

January 31, 2025

Ms. Lori Babcock
Michigan Department of Environment, Great Lakes, and Energy
Materials Management Division
Bay City District Office
401 Ketchum St, Suite B
Bay City, Michigan 48708

SUBJECT: 2024 Annual Groundwater Monitoring and Corrective Action Report §257.90(e)
inclusive of the Semiannual Progress Report §257.97(a)
JC Weadock Landfill Coal Combustion Residuals (CCR) Unit

Dear Ms. Babcock:

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended). Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90 – 257.98), apply to the Consumers Energy Company (Consumers Energy) Landfill CCR Unit at the JC Weadock Power Plant Site. Pursuant to the CCR Rule, no later than January 31, 2018, and annually thereafter, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). This *2024 Annual Groundwater Monitoring and Corrective Action* report documents activities from January 2024 through December 2024.

This letter along with the 4 four quarterly groundwater sampling reports for the Weadock Landfill (Enclosures 2 through 5), and a technical memorandum discussing the nature and extent of contamination characterization (Enclosure 6) collectively comprise the *2024 Annual Groundwater Monitoring and Corrective Action Report* and meet the requirements of §257.90(e) as documented in the enclosed checklists developed for each unit (Enclosures 1).

The Weadock Landfill was in assessment monitoring at the beginning and at the end of the period covered by this report. Consumers Energy is continuing to evaluate corrective measures per §257.96 and §257.97 and is continuing semiannual assessment monitoring in accordance with §257.95.

This annual groundwater monitoring and corrective action report includes a Semiannual Progress Report, prepared as a requirement of §257.97(a) of the Federal Coal Combustion Residual (CCR) Rule, describes progress towards selecting and implementing any additional remedy for the Weadock Landfill after the completion of the *Assessment of Corrective Measures, JC*

Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Unit^{1,2} (Weadock ACM), dated September 11, 2019. Groundwater management alternatives considered to be technically feasible at the Weadock Landfill upon completing source containment through the construction of the soil-bentonite slurry wall and construction of an impermeable final cover system that could potentially address the residual arsenic under *known* groundwater conditions were identified in the Weadock ACM as: 1) Post-remedy monitoring, 2) Groundwater capture/control, 3) Impermeable barrier, 4) Active geochemical sequestration, and 5) Passive geochemical sequestration.

Weadock Landfill Closure Activities

In 2008, Consumers Energy completed construction of a soil-bentonite slurry wall (Weadock Slurry Wall) that enclosed the landfill with except for a 1,600 ft venting feature³. Later, construction of the Weadock Slurry Wall was extended to include the previous vent⁴. EGLE approved the construction certification reports on June 24, 2009, and December 19, 2018, respectively. This engineered barrier is monitored in accordance with the *Landfill Hydrogeological Monitoring Plan* (Landfill HMP)⁵, approved and incorporated by reference into the renewed Solid Waste Operating License No. 9640 dated March 11, 2021.

Additionally, Consumers Energy submitted draft revisions of the closure plan (2016 Closure Plan) for the Weadock Landfill to EGLE for review and concurrence pursuant to the requirements of solid waste operating license. Changes in the closure plan were required due to the forecasted early retirement of coal-fired units at the generating complex in May 2023. Final grades were proposed to be reduced, but other improvements to the final cover system and stormwater drainage were incorporated into the plan with state-specific variances requested. EGLE approved the variances and provisional design elements in the renewed solid waste operating license on March 11, 2021. The final closure plan was approved by EGLE on April 17, 2022. Consumers Energy will update the final closure plan pursuant to 257.102(d) once the detail engineering is completed. The first phase of partial closure that focused on construction approximately 22.5 acres of final cover commenced in May 2023. Consumers Energy will continue monitoring conditions during the execution of the final closure construction including performance of the soil-bentonite slurry wall.

¹ TRC. 2019. Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units. Prepared for Consumers Energy Company. September.

² The Weadock Bottom Ash Pond is certified closed. (Consumers Energy. 2023. JC Weadock Bottom Ash Pond 40 CFR 257.102(c) Closure by Removal Certification. November 10.)

³ NTH Consultants, Ltd. 2009. Construction Certification, Soil-Bentonite Cutoff Wall April 24.

⁴ Golder Associates, Inc. 2018. J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report. October 30.

⁵ TRC. 2021. Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan. Prepared for Consumers Energy Company. February.

Weadock Landfill Groundwater Sampling Results: March, May, July, and October 2024 Events

Groundwater compliance monitoring at the Weadock Landfill is implemented quarterly in accordance with the Landfill HMP. Semiannual assessment monitoring in accordance with §257.95 occurs during the second and fourth calendar quarters. Statistical analysis from the quarterly groundwater monitoring events performed in 2024 at the Weadock Landfill verified that there were no Appendix IV constituents present at statistically significant levels above the established Groundwater Protection Standard (GWPS) within Weadock Landfill groundwater monitoring system. Results are presented in the enclosed quarterly groundwater monitoring report (Enclosures 2 through 5). Additionally, monitoring performed under the Weadock Groundwater Surface-Water Interface (GSI) Compliance Plan demonstrates protection of human health and the environment with criteria determined to be protective at the point of exposure.

Significant observations from the event summary are as follows:

- No Appendix IV constituents have been observed at statistically significant levels above GWPS for the Weadock Landfill groundwater monitoring system;
- Arsenic was determined to be present at statistically significant levels above the GWPS at one of the three downgradient monitoring wells at the time of the initial semiannual monitoring event (April and May 2018); however, based on the revised groundwater monitoring system (12 perimeter wells, post soil-bentonite slurry wall construction), arsenic is not present at statistically significant levels above the GWPS;
- Arsenic concentrations at monitoring well MW-55 have been reviewed through an Alternate Source Demonstration provided in Appendix G of the *2024 Semiannual Groundwater Monitoring Report and Fourth Quarter 2024 Hydrogeological Monitoring Report; JC Weadock Solid Waste Disposal Area* (Enclosure 5) indicating elevated levels of constituents at that location are not related to materials management within the Weadock Landfill.
- The nature and extent of contamination (e.g. arsenic) in groundwater relative to GWPSs has been defined per the RCRA CCR Rule requirements based on the site-specific hydrogeology and there are currently no adverse effects on human health or the environment from either surface water or groundwater due to the CCR management at the Weadock Landfill as discussed in the enclosed *2024 Annual Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan* (Enclosure 6).

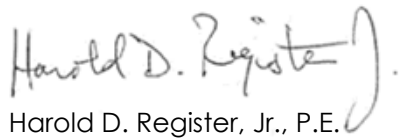
Conclusions

The Weadock Landfill was in assessment monitoring at the beginning and at the end of the period covered by this report. The drinking water and GSI pathways are protected by quarterly monitoring performed under the Michigan-approved hydrogeological monitoring plan that includes a GSI Compliance Monitoring Program. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and is continuing semiannual assessment monitoring in accordance with §257.95.

The final remedy for the Weadock Landfill will be formally selected per §257.97 and Michigan Solid Waste requirements once the selected option is reviewed and commented on by EGLE and a public meeting is conducted at least 30-days prior to the final selection as required under §257.96(e).

The next semiannual progress report will be submitted in six months by July 31, 2025. Please feel free to contact me with any questions or clarifications.

Sincerely,



Harold D. Register, Jr., P.E.
Sr. Principal Environmental Engineer
Risk Management
Phone: (517) 788-2982
Email: harold.registerjr@cmsenergy.com

cc: Mr. Jim Ferritto, EGLE Bay City District Office
Mr. John Ozoga, EGLE Bay City District Office
Mr. Mike Quigg, EGLE Bay City District Office
Ms. Margie Ring, EGLE Lansing Office
Mr. Jim Arduin, EGLE Lansing Office
Mr. Joe Firlit, Consumers Energy
Ms. Darby Litz, TRC
Ms. Kristin Lowery, TRC
Mr. Jacob Krenz, TRC

Enclosures:

- 1) CCR Annual Groundwater Report Requirements: § 257.90(e). Checklist for the Weadock Landfill CCR Unit.
- 2) First Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, April 30, 2024)
- 3) 2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, July 30, 2024)
- 4) Third Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, October 30, 2024)
- 5) 2024 Semiannual Groundwater Monitoring Report and Fourth Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, January 30, 2025)
- 6) 2024 Annual Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan. (TRC, January 30, 2025)

Enclosure 1

**CCR Annual Groundwater Report Requirements: § 257.90(e).
Checklist for the Weadock Landfill CCR Unit.**

CCR Annual Groundwater Report Requirements: § 257.90(e)
Checklist for the Weadock Landfill CCR Unit
2024 Annual Report

Requirement	Reference
At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available: (1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;	Figure 2 ^{(2),(3),(4),(5)}
(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;	Not Applicable - no installation or decommissioning
(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;	Section 3.2 ^{(2),(3),(4),(5)}
(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and	Annual Report Cover Letter ⁽¹⁾ ; Section 1.2 Program Summary ^{(2),(3),(4),(5)}
(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.	Nature and Extent Data Summary ⁽⁶⁾ ; Certified ASD ⁽³⁾⁽⁵⁾
(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following: (i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;	Annual Report Cover Letter ⁽¹⁾ ; Section 1.2 Program Summary ^{(2),(3),(4),(5)}
(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;	Annual Report Cover Letter ⁽¹⁾ ; Section 1.2 Program Summary ^{(2),(3),(4),(5)}
(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e): (A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and (B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Section 1.2 Program Summary ^{(2),(3),(4),(5)} ; Section 3.4 Groundwater Analytical Data and Relevant Screening Criteria ^{(2),(3),(4),(5)} ; Certified ASD ⁽³⁾⁽⁵⁾
(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following: (A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase; (B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	Section 1.2 Program Summary ^{(2),(3),(4),(5)} ; Section 3.4 Groundwater Analytical Data and Relevant Screening Criteria ^{(2),(3),(4),(5)} ; Certified ASD ⁽³⁾⁽⁵⁾
(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	Section 1.2 Program Summary ^{(2),(3),(4),(5)}
(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	Not Applicable - final remedy still under evaluation
(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Annual Report Cover Letter ⁽¹⁾
(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	Annual Report Cover Letter ⁽¹⁾ ; final remedy still under evaluation

Notes:

- (1) 2024 Annual Groundwater Monitoring and Corrective Action Report JC Weadock Landfill Coal Combustion Residuals CCR Unit. Consumers Energy. January 30, 2025.
- (2) First Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. TRC. April 30, 2024.
- (3) 2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. TRC. July 30, 2024.
- (4) Third Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. TRC. October 30, 2024.
- (5) 2024 Semiannual Groundwater Monitoring Report and Fourth Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. TRC. January 30, 2025.
- (6) 2024 Annual Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan. TRC. January 30, 2025.

Enclosure 2

**First Quarter 2024 Hydrogeological Monitoring Report, JC
Weadock Solid Waste Disposal Area, Essexville, Michigan.
(TRC, April 30, 2024)**



First Quarter 2024 Hydrogeological Monitoring Report

JC Weadock Solid Waste Disposal Area

Essexville, Michigan

April 2024

A handwritten signature in blue ink that reads "Darby Litz".

Darby Litz
Project Manager/Hydrogeologist

Prepared For:

Consumers Energy
1945 W. Parnall Road
Jackson, MI 49201

Prepared By:

TRC
1540 Eisenhower Place
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Kristin Lowery".

Kristin Lowery, P.E.
Project Engineer

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1
1.2	Program Summary	1
1.3	Site Overview	3
1.4	Geology/Hydrogeology.....	3
2.0	Leachate Monitoring	5
3.0	Groundwater Monitoring.....	6
3.1	Monitoring Well Network	6
3.2	March 2024 Monitoring Event	7
3.2.1	<i>Data Quality Review</i>	8
3.3	Groundwater Flow Rate and Direction	8
3.4	Groundwater Analytical Data and Relevant Screening Criteria	9
3.4.1	<i>Detection Monitoring</i>	10
3.4.2	<i>Assessment Monitoring Data Evaluation</i>	11
3.4.2.1	Establishing Groundwater Protection Standards.....	11
3.4.2.2	Data Comparison to Groundwater Protection Standards	11
3.4.3	<i>GSI Compliance Monitoring</i>	12
3.5	Alternate Source Demonstration	13
3.5.1	<i>Monitoring Well JCW-MW-18001: Calcium and Sulfate</i>	13
3.5.2	<i>Monitoring Well MW-55: Arsenic and Molybdenum</i>	14
4.0	Conclusions and Recommendations	16
5.0	References	17

TABLES

Table 1	Summary of Groundwater Elevation Data
Table 2	Summary of Field Parameters
Table 3	Summary of Groundwater Sampling Results (Analytical): DE Karn & JC Weadock Background
Table 4	Summary of Groundwater Sampling Results (Analytical): JC Weadock Solid Waste Disposal Area
Table 5	Summary of Confidence Interval Evaluation: March 2024
Table 6	EGLE Exceedance Summary Table
Table 7	Leachate Headwell Results

FIGURES

- Figure 1 Site Location Map
- Figure 2 Site Map
- Figure 3 Potentiometric Surface Map – March 2024

APPENDICES

- Appendix A Static Water Level Evaluation
- Appendix B Data Quality Review
- Appendix C Detection Monitoring Statistical Trend Tests
- Appendix D Assessment Monitoring and GSI Statistical Evaluation
- Appendix E Laboratory Analytical Report
- Appendix F Field Records
- Appendix G Alternate Source Demonstration Supporting Information

1.0 Introduction

Consumers Energy implemented a comprehensive compliance monitoring plan documented in the *Revised Hydrogeological Monitoring Plan* (Natural Resource Technology, 2010) for the JC Weadock Solid Waste Disposal Area as required by Special License Condition 20.b in Solid Waste Disposal Area Operating License No. 9233 issued on October 15, 2009. Since that time, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended) imposing groundwater monitoring and corrective action requirements that apply to the landfill (Weadock Landfill). Subsequently, Michigan amended Part 115 of the Natural Resources and Environmental Protection Act (NREPA) PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management) to provide a basis for establishing a groundwater monitoring system and initiating detection and assessment monitoring to conform requirements for any licensed coal ash impoundment or landfill after December 28, 2018, with Part 115 amendments and the CCR Rule.

On January 15, 2021, Consumers Energy submitted the *Landfill Hydrogeological Monitoring Plan, JC Weadock Power Plant, Essexville, Michigan* (Weadock Landfill HMP), which includes components for Detection Monitoring and Assessment Monitoring, as well as Groundwater Surface Water Interface (GSI) Compliance Monitoring, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115 and the CCR Rule. The Weadock Landfill HMP (TRC, February 2021) was revised per EGLE comments, submitted, and approved by EGLE on February 19, 2021, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This First Quarter 2024 JC Weadock Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring and reporting requirements during the active life of the coal ash landfill. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 *Format for Solid Waste Disposal Facility Monitoring Submittals*. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the Weadock Landfill HMP that was approved by the EGLE on February 19, 2021. The Weadock Landfill HMP is compliant with Public Act No. 640 of 2018 (PA 640) to amend the NREPA, also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the first quarter 2024 at the JC Weadock Solid Waste Disposal Area located at 2742 Weadock Highway

in Essexville, Michigan (Figure 1). This JC Weadock Disposal Area is currently authorized under a permit (Groundwater Discharge Authorization GWE-0005) issued pursuant to Part 31 to discharge to the unusable aquifer directly underlying the solid waste that vents almost immediately to the Saginaw River and Saginaw Bay.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule. Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report JC Weadock Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming SSIs over background were as follows:

- Boron at JCW-MW-15011, JCW-MW-15012, JCW-MW-15023; and
- Field pH at JCW-MW-15023 (high).

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notice to the Department on January 14, 2019 that arsenic was detected at statistically significant levels above the federal groundwater protection standards (GWPS) established pursuant to §257.95(h) in one monitoring well at the JC Weadock Landfill (JCW-MW-15023), which was located downgradient of a 1,600 linear foot vent within the slurry wall enclosing the historical fly ash disposal area. The vent was designed to direct groundwater flow beneath the landfill to the discharge channel immediately upgradient from the National Pollutant Discharge Elimination System (NPDES) external outfall to prevent water from building up within the facility. In July 2018, this vent was closed (Golder, 2018) and the engineering improvement was approved by the Department (MDEQ, 2018). As a part of the vent closure, monitoring wells JCW-MW-15011, JCW-MW-15012, and JCW-MW-15023 were decommissioned by overdrilling, removing the well material, and sealing the borehole to allow for the slurry wall construction as discussed in the *2018 Annual Groundwater Monitoring Report for the JC Weadock Landfill CCR Unit* (TRC, 2019a). Consumers Energy installed an additional nine monitoring wells in August 2018 to supplement the preexisting Michigan Part 115 compliance groundwater well network and provide appropriate coverage for the collection of groundwater levels and water quality data along the perimeter of the Weadock Landfill, as discussed in the Weadock Landfill HMP. Closing the vent and completely encircling the Weadock Landfill with a soil-bentonite slurry wall has demonstrated reduced groundwater flux around the entire perimeter of the landfill.

In March 2019, Consumers Energy submitted a Response Action Plan (Consumers, 2019), which identified interim response activities taken or to be taken to control possible sources of contamination. Consumers Energy further evaluated arsenic in groundwater at the Weadock Landfill as part of the nature and extent analysis and outlined potential remedies in the Assessment of Corrective Measures (TRC, 2019b), which was initiated on April 14, 2019, and completed on September 11, 2019, and focused on materials management with an emphasis on improving source control through the closure plan.

Compliance monitoring is being implemented under the Weadock Landfill HMP dated February 2021 and approved by the EGLE on February 19, 2021. Groundwater data collected in accordance with the Weadock Landfill HMP are used to:

- Assess background groundwater quality for the purposes of establishing and updating GWPS (HMP Section 7.1 Background Determination)
- Perform detection monitoring to assess whether a new release has occurred during operation of the landfill (*i.e.* statistically significant increase (SSI) over background) (HMP Section 7.2 Detection Monitoring)
- Perform assessment monitoring to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the GWPS) (HMP Section 7.3 Assessment Monitoring)
- Assess compliance with the GSI pathway (HMP Section 7.4)

Consumers Energy also continues to execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98 of the CCR Rule, which includes semiannual assessment monitoring in accordance with §257.95. Assessment monitoring data collected in accordance with the CCR Rule is used to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the Appendix IV GWPS).

1.3 Site Overview

The JC Weadock Solid Waste Disposal Area is located within the former JC Weadock Power Plant (Site), located south of the DE Karn Power Plant, east of the Saginaw River, west of Underwood Drain and Saginaw Bay, and north of Tacey Drain and agricultural land (Figure 1). In addition to the disposal area, the Site consists of the generating facility which retired eight coal-fired generating units and infrastructure and utilities that support electrical transmission. Units 1 to 6 commenced operation in 1940 and retired in 1980 and Units 7 and 8 were added in 1955 and 1958 continued to operate through April 15, 2016.

1.4 Geology/Hydrogeology

The majority of Weadock Landfill area is comprised of surficial CCR and sand fill, as described in the Weadock Landfill HMP. USGS topographic maps and aerial photographs dating back to 1950, in addition to field descriptions of subsurface soil at the Site, indicate that the Site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10-30 feet below ground surface (ft bgs) overlying a clay till which is observed at depth ranging from 25-75 ft bgs. A sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts, and sands deposited in or on the shores of glacial lakes) at other areas. Along the perimeter of the landfill, there is a

well-graded sand unit present at depths ranging from 10 to 20 ft bgs. The sand is variable in thickness, ranging from <1 to ~6.5 feet, and is discontinuous along the landfill perimeter, as evidenced by the soil boring logs and slurry wall construction documentation.

The alluvium soils pinch out and are not observed in soil borings located south and east of the Weadock Bottom Ash Pond and Weadock Landfill, along the location of the historic shoreline. The non-water-bearing region south of these units extends for at least a mile south and southeast of the Site.

Beneath the surficial fill and sand unit (where present) is 70 to 80 feet of clay till. Along the southern perimeter of the landfill, some of the upper portion of the clay till is sand-rich (generally greater than 20 ft bgs). The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. The sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs.

The Weadock Landfill is bounded by several surface water features (Figures 1 and 2): the Saginaw River to the west, a discharge channel and Saginaw Bay (Lake Huron) to the north, Underwood Drain to the east, and Tacey Drain to the south. Groundwater flow in this water bearing zone is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay.

2.0 Leachate Monitoring

The leachate monitoring program consists of an annual laboratory leachate sampling program (Q1) and an annual field leachate sampling program (Q4) per the Weadock Landfill HMP. This program was instituted to maintain the facility under the applicable portions of Part 115, Rule 311 – Leaching tests to evaluate potential for groundwater contamination at unlined industrial waste landfills. Specifically, Subrule (3) states that waste that is disposed of in an industrial waste landfill shall be retested to evaluate potential for groundwater contamination annually or on a more frequent schedule as specified by the solid waste control agency. In addition to field leachate testing conducted annually to evaluate appropriateness of monitored constituents and changes to fate and transport properties, an annual laboratory leachate analysis program was included to better understand what, if any, changes to waste placement may be occurring at the Weadock Landfill based on the addition of air emissions controls and the commingling of air emissions controls residuals (Spray Dry Absorber – SDA) over time. The Weadock Landfill HMP includes the laboratory leachate testing program, consisting of four dry-handled Coal Combustion Residual (CCR) samples commingled with SDA materials collected from each of the disposal silos dedicated to DE Karn Electrical Generating Units 1 and 2. Karn Units 1 & 2 permanently ceased operation on May 31, 2023, so additional CCR and air emissions residuals are not being generated; therefore, there are no results to report for this waste stream. It is noteworthy that the Weadock Landfill continues to receive materials facilitating the closure of the landfill in the form of uncontaminated soil from documented sources, and limited contaminated soil that has been authorized for placement in the Weadock Landfill under the Beneficial Use 3 designation as other materials designated for construction at a licensed solid waste disposal facility. These results are maintained with the closure certification documentation.

Additional support for evaluating the potential for groundwater contamination at the unlined industrial waste landfill includes the field leachate monitoring program conducted during the fourth quarter of each year. This program consists of an annual sampling collection from two (2) leachate headwells; LH-103R and LH-104. This program was implemented to determine constituents in the leachate as measured under actual conditions in the field and to assess which constituents have the potential to exceed applicable criteria at the compliance well locations.

Field leachate data was collected from LH-103R and LH-104 in the fourth quarter of 2023. The October 2023 low-level mercury concentrations for LH-103R and LH-103R DUP were noted in the Q4 2023 data quality review as potentially biased high due to a high matrix spike recovery reported in the laboratory report; however, low-level mercury concentrations are generally consistent with prior sample results and field leachate concentrations are below the GSI criterion of 1.3 nanograms per liter. Given the potential uncertainty in the low-level mercury sample results from the fourth quarter of 2023, the field leachate headwells were resampled in first quarter 2024. As shown in Table 7, the March 2024 samples collected from LH-103R and LH-104 demonstrate that low-level mercury concentrations are below the GSI criterion. No new constituents have been identified for inclusion in the porewater and GSI monitoring programs.

3.0 Groundwater Monitoring

3.1 Monitoring Well Network

The groundwater monitoring system presented in the Weadock Landfill HMP has been established in accordance with R 299.4906 and the CCR Rule §257.91 and consists of 27 monitoring wells (four background monitoring wells, 12 downgradient monitoring wells, and 11 additional wells used for static water level measurements only) that are screened in the uppermost aquifer. The monitoring well network has been designed to provide appropriate coverage for water level and water quality data collection along the perimeter of the landfill. The monitoring well locations are shown on Figure 2. Monitoring well specifications and purpose (i.e. static water level monitoring, groundwater quality monitoring, or GSI monitoring) are included in Table 1.

