	< 0.003	0.016	0.13	
	3/10/2020	0.0085	0.062	< 0.003	0.0066	< 0.003	0.012	0.0053	< 0.003	< 0.003	0.022	0.018	< 0.003	< 0.003	0.01	0.011	
	9/29/2020	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.004	0.013	< 0.003	0.0086	N/A	< 0.003	< 0.003	0.15	
	6/23/2021	< 0.003	< 0.003	< 0.003	< 0.003	0.0052	< 0.003	< 0.003	< 0.003	0.015	0.0033	0.015	0.0042	< 0.003	0.0051	0.0044	
	9/29/2021	< 0.003	< 0.003	< 0.003	< 0.003	0.0048	0.013	< 0.003	0.012	0.0056	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	0.037	
	5/25/2022	< 0.005	< 0.005	< 0.005	< 0.005	N/A	0.0253	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005
	Lead, mg/L (CAS NO - 7439-92-1)	11/10/2016	< 0.001	0.013	< 0.001	0.018	< 0.001	< 0.001	0.0022	< 0.001	< 0.001	< 0.001	0.007	0.0096	0.03	0.021	N/A
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.41
5/30/2017		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0011	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/12/2017		< 0.001	< 0.001	< 0.001	0.0015	< 0.001	0.0016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	0.0049	0.005	0.0036	
3/14/2018		< 0.001	< 0.001	< 0.001	< 0.001	0.0014	0.0022	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0013	< 0.001	
8/29/2018		< 0.001	< 0.001	< 0.001	< 0.001	0.0028	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	0.0014	0.0033	< 0.001	
3/11/2019		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0049	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0016	0.0015	< 0.001	
9/23/2019		0.027	0.017	< 0.001	0.021	0.0015	0.0081	0.0066	0.0065	0.01	0.019	0.0075	N/A	< 0.001	0.023	0.067	
3/10/2020		0.012	0.008	< 0.001	0.014	0.0028	0.0036	0.0023	< 0.001	0.0021	0.013	0.038	< 0.001	0.0028	0.023	0.0061	
9/29/2020		0.0014	0.0044	< 0.001	0.0017	0.0019	< 0.001	< 0.001	0.0027	0.0096	< 0.001	0.0085	N/A	< 0.001	0.0059	0.078	
12/3/2020		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.0073	
6/23/2021		< 0.001	0.0037	< 0.001	0.0034	0.0047	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.011	0.0012	0.0017	0.0078	0.0017	
9/29/2021		< 0.001	0.0062	< 0.001	0.0033	0.0031	0.0072	< 0.001	< 0.001	0.0036	< 0.001	0.0026	< 0.001	< 0.001	0.0015	0.022	
5/25/2022		< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	0.000259*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	
5/25/2022		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A
8/10/2023		< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	0.000399*	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005	N/A	< 0.0005	< 0.0005	< 0.0005
8/10/2023		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.0005	N/A	N/A	N/A
Nickel, mg/L (CAS NO - 7440-02-0)		11/10/2016	< 0.005	0.014	< 0.005	0.024	< 0.005	< 0.005	0.01	< 0.005	< 0.005	0.0066	0.0061	0.028	0.025	0.013	N/A
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.98
		5/30/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0057	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
	9/12/2017	< 0.005	< 0.005	< 0.005	0.0065	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0065	< 0.005	N/A	0.0051	< 0.005	< 0.005	
	3/14/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0062	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	8/29/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	
	3/11/2019	< 0.005	< 0.005	< 0.005	< 0.005	0.0067	0.012	< 0.005	< 0.005	< 0.005	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	
	9/23/2019	0.022	0.022	< 0.005	0.028	0.013	0.044	0.036	0.017	0.019	0.025	0.0078	N/A	< 0.005	0.017	0.13	
	3/10/2020	0.0084	0.008	< 0.005	0.018	< 0.005	0.06	0.0057	< 0.005	< 0.005	0.011	0.022	< 0.005	< 0.005	0.011	0.01	
	9/29/2020	< 0.005	0.0051	< 0.005	0.006	< 0.005	< 0.005	< 0.005	< 0.005	0.018	< 0.005	0.0084	N/A	< 0.005	< 0.005	0.15	
	12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.033	
	6/23/2021	< 0.005	< 0.005	< 0.005	0.0069	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.0052	0.016	0.0057	< 0.005	0.0061	0.016	
	9/29/2021	< 0.005	0.0057	< 0.005	0.0062	< 0.005	0.023	< 0.005	< 0.005	0.0057	< 0.005	< 0.005	0.0057	< 0.005	< 0.005	0.042	
	5/25/2022	< 0.005	< 0.005	< 0.005	0.00347*	N/A	0.423	< 0.005	< 0.005	< 0.005	< 0.005	0.00452*	< 0.005	0.00506	0.00191*	< 0.005	< 0.005
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	0.00538	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	< 0.005
	Selenium, mg/L (CAS NO - 7782-49-2)	11/10/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
		1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.03
5/30/2017		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/12/2017		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0012	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	
3/14/2018		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
8/29/2018		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0011	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	
3/11/2019		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/23/2019		0.0016	< 0.001	< 0.001	< 0.001	< 0.001	0.0012	0.0012	< 0.001	0.0015	0.0027	< 0.001	N/A	< 0.001	0.0015	0.0084	
3/10/2020		0.0018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	0.0012	< 0.001	< 0.001	< 0.001	< 0.001	
9/29/2020		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0015	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0096	
6/23/2021		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	0.0019	< 0.001	0.0019	< 0.001	< 0.001	0.0011	< 0.001	
9/29/2021		< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.0015	
5/25/2022		< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
5/25/2022		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A
8/10/2023		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005

SCS ENGINEERS

Summary of Groundwater Chemistry City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C

	Sample Date	P-105A UPG	WT-105B UPG	WT-106B UPG	WT-107B UPG	P-102A DNG	P-103A DNG	P-104A DNG	P-108A DNG	P-110A DNG	P-111A DNG	P-112A DNG	WT-102B DNG	WT-111B DNG	WT-112B DNG	WT-113B DNG	
Total Metals Constituents																	
Silver, mg/L (CAS NO - 7440-22-4)	11/10/2016	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	
	5/30/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	9/12/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	
	3/14/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	8/29/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	
	3/11/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	9/23/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	
	3/10/2020	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	9/29/2020	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	< 0.005	< 0.005	
	6/23/2021	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	9/29/2021	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
	5/25/2022	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.000805*	< 0.001	< 0.001	< 0.001
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001
	Thallium, mg/L (CAS NO - 7440-28-0)																
	11/10/2016	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.014
	5/30/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
	9/12/2017	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001
3/14/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
8/29/2018	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	
3/11/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/23/2019	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.002	
3/10/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/29/2020	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	0.0026	
12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	
6/23/2021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
9/29/2021	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
5/25/2022	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	N/A	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	< 0.001	N/A	N/A	N/A	
8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.001	
Vanadium, mg/L (CAS NO - 7440-62-2)																	
11/10/2016	< 0.005	0.019	< 0.005	0.023	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.012	0.013	0.024	0.024	N/A	
1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.2	
5/30/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
9/12/2017	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	0.0066	< 0.005	
3/14/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
8/29/2018	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	< 0.005	0.0057	< 0.005	
3/11/2019	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.012	< 0.005	< 0.005	< 0.005	0.0056	< 0.005	0.008	0.0068	< 0.005	< 0.005	
9/23/2019	0.023	0.023	< 0.005	0.028	< 0.005	0.013	0.012	0.008	0.025	0.042	0.01	N/A	< 0.005	0.006	0.026	0.19	
3/10/2020	0.018	0.0056	< 0.005	0.0084	< 0.005	0.0064	0.005	< 0.005	< 0.005	0.014	0.025	< 0.005	< 0.005	0.015	0.0098		
9/29/2020	< 0.005	0.0067	< 0.005	0.005	< 0.005	< 0.005	< 0.005	0.0068	0.028	< 0.005	0.017	N/A	< 0.005	0.0096	0.24		
12/3/2020	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.022	
6/23/2021	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.024	< 0.005	< 0.005	0.011	0.0062		
9/29/2021	< 0.005	0.0067	< 0.005	< 0.005	< 0.005	0.006	0.012	< 0.005	< 0.005	0.0082	< 0.005	0.0079	< 0.005	< 0.005	0.0055	0.053	
5/25/2022	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	N/A	0.00482*	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	
5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	< 0.005	N/A	N/A	N/A	
8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.005	
Zinc, mg/L (CAS NO - 7440-66-6)																	
11/10/2016	0.0082	0.046	< 0.006	0.1	0.011	< 0.006	0.06	< 0.006	0.0087	0.011	0.025	0.15	0.2	0.051		N/A	
1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5	
5/30/2017	0.015	0.018	< 0.006	0.016	0.0066	0.0091	< 0.006	< 0.006	0.009	0.011	< 0.006	0.013	0.018	0.009	0.082		
9/12/2017	0.01	0.011	< 0.006	0.011	0.021	0.016	< 0.006	0.0077	0.0083	0.011	< 0.006	N/A	0.029	0.017	0.02		
3/14/2018	0.006	< 0.006	< 0.006	0.0067	0.023	0.018	< 0.006	< 0.006	0.007	0.0061	< 0.006	0.016	0.011	0.0076	0.013		
8/29/2018	0.0077	0.0075	< 0.006	< 0.006	0.025	< 0.006	< 0.006	0.0066	0.0083	0.0082	< 0.006	N/A	0.0093	0.03	0.0088		
3/11/2019	0.0068	0.007	0.0061	0.0091	0.029	0.027	0.0084	0.008	0.017	0.0063	< 0.006	0.022	0.019	0.0099	0.0093		
9/23/2019	0.19	0.065	< 0.006	0.09	0.021	0.056	0.064	0.083	0.056	0.088	0.028	N/A	< 0.006	0.059	0.29		
3/10/2020	0.051	0.022	< 0.006	0.043	0.013	0.034	0.024	< 0.006	0.011	0.047	0.12	0.016	0.016	0.039	0.02		
9/29/2020	0.012	0.023	< 0.006	0.015	0.017	< 0.006	0.012	0.023	0.055	0.014	0.038	N/A	0.013	0.021	0.34		
6/23/2021	< 0.006	0.023	< 0.006	0.025	0.029	0.044	0.0074	< 0.006	0.051	0.023	0.12	0.021	0.02	0.025	0.024		

SCS ENGINEERS

Summary of Groundwater Chemistry City of Fort Madison Landfill & Rodeo Park Dump - 56-SDP-05-88C

	Sample Date	P-105A UPG	WT-105B UPG	WT-106B UPG	WT-107B UPG	P-102A DNG	P-103A DNG	P-104A DNG	P-108A DNG	P-110A DNG	P-111A DNG	P-112A DNG	WT-102B DNG	WT-111B DNG	WT-112B DNG	WT-113B DNG
Total Metals Constituents Zinc, mg/L (CAS NO - 7440-66-6)	9/29/2021	< 0.006	0.021	< 0.006	0.015	0.03	0.05	0.0077	0.017	0.022	0.007	0.011	0.016	0.011	0.0077	0.091
	5/25/2022	< 0.02	< 0.02	< 0.02	< 0.02	N/A	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A	< 0.02	N/A	N/A	N/A
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 0.02
Total Suspended Solids, mg/L (CAS NO - TSS)	11/10/2016	< 4	< 4	< 4	11	< 4	< 4	< 4	< 4	< 4	< 4	< 4	N/A	8.4	8	N/A
	1/27/2017	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.2
	6/28/2017	12	19	2	9	67	54	9	4	2	10	10	100	230	84	51
	9/12/2017	5	30	2	21	44	64	4	4	1	5	10	N/A	22	56	19
	3/14/2018	5	2	< 1	2	93	150	3	< 1	4	2	4	33	13	27	37
	8/29/2018	2	13	2	4	46	25	4	N/A	2	N/A	4	N/A	30	24	9
	3/11/2019	4	< 1	1	1	96	88	3	2	< 1	2	8	19	23	32	2
	9/23/2019	880	280	25	610	87	390	200	170	570	810	460	N/A	1110	1120	1540
	3/10/2020	330	230	3	960	110	47	85	10	200	680	730	51	36	620	1200
	9/29/2020	17	110	4	86	100	41	17	85	1820	32	230	N/A	13	28	4140
	6/23/2021	4	79	20	58	30	15	3	5	2	98	320	57	22	99	77
	9/29/2021	< 1	100	6	110	31	780	20	6	180	18	88	43	5	1	1350
	5/25/2022	< 1.88	< 1.88	1*	< 1.88	N/A	35	2.75	0.875*	3	4.38	4.5	45	2.13	1.5*	21
	5/25/2022	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 1.88	N/A	N/A	N/A	45	N/A	N/A	N/A
	8/10/2023	< 1.88	0.75*	< 1.88	1.25*	N/A	16.9	5.63	< 1.88	1.25*	< 1.88	5.5	N/A	1.63*	< 1.88	13
	8/10/2023	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	< 5	N/A	N/A	N/A	1*	N/A	N/A

Note: * indicates 'I flag'. Detection is below the reporting limit, but greater than the MDL (Method Detection Limit). The concentration is estimated.

Denotes Detection.

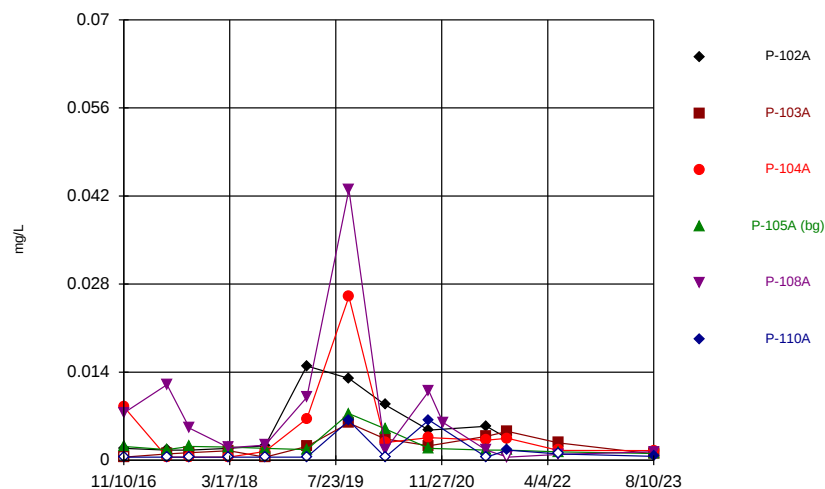
Denotes Confirmed Outlier. Statistically Excluded.

Sampling performed over multiple dates is recorded on the first date sampled. Refer to field forms for exact sample date.

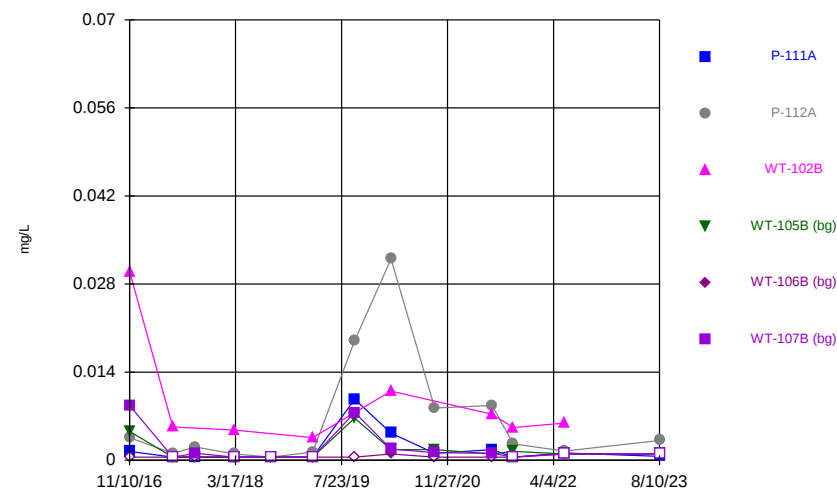
Appendix D

Time Series Plots

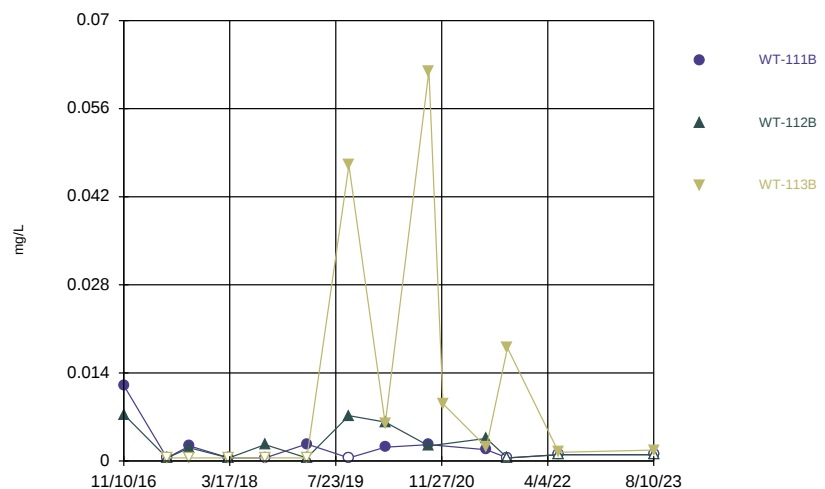
Time Series



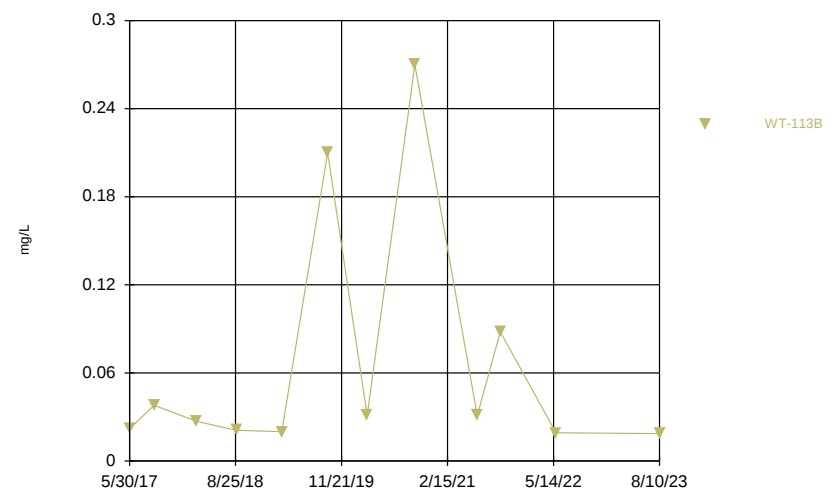
Time Series



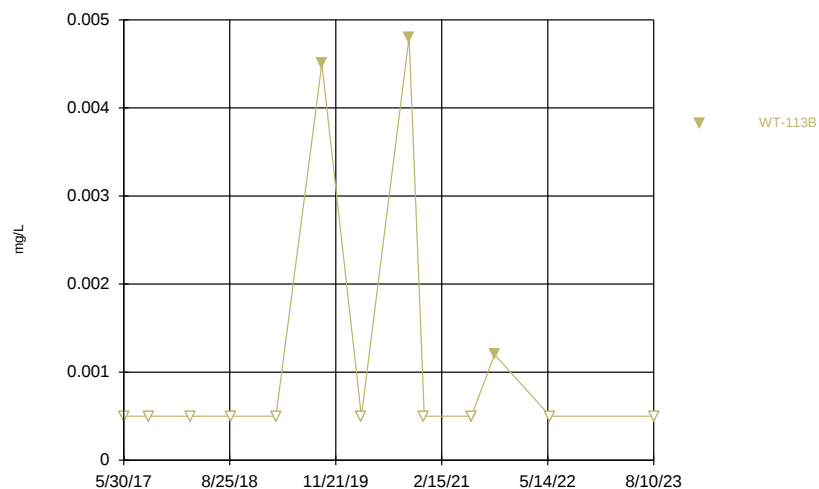
Time Series



Time Series

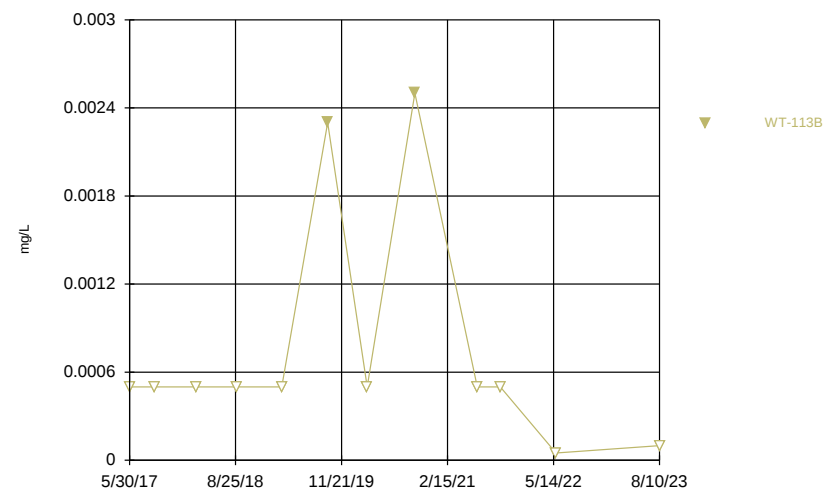


Time Series



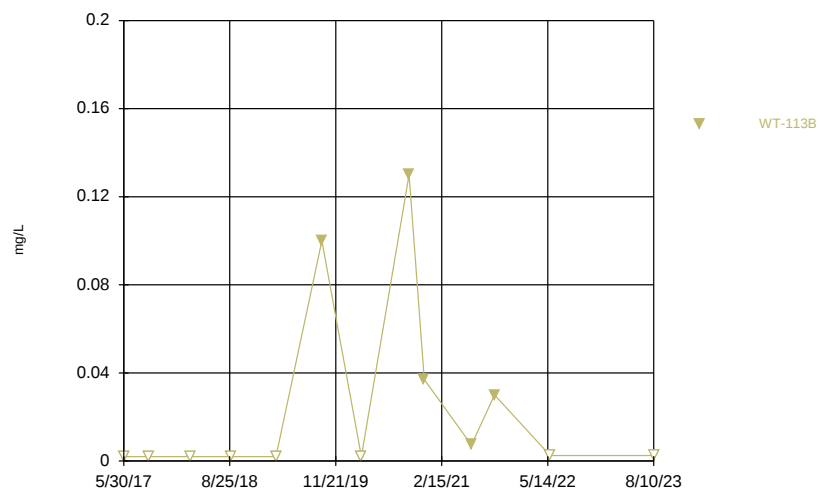
Constituent: Beryllium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Met
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