The Weadock Landfill HMP groundwater monitoring system consists of the following:

- **Background Groundwater Quality:** Four monitoring wells located southwest of the Weadock Landfill provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019) and are used to establish groundwater protection standards (GWPSs) for the landfill:
 - MW-15002 – MW-15008 – MW-15016 – MW-15019
- **Downgradient Groundwater Quality:** The twelve downgradient monitoring wells, located on the outside of the perimeter slurry wall include:
 - JCW-MW-18001 – JCW-MW-18004 – JCW-MW-18005 – JCW-MW-18006
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – OW-57R Out
- **Groundwater-Surface Water Interface (GSI) Monitoring:** Monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the monitoring program to meet the requirements of Part 31. Locations and alignments were established in the Phase II Groundwater Discharge Evaluation, Figure: Appendix K (Natural Resource Technology, 2005) as a baseline for monitoring future results. These monitoring wells are screened across the water table of the uppermost aquifer and serve as GSI monitoring wells to determine compliance with generic GSI criteria or site-specific mixing zone-based criteria as appropriate. The eight GSI compliance monitoring wells include:
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – JCW-MW-18004
- **Static Water Level Measurement Only:** Eleven additional monitoring wells, located on the inside of the perimeter slurry wall, at paired locations with several of the downgradient monitoring wells include:
 - JCW-OW-18001 – JCW-OW-18002 – JCW-MW-18003 – JCW-MW-18004
 - JCW-MW-18005 – JCW-MW-18006 – MW-20 – OW-51
 - OW-53 – OW-54 – OW-55 – OW-56R
 - OW-57R IN – OW-61 – OW-63

3.2 March 2024 Monitoring Event

In accordance with the Weadock Landfill HMP, TRC conducted the first quarter 2024 monitoring event for the Weadock Landfill by collecting water levels and groundwater samples on March 4 through 6, 2024. Samples that were collected during this event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan for analysis of total metals and inorganic parameters. Quarterly monitoring constituents include:

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents	
Boron	Antimony	Lithium
Calcium	Arsenic	Mercury
Chloride	Barium	Molybdenum
Fluoride	Beryllium	Nickel
Iron	Cadmium	Selenium
pH	Chromium, total	Silver
Sulfate	Cobalt	Thallium
Total Dissolved Solids (TDS)	Copper	Vanadium
	Fluoride	Zinc
	Lead	

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity. Analytical results from the monitoring event are included in the attached laboratory reports (Appendix E).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the Weadock Landfill HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix F).

Groundwater samples were collected using a peristaltic pump. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Groundwater sample preparation and analyses were performed in accordance with SW-846 “Test Methods for Evaluation Solid Waste – Chemical / Physical Methods,” USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of two field blanks, one equipment blank, three field duplicates (MW-15008, JCW-MW-18006, and MW-50), and one field matrix spike/matrix spike duplicate sample pair (JCW-MW-18001). Additionally, one field blank, one equipment

blank, two field duplicates (LH-103R and LH-104), and one field matrix/spike duplicate pair (LH-103R) and a trip blank were collected as part of the QA/QC samples for the low-level mercury resampling at the leachate headwells.

3.2.1 Data Quality Review

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The laboratory data were found to be complete and usable for the purposes of the Weadock Landfill HMP. The data quality reviews for the JC Weadock Disposal Area network wells are summarized in Appendix B.

3.3 Groundwater Flow Rate and Direction

Potentiometric monitoring in the unusable aquifer beneath the facility includes static water level data collected for development of water table contours and evaluation of the potential for discharge from the facility. The monitoring under this section will be conducted quarterly until closure, as approved by the Director, and semiannually during the 30-year postclosure period. Monitoring will continue until the end of post closure (30 years) or as otherwise approved by the Director.

The measurements for top of casing (TOC) and recorded depth to water (DTW) with corresponding calculated static water level (SWL) is tabulated and presented in Table 1. A potentiometric surface map is provided as Figure 3.

Groundwater elevations measured at the Site in March 2024 are generally within the range of 578 to 596 feet above mean sea level (ft NAVD88). Groundwater elevations in monitoring wells located adjacent to Saginaw Bay and adjoining surface water bodies are typically encountered at a similar or slightly higher elevation relative to surrounding surface water features measured by the NOAA gauging station. A time-series plot included in Appendix A compares the groundwater elevation of at the GSI monitoring wells (MW-50, MW-51, MW-52, MW-53, MW-54R, JCW-MW-18004, and MW-55) to the nearby NOAA staff gauge. Water levels in wells adjacent to surface water bodies (e.g. Saginaw Bay, Tacey Drain) closely mirror the surface water elevation. Such conditions would result in a minimal gradient to potentially a reverse gradient (i.e., toward the landfill) between the well and the drain which would result in minimal to zero mass flux to the drain (Appendix A: Table A1).

The groundwater monitoring system is structured such that there are eleven monitoring well pairs used to evaluate the hydraulic gradient and potential for water flux across the slurry wall. Static water level observations from the paired wells are shown on time series charts in Appendix A. The static water level elevations inside of the Weadock Landfill perimeter slurry wall are generally significantly different (>3 ft) than static water levels outside of the slurry wall, which demonstrates the presence of a low permeability feature between the well pairings inside and outside of the constructed slurry wall. As such, the water level elevations indicate that the slurry wall is performing as designed. The general flow direction observed within the confinement of the slurry wall is similar to that identified in previous monitoring rounds. Due to the potential for radial flow, the downgradient wells are appropriately positioned to detect the

presence of detection or assessment parameters that could potentially migrate from the Weadock Landfill. As shown on Figure 3 and in Appendix A, the static water level outside of the slurry wall is lower than the static water level inside of the wall; therefore, the potential groundwater flux across the slurry wall was calculated and included in Table A2 of Appendix A.

3.4 Groundwater Analytical Data and Relevant Screening Criteria

Groundwater analytical data are evaluated in accordance with the Weadock Landfill HMP to determine the effectiveness of landfill structural and operational enhancement measures on the quality and quantity of groundwater flow beneath the footprint of the facility (Section 3.4.1 Detection Monitoring and Section 3.4.2 Assessment Monitoring). Additionally, analytical results are evaluated in support of GSI compliance. GSI criteria only apply to the designated compliance point as specified in Section 3.4.3 below; however, analytical results and data trends in groundwater collected from the perimeter dike wells are evaluated to identify potential GSI compliance issues. Data are evaluated by using a combination of screening against relevant criteria, as well as utilizing statistical analyses.

Analytical results from the first quarter 2024 monitoring event are included in the attached laboratory report (Appendix E). Groundwater analytical data from the first quarter 2024 monitoring event are summarized in Table 3 (background monitoring wells) and Table 4 (Weadock Landfill Monitoring Wells), as well as the associated Part 201 generic GSI and site-specific mixing-zone GSI criteria. Field data are summarized in Table 2.

Mixing-zone criteria for arsenic, boron, and selenium are provided for the Karn-Weadock complex in the mixing zone determination, dated December 23, 2015 (MDEQ, 2015). As such, arsenic, boron, and selenium are compared to site-specific mixing zone-based GSI criteria, and all other constituents are screened against generic GSI criteria. All data are screened against GSI criteria; however, compliance with GSI criteria is determined at select monitoring locations as noted in Section 3.4.3 below.

The mixing zone determination included both final acute values (FAV) and final chronic values (FCV). If a concentration of a constituent at a groundwater well exceeds the acute criteria, and the exceedances are upgradient of the GSI compliance monitoring wells, Consumers Energy must demonstrate that data from all of the compliance monitoring wells are, and will be, in compliance with acute mixing zone-based GSI criteria for those parameters. Averaging of groundwater data is not allowed for comparison to generic GSI or acute mixing zone-based GSI criteria. Acute mixing zone-based or generic GSI criteria may not be exceeded in any individual GSI compliance monitoring well. If a concentration of a constituent at a well exceeds the chronic criterion, compliance can be demonstrated on a mass-flux basis. The facility can choose to demonstrate compliance by evaluating the total chronic loading based upon the contribution from each compliance well with respect to the total flux observed in the mixing zone.

Table 6 provides a summary of the statistically significant increases or exceedances over the most recent four quarters in accordance with the EGLE-prescribed format; only well/constituent pairs that exceed the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3) within the last four quarters are included.

3.4.1 Detection Monitoring

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. The potentiometric analysis, as discussed in Section 3.3, demonstrates that the slurry wall is performing as designed.

In addition to the comparison of analytical data to relevant screening criteria (Table 4), statistical trend analyses are used to evaluate groundwater quality each quarter. Consumers Energy manages and evaluates its groundwater data using Sanitas™ Statistical Software. Consumers Energy conducts intrawell trend analyses to examine data for a given well over time to determine if changes in water quality are occurring that may be associated with the landfill and to identify potential GSI compliance issues. Specifically, the Mann-Kendall test for trend was performed at a significance level (α) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant.

Appendix C includes a table summarizing the results of the trend tests as well as the Sanitas™ output summary statistics and graphs. Data are stable or declining for the majority of the well/constituent pairs, with the following exceptions:

- A new, unconfirmed increasing trend for boron was observed at MW-50 in Q1 2024.
- The increasing trend for boron at MW-54R continued in Q1 2024.
- The previously observed increasing trend of boron at MW-55 did not continue in Q1 2024.
- The increasing trend for calcium at JCW-MW-18001 continued in Q1 2024.
- A new, unconfirmed increasing trend for chloride was observed at JCW-MW-18004 in Q1 2024.
- The increasing trend for iron at JCW-MW-18001 continued in Q1 2024.
- The increasing trend for sulfate at JCW-MW-18001 continued in Q1 2024.
- New, unconfirmed increasing trends for sulfate were observed at JCW-MW-18006 and MW-50 in Q1 2024.
- A new, unconfirmed increasing trend for total dissolved solids was observed at OW-57R OUT in Q1 2024.

Although increasing trends for detection monitoring constituents were observed, individual constituent trends provide a *potential indication* that there may be a release coming from the monitored unit. When these indicator trends are evaluated with other co-monitored conditions and parameters at the Weadock Landfill, the increasing trends for detection monitoring constituents do not appear to be a result of a new release from operation of the landfill. The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill. Several of these newly observed trends, such as those observed for calcium, iron, and sulfate are likely a result of localized geochemical changes influenced by changes in lake levels rather than a change in flux from the landfill and will continue to be evaluated. The increasing trends of calcium and sulfate in JCW-MW-18001 are attributed to localized changes in geochemistry proximal to each well, rather than a change in flux from the

landfill, as discussed further in Section 3.5. Additionally, iron concentrations in all monitoring wells remain below the relevant Part 115 compliance standard – the GSI pathway standard.

Consumers is further evaluating possible causes of the increasing boron concentrations at several porewater compliance monitoring wells. Previous studies (NRT, 2005) documented boron at significantly elevated concentrations at the Karn-Weadock Power Generating Complex. Boron was also identified as an SSI over background levels in the 2017 *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit* (TRC, 2018) and was one of the detection monitoring constituents that triggered the initiation of the assessment monitoring program. Statistical significance above the GWPS established for boron has been noted for these monitoring wells per the Part 115 groundwater monitoring program requirements, as discussed in Section 3.4.2.2. Continued monitoring and assessment for potential future actions is warranted at this time; however, observed concentrations of boron in each of the monitoring wells are less than the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3).

3.4.2 Assessment Monitoring Data Evaluation

Assessment monitoring is continuing at the Weadock Landfill in accordance with the Weadock Landfill HMP and §257.95. The assessment monitoring data were statistically evaluated in accordance with the procedures in the Weadock Landfill HMP. The statistical evaluation details are provided in Appendix D. A summary of the confidence interval evaluation is provided in Table 5.

3.4.2.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess constituent concentrations present in groundwater as a result of CCR unit operations by statistically comparing concentrations in the downgradient wells to each of the respective GWPSs for each detection and assessment monitoring constituent. The calculation of the GWPSs in accordance with the Weadock Landfill HMP is documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). The Federal CCR Rule requires establishment of GWPSs for assessment monitoring (Appendix IV) constituents only. Part 115 requires establishment of GWPSs for both detection and assessment monitoring constituents.

3.4.2.2 Data Comparison to Groundwater Protection Standards

Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009) and the Weadock Landfill HMP, the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient data exceeds the GWPS.

Detection Monitoring Constituents (Part 115): The first quarter 2024 statistical evaluation indicates that boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001 were present at statistically significant levels above the GWPS.

Boron was one of the Appendix III SSIs that originally triggered assessment monitoring. Boron concentrations have been consistently above the GWPS but less than the chronic-based mixing zone-based GSI criterion of 44,000 ug/L within the Weadock Landfill monitoring well network since monitoring under the Weadock Landfill HMP began in first quarter 2021.

Calcium at JCW-MW-18001 was present at statistically significant levels above the GWPS beginning in first quarter 2023 resulting from increases in calcium concentration since first quarter 2021. Sulfate was present at JCW-MW-18001 at statistically significant levels above the GWPS for the first time in second quarter 2023 due to increasing concentrations. Consumers is asserting an ASD for the increases in calcium and sulfate at JCW-MW-18001, as detailed in Section 3.5.

The GWPSs for boron, calcium, and sulfate were established based on background concentrations observed in wells unaffected by the Weadock Landfill or Weadock Bottom Ash Pond. Detection monitoring (i.e., Appendix III) constituents do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Overall, data continue to demonstrate compliance with the applicable GSI criteria, as discussed in Section 3.4.3.

Assessment Monitoring Constituents (Part 115 and Federal CCR): Based on the first quarter 2024 statistical evaluation, there are no assessment monitoring constituents present at statistically significant levels above the GWPSs within the Weadock Landfill groundwater monitoring system. Although concentrations of arsenic and molybdenum at MW-55 observed during individual sampling events are above the GWPS, the elevated concentrations of those constituents are not a result of a release from the Weadock Landfill, as detailed in Section 3.5. The head differential of 9.53 feet between OW-55 inside the slurry wall and MW-55 outside of the slurry wall also suggests that the integrity of the slurry wall is maintained and groundwater flow from the landfill to the south is impeded by the low permeability of the slurry wall. Groundwater conditions at MW-55 will continue to be monitored.

3.4.3 GSI Compliance Monitoring

The GSI monitoring program consists of the eight monitoring points located along the surface water features:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

First quarter 2024 data from the GSI monitoring points are tabulated in Table 4. Consistent with the Weadock Landfill HMP, confidence limits were established for the following GSI monitoring program constituents:

- Boron
- Iron
- pH
- Sulfate
- Arsenic
- Chromium
- Lithium
- Molybdenum

- Selenium
- Vanadium

The confidence interval calculations are provided in Appendix D. The confidence interval test compares the lower confidence limit to the GSI. Overall, data continue to demonstrate compliance with the applicable GSI criteria.

Boron: The assessment monitoring statistical evaluation found that boron was present at statistically significant levels above the GWPS at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT. Boron is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of boron are less than the recommended mixing-zone based GSI value specified in Table 3 of the *Implementation of a Mixing Zone Request, Consumers Energy DE Karn/JC Weadock Complex* (MDEQ, 2015) (Appendix D: Table 2).

Arsenic and Molybdenum at MW-55: Concentrations of arsenic and molybdenum at MW-55 have at times exceeded the GSI criteria on a direct comparison to the fixed limit basis (Appendix D: Table 2).¹ The first quarter 2024 sampling event results show that both arsenic and molybdenum concentrations are below applicable GSI criteria. The statistical evaluation presented in Appendix D shows that the lower confidence limit of the arsenic data over the past 8 events does not exceed the GSI criterion. Molybdenum concentrations have not directly exceeded the GSI criterion within the past 8 events; therefore, confidence limits were not calculated. Additionally, water levels in MW-55 closely mirror the surface water elevation measured at the NOAA gauging station, which indicates there is a minimal outward gradient to a potentially, modest reverse gradient (i.e., toward the landfill) between the monitoring well and the drain, resulting in a minimal to zero mass flux to the drain (Appendix A).

3.5 Alternate Source Demonstration

At this time, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD), for the following, as detailed below:

- Calcium and sulfate in monitoring well JCW-MW-18001; and
- Arsenic and molybdenum in monitoring well MW-55.

The groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below.

3.5.1 Monitoring Well JCW-MW-18001: Calcium and Sulfate

Although confirmed increasing trends were observed at JCW-MW-18001 for calcium and sulfate (through Q1 2024), these trends are not indicative of a new release from the landfill. Calcium and sulfate are two of several constituents that contribute to the overall TDS concentration and increasing calcium and sulfate concentrations could result in an increase in TDS as well. Although, TDS concentrations are not currently exhibiting a statistically significant upward trend, TDS concentrations have been increasing in past events and the data are discussed as part of

¹ Molybdenum was last observed at a concentration above the GSI criterion in fourth quarter 2021.

this ASD. Increases of calcium, sulfate, and TDS concentrations at JCW-MW-18001 are attributed to changes occurring outside of the slurry wall as a result of changing water levels, rather than a change in flux from the landfill; therefore, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD) for these constituents. The following lines of evidence as well as additional time series charts included in Appendix G support this ASD:

- The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill (Appendix A).
- Concentration data also support that the slurry wall is effective in reducing the flux of groundwater from the landfill, based on the following observations (Appendix G1):
 - JCW-MW-18001 was installed after the 1,600 linear foot gap in the landfill perimeter slurry wall was closed, as discussed in Section 1.2. Prior to the slurry wall expansion in July 2018, monitoring well JCW-MW-15023 was located within the gap of the slurry wall and was sampled between December 2015 and May 2018 as a part of the original Federal CCR program monitoring well network. The groundwater quality data collected from JCW-MW-15023 shows that groundwater in contact with CCR managed within the landfill was high in arsenic, and low in sulfate, calcium, and TDS (Appendix G1).
 - To accommodate the July 2018 slurry wall expansion, JCW-MW-15023 was decommissioned. Once slurry wall construction was completed, JCW-MW-18001 was installed within 10-ft of the location of the former JCW-MW-15023 well, on the discharge channel side of the slurry wall. Additionally, an observation well, JCW-OW-18001, was installed on the landfill side of the slurry wall to monitor water levels to assess the effectiveness of the hydraulic control. Both JCW-MW-18001 (outside) and JCW-OW-18001 (inside) have been sampled recently to assess concentration trends.
 - Concentrations of arsenic are much higher inside of the slurry wall, within the landfill, while arsenic concentration remain low on the outside of the landfill.
 - Concentrations of calcium, sulfate, and TDS are much lower on the inside of the slurry wall and are higher outside of the slurry wall.
- These combined lines of evidence support that increasing concentrations of calcium, sulfate, and TDS are not a result of a change in flux from the landfill and instead are a result of changing groundwater conditions on the outside of the slurry wall.

3.5.2 Monitoring Well MW-55: Arsenic and Molybdenum

Additionally, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD) for arsenic and molybdenum at MW-55 indicating elevated levels of constituents at that location are not related to materials management of the Weadock Landfill (*2021 Annual Groundwater Monitoring and Corrective Action Report*; TRC, January 2022). The basis for this ASD is summarized below and updated time series plots in support of this ASD are included in Appendix G (Figure G2).

Data collected from the 2018 investigation as well as data collected during routine sampling events for Part 115 and Federal CCR groundwater compliance show the following:

- **Distinct Chemistry from Leachate** – The leachate chemistry from a monitoring well screened at the base of the ash fill (LH-104) is distinctly different from the groundwater

chemistry near MW-55 and the temporary monitoring wells installed by TRC in the investigation area, as illustrated Appendix G of the 2019 Annual Groundwater Monitoring and Corrective Action Report (TRC, January 2020). Additionally, concentrations of arsenic are generally much lower, and concentrations of boron are much higher within the landfill (LH-104) than outside of the landfill at MW-55 (Figure G2).

- **Conservative Tracer** – Boron is a metalloid known to be present in coal ash and can be used as a conservative tracer in groundwater. The average concentration of boron in Leachate Headwell LH-104 (10,800 ug/L: November 2017 - October 2023) is significantly higher than concentrations observed at any of the other locations sampled as a part of this monitoring program. Additionally, recently observed boron concentrations at MW-55 are similar to or lower than historical concentrations, which further supports that the water quality at MW-55 is not directly affected by groundwater migrating from the landfill.
- **Reducing Conditions and Groundwater Head Levels** – Water levels observed at MW-55, as shown in Appendices A and G, increased over 4-ft between 2010 and 2020. The oxidation-reduction potential (ORP) at MW-55 has generally decreased (i.e., is more reducing) since 2010. The lowering of ORP over time as a result of increased water levels has changed the geochemical conditions in the vicinity of MW-55 and has resulted in increased solubility of arsenic and molybdenum. Since 2021, water levels have been generally decreasing, resulting in a slight increase in ORP (i.e., is less reducing) and decreases in concentrations of both arsenic and molybdenum, which further illustrates the relationship between groundwater elevations, redox state, and concentration of arsenic and molybdenum in groundwater.

4.0 Conclusions and Recommendations

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. Evaluation of the first quarter 2024 data demonstrate that the slurry wall is functioning as designed.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule, as discussed in the *2023 Annual Groundwater Monitoring and Corrective Action Report*, due to observed groundwater concentrations that are indicative of impact from past landfill operations. Evaluation of the first quarter 2024 data in accordance with the Weadock Landfill HMP demonstrate that boron, calcium, and sulfate are present at concentrations above the GWPSs. Boron, calcium, and sulfate are detection monitoring (i.e., Appendix III) constituents that do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. The statistical evaluation in first quarter 2024 found that no constituents were present at statistically significant levels above applicable GSI criteria.

Therefore, Consumers Energy will continue with the detection and assessment monitoring as required by the CCR rule as well as the monitoring program relative to the implementation of the site-specific mixing zone authorization at the Weadock Landfill unit in conformance with the JC Weadock Landfill HMP. The second quarter monitoring event for is scheduled for May 2024.

5.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. JC Weadock Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. November 6.
- Consumers Energy Company. 2015. *Hydrogeological Monitoring Plan Rev. 2: JC Weadock Solid Waste Disposal Area*. June 9.
- Consumers Energy. 2019. *JC Weadock Landfill Response Action Plan Submittal, JC Weadock Generating Facility (WDS# 395457), Essexville, Michigan*. March 15.
- Golder Associates, Inc. 2018. *J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report*. October 30.
- Michigan Department of Natural Resources (MDNR). 1986. *Determination of Permit Exemption No. GWE-0005*. August 25.
- Michigan Department of Environmental Quality (MDEQ). 2015. *Implementation of a Mixing Zone Request Consumers Energy DE Karn/JC Weadock Complex*. December 23.
- MDEQ. 2018. *Slurry Wall Construction Certification; JC Weadock Landfill, Bay County, Michigan, Waste Data System Number 395457*. December 19.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. *Closure Certification, Consumers Weadock Complex (Weadock) Bottom Ash Pond, Bay County, Waste Data System No. 395457*. November 30. [Letter]
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation, Final Report.
- Natural Resource Technology. 2010. Revised Hydrogeological Monitoring Plan – JC Weadock Solid Waste Disposal Area. TRC. 2018. Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit. Prepared for Consumers Energy Company. January.
- TRC. 2018. *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit*. Prepared for Consumers Energy Company.
- TRC. 2019a. *2018 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company*. January.
- TRC. 2019b. *Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units*. Prepared for Consumers Energy Company. September.
- TRC. 2020. *2019 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit*. Prepared for Consumers Energy Company. January.
- TRC. 2021. *Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan*. Prepared for Consumers Energy Company. February.

TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.

TRC. 2022. *2021 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.

TRC. 2022. *2022 Semiannual Groundwater Monitoring Report and Second Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. July.

TRC. 2023. *2022 Semiannual Groundwater Monitoring Report and Fourth Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. January.

TRC. 2024. *2023 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.

USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

USEPA. 2015. *40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*. 80 Federal Register 74 (April 17, 2015), pp. 21301-21501 (80 FR 21301). April

USEPA. 2018. *40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule*. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.

Tables

Table 1
 Summary of Groundwater Elevation Data
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)		March 4, 2024	
					Depth to Water (ft BTOC)	Groundwater Elevation (ft)
Background Monitoring Wells						
MW-15002	587.71	Sand	580.9	to	570.9	580.98
MW-15008	585.36	Sand with clay	578.7	to	568.7	581.04
MW-15016	586.49	Sand	581.2	to	578.2	580.96
MW-15019	586.17	Sand and Sand/Clay	579.5	to	569.5	580.71
Bottom Ash Pond: Downgradient Monitoring Wells						
JCW-MW-15007	587.40	Sand	582.7	to	579.2	584.38
JCW-MW-15009	589.64	Sand	581.9	to	576.9	580.24
JCW-MW-15010	597.76	Sand	579.7	to	578.2	579.73
JCW-MW-15028	589.64	Sand	567.7	to	564.7	581.84
Landfill: Downgradient Monitoring Wells (outside slurry wall)						
JCW-MW-18001	596.73	Sand and Sandy Clay	578.3	to	573.3	578.78
JCW-MW-18004	593.04	Sandy Clay	583.9	to	578.9	580.06
JCW-MW-18005	590.89	Sand and Sandy Clay	580.0	to	575.0	582.74
JCW-MW-18006	600.72	Fly Ash and Sandy Clay	582.8	to	577.8	587.99
MW-50	593.36	Sand	577.8	to	574.8	578.83
MW-51	594.29	Sand and Clay	577.8	to	574.8	579.05
MW-52	594.90	Sand	579.3	to	576.3	578.30
MW-53	593.68	Sand and Clay	579.1	to	576.1	579.10
MW-53R	594.25	Sand and Clay	580.4	to	575.4	578.87
MW-54R	593.89	Clay and Sand	581.3	to	576.3	579.14
MW-55	593.82	Sand	581.5	to	578.5	578.98
OW-57R OUT	591.00	Sandy Clay	577.0	to	572.0	581.40
Landfill: Static Water Level Only (inside slurry wall)						
JCW-OW-18001	595.84	Fly Ash and Sand	581.1	to	576.1	589.24
JCW-OW-18002	593.63	Sand	578.9	to	573.9	582.85
JCW-OW-18003	593.99	Sand and Clay	580.5	to	575.5	585.71
JCW-OW-18004	594.19	Sandy Clay	584.6	to	579.6	587.83
JCW-OW-18006	600.61	Fly Ash and Clay with Sand	582.9	to	577.9	593.59
MW-20	592.73	NR	~581.1	to	~578.1	586.57
OW-51	593.62	Clay and Sand	578.9	to	575.9	584.47
OW-53	593.64	Clay and Sand	579.0	to	576.0	586.16
OW-54	594.10	Clay and Sand	580.0	to	577.0	587.58
OW-55	594.67	Clay (or Sand and Clay)	580.9	to	577.9	588.51
OW-56R	592.01	Ash and Sand	577.5	to	572.5	586.33
OW-57R IN	590.86	Sandy Clay	575.7	to	570.7	585.06
OW-61	602.15	Ash and Sand	588.0	to	585.0	595.95
Landfill: Leachate Headwells						
LH-103R	612.70	Fly Ash	30.2	to	33.2	591.42
LH-104	596.56	Fly Ash	8.0	to	11.0	588.51

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G (Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2
 Summary of Field Parameters
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
Background							
MW-15002	3/5/2024	1.76 ⁽¹⁾	-69.2	6.7	4,728	8.3	0.0
MW-15008	3/5/2024	1.51 ⁽¹⁾	-115.1	6.7	1,506	8.5	0.0
MW-15016	3/5/2024	1.53 ⁽¹⁾	-102.4	7.0	1,318	5.8	0.0
MW-15019	3/5/2024	1.63 ⁽¹⁾	-87.9	6.7	1,765	7.3	0.0
Weadock Landfill							
JCW-MW-18001	3/5/2024	0.95	-36.7	6.8	3,433	9.7	6.5
JCW-MW-18004	3/5/2024	9.00	78.5	7.0	1,455	6.5	6.2
JCW-MW-18005	3/6/2024	0.85	-8.5	6.7	1,605	6.1	9.5
JCW-MW-18006	3/6/2024	0.87	-66.3	7.0	1,157	7.6	9.3
MW-50	3/5/2024	1.00	-45.5	7.5	1,447	8.6	6.0
MW-51	3/5/2024	1.45	-16.0	7.4	1,256	8.2	6.4
MW-52	3/5/2024	1.00	-15.0	7.0	1,635	7.8	10.0
MW-53	3/5/2024	0.85	-32.5	7.5	1,104	7.8	10.0
MW-53R	3/5/2024	0.91	8.5	7.0	1,245	7.7	6.9
MW-54R	3/5/2024	1.90	49.5	7.0	1,131	6.9	8.9
MW-55	3/5/2024	1.00	-57.2	6.9	1,210	7.6	9.9
OW-57ROUT	3/6/2024	4.30	43.0	7.2	1,167	6.5	5.7

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius.

NTU - Nephelometric Turbidity Unit.

(1) The water quality meter used at this well location was determined to have a bias towards elevated dissolved oxygen readings.

Table 3
 Summary of Groundwater Sampling Results (Analytical)
 DE Karn & JC Weadock Background – RCRA CCR Monitoring Program
 Essexville, Michigan

		Sample Location:				MW-15002	MW-15008	MW-15016	MW-15019
		Sample Date:				3/5/2024	3/5/2024	3/5/2024	3/5/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Background			
Appendix III⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	116	128	336	241
Calcium	mg/L	NC	NC	NC	500 ^{EE}	175	124	227	174
Chloride	mg/L	250**	250^E	250^E	50	1,860	400	117	383
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250^E	250^E	500 ^{EE}	3.79	5.64	271	92.7
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	3,300	1,010	1,090	1,220
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	6.7	6.7	7.0	6.7
Appendix IV⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	3	12	2
Barium	ug/L	2,000	2,000	2,000	1,200	474	92	131	361
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	13	20	72	14
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC	--	--	--	--
Radium-228	pCi/L	NC	NC	NC	NC	--	--	--	--
Radium-226/228	pCi/L	5	NC	NC	NC	--	--	--	--
Selenium	ug/L	50	50	50	5.0	< 1	< 1	< 1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾									
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	17,600	18,900	18,200	23,000
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	< 1	2	1
Nickel	ug/L	NC	100	100	120	6	4	7	4
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	16	7	< 2	2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	12	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Sample Location:	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
								Sample Date:	3/5/2024	3/5/2024	3/6/2024	3/6/2024	3/5/2024	3/5/2024
								Downgradient	Downgradient/ GSI	Downgradient	Downgradient	Downgradient/ GSI	Downgradient/ GSI	
Appendix III⁽¹⁾														
Boron	ug/L	NC	500	500	4,000	44,000	69,000	1,420	192	1,000	2,650	2,170	935	
Calcium	mg/L	NC	NC	NC	500 ^{EE}	NC	NC	557	238	335	137	199	132	
Chloride	mg/L	250**	250 ^E	250 ^E	50	NC	NC	45	17	23	61	40	78	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	NC	NC	1,880	557	512	70	449	266	
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	NC	NC	3,450	1,250	1,400	748	1,180	902	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	6.8	7.0	6.7	7.0	7.5	7.4	
Appendix IV⁽¹⁾														
Antimony	ug/L	6	6.0	6.0	2.0	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Arsenic	ug/L	10	10	10	10	100	680	< 1	< 1	3	22	3	10	
Barium	ug/L	2,000	2,000	2,000	1,200	NC	NC	49	26	136	445	187	127	
Beryllium	ug/L	4	4.0	4.0	33	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	NC	NC	1	1	< 1	< 1	1	1	
Cobalt	ug/L	NC	40	100	100	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Lead	ug/L	NC	4.0	4.0	14	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Lithium	ug/L	NC	170	350	440	NC	NC	106	43	43	52	69	31	
Mercury	ug/L	2	2.0	2.0	0.20#	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	73	210	120	NC	NC	< 5	< 5	< 5	< 5	6	< 5	
Radium-226	pCi/L	NC	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Radium-228	pCi/L	NC	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Radium-226/228	pCi/L	5	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Selenium	ug/L	50	50	50	5.0	55	120	2	4	2	3	3	1	
Thallium	ug/L	2	2.0	2.0	2.0	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Additional MI Part 115⁽²⁾														
Iron	ug/L	300**	300 ^E	300 ^E	500,000 ^{EE}	NC	NC	3,570	98	4,020	7,970	889	446	
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	NC	NC	3	2	7	2	1	1	
Nickel	ug/L	NC	100	100	120	NC	NC	14	< 2	< 2	5	8	< 2	
Silver	ug/L	100**	34	98	0.2	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NC	4.5	62	27	NC	NC	3	< 2	< 2	4	< 2	2	
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10	

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Sample Location:	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57ROUT
								Sample Date:	3/5/2024	3/5/2024	3/5/2024	3/5/2024	3/5/2024	3/6/2024
								Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient
Appendix III⁽¹⁾														
Boron	ug/L	NC	500	500	4,000	44,000	69,000	945	5,740	2,300	5,940	825	1,810	
Calcium	mg/L	NC	NC	NC	500 ^{EE}	NC	NC	237	134	173	170	166	123	
Chloride	mg/L	250**	250 ^E	250 ^E	50	NC	NC	34	77	35	62	18	68	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	NC	NC	540	25	53	49	224	79	
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	NC	NC	1,380	694	862	752	866	770	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	7.0	7.5	7.0	7.0	6.9	7.2	
Appendix IV⁽¹⁾														
Antimony	ug/L	6	6.0	6.0	2.0	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Arsenic	ug/L	10	10	10	10	100	680	< 1	1	9	1	46	1	
Barium	ug/L	2,000	2,000	2,000	1,200	NC	NC	94	654	165	97	260	81	
Beryllium	ug/L	4	4.0	4.0	33	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	NC	NC	1	1	1	1	< 1	2	
Cobalt	ug/L	NC	40	100	100	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	
Lead	ug/L	NC	4.0	4.0	14	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Lithium	ug/L	NC	170	350	440	NC	NC	27	50	56	76	26	28	
Mercury	ug/L	2	2.0	2.0	0.20#	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	73	210	120	NC	NC	< 5	< 5	< 5	15	27	6	
Radium-226	pCi/L	NC	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Radium-228	pCi/L	NC	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Radium-226/228	pCi/L	5	NC	NC	NC	NC	NC	--	--	--	--	--	--	
Selenium	ug/L	50	50	50	5.0	55	120	2	3	2	3	1	< 1	
Thallium	ug/L	2	2.0	2.0	2.0	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Additional MI Part 115⁽²⁾														
Iron	ug/L	300**	300 ^E	300 ^E	500,000 ^{EE}	NC	NC	3,120	947	752	159	18,700	44	
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	NC	NC	2	1	2	2	1	2	
Nickel	ug/L	NC	100	100	120	NC	NC	< 2	< 2	< 2	< 2	< 2	12	
Silver	ug/L	100**	34	98	0.2	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NC	4.5	62	27	NC	NC	< 2	2	< 2	< 2	< 2	< 2	
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10	

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 5
 Summary of Confidence Interval Evaluation: March 2024
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Assessment Monitoring Statistical Evaluation																								
Constituent	Units	GWPS	MW-50		MW-51		MW-52		MW-53		MW-53R		MW-54R		MW-55		OW-57R OUT		JCW-MW-18001		JCW-MW-18005		JCW-MW-18006	
			LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron ⁽¹⁾	ug/L	560	1,400	2,100	830	1,300	960	1,200	2,800	5,400	1,800	2,400	4,700	6,000	730	1,200	1,700	1,900	1,400	1,700	920	1,300	2,000	2,800
Calcium	mg/L	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	520	680	160	300	--	--
Sulfate	mg/L	780	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,700	2,300	--	--	--	--
Arsenic	ug/L	21	--	--	--	--	--	--	--	--	--	--	--	--	-- ⁽²⁾	-- ⁽²⁾	--	--	--	--	--	--	15	25
Molybdenum	ug/L	73	--	--	--	--	--	--	--	--	--	--	--	--	-- ⁽²⁾	-- ⁽²⁾	--	--	--	--	--	--	--	--
Iron	ug/L	28,000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

GSI Statistical Evaluation				
Constituent	Units	GSI	MW-55	
			LCL	UCL
Arsenic	ug/L	100	44	97

Notes:

ug/L - micrograms per Liter

mg/L - milligrams per Liter

-- - Not Applicable; well/parameter pair did not directly exceed the applicable criterion and was not included in further analysis.

GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated April 23, 2021

GSI - Groundwater Surface Water Interface Criteria; GSI criteria is the generic Michigan Part 201 GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

1,300	Indicates a statistically significant exceedance of the GWPS (detection monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the GWPS (assessment monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the applicable GSI criterion. An exceedance occurs when the LCL is greater than the criterion.

(1) Boron concentrations were confirmed as a statistically significant increase (SSI) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

(2) The concentrations of arsenic and molybdenum at MW-55 are not a result of a release from the unit, as detailed in the Alternate Source Demonstration (2021 Annual Groundwater Monitoring and Corrective Action Report, TRC, January 2022); therefore, confidence intervals were not calculated for comparison to GWPSs..

Table 6
 EGLE Exceedance Summary Table
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
 SUMMARY OF STATISTICAL EXCEEDANCES

Data is in (X) ug/L or () mg/L unless otherwise stated
--

Facility: JC Weadock – WDS# 395457

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)	2 Qtr. 2023 (bold >201)
No Exceedances at Compliance Locations								

Table 7
 Leachate Headwell Results
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Parameter	Reporting Limit	Units	2024 Field Leachate Resample		2023 Field Leachate	
			LH-103R	LH-104	LH-103R	LH-104
			3/6/2024		10/4/2023	
Indicator Parameters						
Dissolved Oxygen	0.1	mg/L	0.87	2.5	1.60	0.50
O.R.P.	1	mV	-98.5	-51.3	-167.0	-89.3
pH	0.05	S.U.	6.98	8.55	7.04	7.46
Specific Conductance	1	uS/cm	2,795	928	3,114	1,089
Metals						
Mercury (low-level) ⁽¹⁾	0.5	ng/L	<0.5 | <0.5	0.67 | 0.68	1.01 | 0.82	<0.5 | <0.5

Notes:

mg/L = milligrams per liter

ng/L = nanograms per liter

mV = millivolts

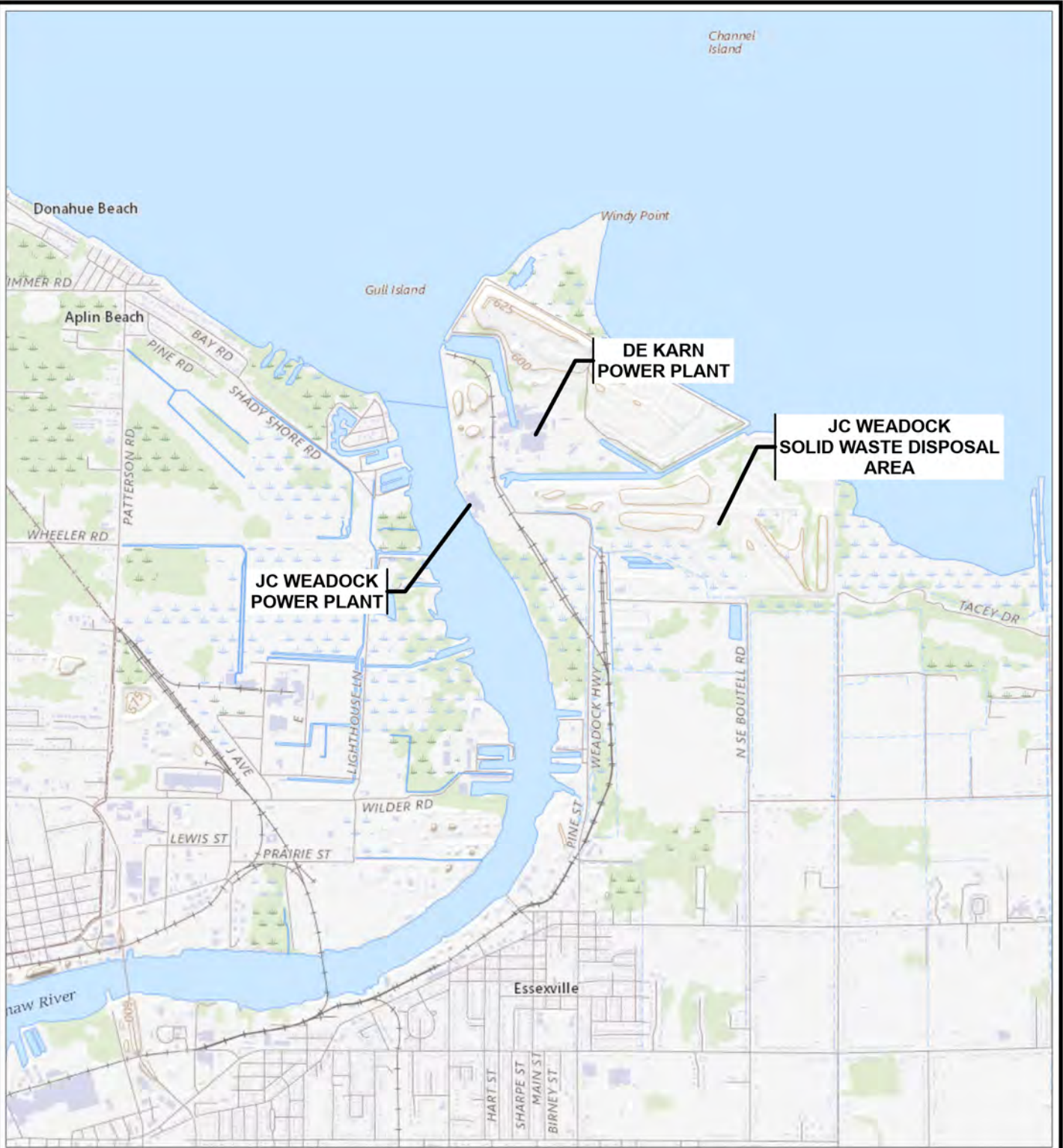
S.U. = standard units

uS/cm = microSiemens per centimeter

O.R.P. = oxidation-reduction potential

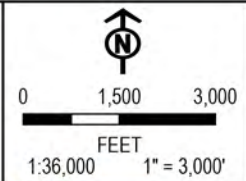
(1) Primary sample result | Duplicate sample result


Figures



COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH FIPS 2113 FEET. MAP ROTATION: 0
 - SAVED BY: ADAIR ON 4/11/2024 01:10:14 AM. FILE PATH: T:\1-PROJECTS\CONSUMERS_ENERGY\44096_WEADOCK\APRX. LAYOUT NAME: 514403-1024-001

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.



PROJECT:		CONSUMERS ENERGY COMPANY DE KARN AND JC WEADOCK POWER PLANTS ESSEXVILLE, MICHIGAN	
TITLE:		SITE LOCATION MAP	
DRAWN BY:	A. ADAIR	PROJ. NO.:	553828.0000
CHECKED BY:	J. KRENZ	FIGURE 1	
APPROVED BY:	D. LITZ		
DATE:	APRIL 2024	 1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096_WEADOCK		

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0
 Saved By: AADaif on 4/24/2024 12:28:38 PM; File Path: T:\PROJECTS\Consumers_Energy\464096_Weadock.aprx; Weadock.aprx; Layout Name: 514403-1024-002



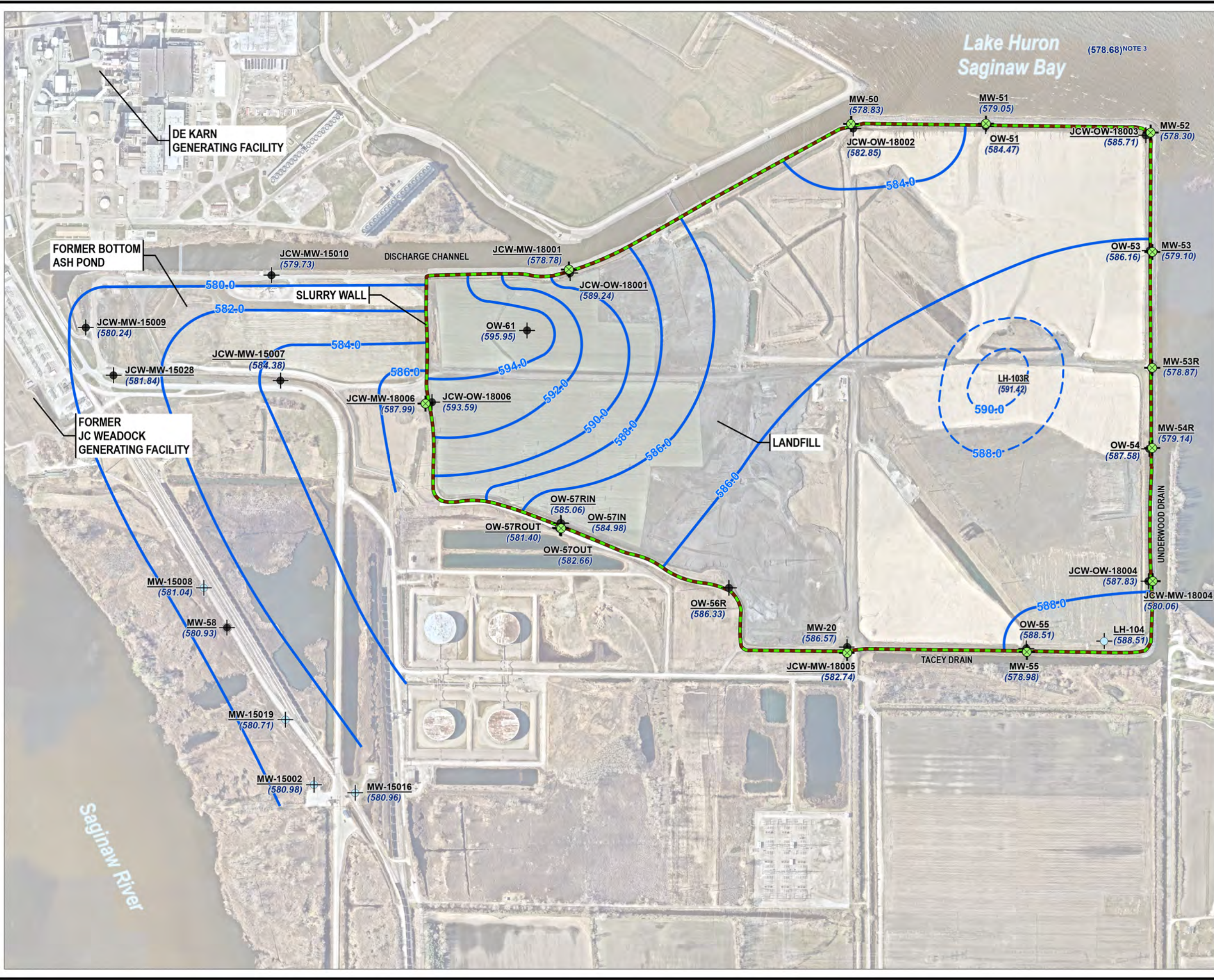
- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOM ASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - DECOMMISSIONED WELL
 - SLURRY WALL (APPROXIMATE)

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022)
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018
 3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).