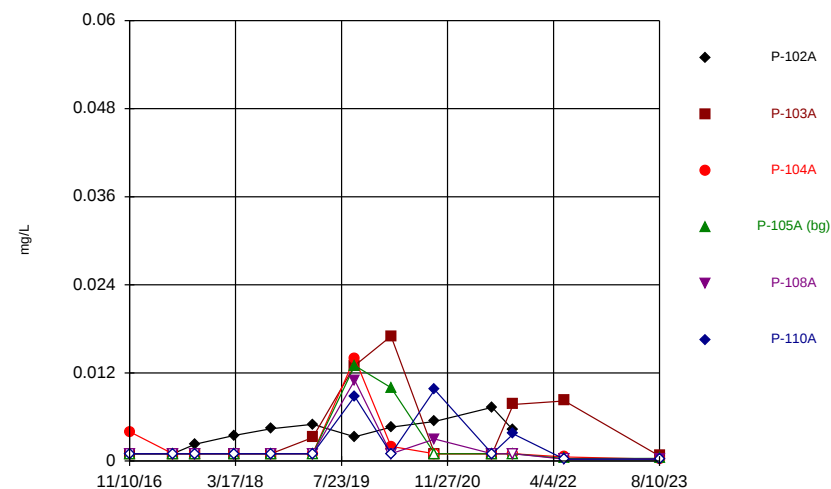
Constituent: Cadmium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Met
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



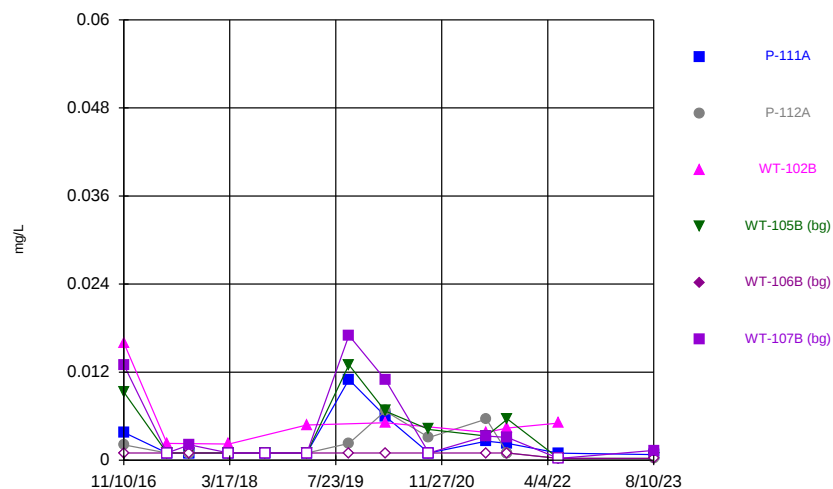
Constituent: Chromium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Me
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



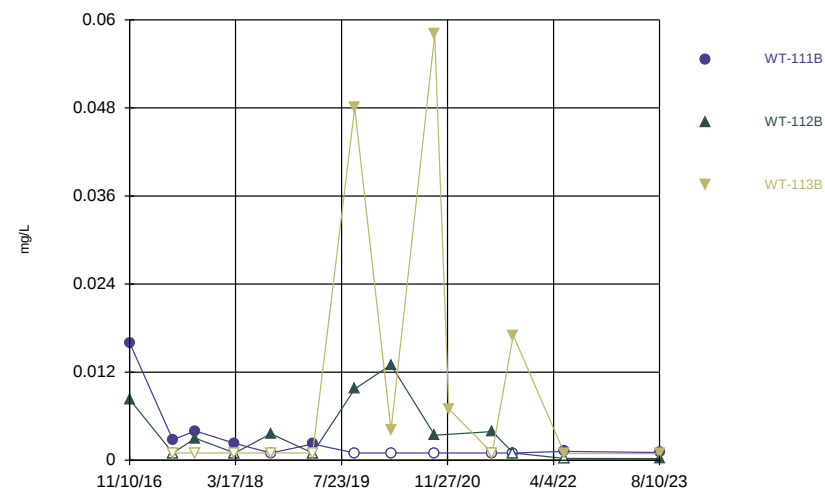
Constituent: Cobalt Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



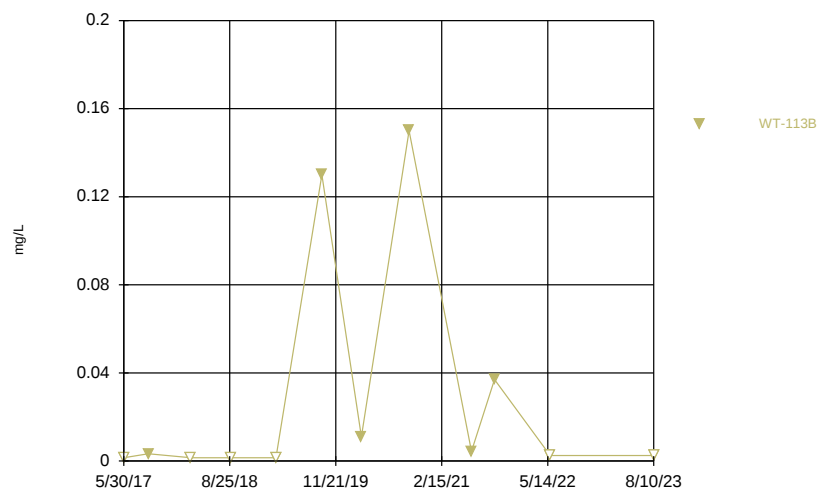
Constituent: Cobalt Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



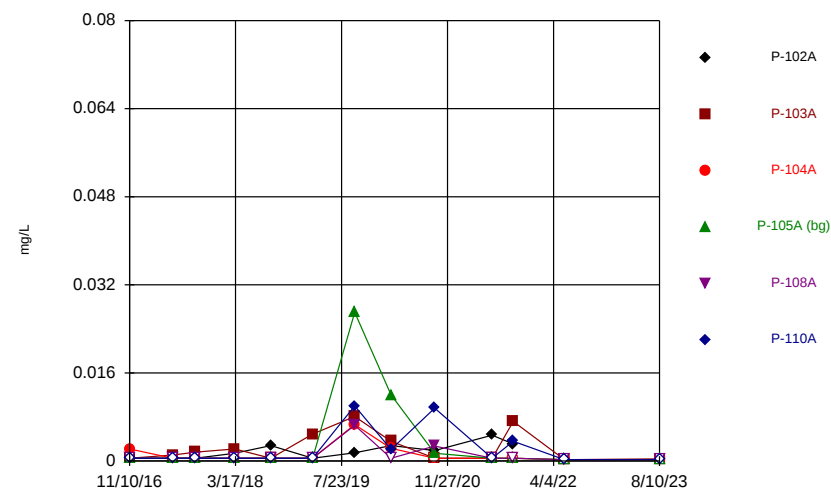
Constituent: Cobalt Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



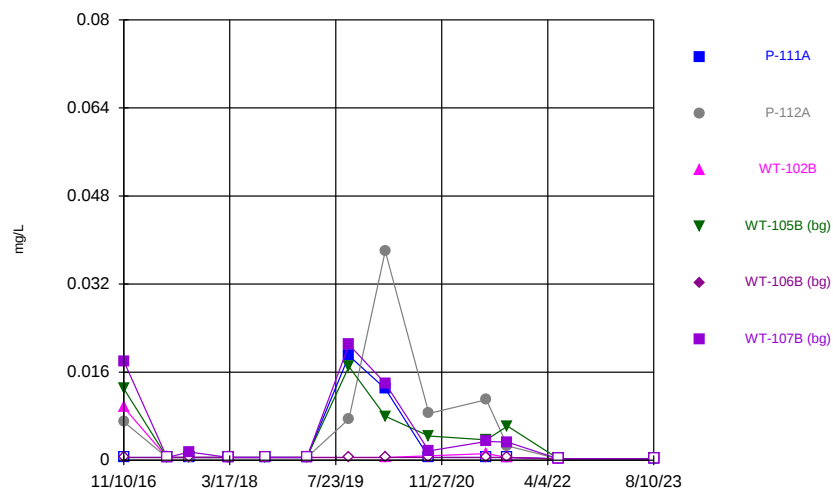
Constituent: Copper Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metal
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



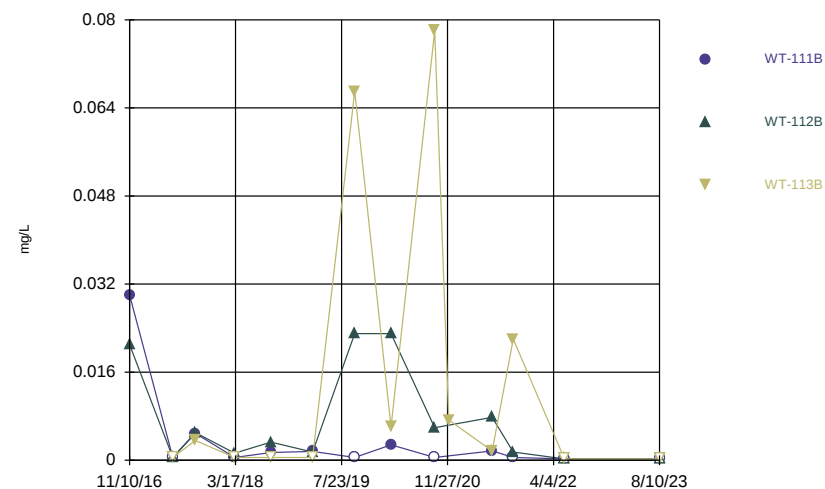
Constituent: Lead Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



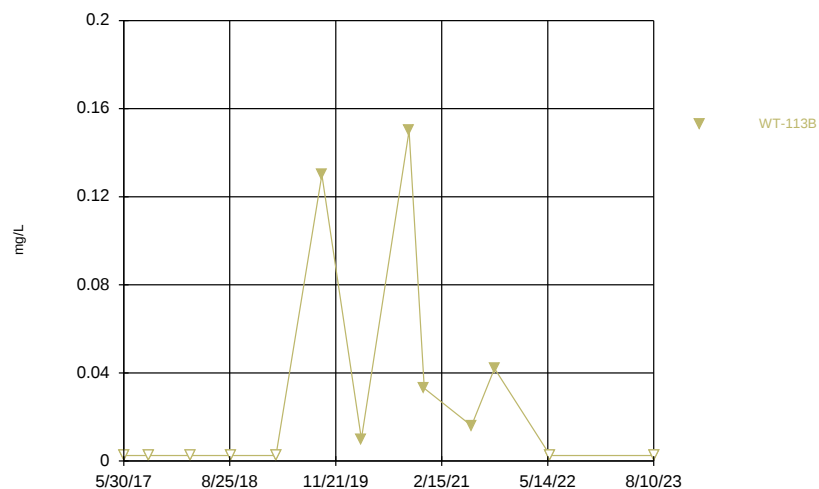
Constituent: Lead Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



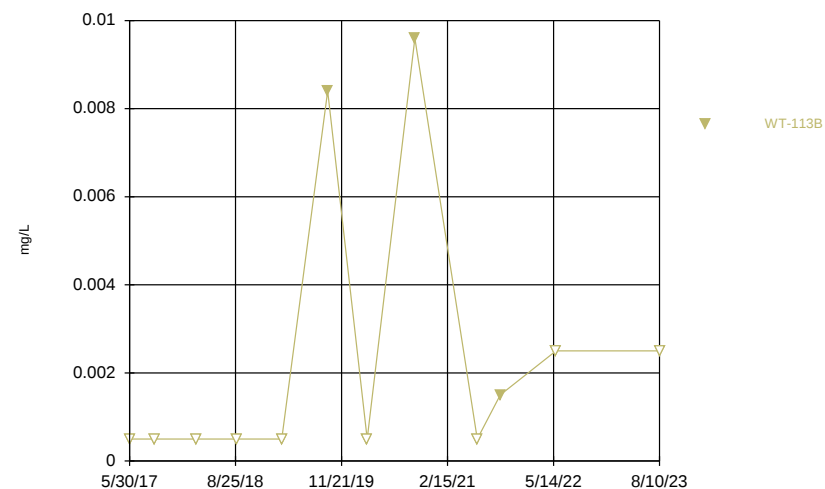
Constituent: Lead Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



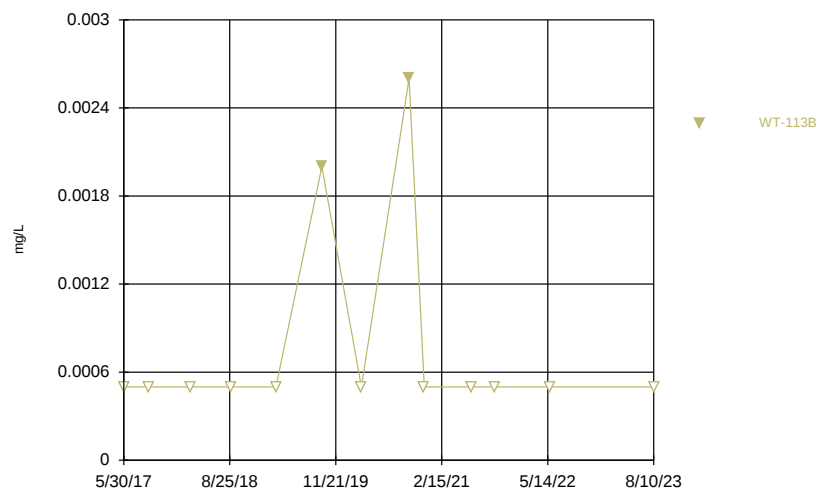
Constituent: Nickel Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



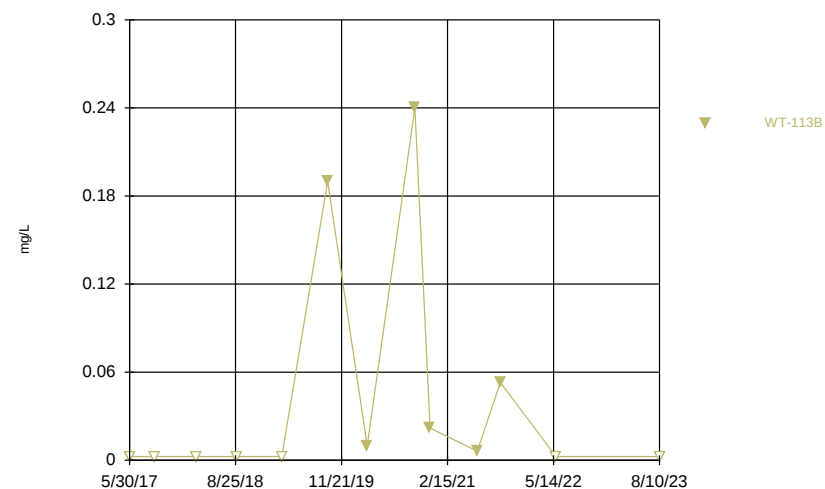
Constituent: Selenium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Met
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



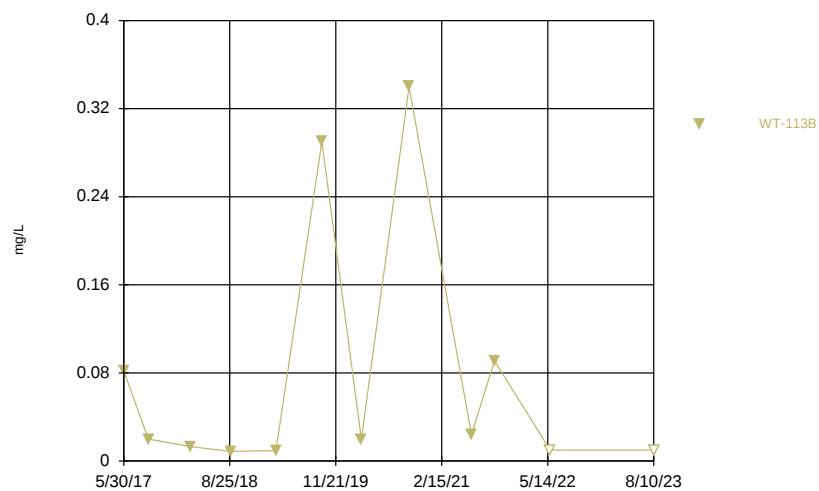
Constituent: Thallium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Meta
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



Constituent: Vanadium Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Me
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Time Series



Constituent: Zinc Analysis Run 10/9/2023 3:41 PM View: 2023AWQR - Time Series - Tested Apl Metals
City of Fort Madison LF Client: SCS Engineers Data: CTYFM Sanitas HMSP

Appendix E

Confidence Interval Summary Table and Graphs

Confidence Interval

City of Fort Madison LF Data: CTYFM Sanitas-AM2023 Printed 10/9/2023, 5:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	P-102A	0.01207	0.001602	0.01	No	8	0	No	0.01	Param.
Arsenic (mg/L)	P-103A	0.00487	0.001617	0.01	No	8	12.5	No	0.01	Param.
Arsenic (mg/L)	P-104A	0.026	0.00154	0.01	No	8	0	No	0.004	NP (normality)
Arsenic (mg/L)	P-105A (bg)	0.0074	0.00108	0.01	No	8	0	No	0.004	NP (normality)
Arsenic (mg/L)	P-108A	0.043	0.0005	0.01	No	8	12.5	No	0.004	NP (normality)
Arsenic (mg/L)	P-110A	0.0064	0.0005	0.01	No	8	50	No	0.004	NP (normality)
Arsenic (mg/L)	P-111A	0.0097	0.0005	0.01	No	8	25	No	0.004	NP (normality)
Arsenic (mg/L)	P-112A	0.02102	-0.001903	0.01	No	8	0	No	0.01	Param.
Arsenic (mg/L)	WT-102B	0.03	0.0036	0.01	No	8	0	No	0.004	NP (normality)
Arsenic (mg/L)	WT-105B (bg)	0.0067	0.0005	0.01	No	8	37.5	No	0.004	NP (normality)
Arsenic (mg/L)	WT-106B (bg)	0.001	0.0005	0.01	No	8	87.5	No	0.004	NP (NDs)
Arsenic (mg/L)	WT-107B (bg)	0.0076	0.0005	0.01	No	8	50	No	0.004	NP (normality)
Arsenic (mg/L)	WT-111B	0.00245	0.001008	0.01	No	8	50	No	0.01	Param.
Arsenic (mg/L)	WT-112B	0.005426	0.0004236	0.01	No	8	50	No	0.01	Param.
Arsenic (mg/L)	WT-113B	0.04308	-0.006251	0.01	No	8	0	No	0.01	Param.
Barium (mg/L)	WT-113B	0.27	0.0187	2	No	8	0	No	0.004	NP (normality)
Beryllium (mg/L)	WT-113B	0.0048	0.0005	0.004	No	8	62.5	No	0.004	NP (NDs)
Cadmium (mg/L)	WT-113B	0.0025	0.00005	0.005	No	8	75	No	0.004	NP (NDs)
Chromium (mg/L)	WT-113B	0.08806	-0.008984	0.1	No	8	37.5	No	0.01	Param.
Cobalt (mg/L)	P-102A	0.006047	0.003378	0.0021	Yes	8	0	No	0.01	Param.
Cobalt (mg/L)	P-103A	0.01254	0.000248	0.0021	No	8	25	No	0.01	Param.
Cobalt (mg/L)	P-104A	0.014	0.000238	0.0021	No	8	50	No	0.004	NP (normality)
Cobalt (mg/L)	P-105A (bg)	0.013	0.000345	0.0021	No	8	50	No	0.004	NP (normality)
Cobalt (mg/L)	P-108A	0.011	0.00025	0.0021	No	8	62.5	No	0.004	NP (NDs)
Cobalt (mg/L)	P-110A	0.0097	0.00025	0.0021	No	8	62.5	No	0.004	NP (NDs)
Cobalt (mg/L)	P-111A	0.011	0.000764	0.0021	No	8	25	No	0.004	NP (normality)
Cobalt (mg/L)	P-112A	0.004925	-0.0002637	0.0021	No	8	37.5	No	0.01	Param.
Cobalt (mg/L)	WT-102B	0.016	0.0022	0.0021	Yes	8	0	No	0.004	NP (normality)
Cobalt (mg/L)	WT-105B (bg)	0.008518	0.00005655	0.0021	No	8	37.5	No	0.01	Param.
Cobalt (mg/L)	WT-107B (bg)	0.01072	-0.001209	0.0021	No	8	37.5	No	0.01	Param.
Cobalt (mg/L)	WT-111B	0.0022	0.001	0.0021	No	8	62.5	No	0.004	NP (NDs)
Cobalt (mg/L)	WT-112B	0.008759	-0.001029	0.0021	No	8	37.5	No	0.01	Param.
Cobalt (mg/L)	WT-113B	0.058	0.0009	0.0021	No	8	12.5	No	0.004	NP (normality)
Copper (mg/L)	WT-113B	0.15	0.0015	1.3	No	8	37.5	No	0.004	NP (normality)
Lead (mg/L)	P-102A	0.00371	0.0009649	0.015	No	8	12.5	No	0.01	Param.
Lead (mg/L)	P-103A	0.006408	-0.00005869	0.015	No	8	37.5	No	0.01	Param.
Lead (mg/L)	P-104A	0.0066	0.00025	0.015	No	8	75	No	0.004	NP (NDs)
Lead (mg/L)	P-105A (bg)	0.027	0.00025	0.015	No	8	62.5	No	0.004	NP (NDs)
Lead (mg/L)	P-108A	0.0065	0.00025	0.015	No	8	75	No	0.004	NP (NDs)
Lead (mg/L)	P-110A	0.01	0.00025	0.015	No	8	50	No	0.004	NP (normality)
Lead (mg/L)	P-111A	0.019	0.00025	0.015	No	8	62.5	No	0.004	NP (NDs)
Lead (mg/L)	P-112A	0.038	0.00025	0.015	No	8	37.5	No	0.004	NP (normality)
Lead (mg/L)	WT-102B	0.0096	0.00025	0.015	No	8	75	No	0.004	NP (NDs)
Lead (mg/L)	WT-105B (bg)	0.01062	-0.0004224	0.015	No	8	37.5	No	0.01	Param.
Lead (mg/L)	WT-107B (bg)	0.021	0.00025	0.015	No	8	37.5	No	0.004	NP (normality)
Lead (mg/L)	WT-111B	0.0028	0.00025	0.015	No	8	62.5	No	0.004	NP (NDs)
Lead (mg/L)	WT-112B	0.01298	-0.002356	0.015	No	8	25	No	0.01	Param.
Lead (mg/L)	WT-113B	0.078	0.00025	0.015	No	8	25	No	0.004	NP (normality)
Nickel (mg/L)	WT-113B	0.1064	-0.008632	0.1	No	8	25	No	0.01	Param.
Selenium (mg/L)	WT-113B	0.0096	0.0005	0.05	No	8	62.5	No	0.004	NP (NDs)

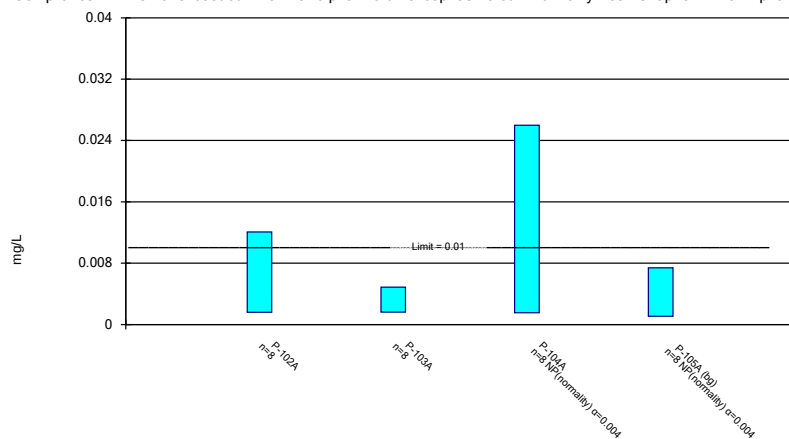
Confidence Interval

City of Fort Madison LF Data: CTYFM Sanitas-AM2023 Printed 10/9/2023, 5:03 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	WT-113B	0.0026	0.0005	0.002	No	8	75	No	0.004	NP (NDs)
Vanadium (mg/L)	WT-113B	0.24	0.0025	0.035	No	8	25	No	0.004	NP (normality)
Zinc (mg/L)	WT-113B	0.34	0.0093	2	No	8	25	No	0.004	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

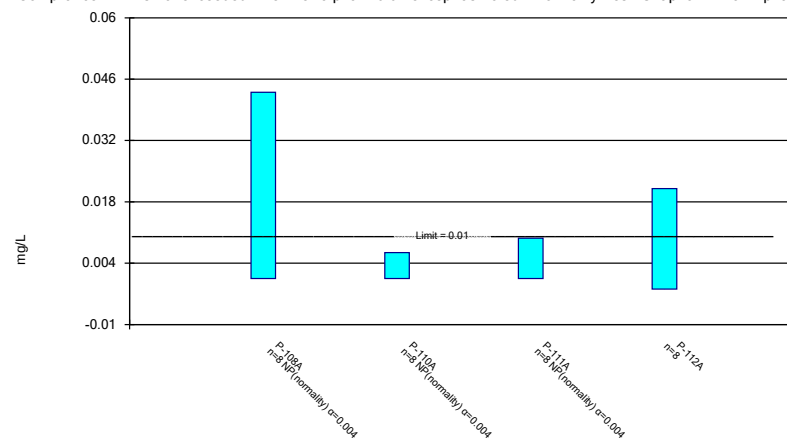
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Arsenic Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

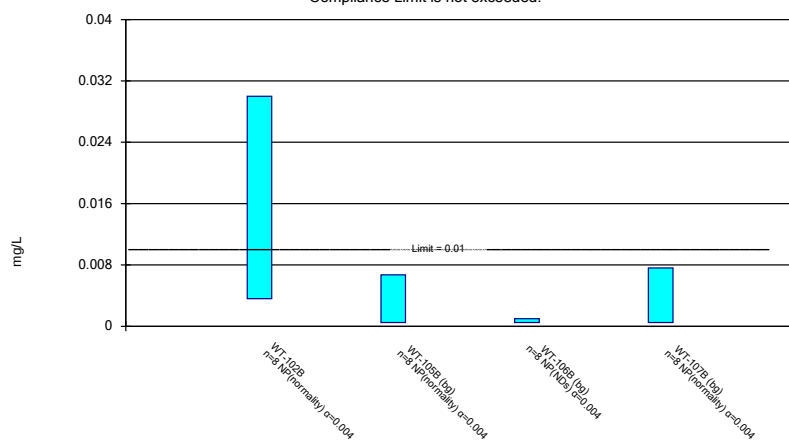
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Arsenic Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

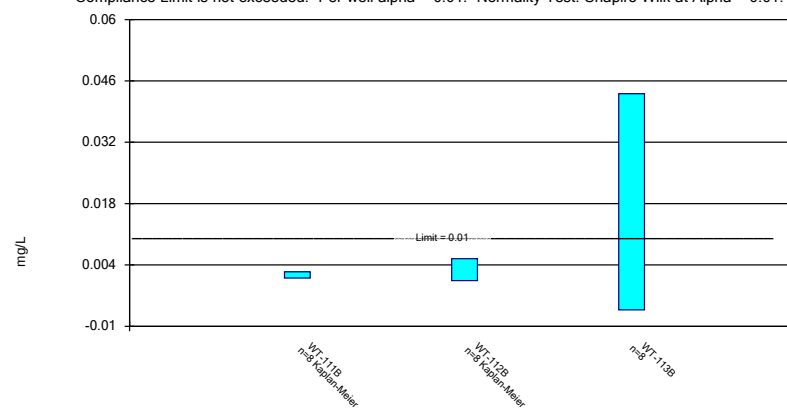
Compliance Limit is not exceeded.



Constituent: Arsenic Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric Confidence Interval

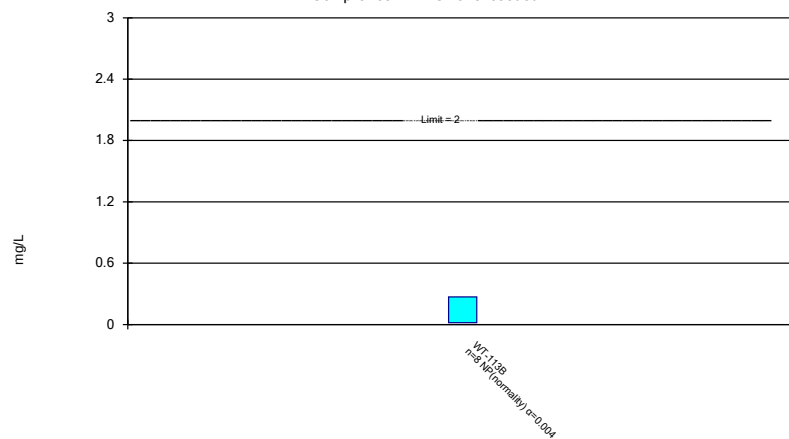
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Arsenic Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

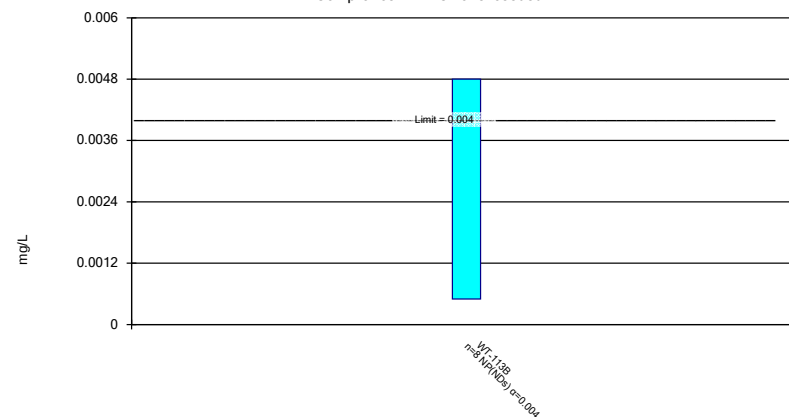
Compliance Limit is not exceeded.



Constituent: Barium Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

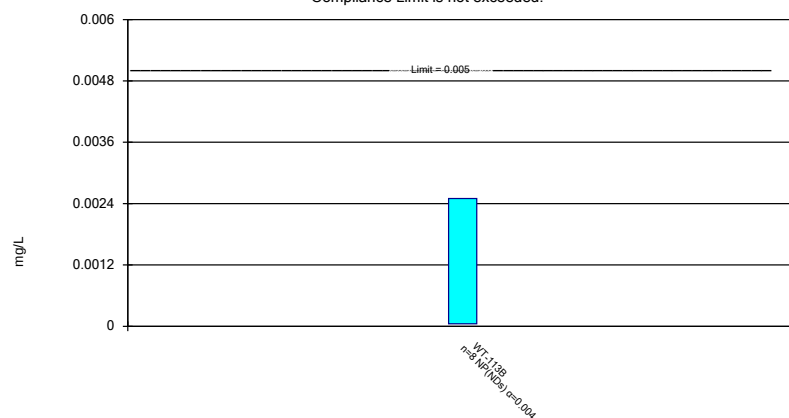
Compliance Limit is not exceeded.



Constituent: Beryllium Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

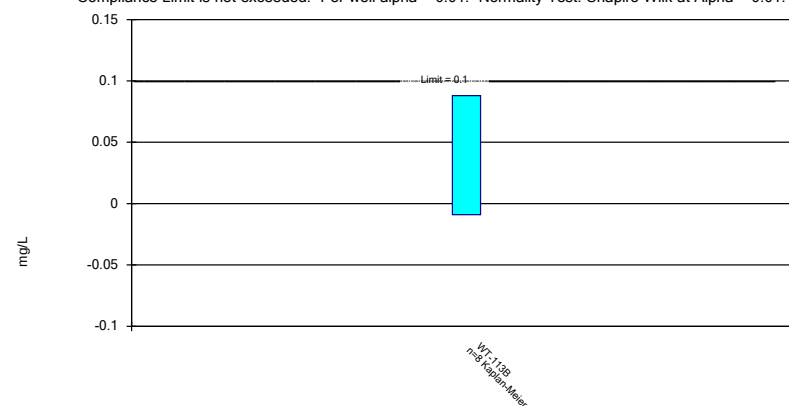
Compliance Limit is not exceeded.



Constituent: Cadmium Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric Confidence Interval

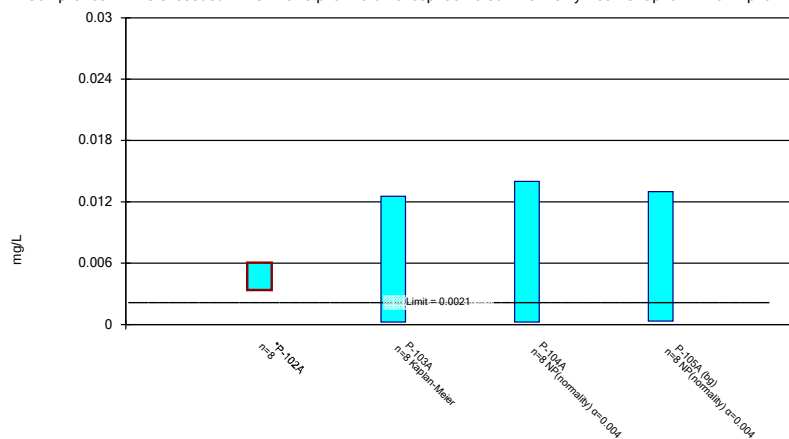
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Chromium Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

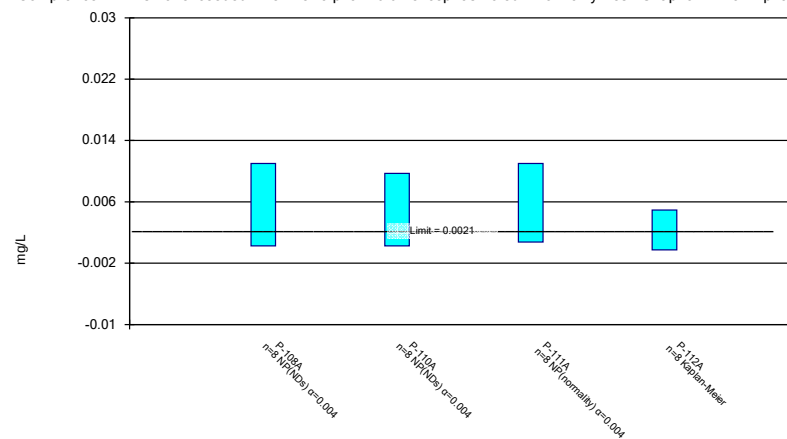
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

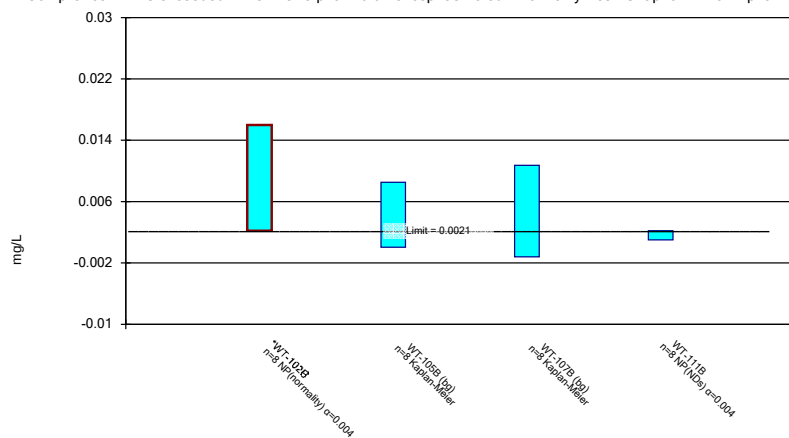
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

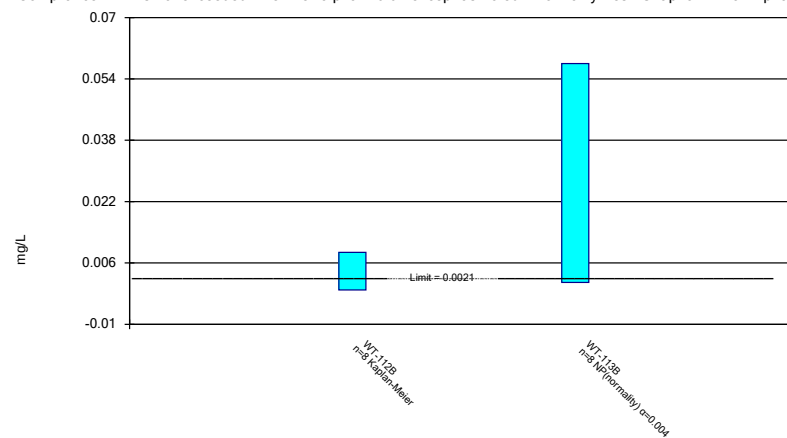
Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

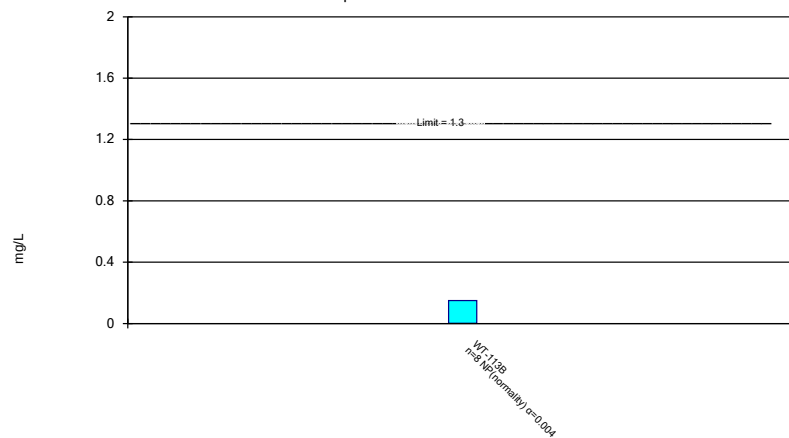
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Cobalt Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

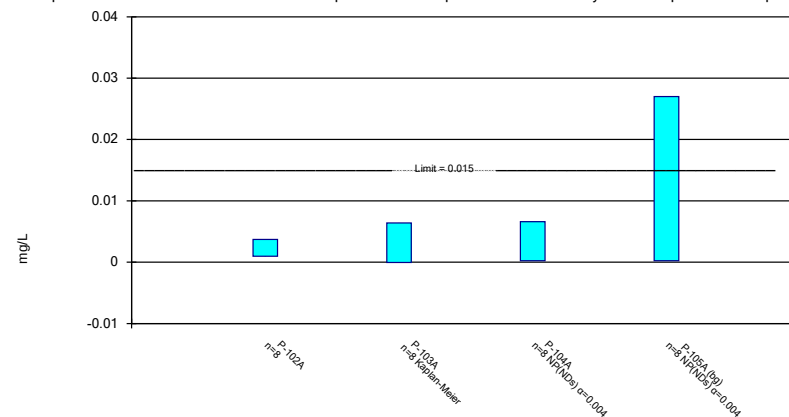
Compliance Limit is not exceeded.