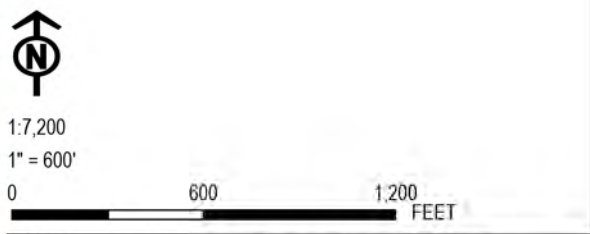
PROJECT:		CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE:		SITE MAP	
DRAWN BY:	A. ADAIR	PROJ. NO.:	553828.0000
CHECKED BY:	J. KRENZ	FIGURE 2	
APPROVED BY:	D. LITZ		
DATE:	APRIL 2024		
		1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096_Weadock.aprx		

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0
 Saved By: AADalfr on 4/29/2024 10:23:47 AM; File Path: T:\PROJECTS\Consumers_Energy\464096_Weadock.aprx; Layout Name: 553828-1024-003



- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOM ASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - SLURRY WALL (APPROXIMATE)
 - GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
 - (590.51)** GROUNDWATER ELEVATION (FEET)
 - (NU)** NOT USED TO DEVELOP CONTOURS

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018.
 3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
 4. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: POTENTIOMETRIC SURFACE MAP MARCH 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553828
CHECKED BY: J. KRENZ	FIGURE 3
APPROVED BY: D. LITZ	
DATE: APRIL 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096_Weadock.aprx

Appendix A

Static Water Level Evaluation

Table A1
 Static Water Levels for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Date Measured	Groundwater Water Elevation (GWE) (ft)	Saginaw Bay Surface Water Elevation (SWE) (ft)	Elevation Difference (GWE-SWE) ⁽¹⁾
MW-50	3/4/2024	578.83	578.68	0.15
MW-51	3/4/2024	579.05		0.37
MW-52	3/4/2024	578.30		-0.38
MW-53	3/4/2024	579.10		0.42
MW-53R	3/4/2024	578.87		0.19
MW-54R	3/4/2024	579.14		0.46
MW-55	3/4/2024	578.98		0.30
JCW-MW-18004	3/4/2024	580.06		1.38
Average:		579.04		

Notes:

Elevation in feet above North American Vertical Datum 1988 (NAVD 88)

TOC: top of well casing

ft BTOC: feet below top of well casing

(1) Positive elevation difference indicates flow toward the surface water body.

Table A2
Slurry Wall Gradient and Flux
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Discharge Channel													
JCW-OW-18001	589.24		22.4	4.68E-01	2.00	2.88	1,010	2.30E-08	0.47	2,904	8.85E-02	0.66	242
JCW-MW-18001		578.78			3.75								
JCW-OW-18002	582.85		28.9	1.39E-01	4.00	4.25	970		0.14	4,123	3.74E-02	0.28	102
MW-50		578.83			4.50								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Adjacent Zone													
OW-51	584.47		14.4	3.77E-01	4.00	3.88	1,850	2.30E-08	0.38	7,169	1.76E-01	1.32	481
MW-51		579.05			3.75								
JCW-OW-18003	585.71		33.9	2.19E-01	3.50	3.01	740		0.22	2,224	3.17E-02	0.24	87
MW-52		578.30			2.51								
OW-53	586.16		20.1	3.51E-01	1.25	1.26	730	2.30E-08	0.35	916	2.09E-02	0.16	57
MW-53		579.10			1.26								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Non-Adjacent Zone													
OW-54	587.58		21.2	3.98E-01	2.00	2.25	510	2.30E-08	0.40	1,148	2.97E-02	0.22	81
MW-54R		579.14			2.50								
JCW-OW-18004	587.83		26.6	2.92E-01	8.00	4.08	820		0.29	3,346	6.37E-02	0.48	174
JCW-MW-18004		580.06			0.16								
OW-55	588.51		24	3.98E-01	2.00	1.49	1,220	2.30E-08	0.40	1,818	4.72E-02	0.35	129
MW-55		578.98			0.98								
MW-20	586.57		40.9	9.36E-02	1.50	1.38	1,120		2.30E-08	0.09	1,540	9.40E-03	0.07	26
JCW-MW-18005		582.74			1.25								

Calculated Groundwater Discharge from JC Weadock (gal per day) = 3.78
(cubic ft per day) = 0.50
(cubic ft per min) = 3.5E-04

Calculated Groundwater Discharge from JC Weadock (gal per yr) = 1,378
(cubic ft per yr) = 184

Calculated Groundwater Discharge from JC Weadock (gal per year per linear foot of dike) = 0.15
(cubic feet per year per linear foot of dike) = 2.05E-02

Notes:

Water level data collected on March 4, 2024 are shown by yellow cells:

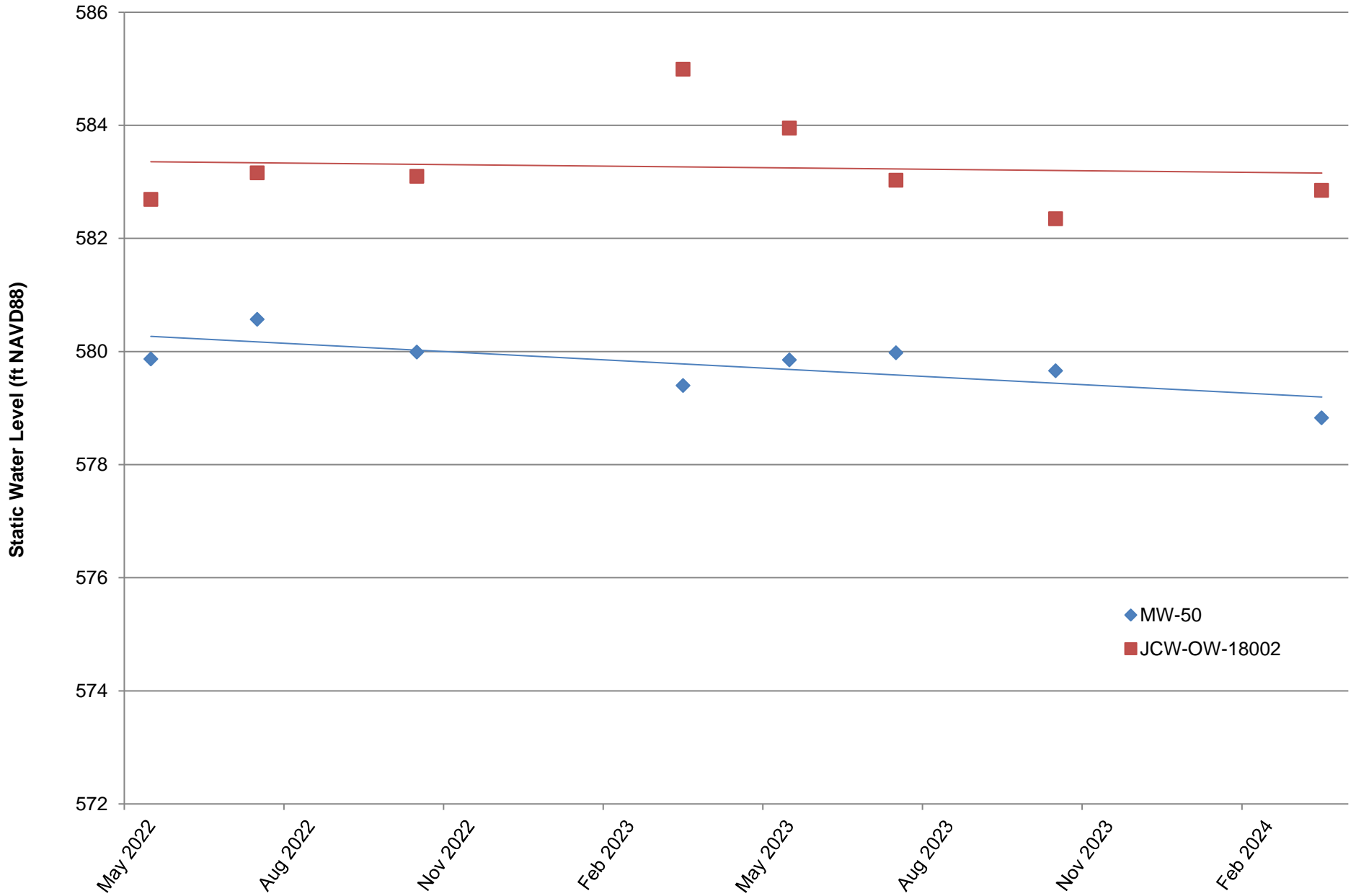
579.58

- Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- Saturated thickness will be the thickness of the sand unit when the observed SWL is above the top of the sand unit, or the measured saturated thickness of the sand unit if the SWL is below the top of the sand unit.
- Hydraulic conductivity taken as harmonic mean of laboratory tests done on in-place slurry wall from NTH Certified Quality Assurance Report, Appendix E, April 24, 2009
- Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- If Obs well SWL < MW SWL calculated flow will be zero.

SWL = Static Water Level; Obs Well = Observation Well; MW= Monitoring Well; ft NAVD 88 = feet above North American Vertical Datum 1988
 ft/ft = feet per foot; cm/sec = centimeters per second; ft² = square feet; ft³/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year
 i = hydraulic gradient; K = hydraulic conductivity; x_{wells} = distance between well pairs