Constituent: Copper Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

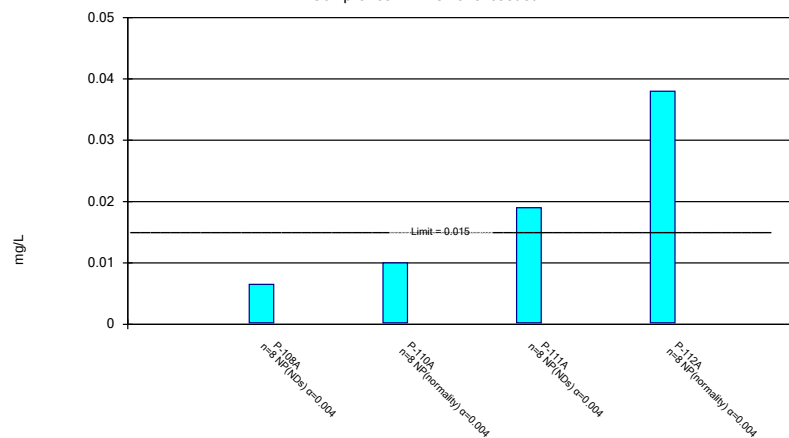
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Lead Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

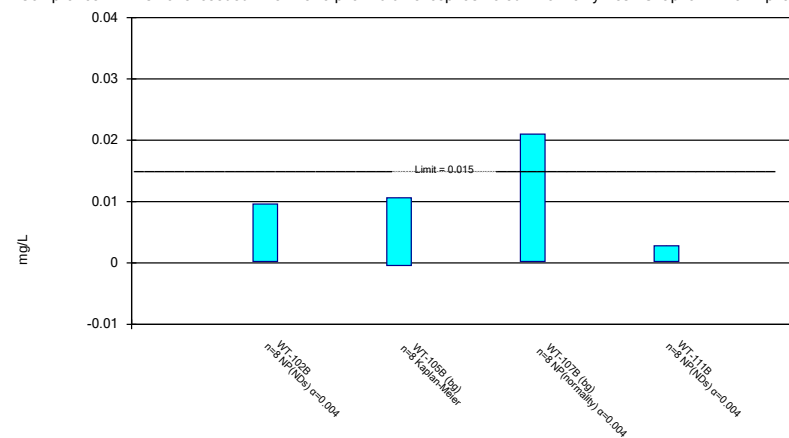
Compliance Limit is not exceeded.



Constituent: Lead Analysis Run 10/9/2023 5:01 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

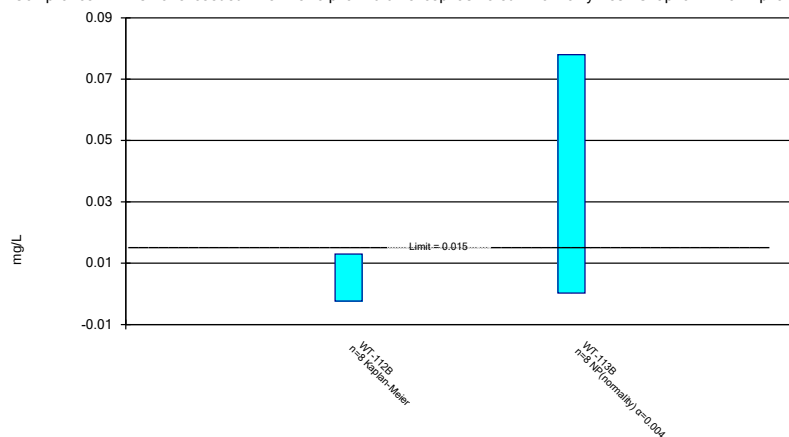
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Lead Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric and Non-Parametric (NP) Confidence Interval

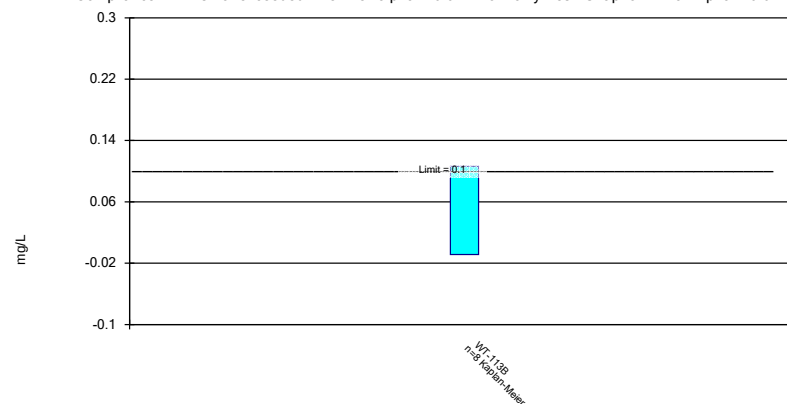
Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Lead Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Parametric Confidence Interval

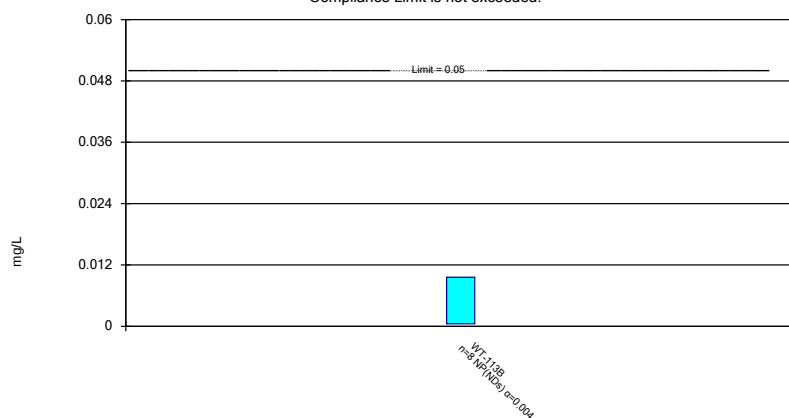
Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk at Alpha = 0.01.



Constituent: Nickel Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

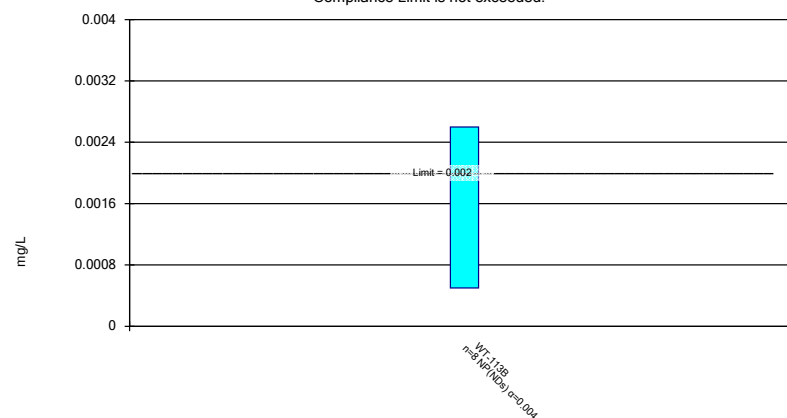
Compliance Limit is not exceeded.



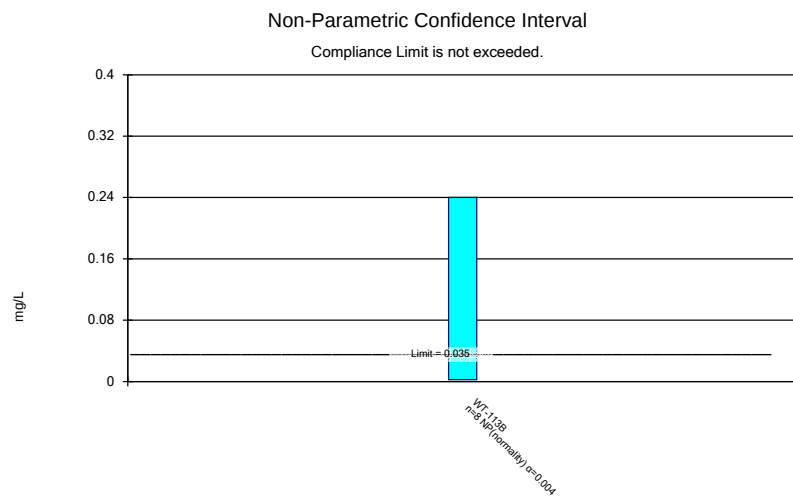
Constituent: Selenium Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Non-Parametric Confidence Interval

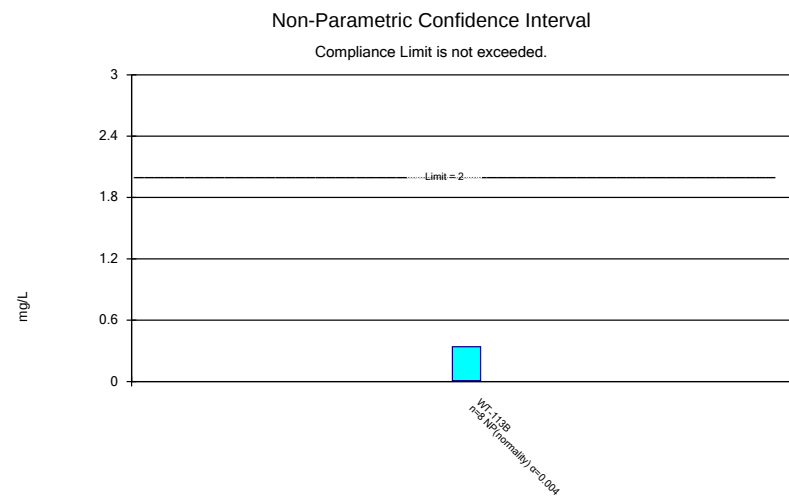
Compliance Limit is not exceeded.



Constituent: Thallium Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023



Constituent: Vanadium Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023



Constituent: Zinc Analysis Run 10/9/2023 5:02 PM View: 2023AWQR - Confidence Interval
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Appendix F

Mann-Kendall Summary Table and Graphs

Trend Test

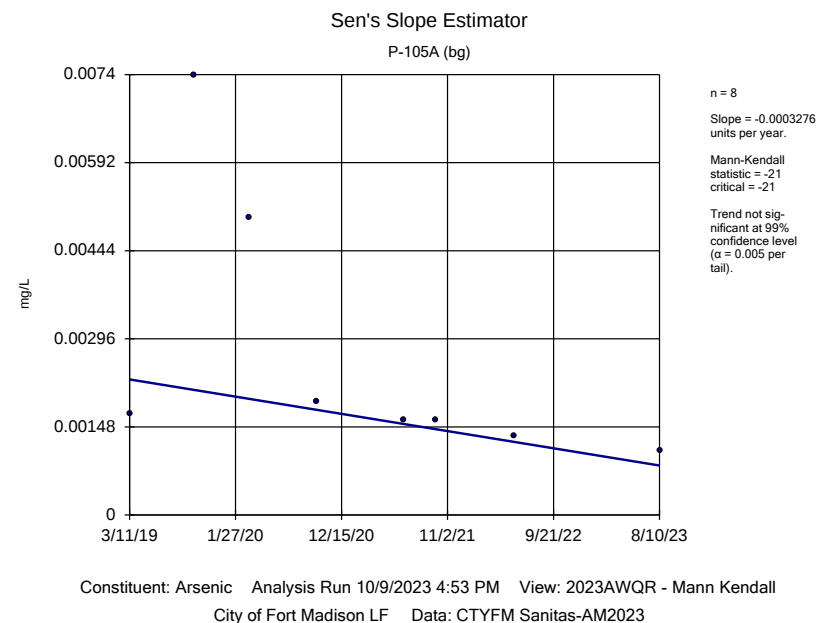
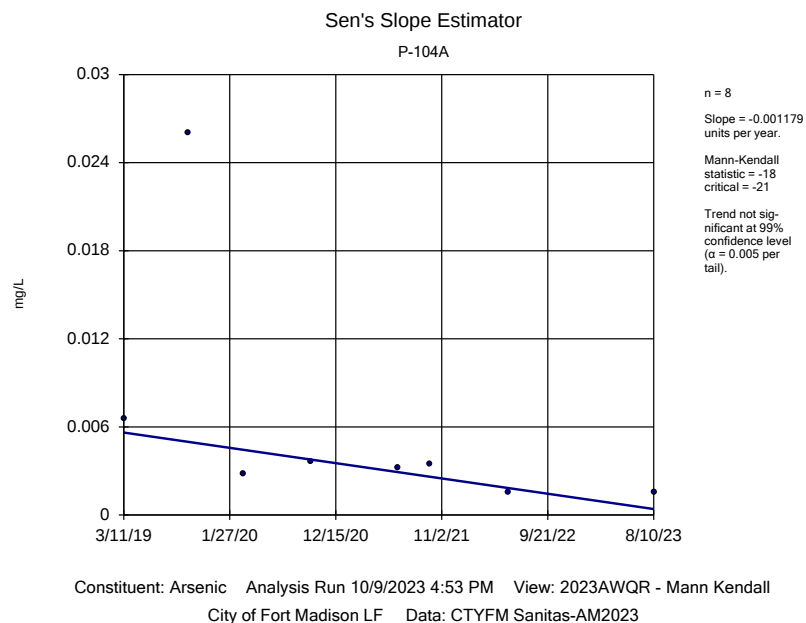
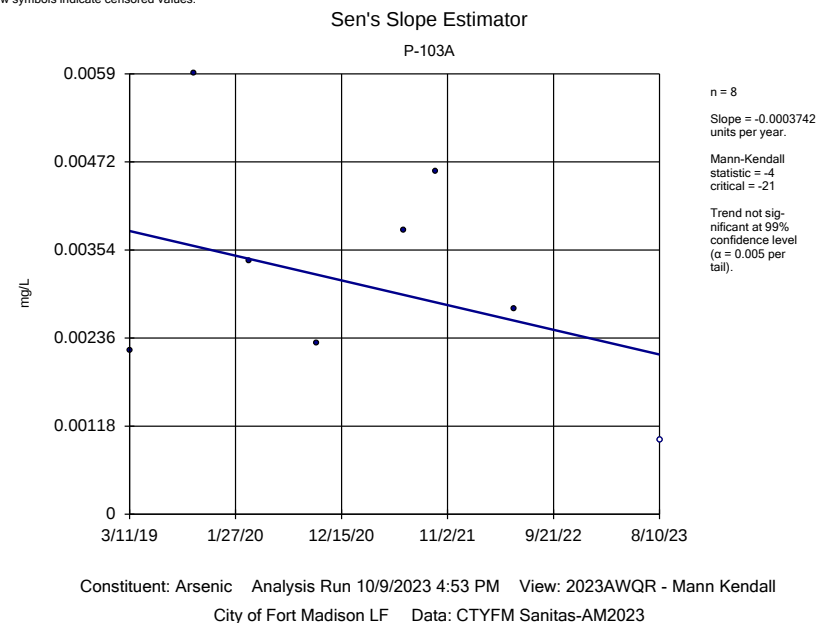
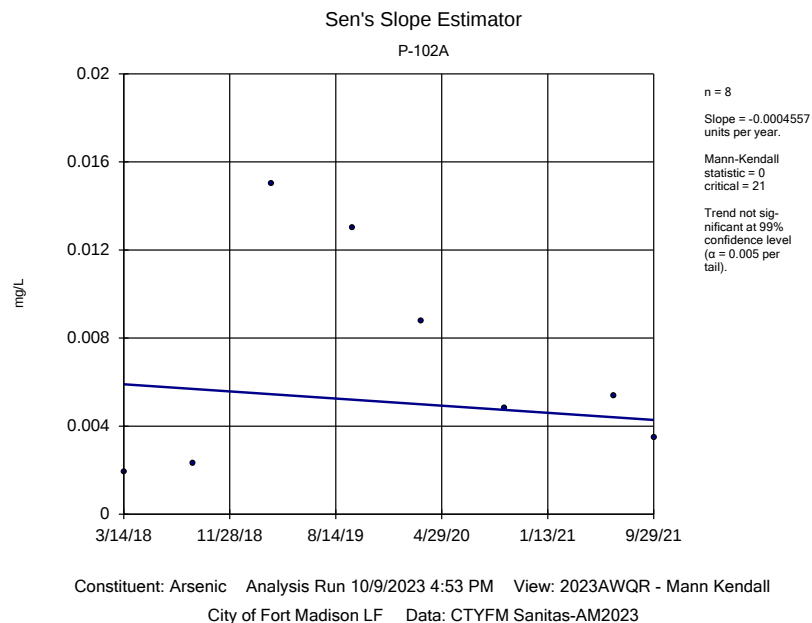
City of Fort Madison LF Data: CTYFM Sanitas-AM2023 Printed 10/9/2023, 4:55 PM

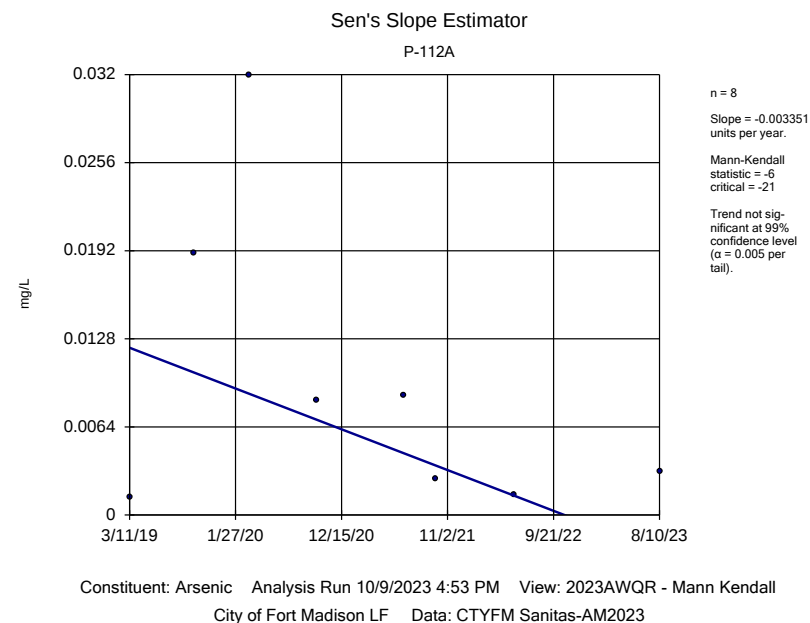
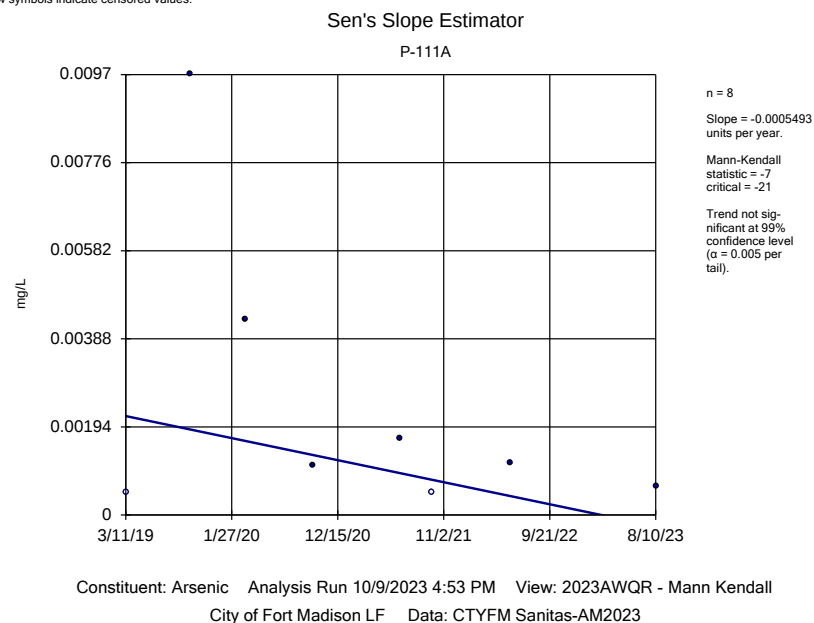
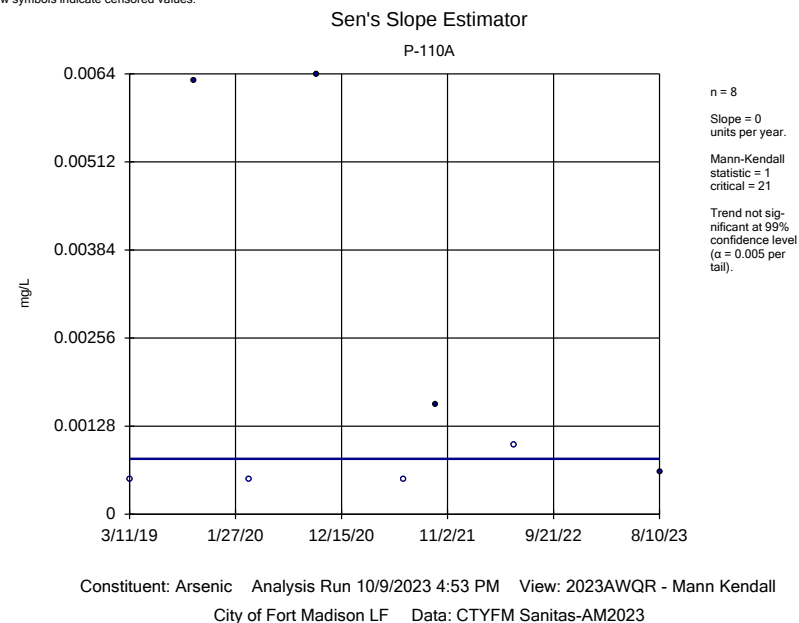
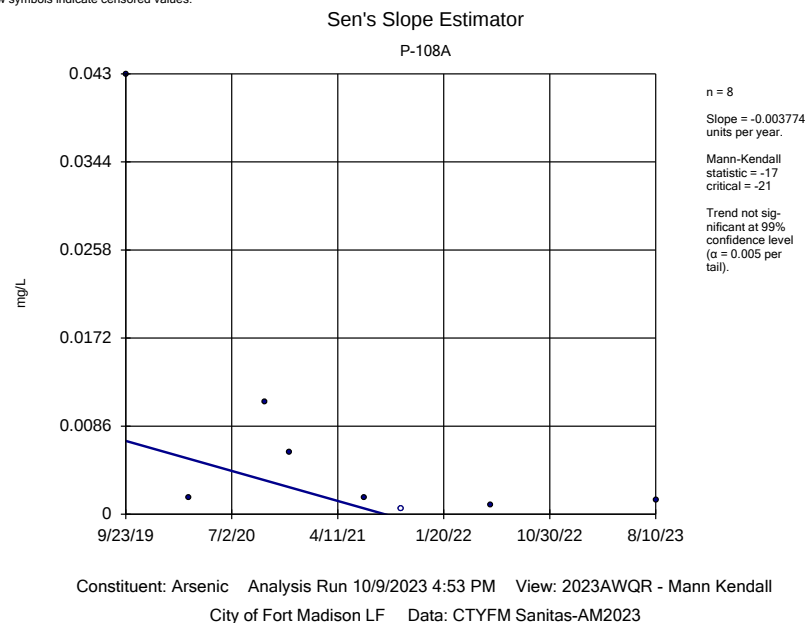
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (mg/L)	P-102A	-0.0004557	0	21	No	8	0	0.01	NP
Arsenic (mg/L)	P-103A	-0.0003742	-4	-21	No	8	12.5	0.01	NP
Arsenic (mg/L)	P-104A	-0.001179	-18	-21	No	8	0	0.01	NP
Arsenic (mg/L)	P-105A (bg)	-0.0003276	-21	-21	No	8	0	0.01	NP
Arsenic (mg/L)	P-108A	-0.003774	-17	-21	No	8	12.5	0.01	NP
Arsenic (mg/L)	P-110A	0	1	21	No	8	50	0.01	NP
Arsenic (mg/L)	P-111A	-0.0005493	-7	-21	No	8	25	0.01	NP
Arsenic (mg/L)	P-112A	-0.003351	-6	-21	No	8	0	0.01	NP
Arsenic (mg/L)	WT-102B	-0.0007941	-4	-21	No	8	0	0.01	NP
Arsenic (mg/L)	WT-105B (bg)	-0.0002097	-8	-21	No	8	37.5	0.01	NP
Arsenic (mg/L)	WT-106B (bg)	6.9e-12	9	21	No	8	87.5	0.01	NP
Arsenic (mg/L)	WT-107B (bg)	-0.0001289	-10	-21	No	8	50	0.01	NP
Arsenic (mg/L)	WT-111B	-0.00038	-10	-21	No	8	50	0.01	NP
Arsenic (mg/L)	WT-112B	-0.00137	-8	-21	No	8	50	0.01	NP
Arsenic (mg/L)	WT-113B	-0.006979	-14	-21	No	8	0	0.01	NP
Barium (mg/L)	WT-113B	-0.004471	-9	-21	No	8	0	0.01	NP
Beryllium (mg/L)	WT-113B	0	-8	-21	No	8	62.5	0.01	NP
Cadmium (mg/L)	WT-113B	-0.000164	-12	-21	No	8	75	0.01	NP
Chromium (mg/L)	WT-113B	-0.01908	-11	-21	No	8	37.5	0.01	NP
Cobalt (mg/L)	P-102A	0.0005156	10	21	No	8	0	0.01	NP
Cobalt (mg/L)	P-103A	-0.0007652	-7	-21	No	8	25	0.01	NP
Cobalt (mg/L)	P-104A	-0.0003833	-18	-21	No	8	50	0.01	NP
Cobalt (mg/L)	P-105A (bg)	-0.0003705	-16	-21	No	8	50	0.01	NP
Cobalt (mg/L)	P-108A	-0.0003373	-14	-21	No	8	62.5	0.01	NP
Cobalt (mg/L)	P-110A	-0.0002867	-10	-21	No	8	62.5	0.01	NP
Cobalt (mg/L)	P-111A	-0.0009894	-15	-21	No	8	25	0.01	NP
Cobalt (mg/L)	P-112A	-0.0005877	-11	-21	No	8	37.5	0.01	NP
Cobalt (mg/L)	WT-102B	0.0001905	2	21	No	8	0	0.01	NP
Cobalt (mg/L)	WT-105B (bg)	-0.001659	-13	-21	No	8	37.5	0.01	NP
Cobalt (mg/L)	WT-107B (bg)	-0.0009372	-9	-21	No	8	37.5	0.01	NP
Cobalt (mg/L)	WT-111B	0	2	21	No	8	62.5	0.01	NP
Cobalt (mg/L)	WT-112B	-0.001814	-15	-21	No	8	37.5	0.01	NP
Cobalt (mg/L)	WT-113B	-0.006382	-16	-21	No	8	12.5	0.01	NP
Copper (mg/L)	WT-113B	-0.002275	-5	-21	No	8	37.5	0.01	NP
Lead (mg/L)	P-102A	0.0006884	15	21	No	8	12.5	0.01	NP
Lead (mg/L)	P-103A	-0.001159	-15	-21	No	8	37.5	0.01	NP
Lead (mg/L)	P-104A	-0.0001428	-17	-21	No	8	75	0.01	NP
Lead (mg/L)	P-105A (bg)	-0.0005489	-18	-21	No	8	62.5	0.01	NP
Lead (mg/L)	P-108A	-0.0001153	-15	-21	No	8	75	0.01	NP
Lead (mg/L)	P-110A	-0.0004668	-12	-21	No	8	50	0.01	NP
Lead (mg/L)	P-111A	-0.00014	-18	-21	No	8	62.5	0.01	NP
Lead (mg/L)	P-112A	-0.002147	-9	-21	No	8	37.5	0.01	NP
Lead (mg/L)	WT-102B	-0.00002505	-10	-21	No	8	75	0.01	NP
Lead (mg/L)	WT-105B (bg)	-0.001943	-13	-21	No	8	37.5	0.01	NP
Lead (mg/L)	WT-107B (bg)	-0.001557	-13	-21	No	8	37.5	0.01	NP
Lead (mg/L)	WT-111B	-0.0002284	-14	-21	No	8	62.5	0.01	NP
Lead (mg/L)	WT-112B	-0.003481	-15	-21	No	8	25	0.01	NP
Lead (mg/L)	WT-113B	-0.007451	-15	-21	No	8	25	0.01	NP
Nickel (mg/L)	WT-113B	-0.02095	-13	-21	No	8	25	0.01	NP
Selenium (mg/L)	WT-113B	0.0004219	6	21	No	8	62.5	0.01	NP

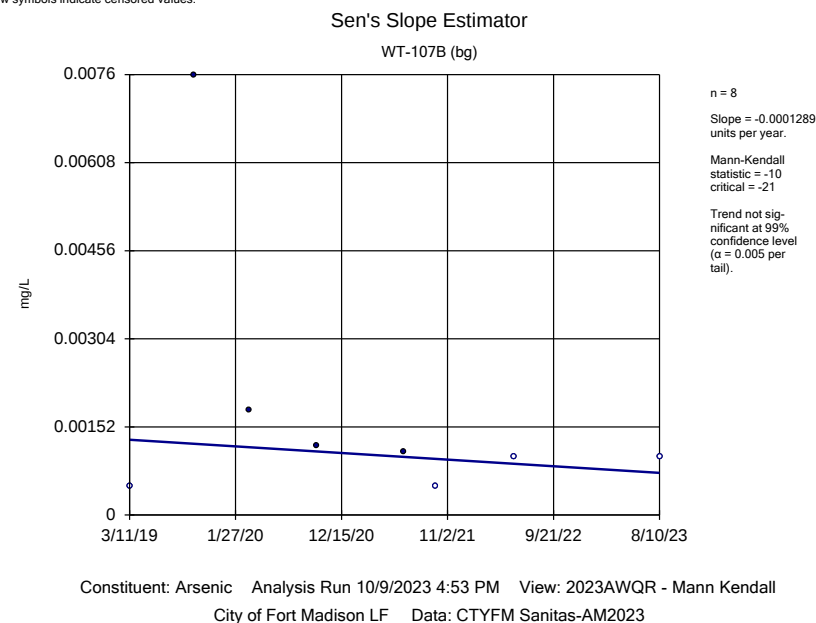
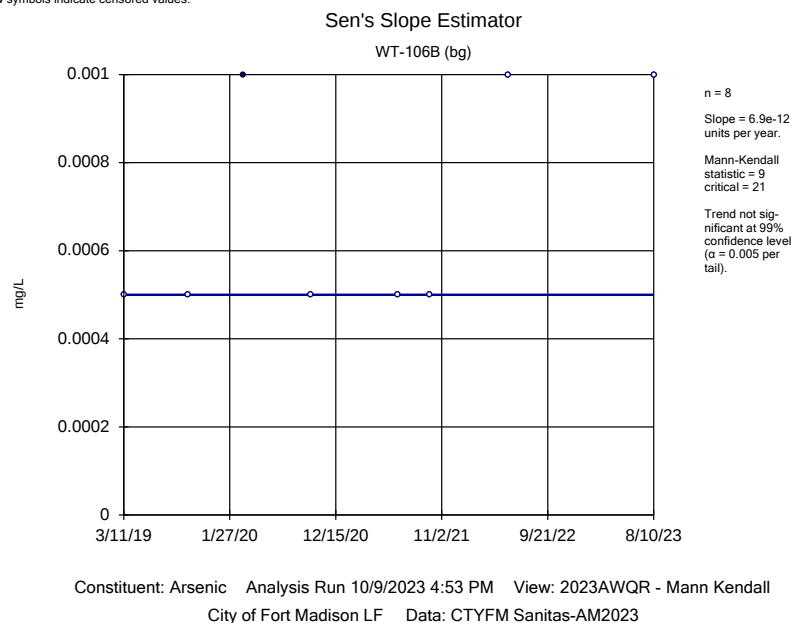
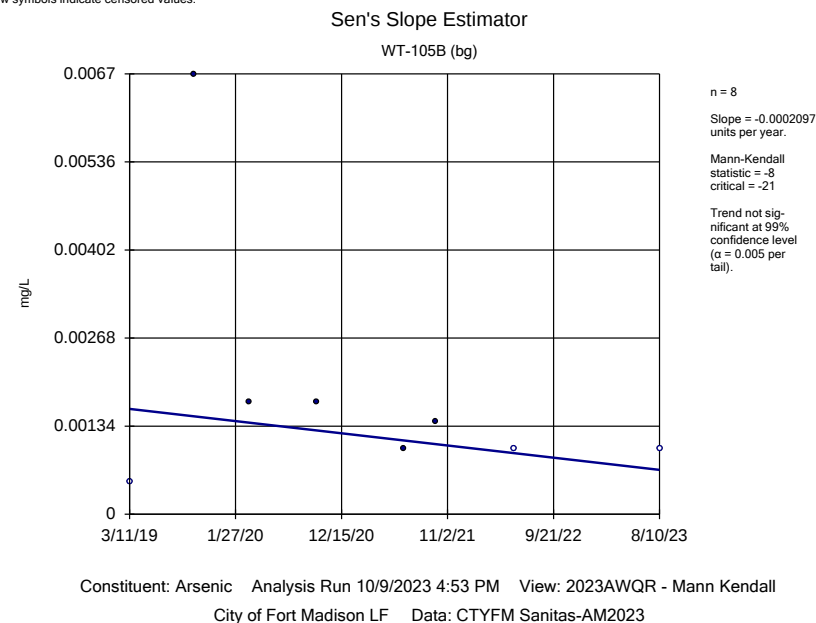
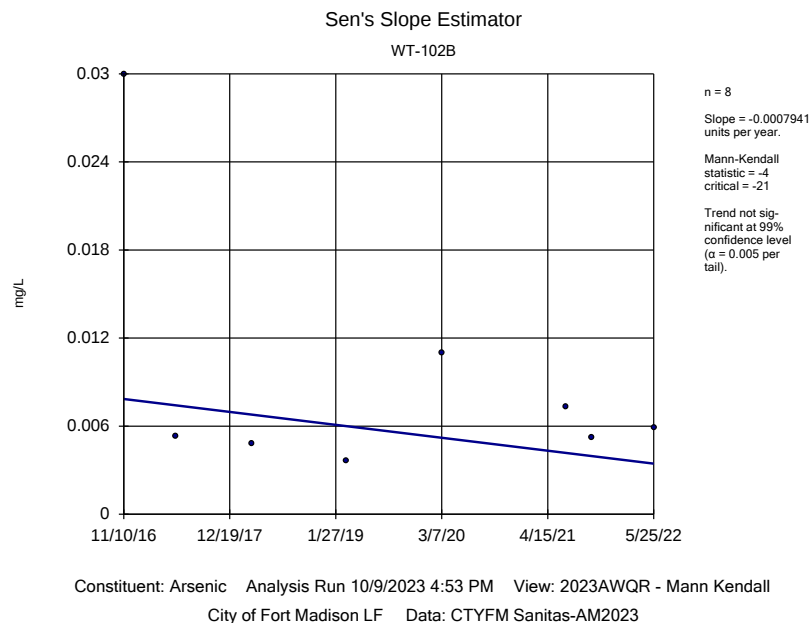
Trend Test

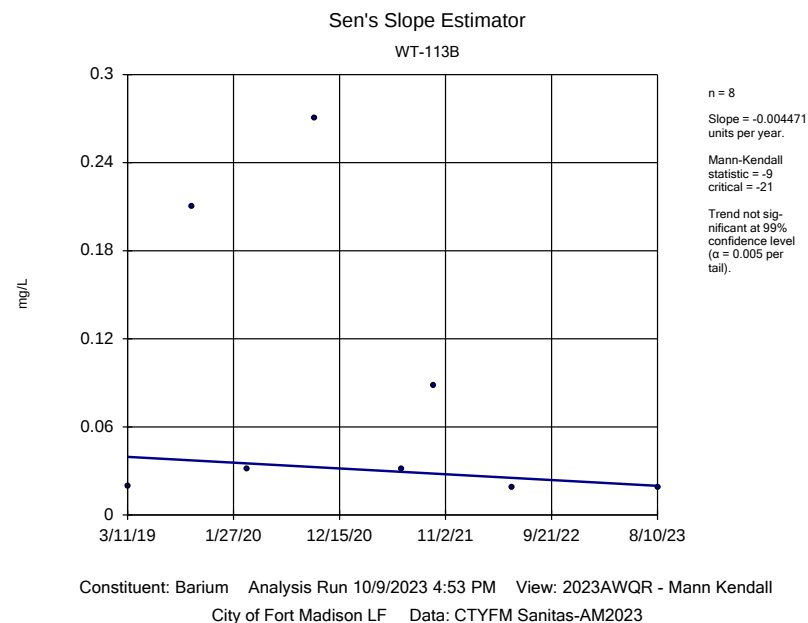
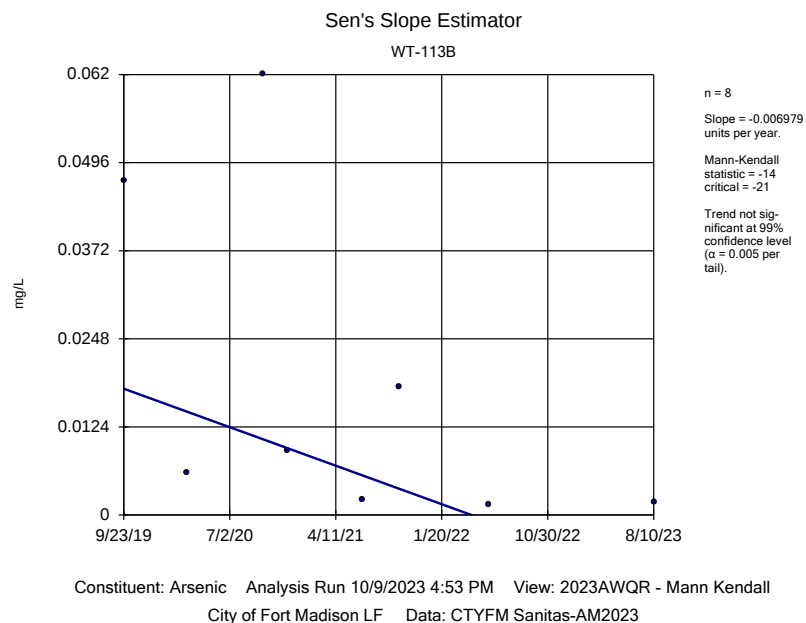
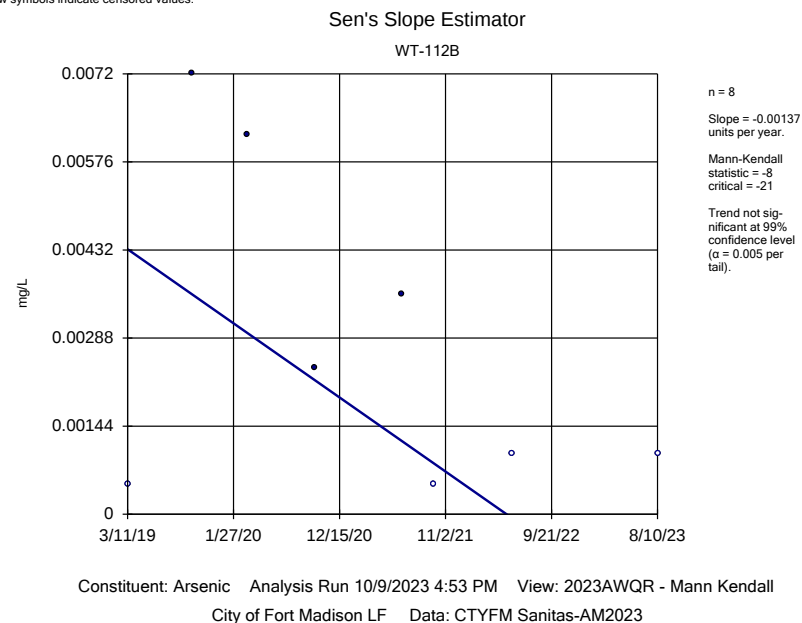
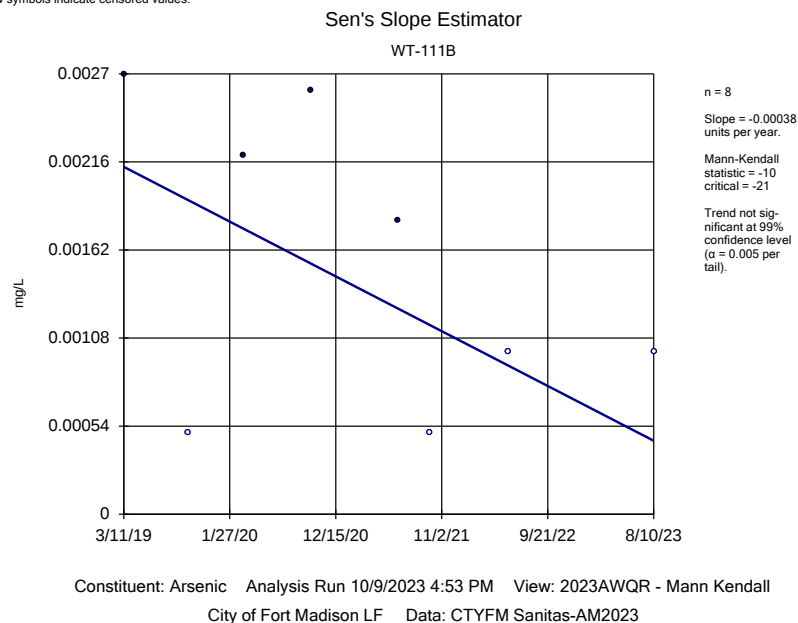
City of Fort Madison LF Data: CTYFM Sanitas-AM2023 Printed 10/9/2023, 4:55 PM