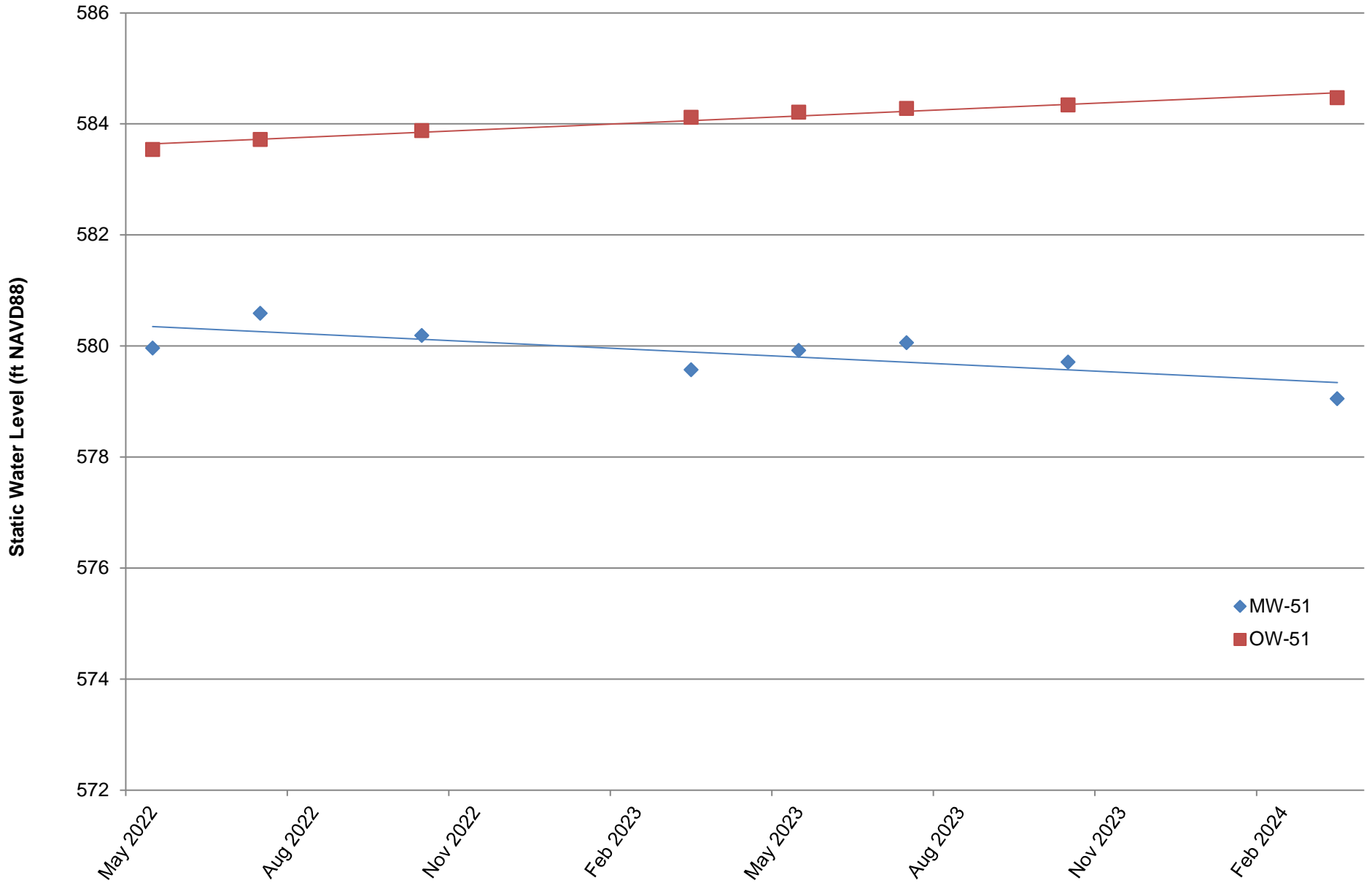
Appendix A

Static Water Level for MW-50 and JCW-OW-18002



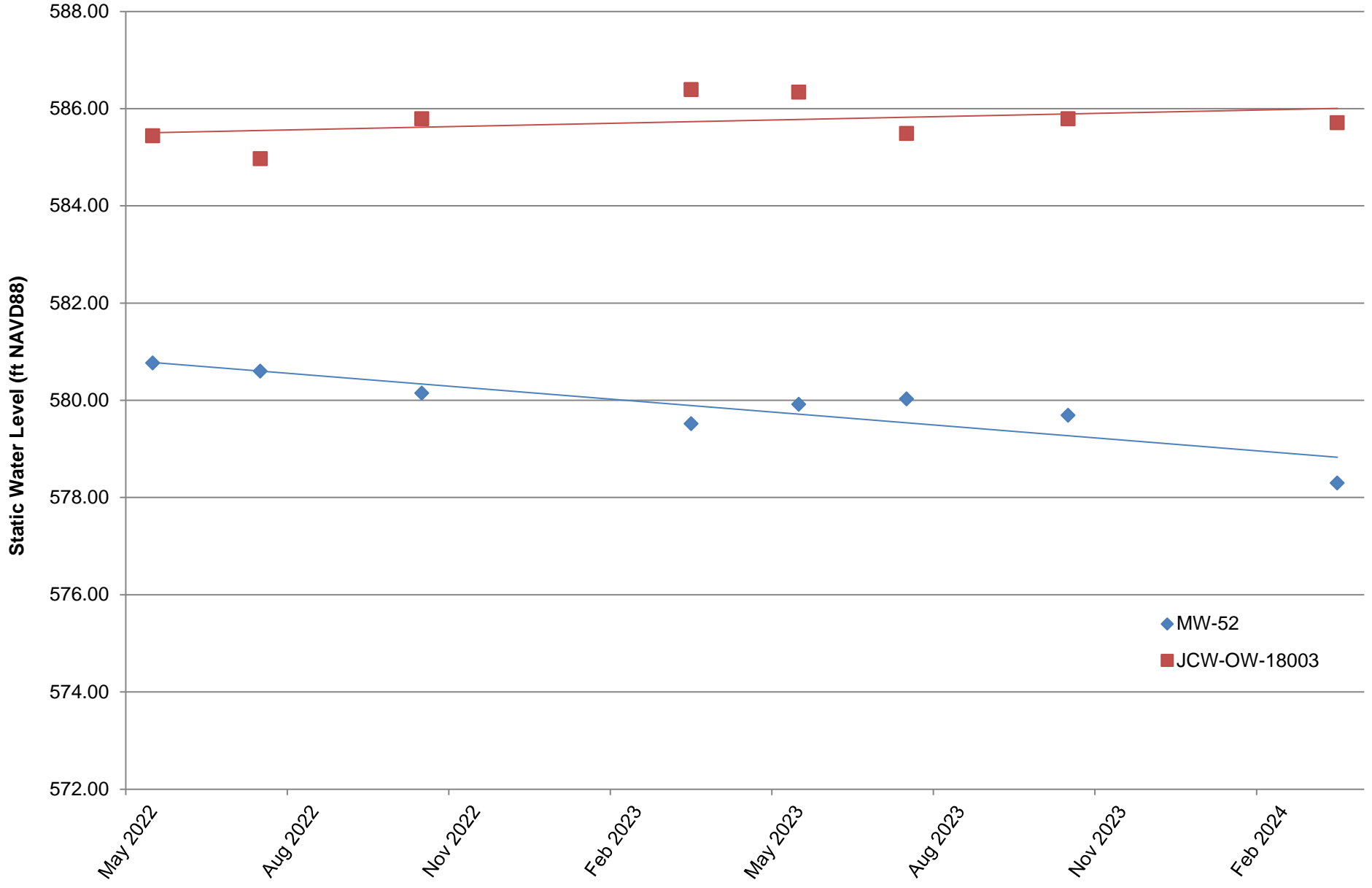
Appendix A

Static Water Level for MW-51 and OW-51



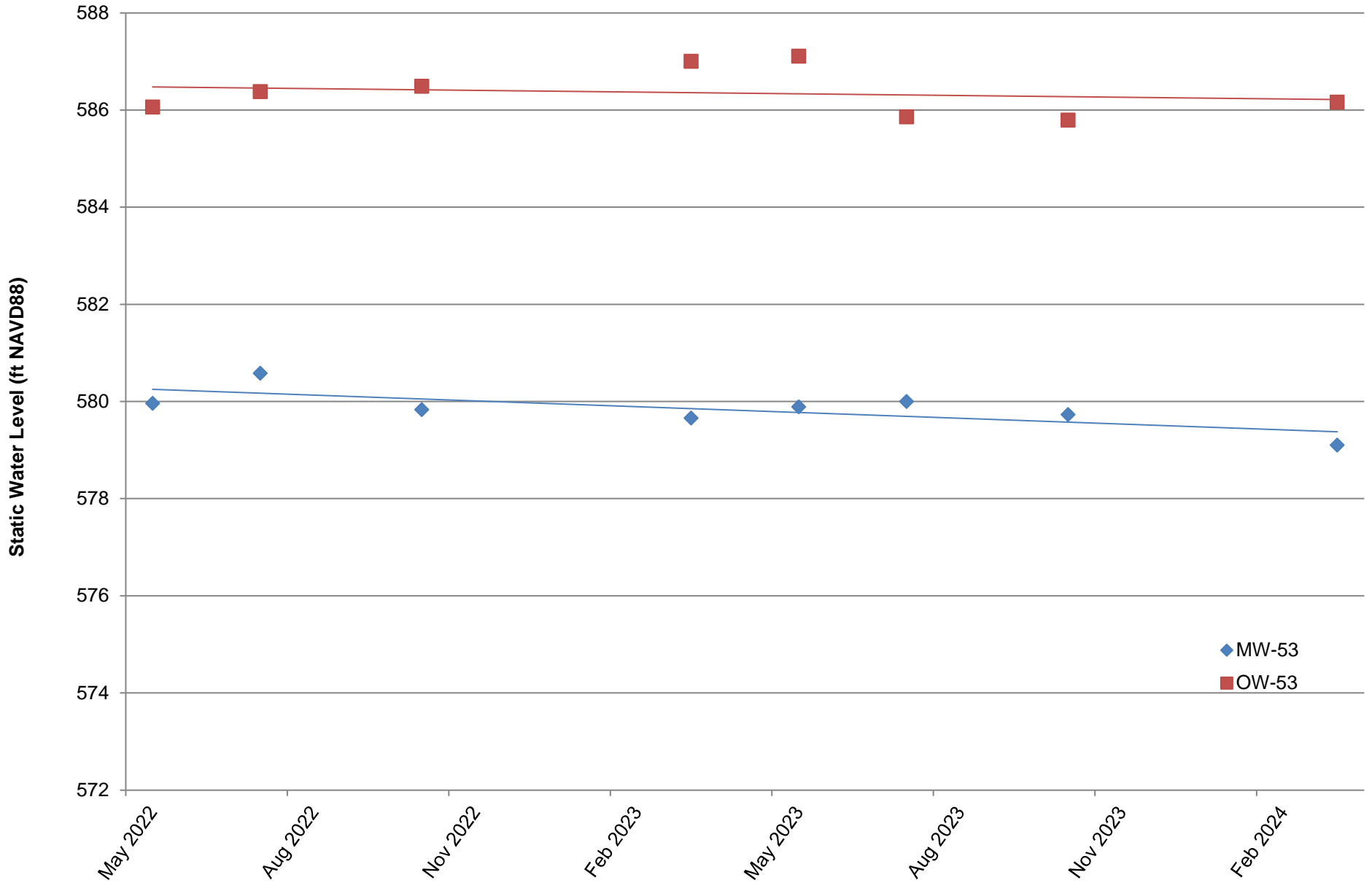
Appendix A

Static Water Level for MW-52 and JCW-OW-18003



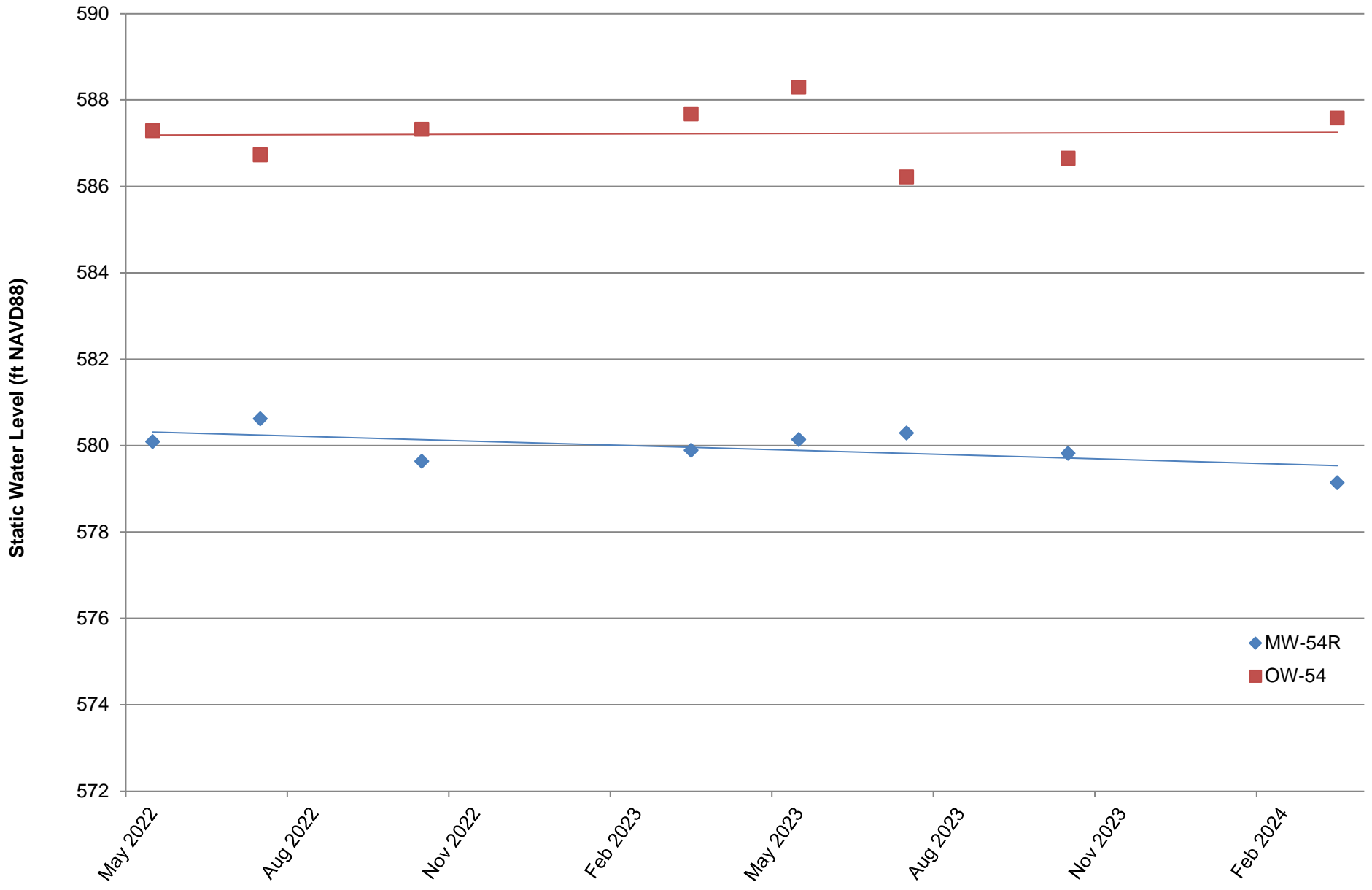
Appendix A

Static Water Level for MW-53 and OW-53



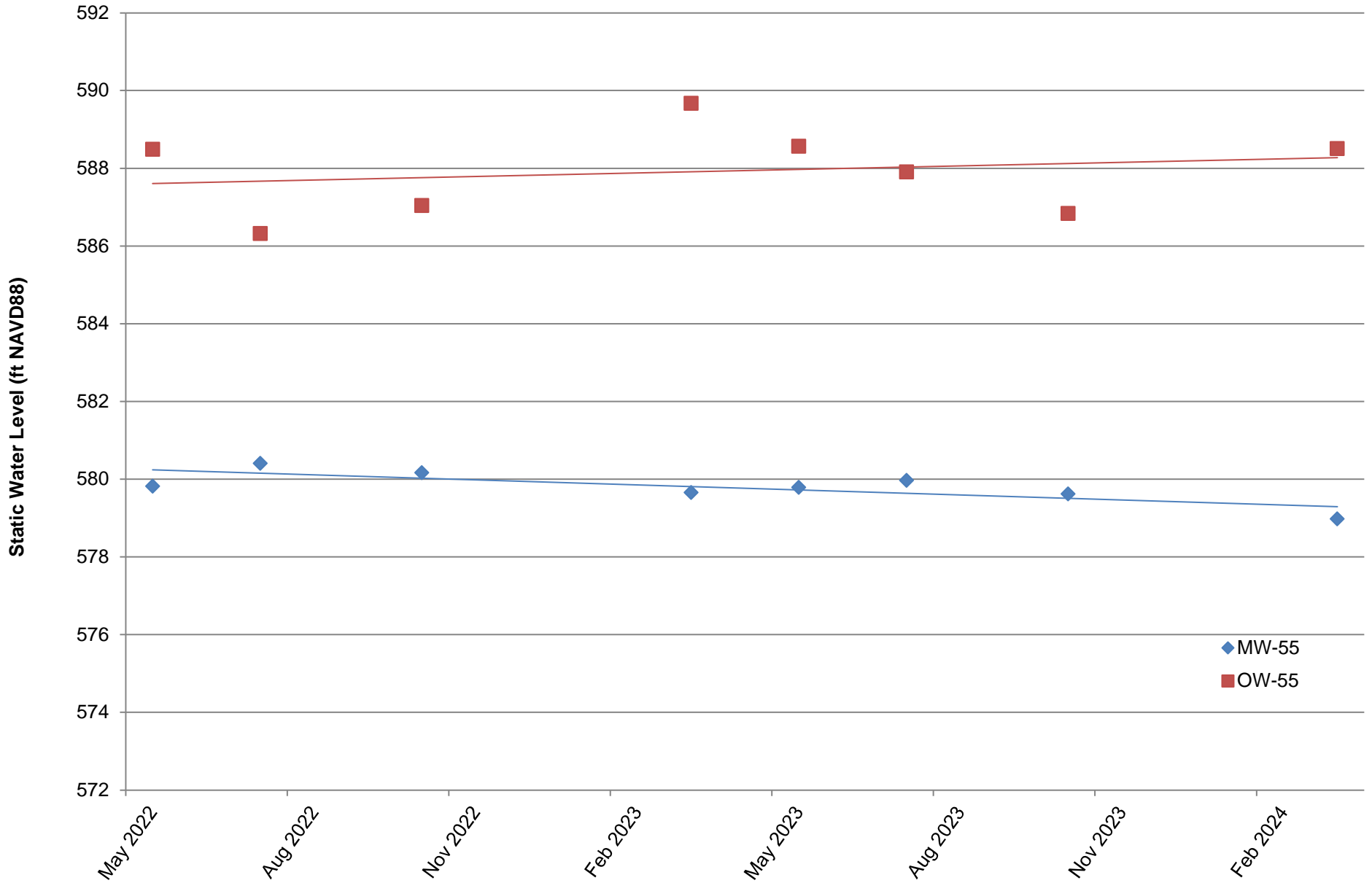
Appendix A

Static Water Level for MW-54R and OW-54



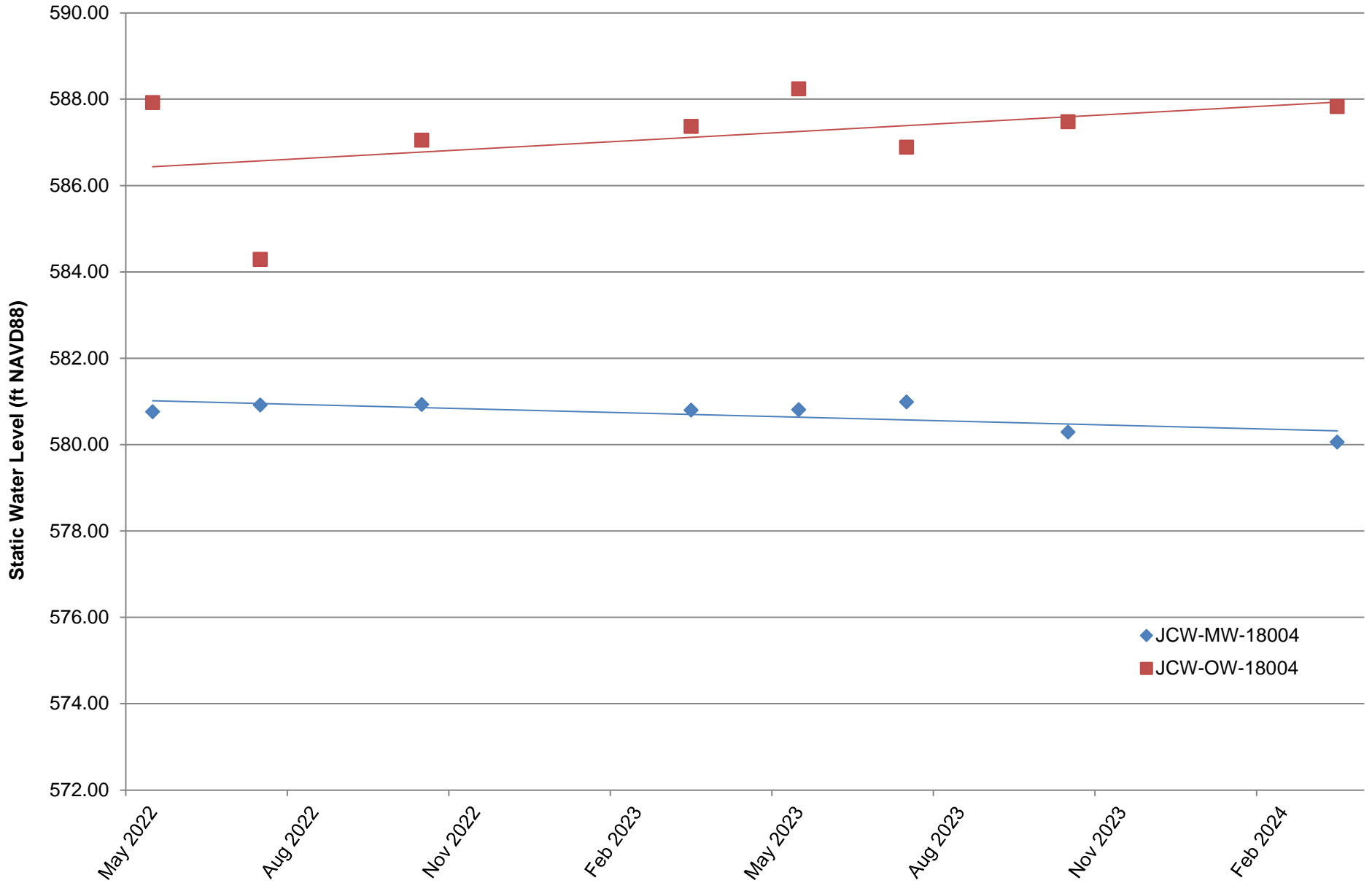
Appendix A

Static Water Level for MW-55 and OW-55



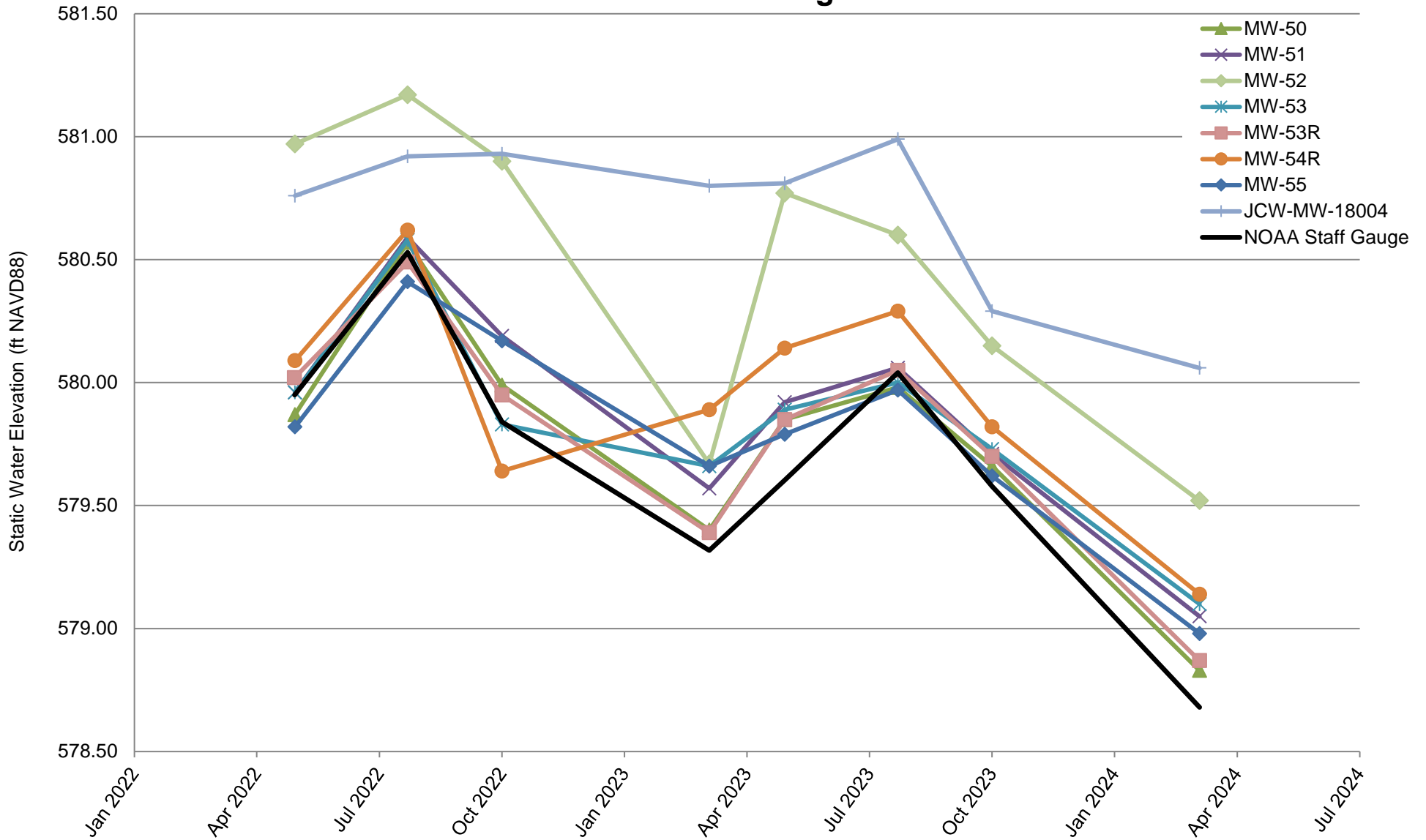
Appendix A

Static Water Level for JCW-MW-18004 and JCW-OW-18004



Appendix A

Static Water Elevations for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge



Appendix B

Data Quality Review

Laboratory Data Quality Review Groundwater Monitoring Event March 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the March 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0131R.

During the March 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Calcium, copper, iron, lead, and zinc were detected in FB-Background at 2,410 µg/L, 5 µg/L, 344 µg/L, 2 µg/L, and 13 µg/L, respectively. Potential false positive exists for results for copper and/or zinc that were <10x the field blank concentrations in select samples, as summarized in attachment A.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 JC Weadock/DE Karn Background Wells
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
MW-15002	3/5/2024	Copper	Field blank contamination; potential false positive.
MW-15016	3/5/2024		
MW-15019	3/5/2024		
MW-15002	3/5/2024			Zinc

Laboratory Data Quality Review Groundwater Monitoring Event March 2024 JC Weadock Landfill

Porewater samples were collected by TRC for the March 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, and/or alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0132R.

During the March 2024 sampling event, a porewater sample was collected from each of the following wells:

- JCW-MW-18001
- JCW-MW-18004
- JCW-MW-18005
- JCW-MW-18006
- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- MW-58
- OW-57R OUT

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;

- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-01) and one equipment blank (EB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JCW-MW-18001 for total metals and anions. The recoveries were within the acceptance limits. Relative percent differences were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- Samples DUP-JCW-LF-02/JCW-MW-18006 and DUP-JCW-LF-01/MW-50 were submitted as the field duplicate pairs with this data set; all criteria between the parent and duplicate samples were within the QC limits with the following exception:

- The results for nickel were <math><5x</math> the RL in samples DUP-JCW-LF-02 and JCW-MW-18006 and the absolute difference was greater than the RL. Therefore, the positive results for nickel should be considered estimated in all groundwater samples in this data set except MW-50 and DUP-JCW-LF-01, as summarized in the attached table, Attachment A.
- Laboratory duplicate analyses were not performed on a sample from this data set.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 JCW Landfill
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
JCW-MW-18001	3/5/2024	Nickel	Field duplicate variability (results <5x the reporting limit [RL] and absolute difference greater than RL); potential uncertainty exists for the listed results.
JCW-MW-18006	3/6/2024		
OW-57ROUT	3/6/2024		
MW-58	3/6/2024		
DUP-JCW-LF-02	3/6/2024		

Laboratory Data Quality Review Groundwater Monitoring Event March 2024 JCW Alternate Source Demonstration

A groundwater sample was collected by TRC for the March 2024 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0133R.

During the March 2024 sampling event, a groundwater sample was collected from the following well:

- JCW-OW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the total metals, anions, alkalinity, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data.
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- No field blanks or equipment blanks were collected with this data set.
- A field duplicate pair was not submitted with this data set.
- Laboratory duplicate and MS/MSD analyses were not performed on the sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event March 2024 JC Weadock Landfill

Groundwater samples were collected by TRC for the March 2024 sampling event. The samples were analyzed for low-level mercury by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0134.

During the March 2024 sampling event, a groundwater sample was collected from each of the following wells:

- LH-103R
- LH-104

The samples were analyzed for the following constituent:

Analyte Group	Method
Low-Level Mercury	EPA 1631E

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, field blanks, and trip blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures and trip blanks are used to assess potential contamination arising during shipment to the laboratory;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;

- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the low-level mercury analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituent, low-level mercury, will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-02), one trip blank (TB-02), and one equipment blank (EB-02) were collected. Low-level mercury was not detected in these blank samples. It was noted that the RL for low-level mercury in these blank samples (0.2 ng/L) was lower than the field samples (0.5 ng/L).
- MS and MSD analyses were performed on sample LH-103R for low-level mercury. The recoveries were within the acceptance limits. The relative percent difference (RPD) was not provided by the laboratory and therefore was not evaluated; further, MS/MSD concentrations were not provided by the laboratory.
- Samples LH-103R Dup/LH-103R and LH-104 Dup/LH-104 were submitted as the field duplicate pairs with this data set; all criteria were met.
- Laboratory duplicate analyses were not performed on a sample from this data set.

Appendix C

Detection Monitoring Statistical Trend Tests

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 First Quarter 2024
 Data from May 2022 to March 2024

Porewater Monitoring Points						
PARAMETER	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
Boron ⁽¹⁾	O	O	O	O	↑*	↓
Calcium	↑ ^{ASD}	O	O	O	O	↓
Chloride	O	↑*	O	O	O	O
Fluoride	O*	O*	O*	O*	O*	O*
Iron	↑	O	O	O	O	O
pH/Corrosivity ⁽¹⁾	O	O	O	O	O	O
Sulfate	↑ ^{ASD}	O	O	↑*	↑*	↓
Total Dissolved Solids	O	O	O	O	O	↓

Notes:

- O* = Non-detect (70%)
- O = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new
- ↑^{ASD} = Alternate Source Demonstration (Fourth Quarter 2023 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 First Quarter 2024
 Data from May 2022 to March 2024

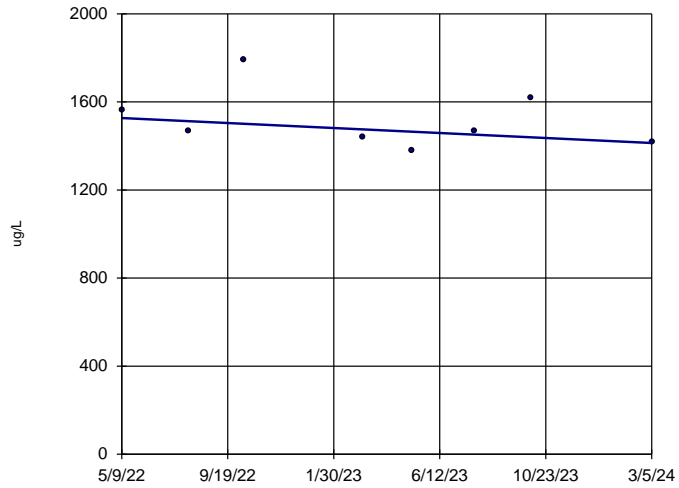
Porewater Monitoring Points						
PARAMETER	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57R OUT
Boron ⁽¹⁾	○	○	○	↑	○	○
Calcium	○	○	○	○	○	○
Chloride	↓	○	○	○	○	○
Fluoride	○*	○*	○*	○*	○*	○*
Iron	○	○	○	○	○	○
pH/Corrosivity ⁽¹⁾	○	○	○	○	○	○
Sulfate	↓	↓*	○	○	○	○
Total Dissolved Solids	○	○	○	○	○	↑*

Notes:

- * = Non-detect (70%)
- = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new
- ↑^{ASD} = Alternate Source Demonstration (Fourth Quarter 2023 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

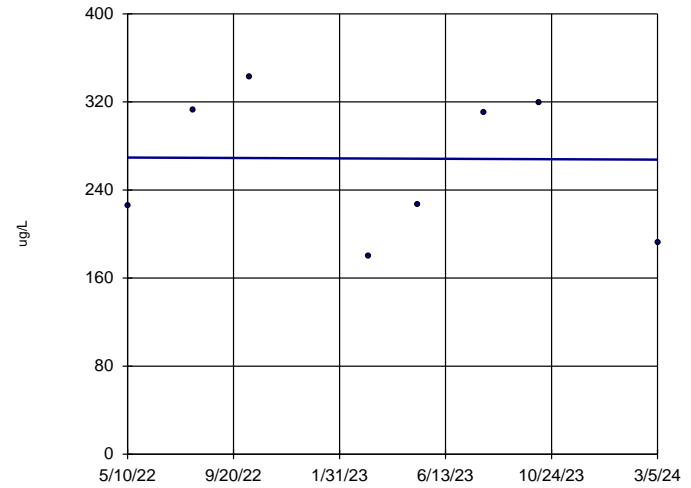
Boron, Total JCW-MW-18001



n = 8
 Slope = -62.08
 units per year.
 Mann-Kendall
 statistic = -7
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