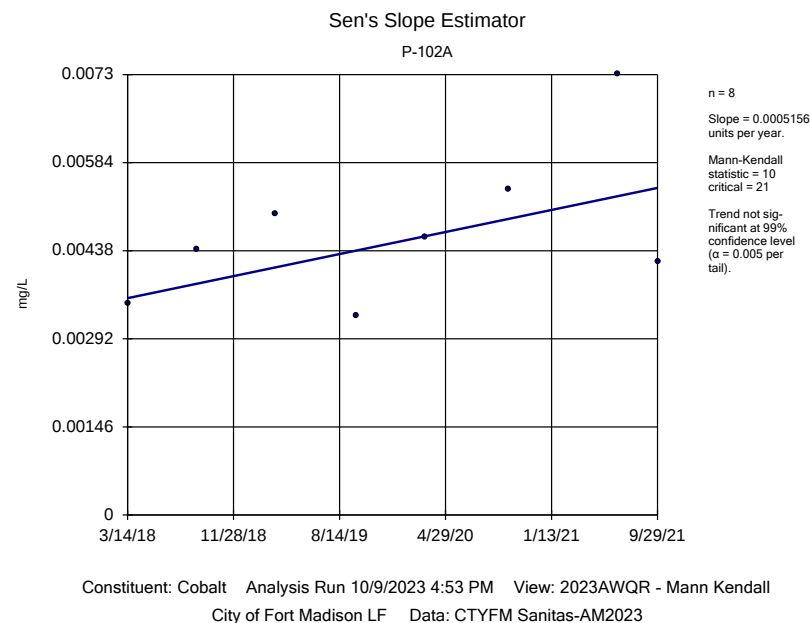
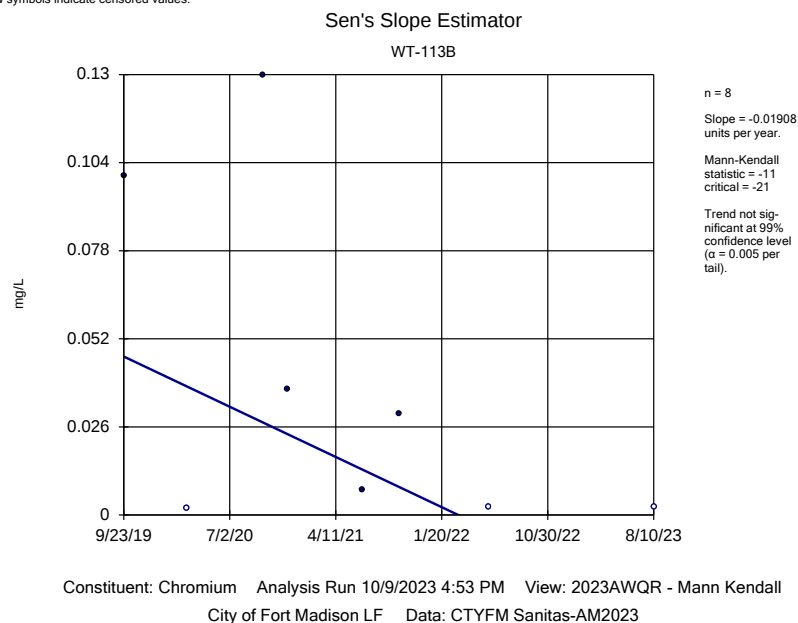
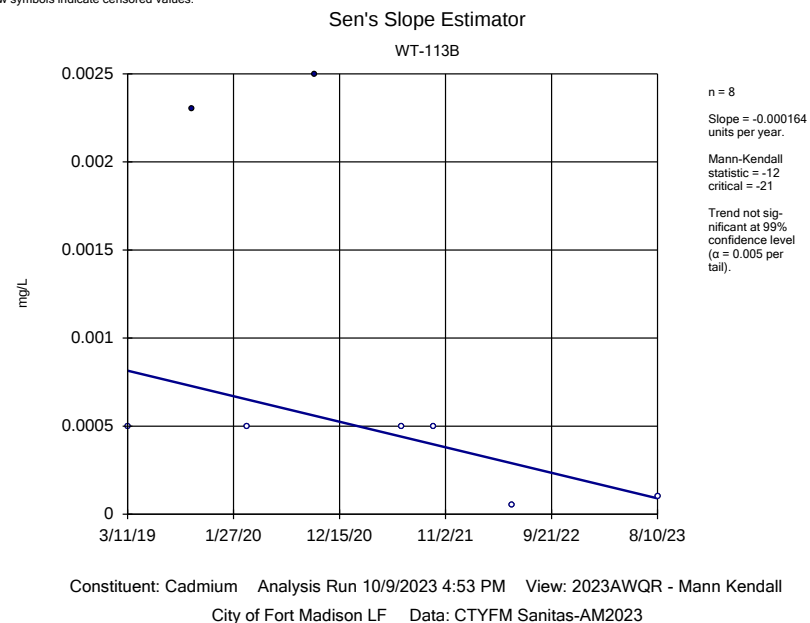
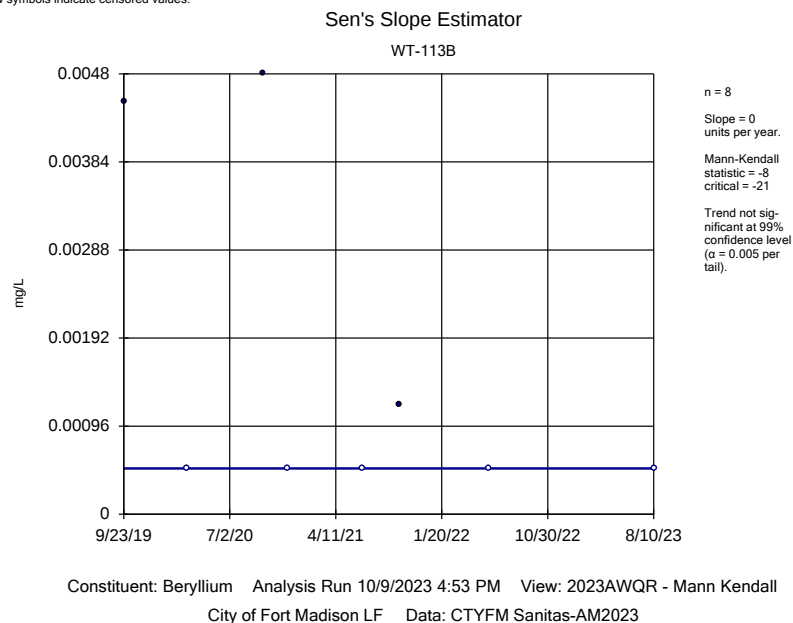
<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Alpha</u>	<u>Method</u>
Thallium (mg/L)	WT-113B	0	-9	-21	No	8	75	0.01	NP
Vanadium (mg/L)	WT-113B	-0.02017	-15	-21	No	8	25	0.01	NP
Zinc (mg/L)	WT-113B	-0.003727	-3	-21	No	8	25	0.01	NP

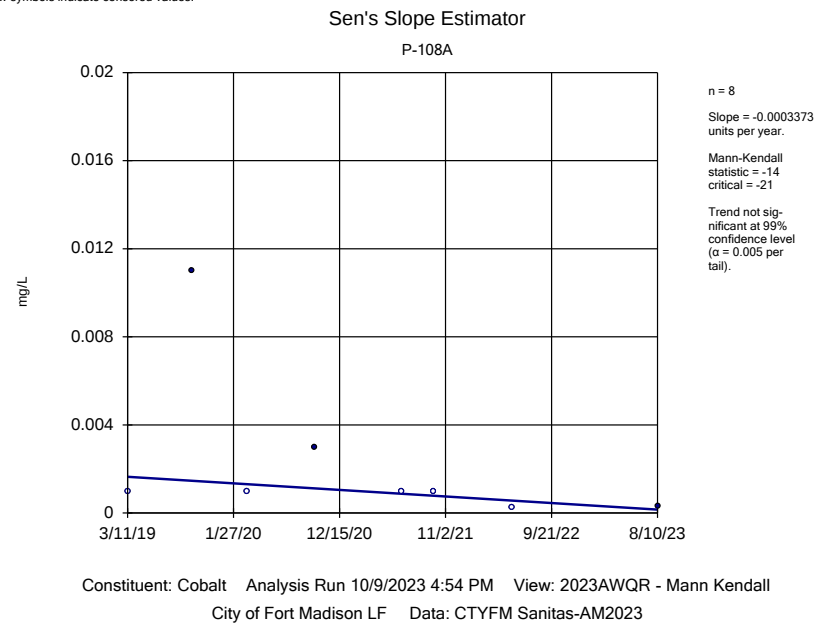
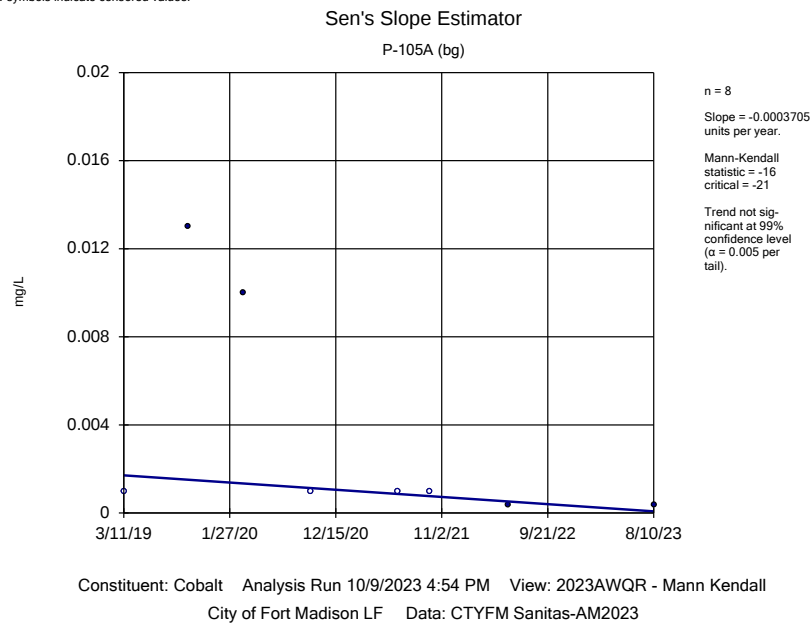
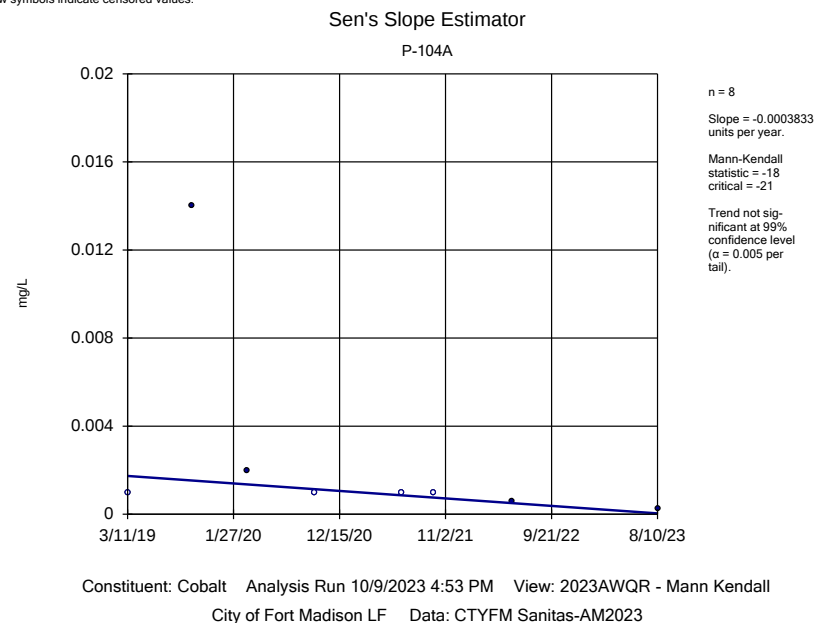
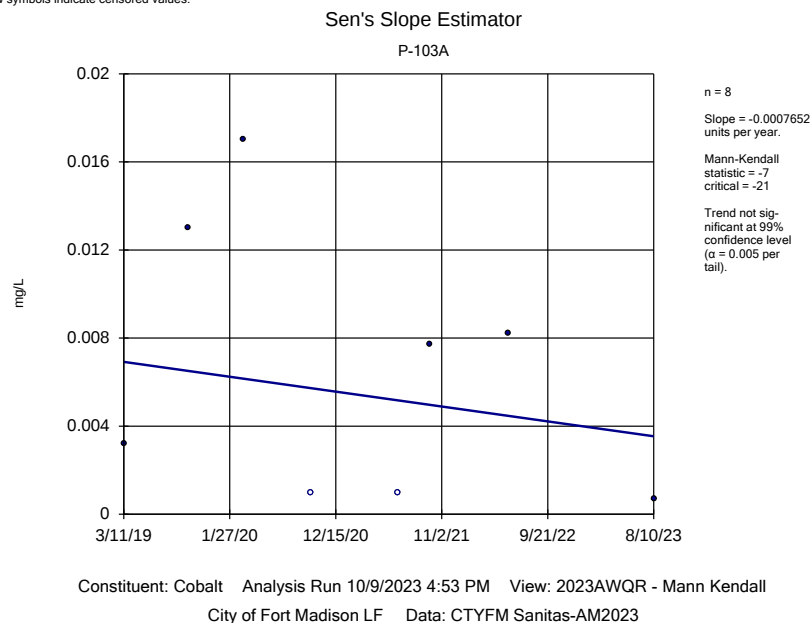


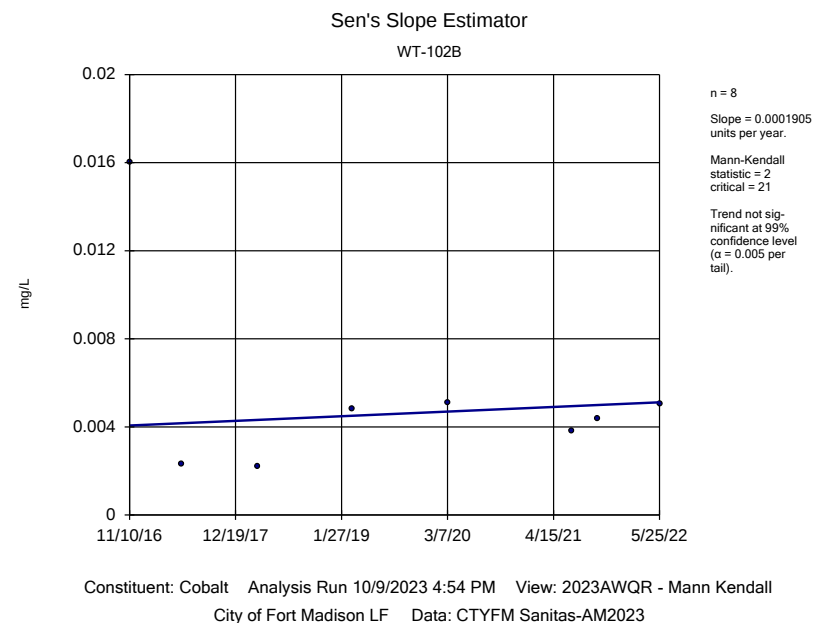
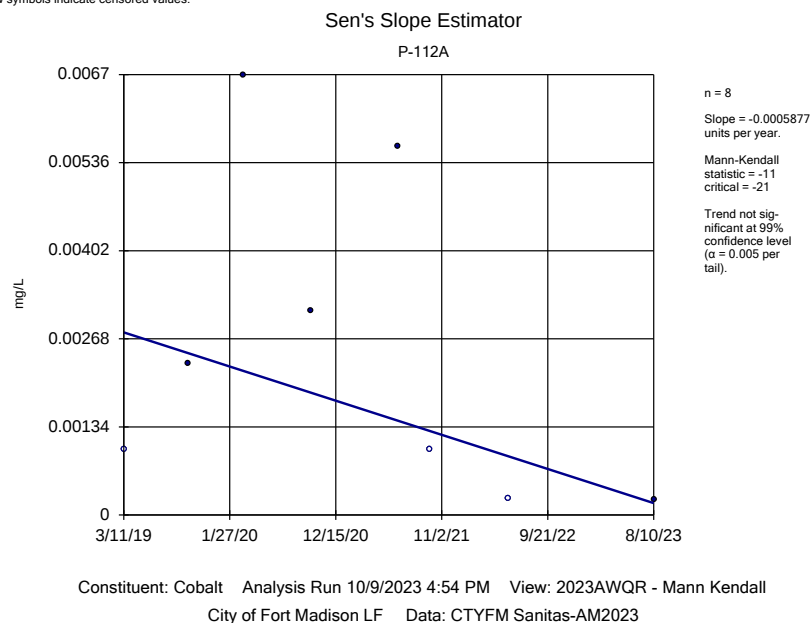
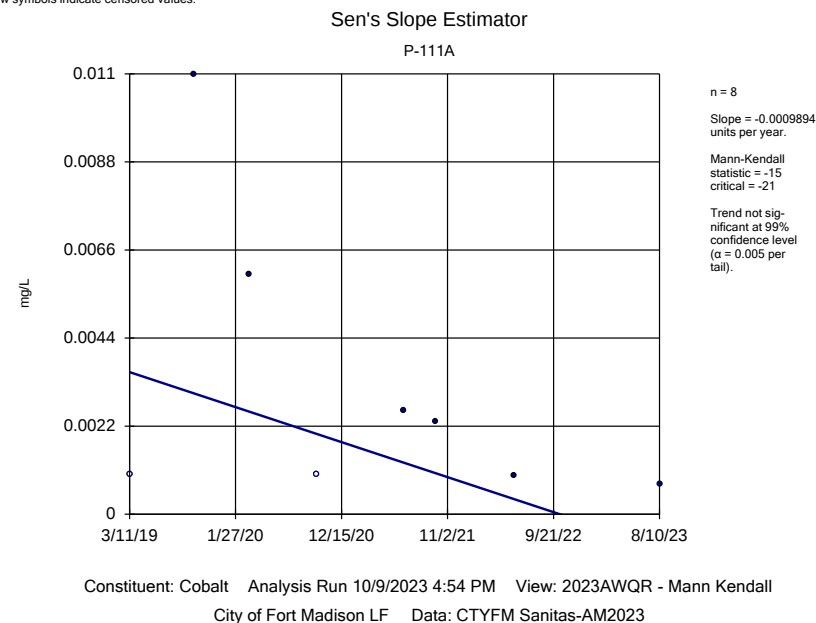
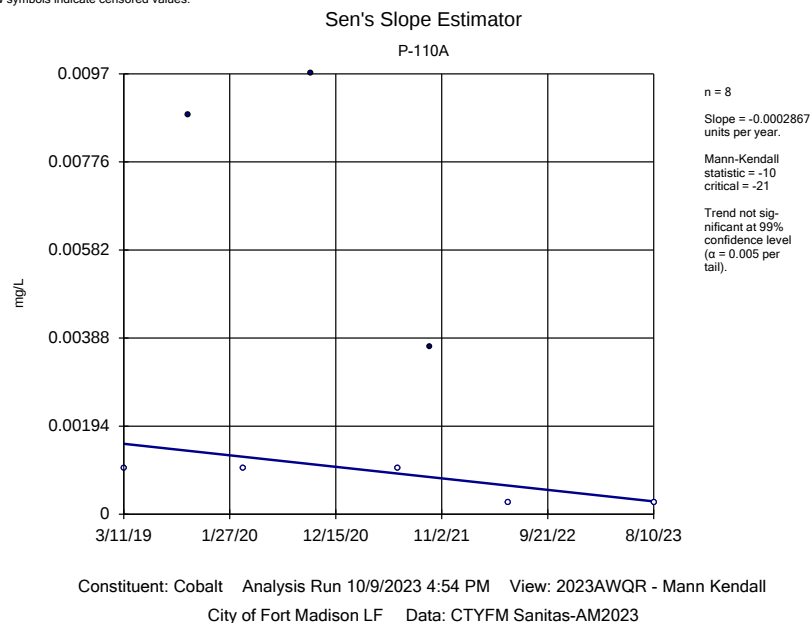