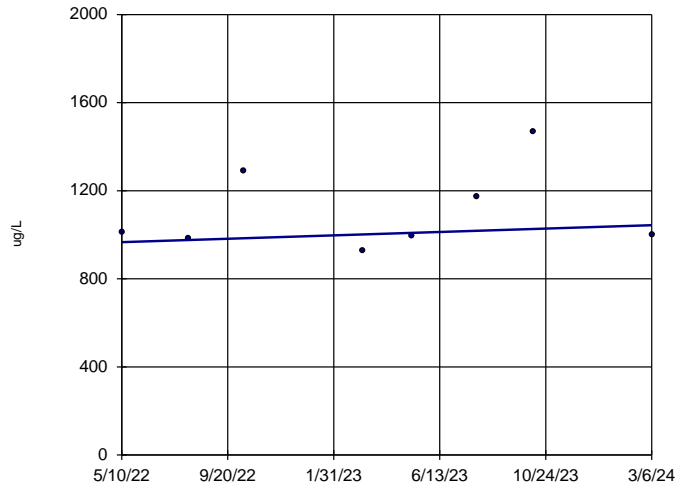
Boron, Total JCW-MW-18004



n = 8
 Slope = -1.003
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

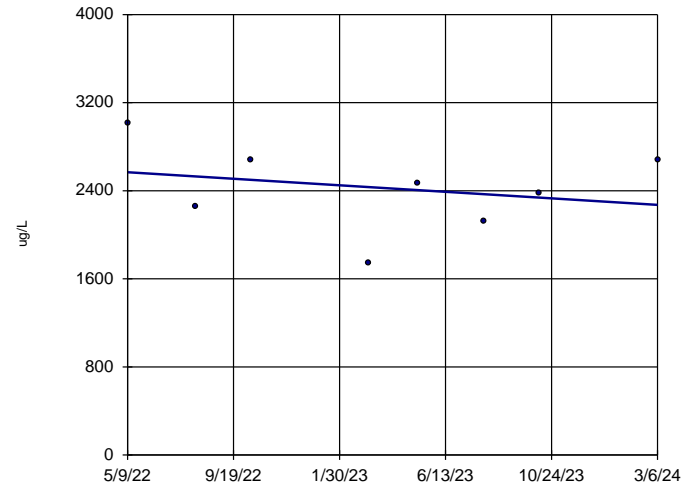
Boron, Total JCW-MW-18005



n = 8
 Slope = 42.36
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

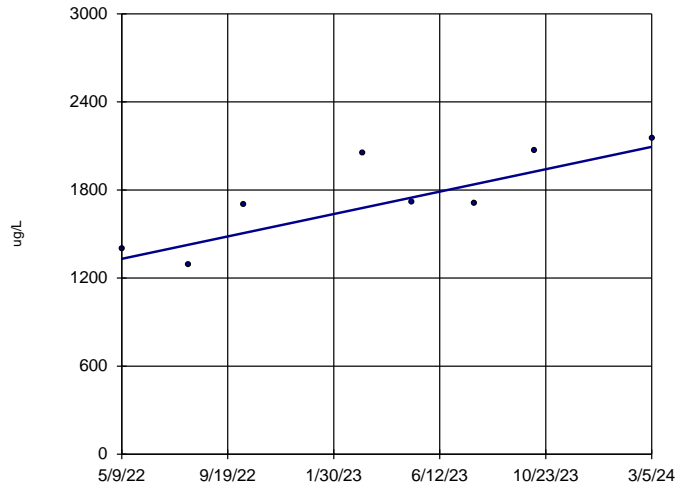
Boron, Total JCW-MW-18006



n = 8
 Slope = -162
 units per year.
 Mann-Kendall
 statistic = -4
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

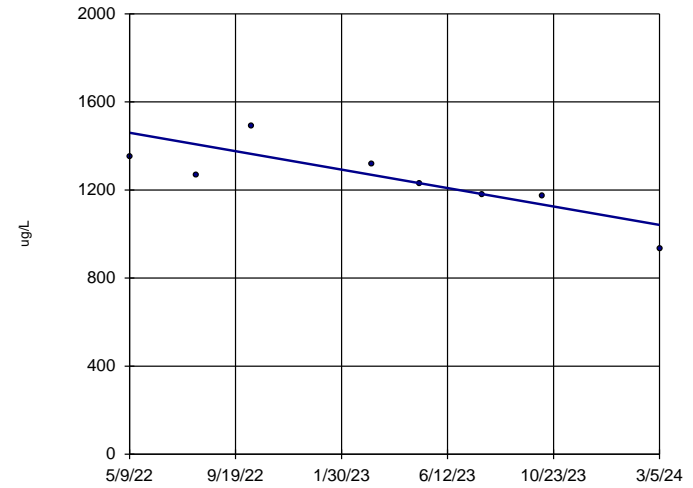
Boron, Total MW-50



n = 8
 Slope = 417.9
 units per year.
 Mann-Kendall
 statistic = 20
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

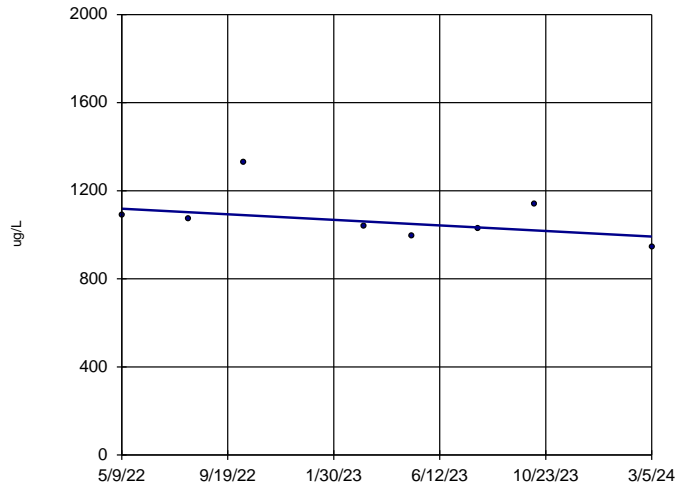
Boron, Total MW-51



n = 8
 Slope = -229.2
 units per year.
 Mann-Kendall
 statistic = -22
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

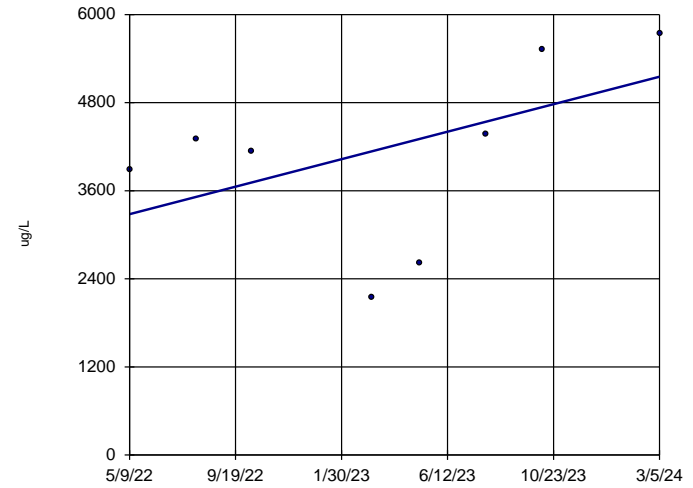
Boron, Total MW-52



n = 8
 Slope = -69.21
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

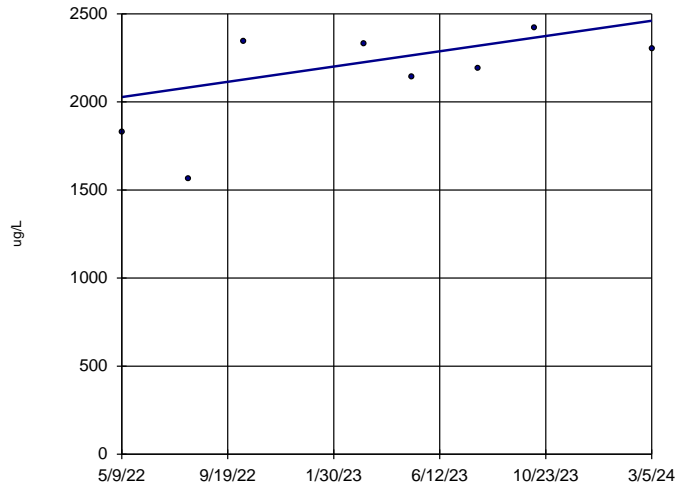
Boron, Total MW-53



n = 8
 Slope = 1027
 units per year.
 Mann-Kendall
 statistic = 14
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

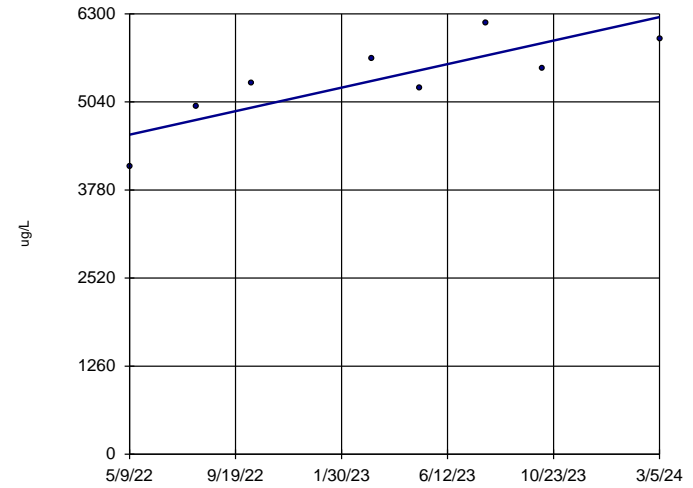
Boron, Total MW-53R



n = 8
 Slope = 237.4 units per year.
 Mann-Kendall statistic = 10
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

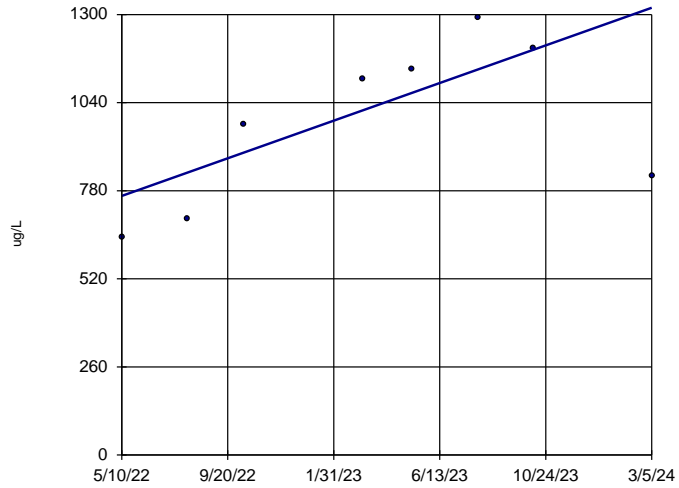
Boron, Total MW-54R



n = 8
 Slope = 922.6 units per year.
 Mann-Kendall statistic = 18
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

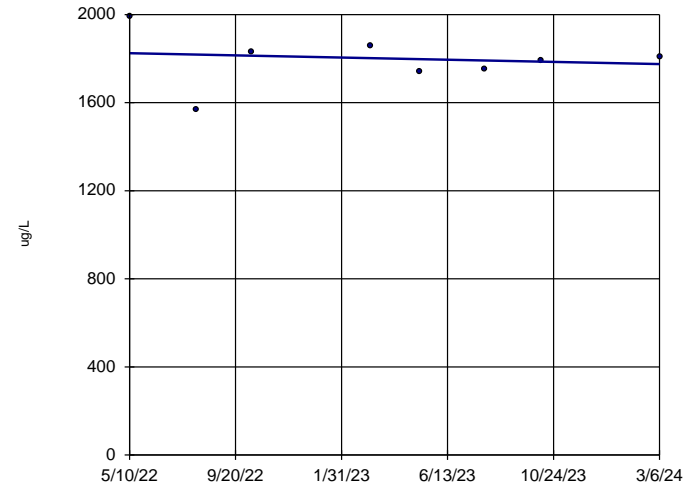
Boron, Total MW-55



n = 8
 Slope = 304.9 units per year.
 Mann-Kendall statistic = 16
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

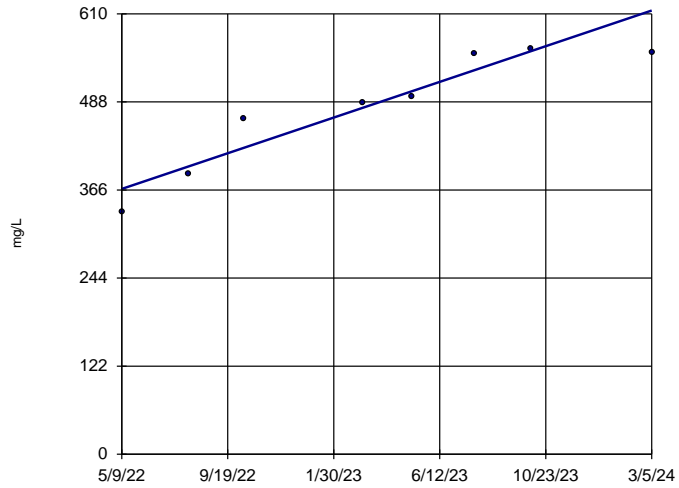
Boron, Total OW-57ROUT



n = 8
 Slope = -27.24 units per year.
 Mann-Kendall statistic = -2
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

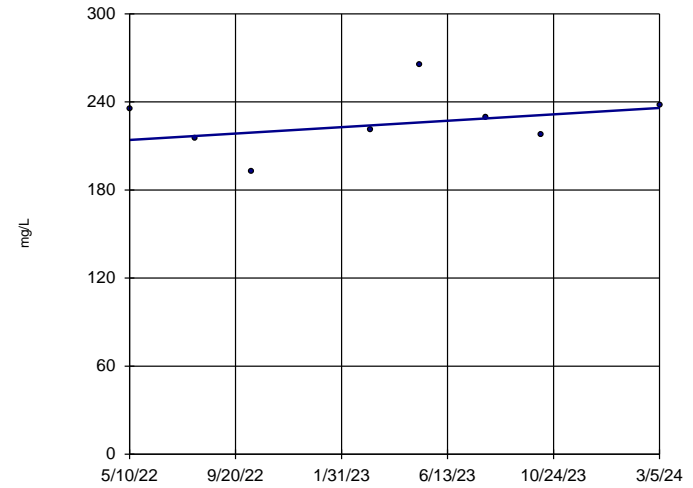
Calcium, Total JCW-MW-18001



n = 8
 Slope = 135.5
 units per year.
 Mann-Kendall
 statistic = 26
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

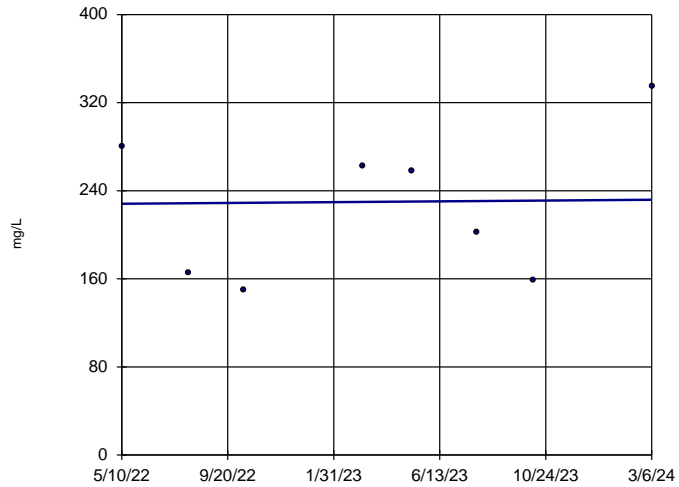
Calcium, Total JCW-MW-18004



n = 8
 Slope = 12
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

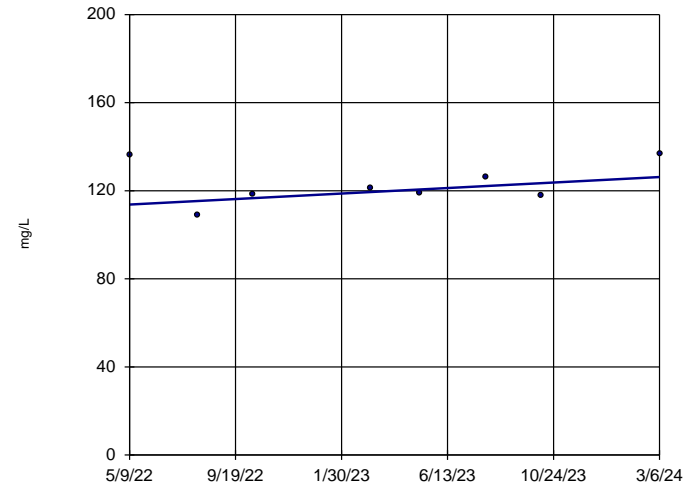
Calcium, Total JCW-MW-18005



n = 8
 Slope = 1.996
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

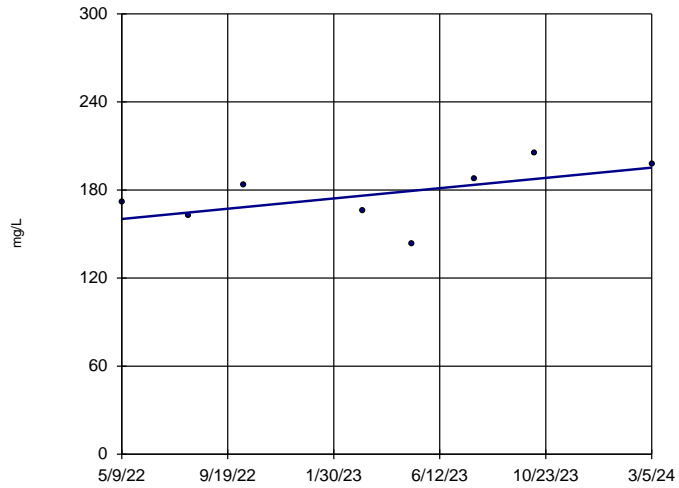
Calcium, Total JCW-MW-18006



n = 8
 Slope = 6.855
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

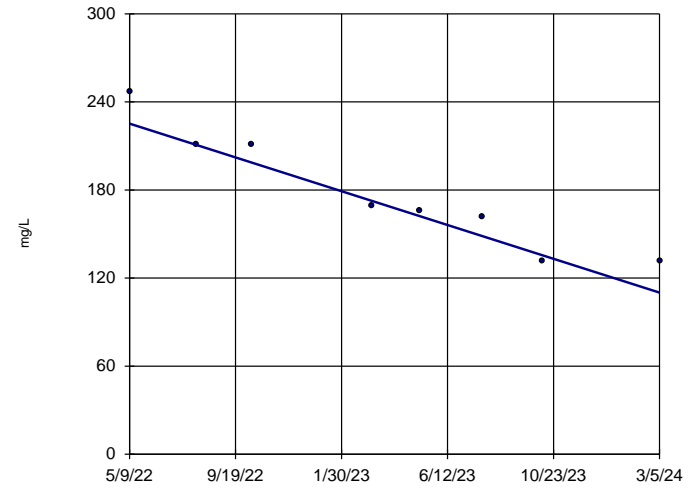
Calcium, Total
MW-50



n = 8
 Slope = 19.16 units per year.
 Mann-Kendall statistic = 12
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

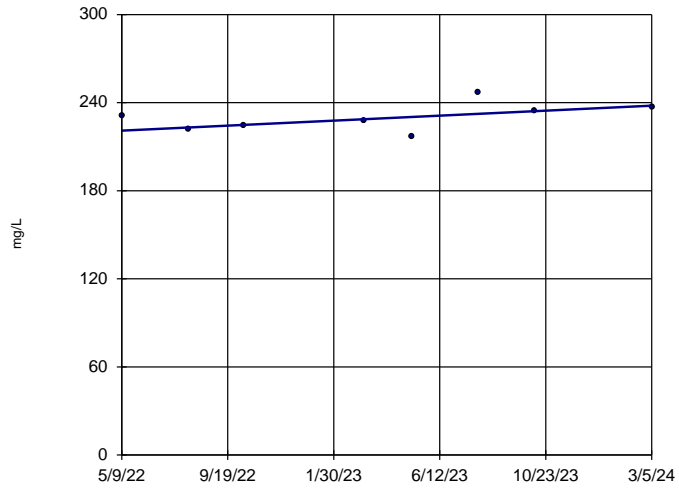
Calcium, Total
MW-51



n = 8
 Slope = -63.07 units per year.
 Mann-Kendall statistic = -26
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

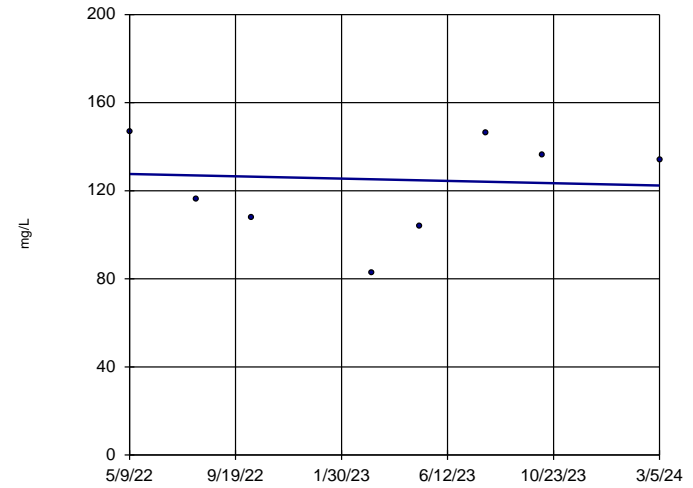
Calcium, Total
MW-52



n = 8
 Slope = 9.337 units per year.
 Mann-Kendall statistic = 10
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

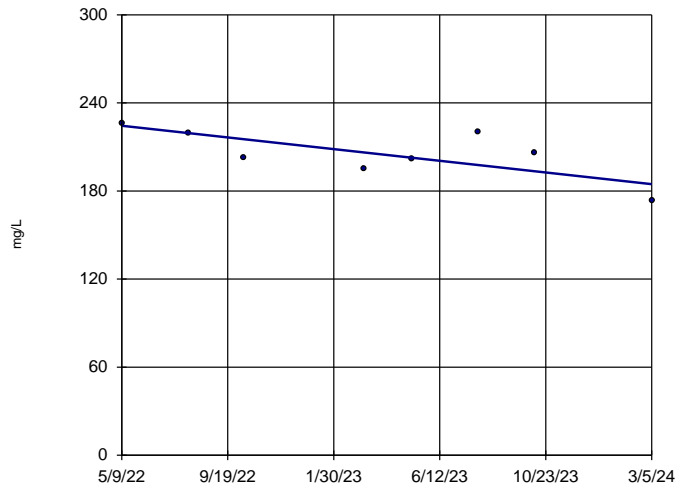
Calcium, Total
MW-53



n = 8
 Slope = -2.874 units per year.
 Mann-Kendall statistic = -2
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

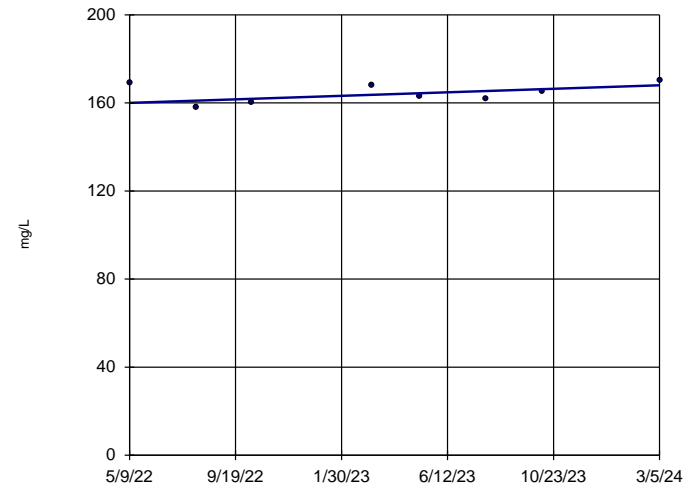
Calcium, Total
MW-53R



n = 8
 Slope = -21.77
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

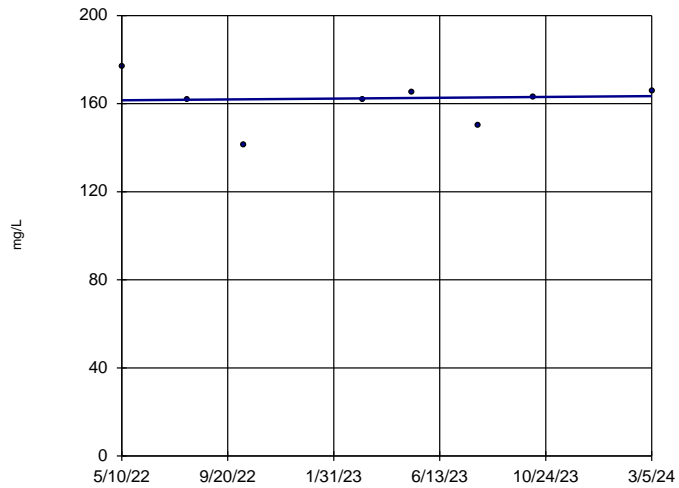
Calcium, Total
MW-54R



n = 8
 Slope = 4.391
 units per year.
 Mann-Kendall
 statistic = 8
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

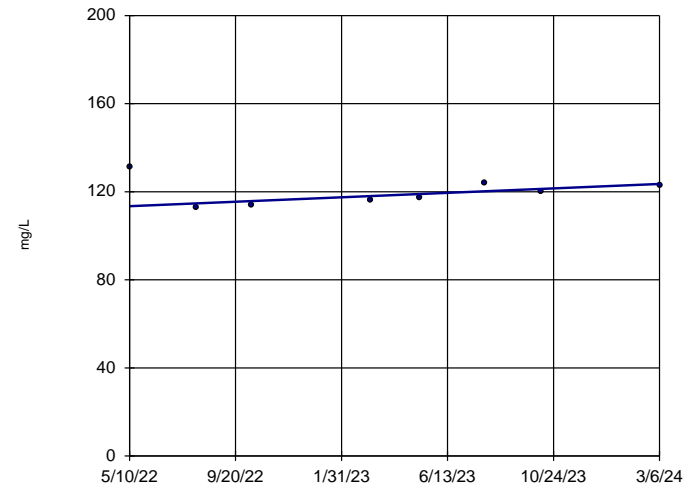
Calcium, Total
MW-55



n = 8
 Slope = 1.027
 units per year.
 Mann-Kendall
 statistic = 3
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

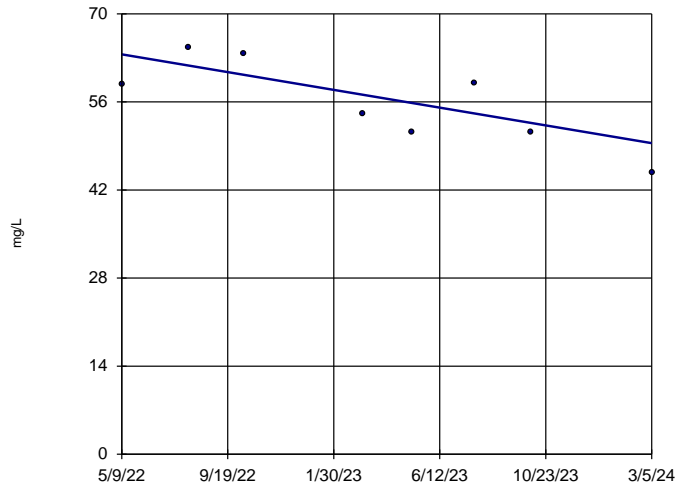
Calcium, Total
OW-57ROUT



n = 8
 Slope = 5.557
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

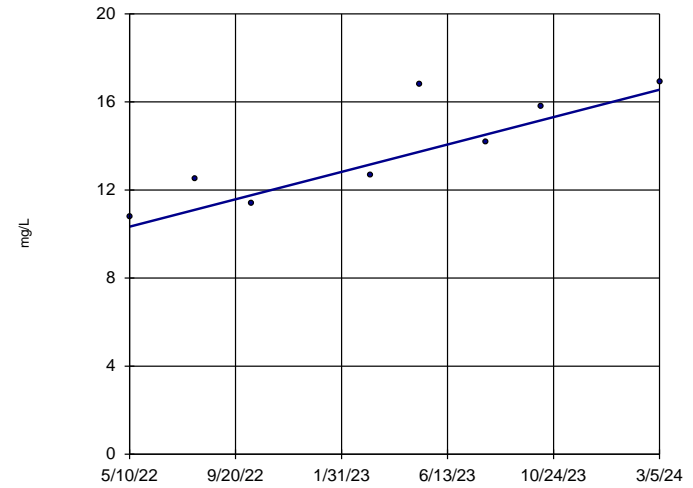
Chloride JCW-MW-18001



n = 8
 Slope = -7.731
 units per year.
 Mann-Kendall
 statistic = -17
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

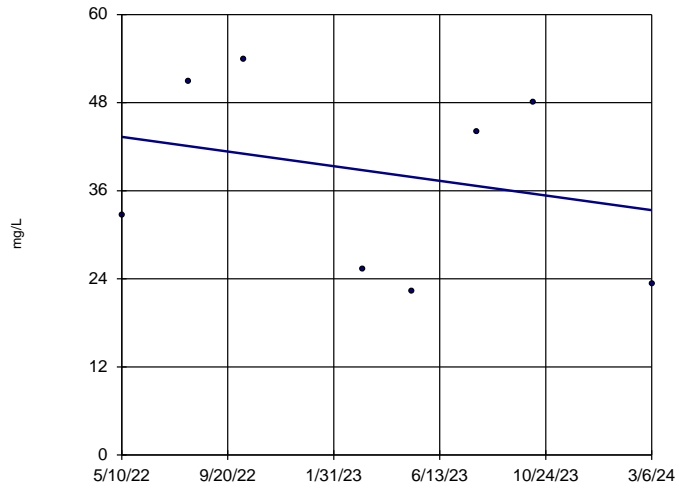
Chloride JCW-MW-18004



n = 8
 Slope = 3.412
 units per year.
 Mann-Kendall
 statistic = 22
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

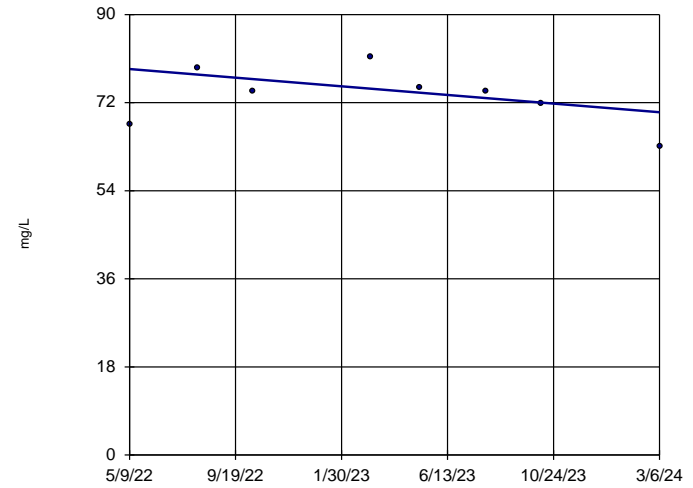
Chloride JCW-MW-18005



n = 8
 Slope = -5.464
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

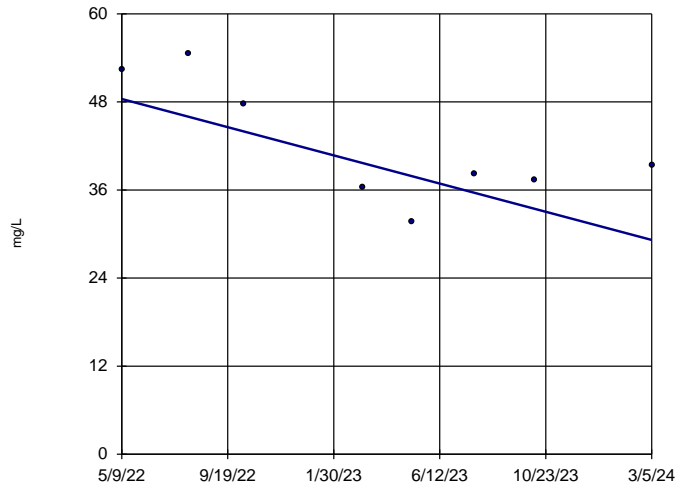
Chloride JCW-MW-18006



n = 8
 Slope = -4.829
 units per year.
 Mann-Kendall
 statistic = -9
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

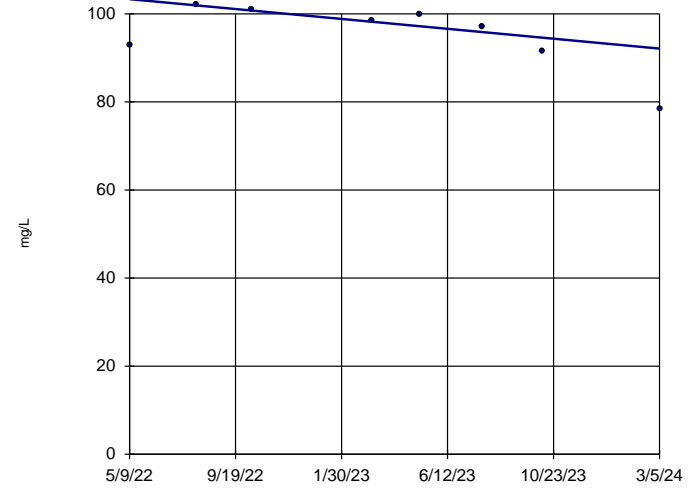
Chloride MW-50



n = 8
 Slope = -10.53
 units per year.
 Mann-Kendall
 statistic = -10
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

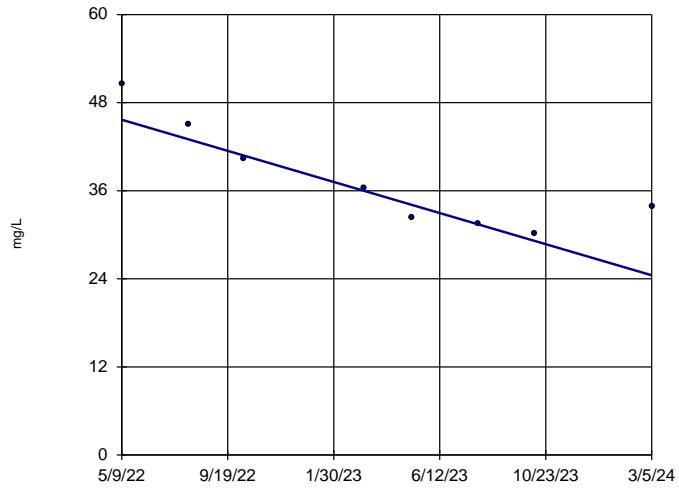
Chloride MW-51



n = 8
 Slope = -6.15
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

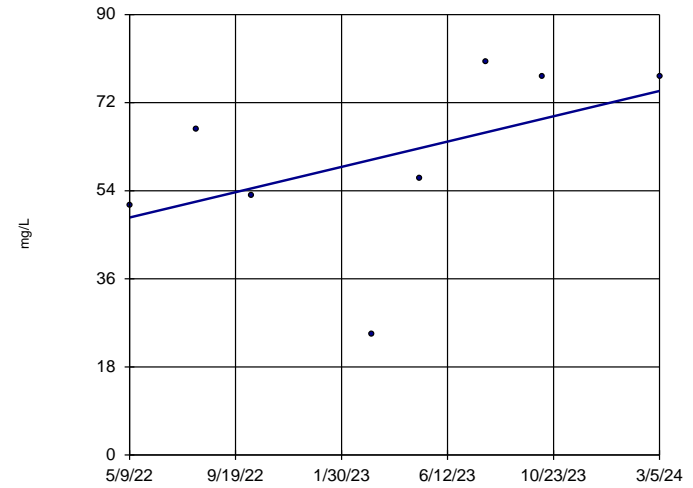
Chloride MW-52



n = 8
 Slope = -11.61
 units per year.
 Mann-Kendall
 statistic = -22
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

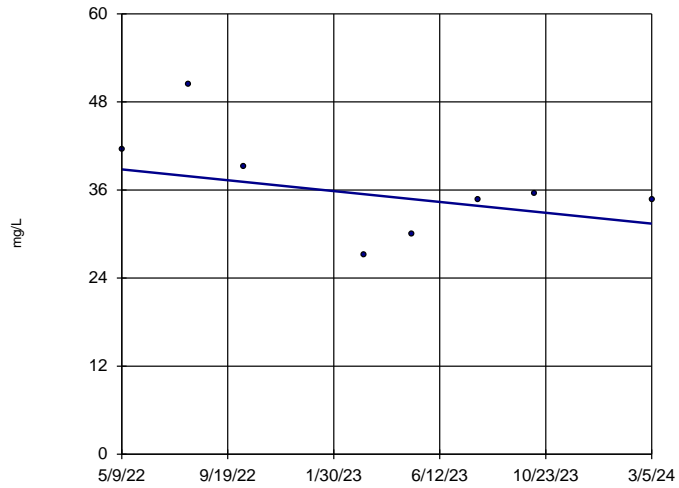
Chloride MW-53



n = 8
 Slope = 14.18
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

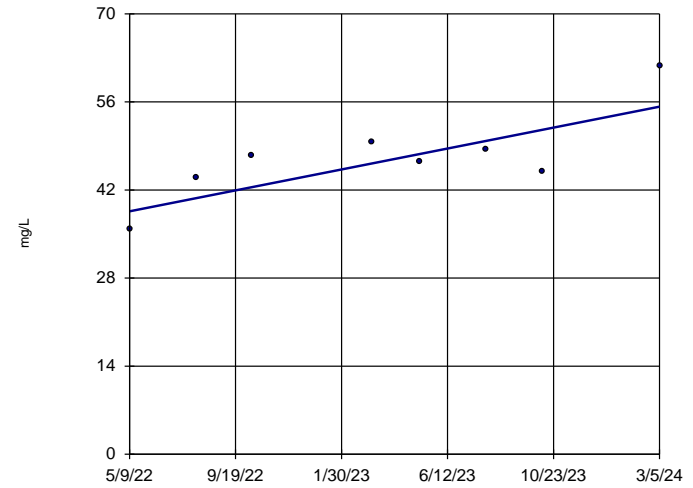
Chloride MW-53R



n = 8
 Slope = -4.04
 units per year.
 Mann-Kendall
 statistic = -8
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

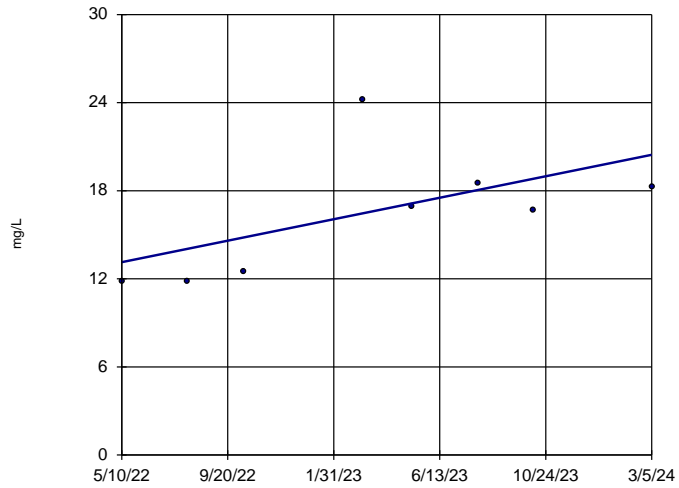
Chloride MW-54R



n = 8
 Slope = 9.126
 units per year.
 Mann-Kendall
 statistic = 14
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

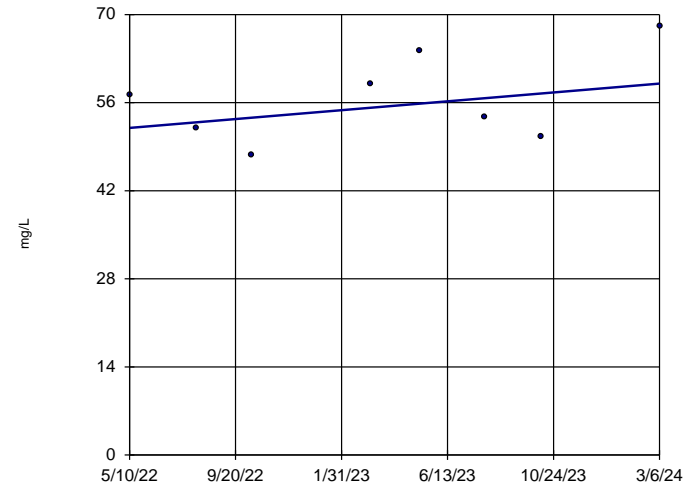
Chloride MW-55



n = 8
 Slope = 4.011
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

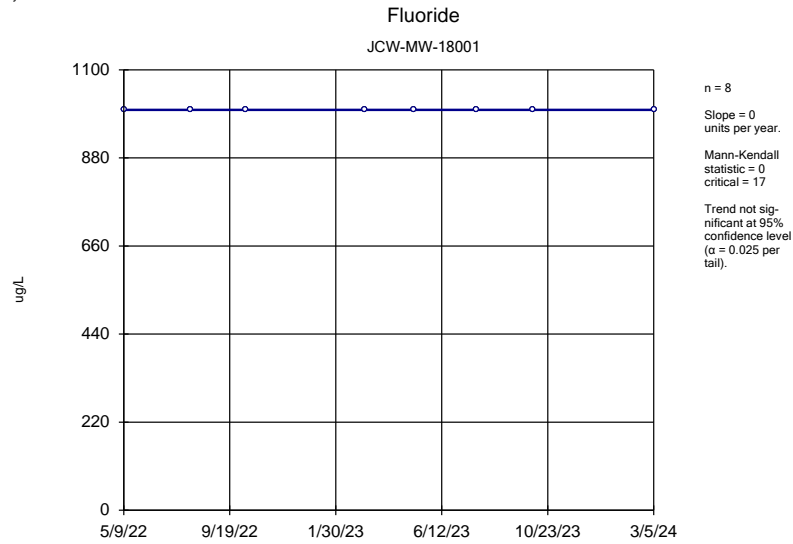
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Chloride OW-57ROUT

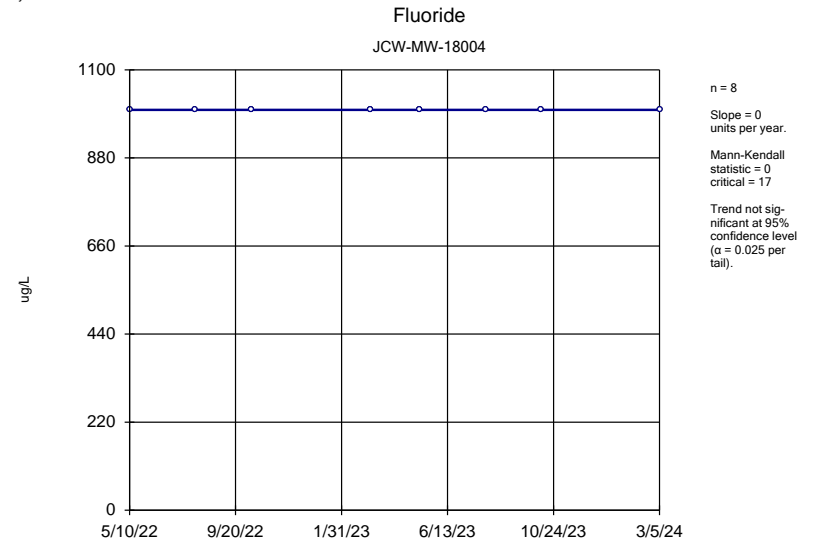


n = 8
 Slope = 3.865
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

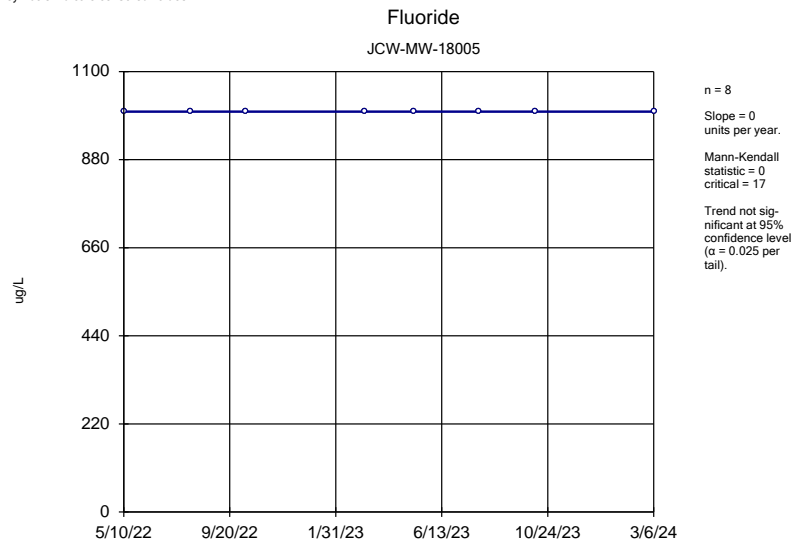
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



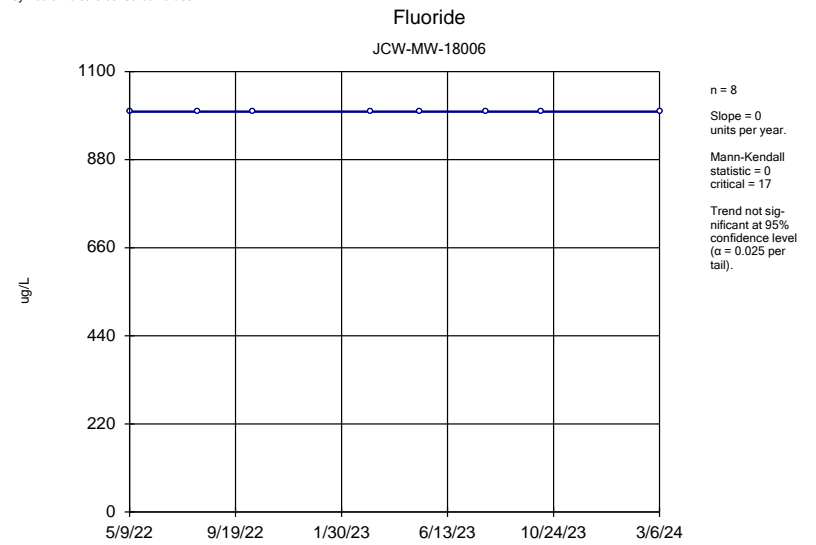
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