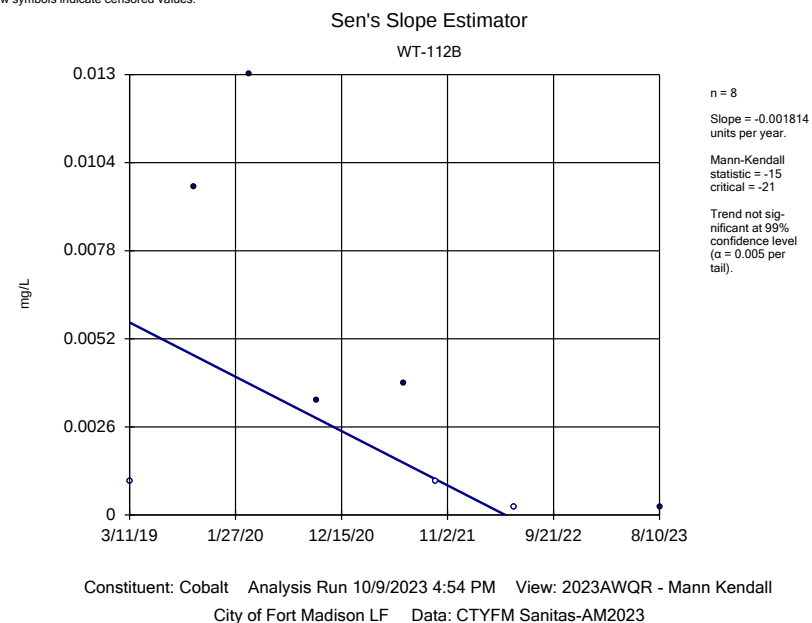
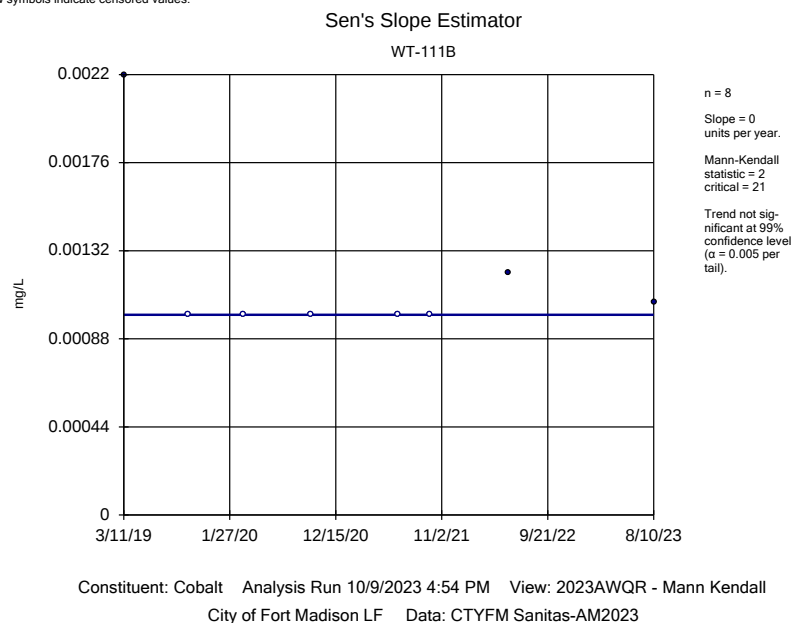
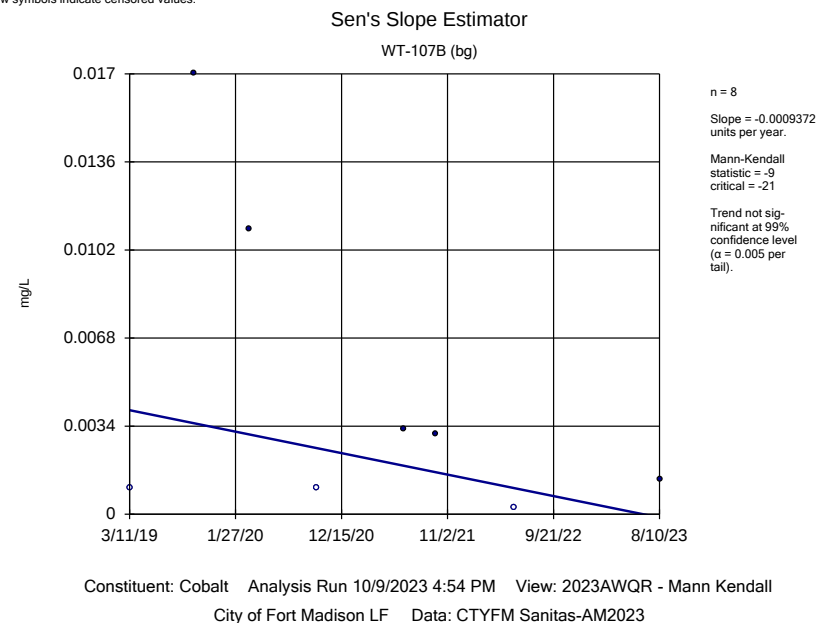
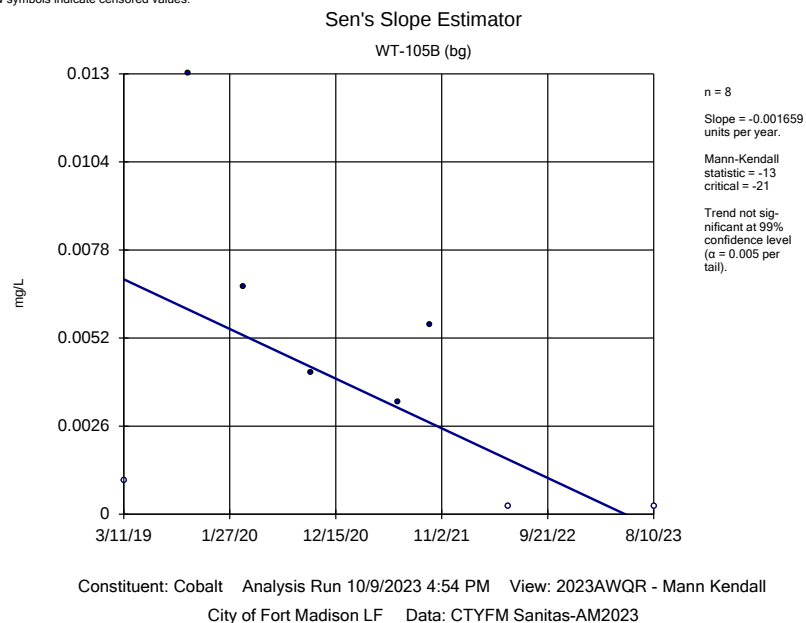


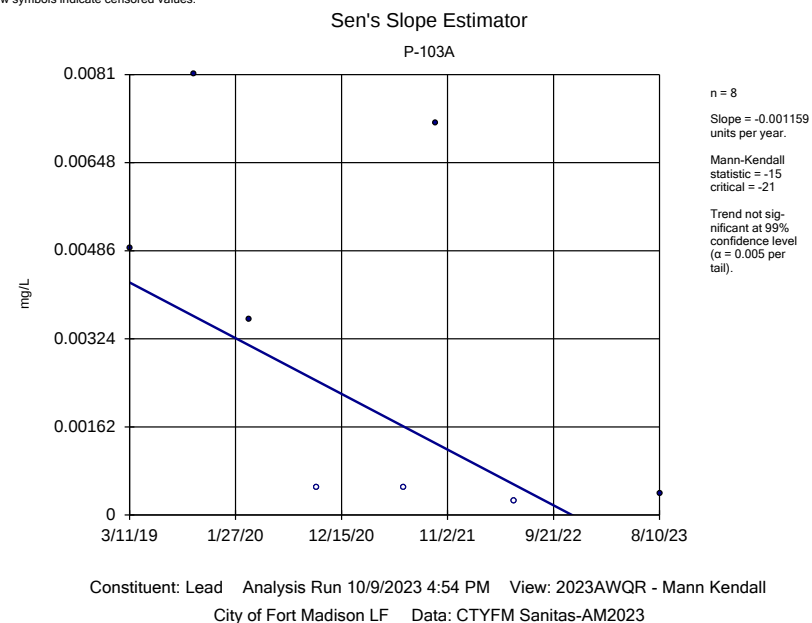
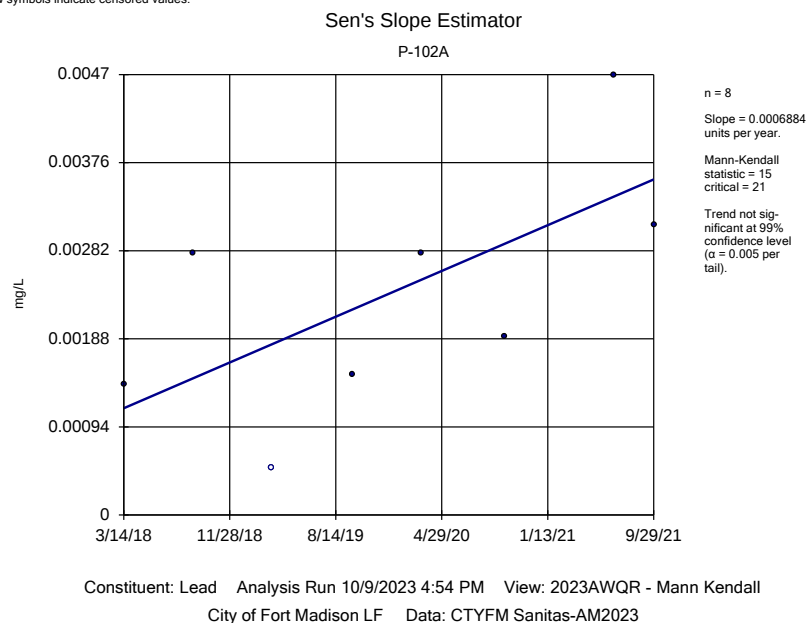
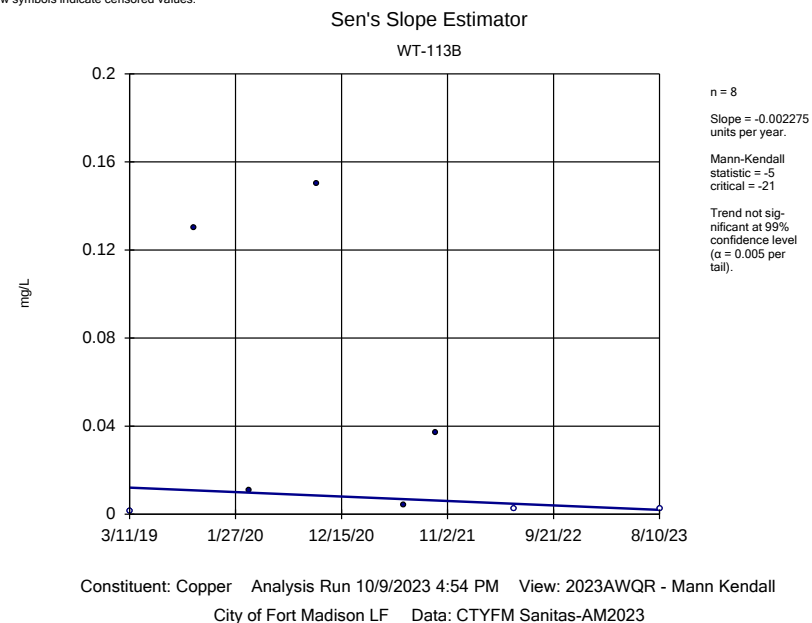
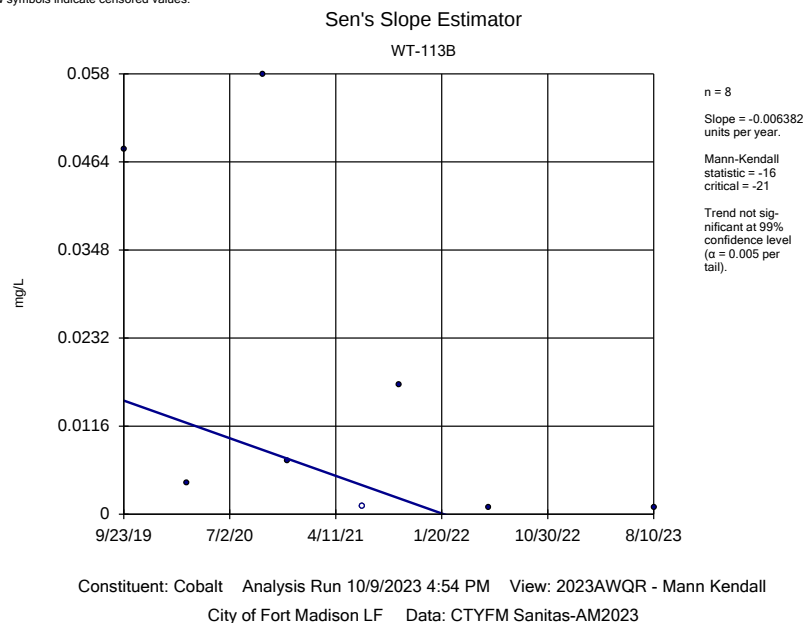






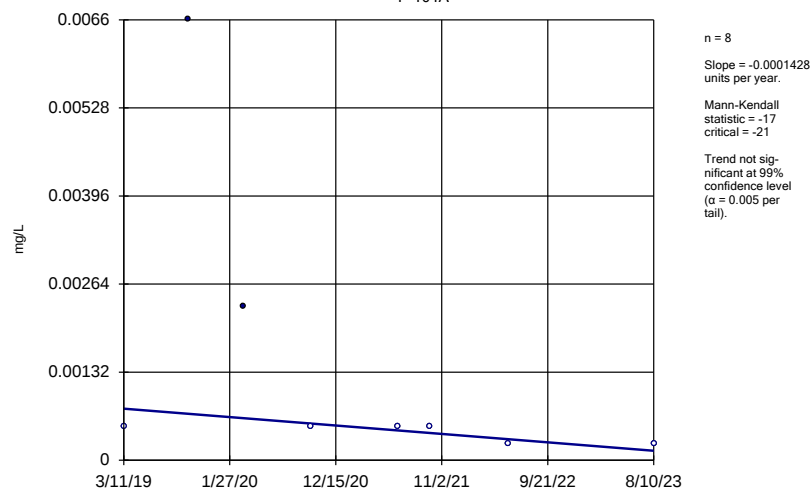






Sen's Slope Estimator

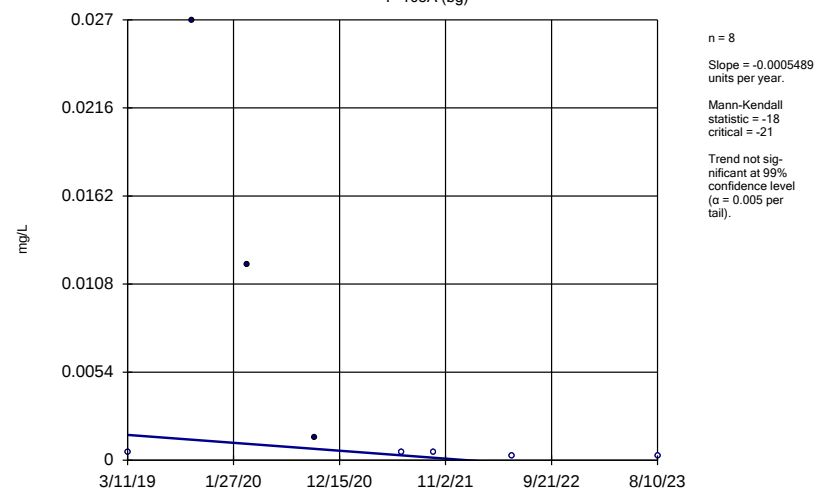
P-104A



Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

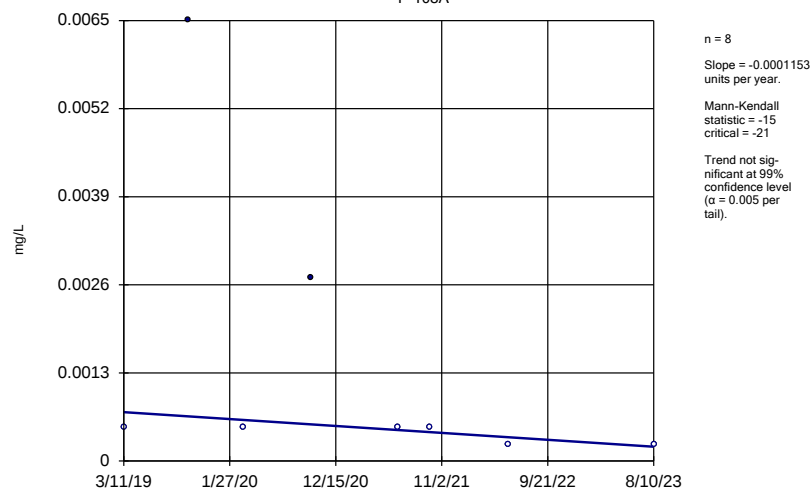
P-105A (bg)



Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

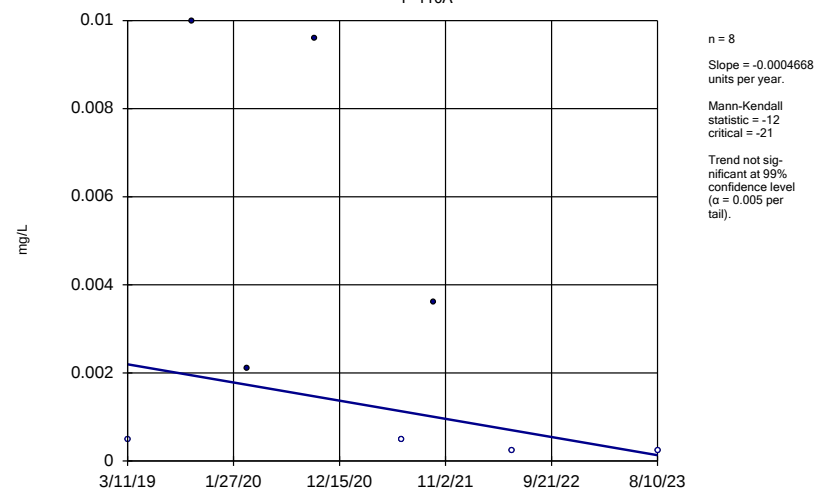
P-108A



Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

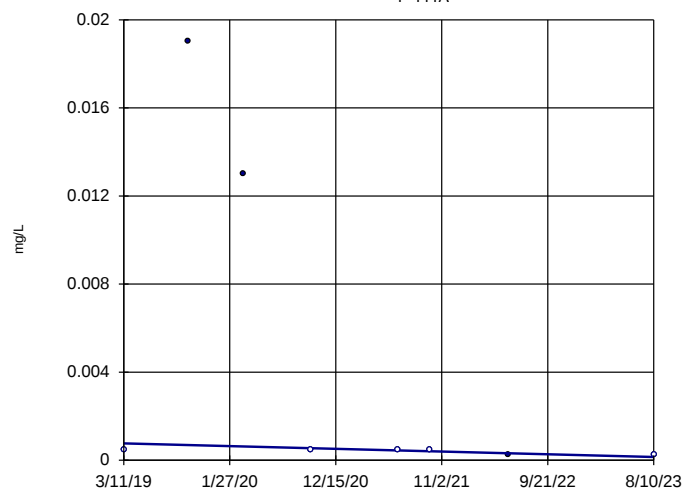
P-110A



Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

P-111A

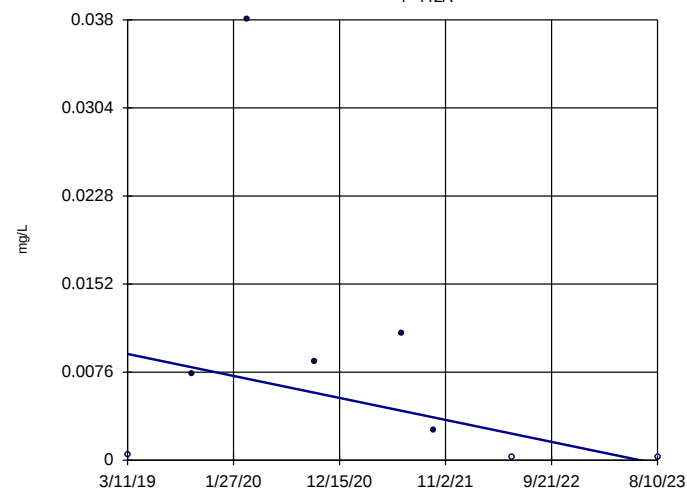


n = 8
Slope = -0.00014
units per year.
Mann-Kendall
statistic = -18
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

P-112A

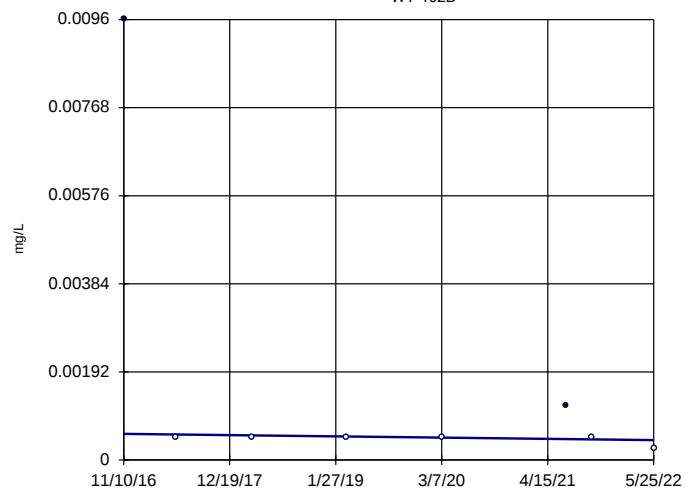


n = 8
Slope = -0.002147
units per year.
Mann-Kendall
statistic = -9
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

Sen's Slope Estimator

WT-102B

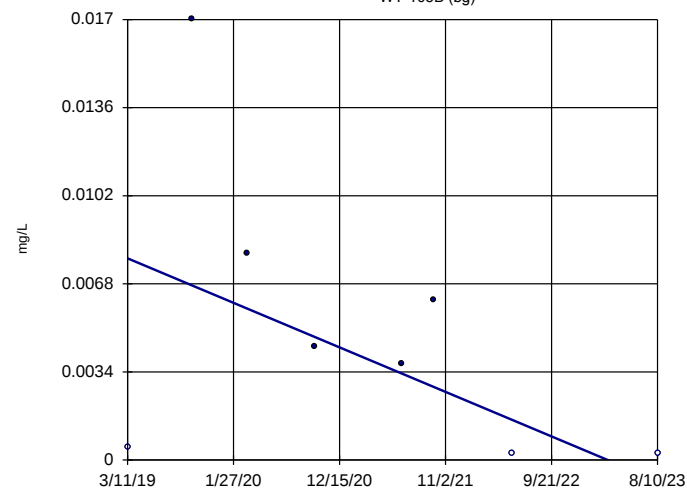


n = 8
Slope = -0.00002505
units per year.
Mann-Kendall
statistic = -10
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023

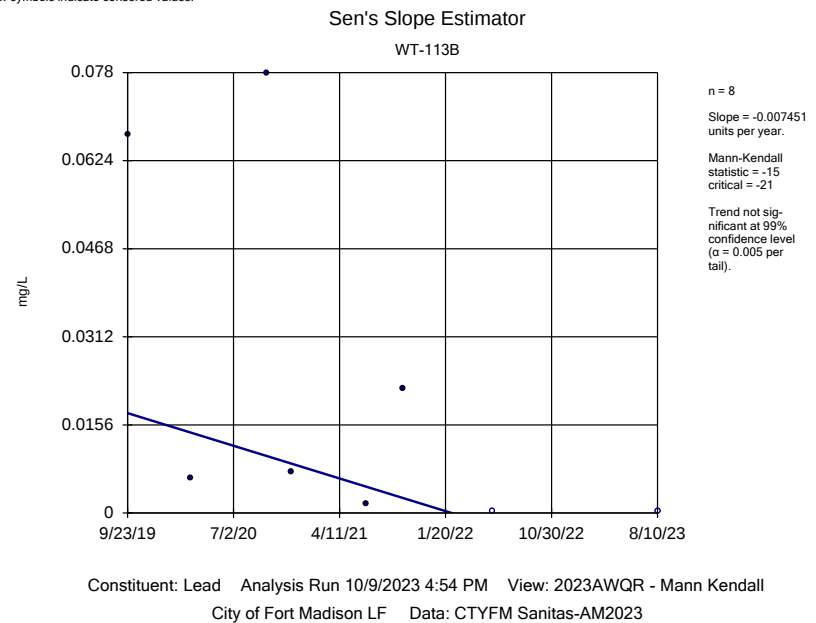
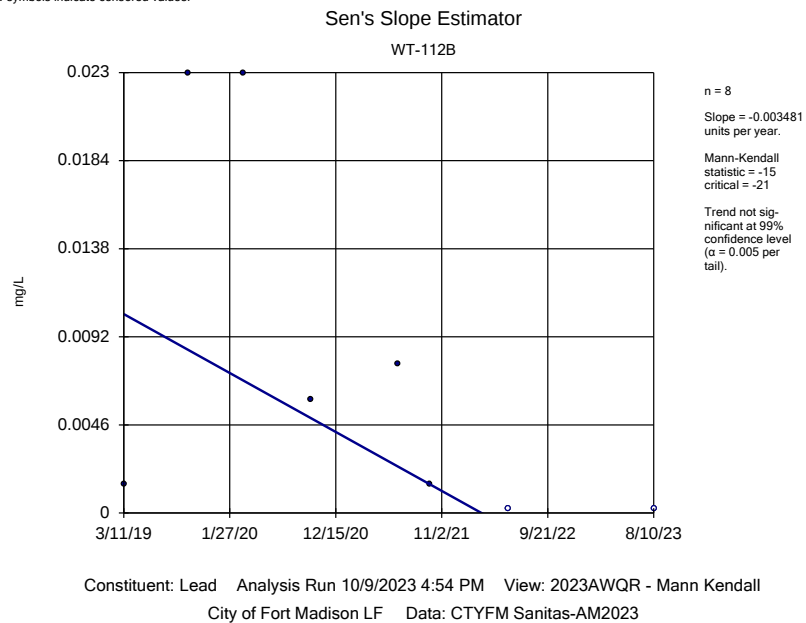
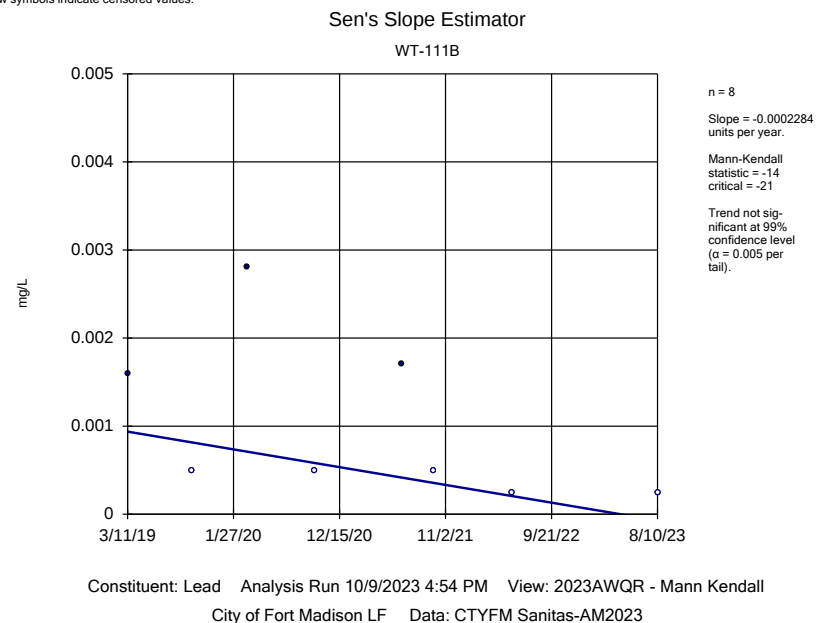
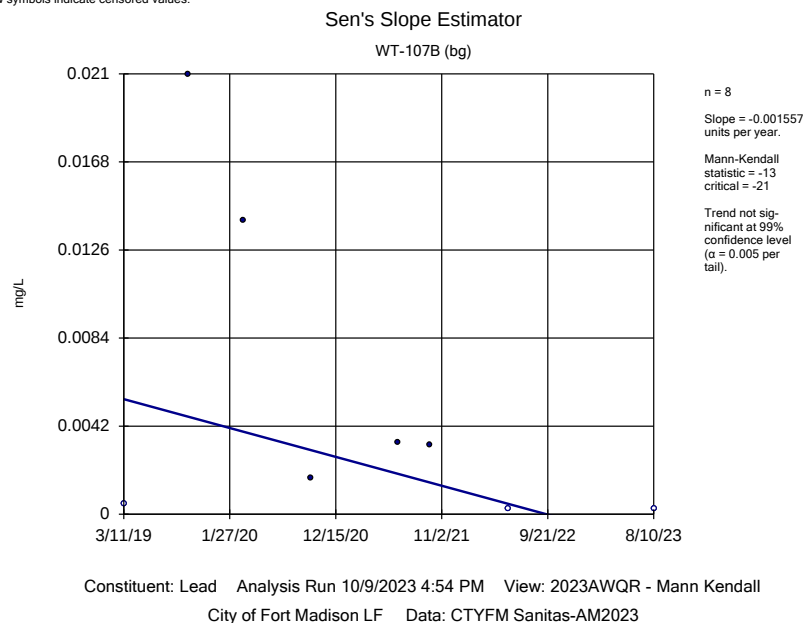
Sen's Slope Estimator

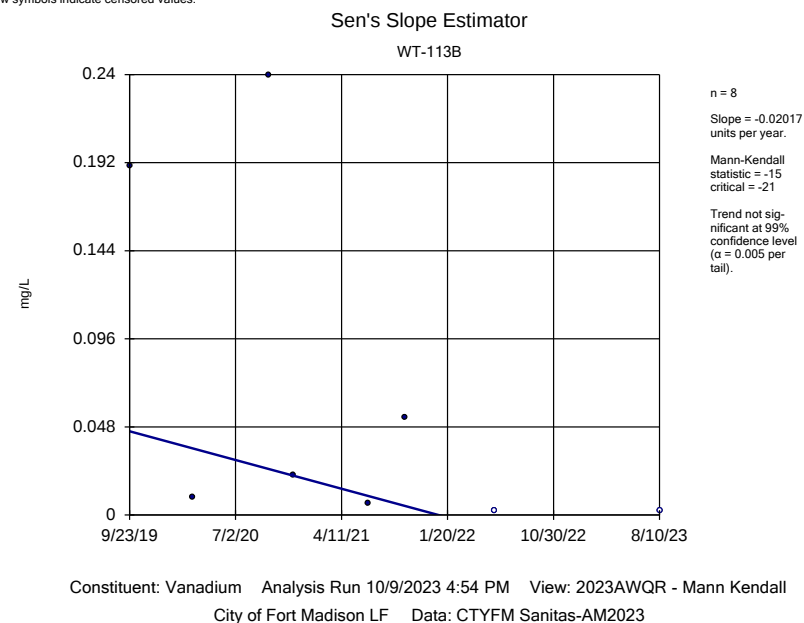
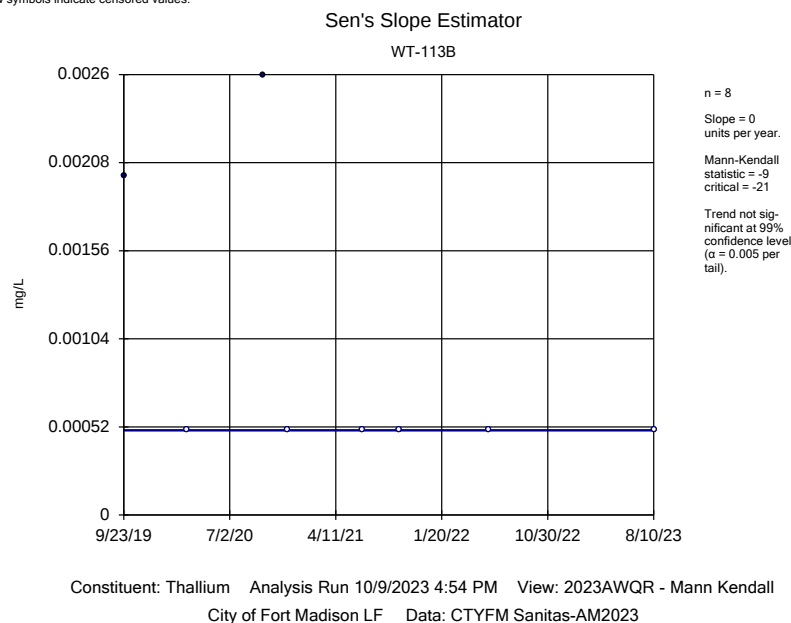
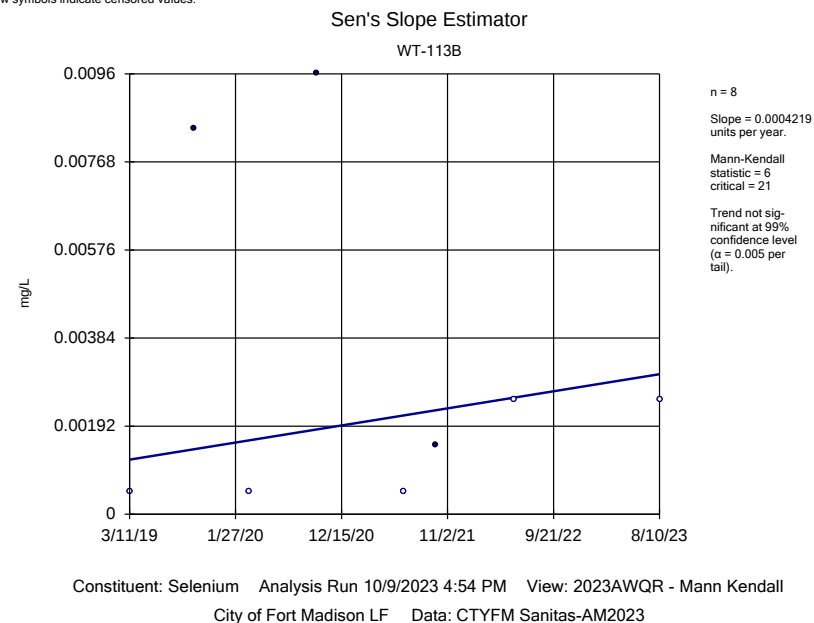
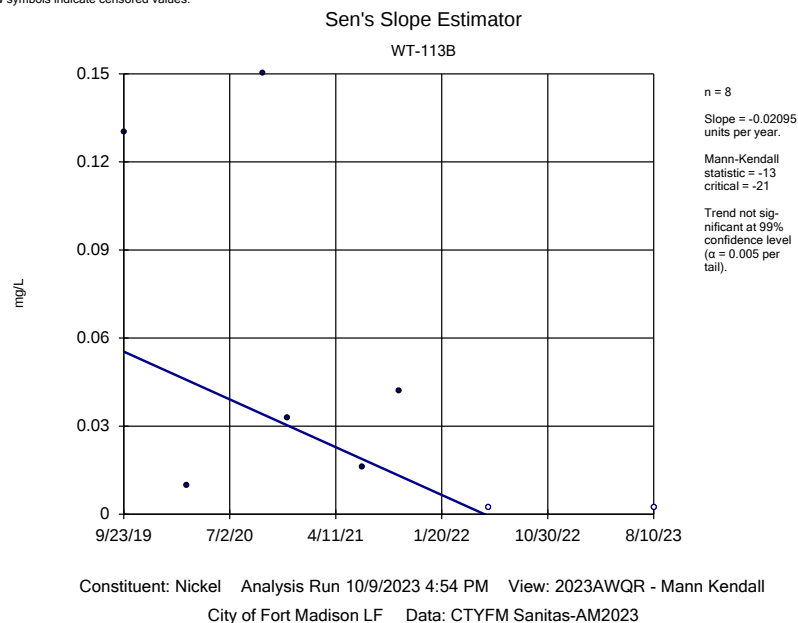
WT-105B (bg)

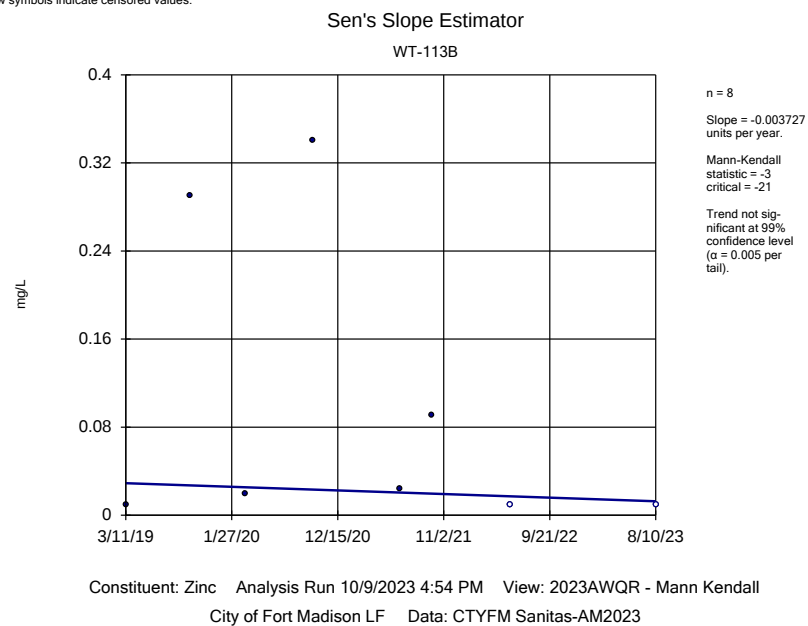


n = 8
Slope = -0.001943
units per year.
Mann-Kendall
statistic = -13
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Constituent: Lead Analysis Run 10/9/2023 4:54 PM View: 2023AWQR - Mann Kendall
City of Fort Madison LF Data: CTYFM Sanitas-AM2023







Appendix G

Gas Monitoring Map and Results

Path: C:\Users\hmadson\OneDrive - SCS Engineers\Desktop\GIS\Map\Site Maps\City\FW 2023 AMQP\EarthImage_2022_AMQP.aprx
User: hmadson
Date Saved: 10/27/2023 1:27 PM



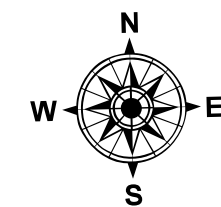
Methane Monitoring Points	
Name	Type
GV-A2	Gas Vent
GV-A3	Gas Vent
GV-A7	Gas Vent
GV-B	Gas Vent
GV-C	Gas Vent
GV-D	Gas Vent
GV-K	Gas Vent
GV-100	Gas Vent
GV-300	Gas Vent
GV-400	Gas Vent
LFG-3	Gas Vent
UNKNOWN 1	Gas Vent
UNKNOWN 3	Gas Vent
UNKNOWN 4	Gas Vent
UNKNOWN 5	Gas Vent
GP-1-17	Gas Probe
GP-2-17	Gas Probe
GP-3-17	Gas Probe
GP-4-17	Gas Probe
GP-5-17	Gas Probe
GP-6-17	Gas Probe



Legend

- Methane Monitoring Location
- Approximate Gas Vent Location
- Leachate Monitoring Well
- Monitoring Well
- Manhole
- Creek
- Approximate Property Boundary
- Approximate Waste Boundary

City of Fort Madison Landfill &
Rodeo Park Dump
Fort Madison, Iowa
Project No: 27223190.00
Drawing Date: October 2023



0 140 280 560 840 Feet

Figure 1-1

Gas Monitoring Summary
2023 Gas Monitoring Report
City of Fort Madison Landfill/Rodeo Park Dump
Permit No. 56-SDP-05-88C

Monitoring Points		Methane Results (% LEL)			
Name	Type	5/4/2023	S	8/10/2023	S
Gas Probes					
GP-1-17	Vadose Zone	>100	N	>100	N
GP-2-17	Vadose Zone	>100	N	>100	N
GP-3-17	Vadose Zone	>100	N	>100	N
GP-4-17	Vadose Zone	0	N	0	N
GP-5-17	Vadose Zone	0	N	0	N
GP-6-17	Vadose Zone	0	N	0	N
Gas Vents					
GV-A2	Unknown			0	
GV-A3	Unknown			0	
GV-A7	Unknown			>100	
GV-A	Unknown			0	
GV-B	Unknown			0	
GV-C	Unknown			7	
GV-D	Unknown			>100	
GV-K	Unknown			0	
GV-100	Unknown			>100	
GV-300	Unknown			0	
GV-400	Unknown			0	
LFG-3	Unknown			0	
UNKNOWN 1	Unknown			0	
UNKNOWN 3	Unknown			0	
UNKNOWN 4	Unknown			>100	
UNKNOWN 5	Unknown			0	

S - Was screen submerged, yes or no or blank is non-applicable