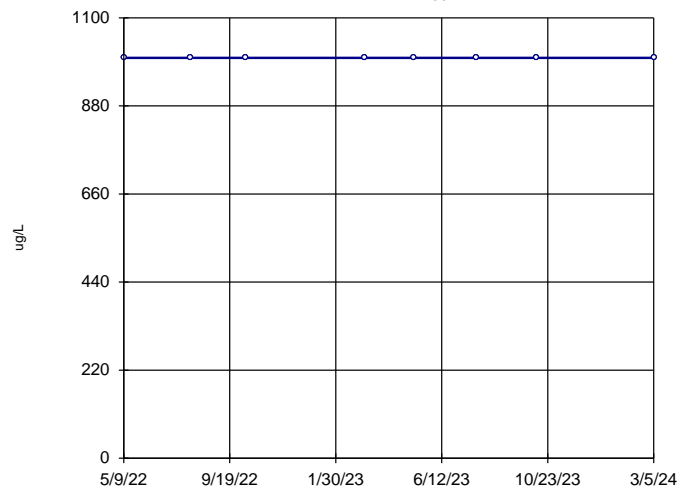


Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

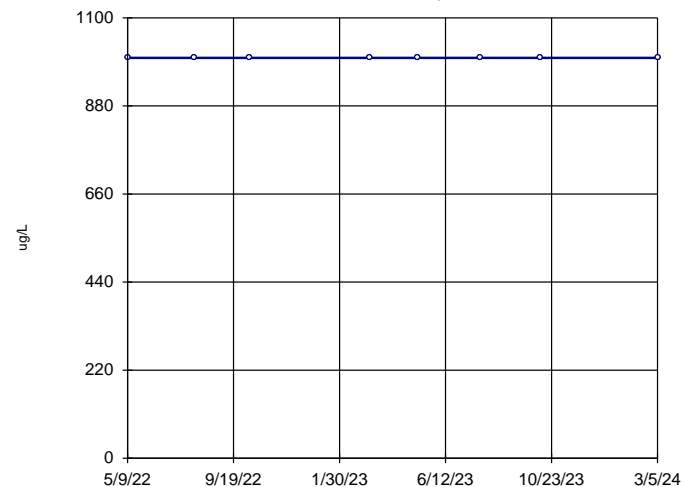
Fluoride MW-50



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

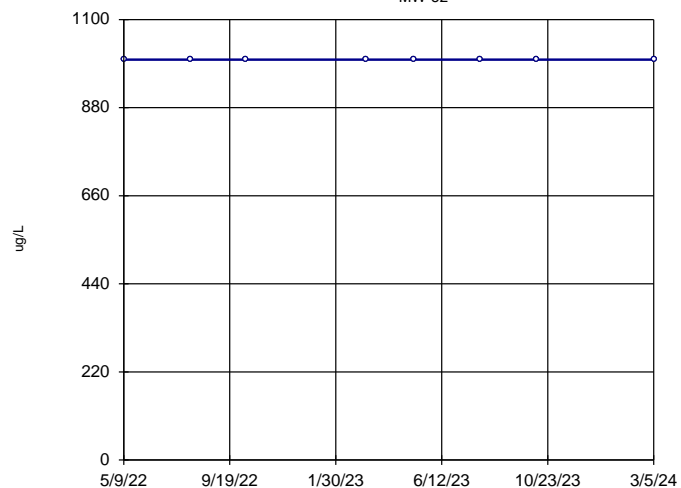
Fluoride MW-51



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

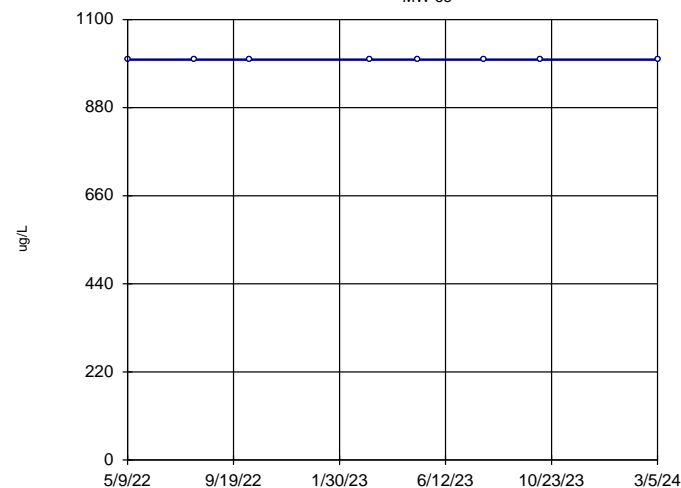
Fluoride MW-52



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

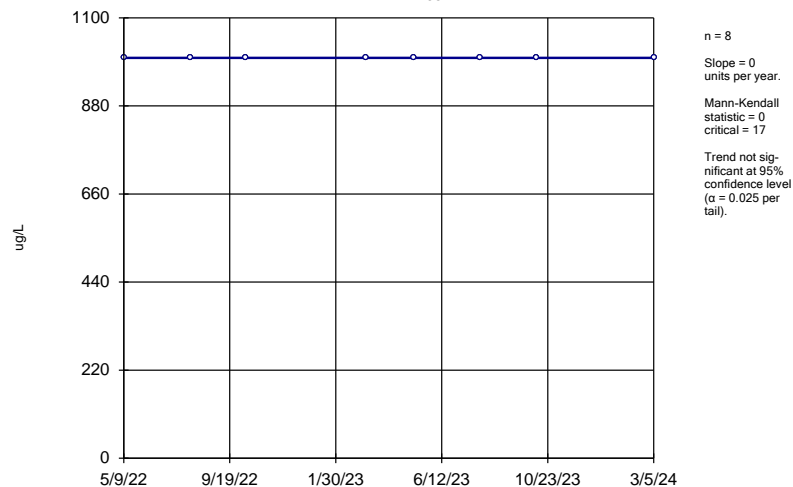
Fluoride MW-53



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

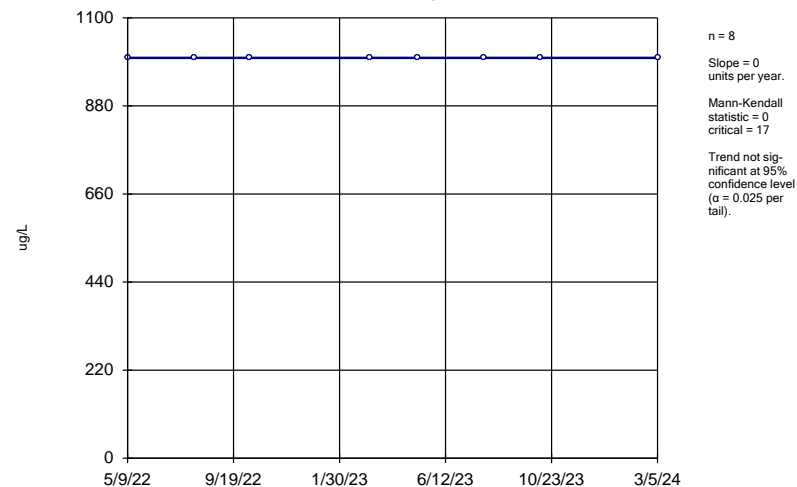
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Fluoride MW-53R



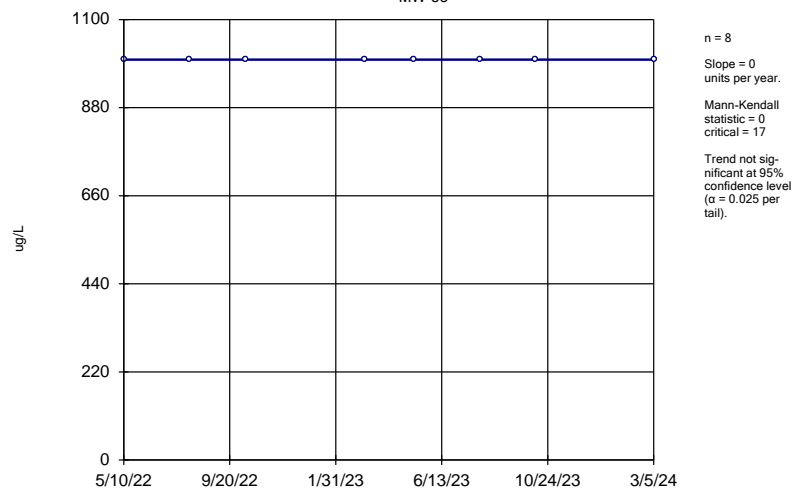
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Fluoride MW-54R



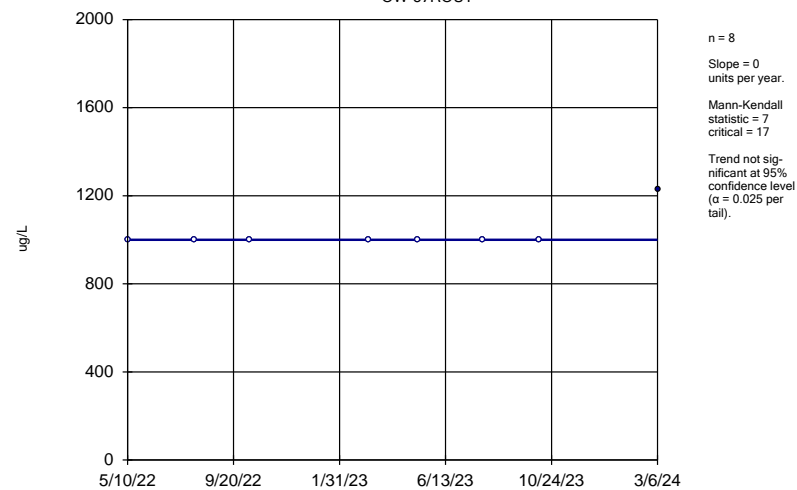
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Fluoride MW-55

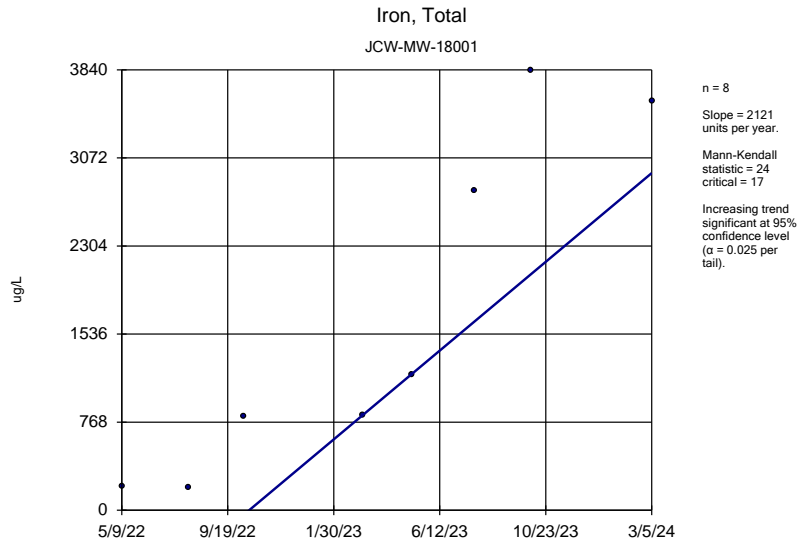


Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

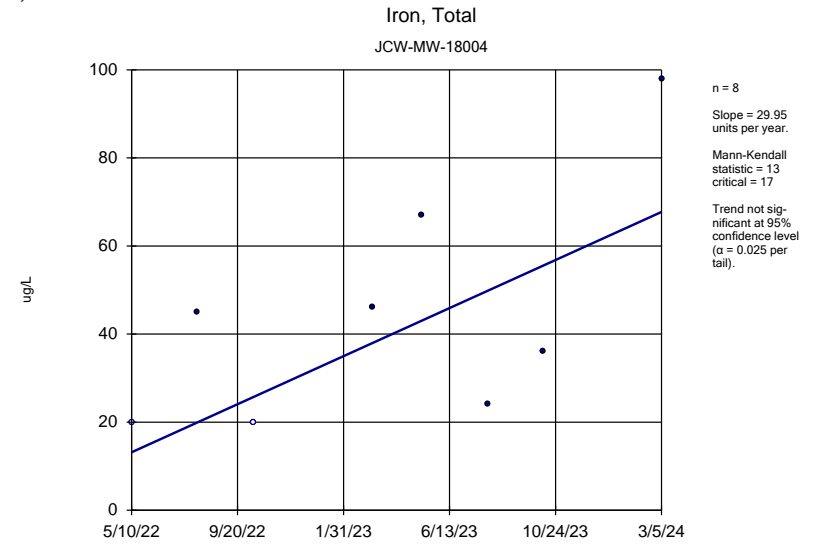
Fluoride OW-57ROUT



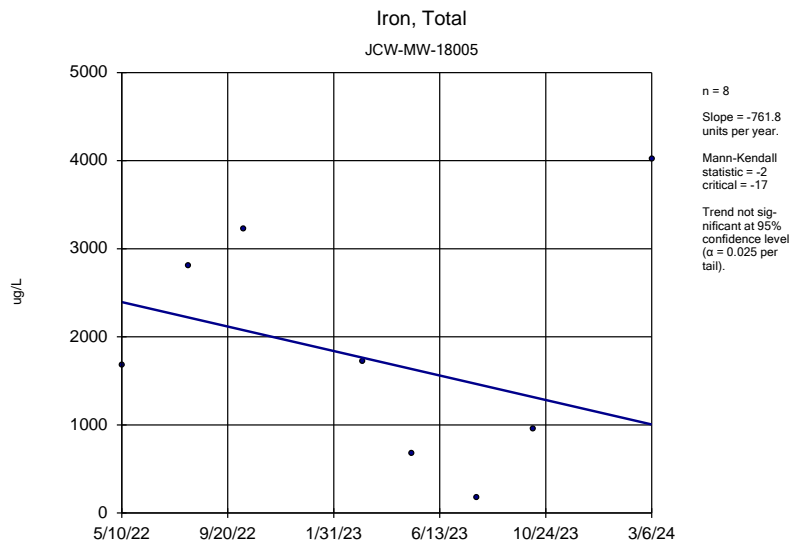
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



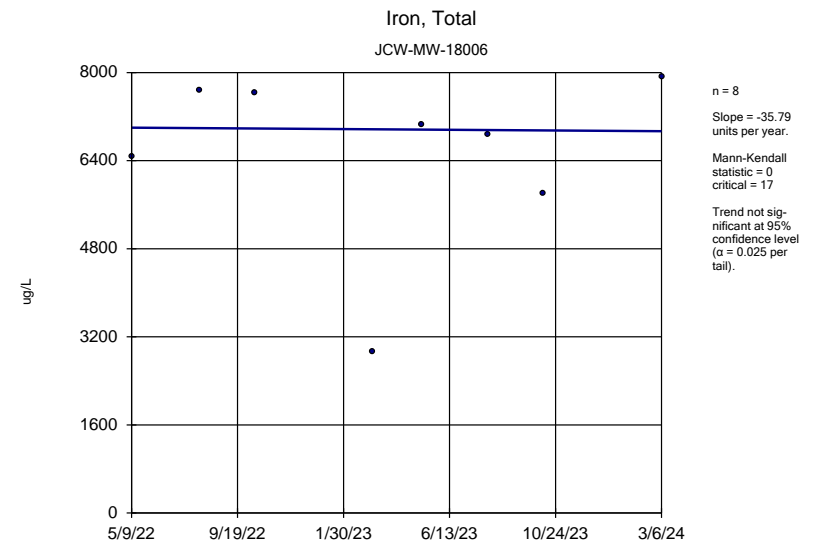
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

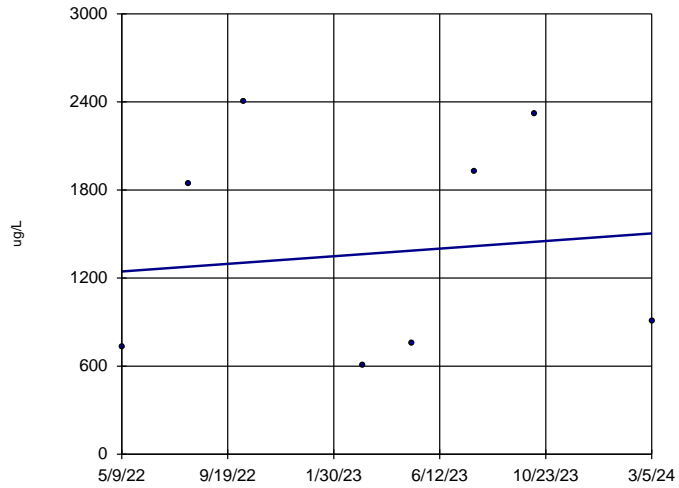


Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

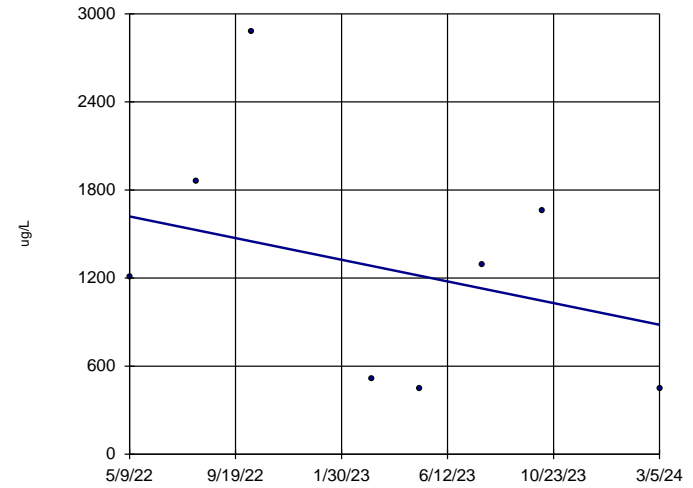
Iron, Total MW-50



n = 8
 Slope = 142.3
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

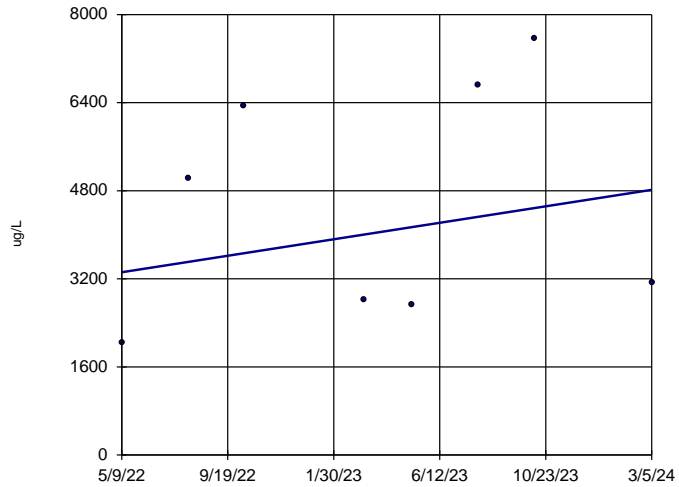
Iron, Total MW-51



n = 8
 Slope = -404
 units per year.
 Mann-Kendall
 statistic = -8
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

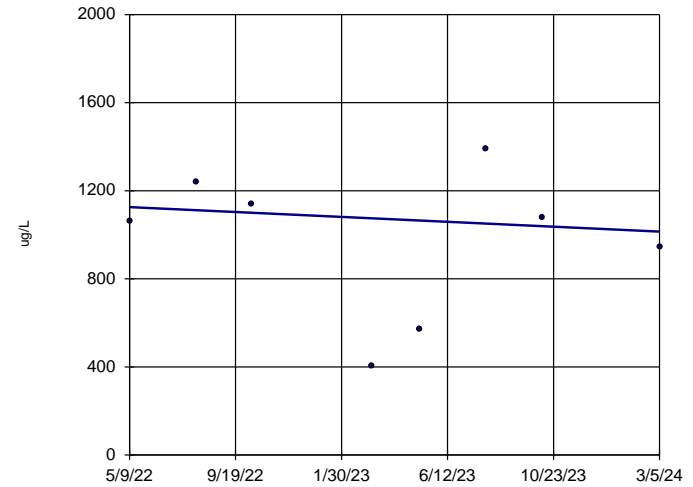
Iron, Total MW-52



n = 8
 Slope = 820.2
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

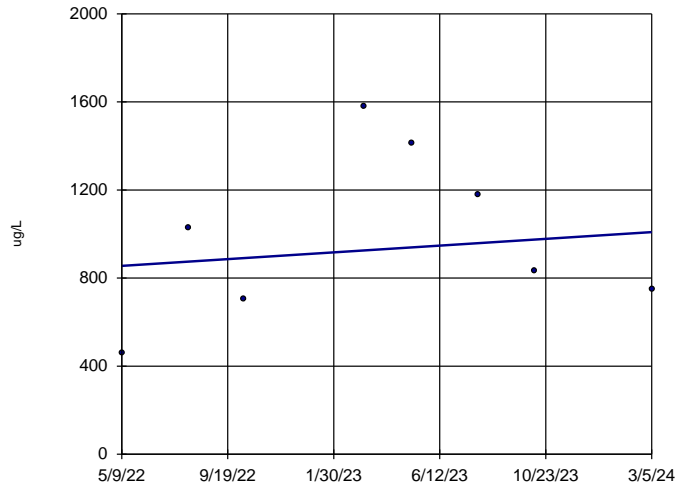
Iron, Total MW-53



n = 8
 Slope = -61.05
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

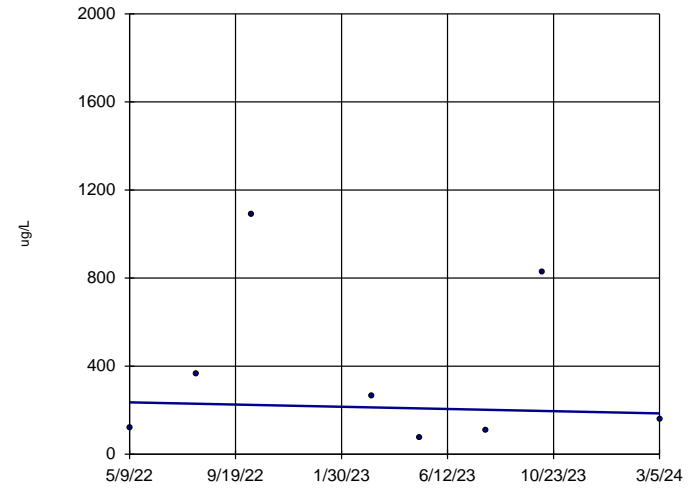
Iron, Total MW-53R



n = 8
 Slope = 84
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

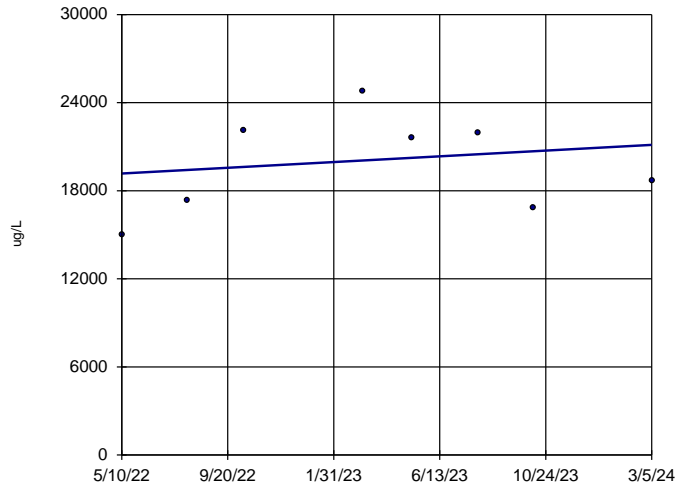
Iron, Total MW-54R



n = 8
 Slope = -27.57
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

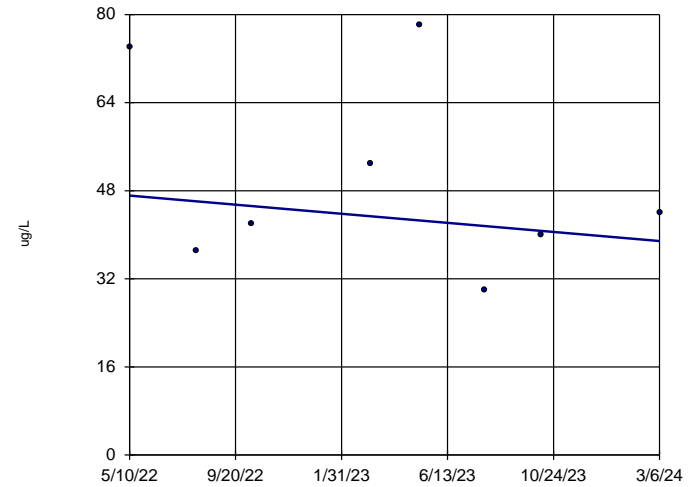
Iron, Total MW-55



n = 8
 Slope = 1074
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

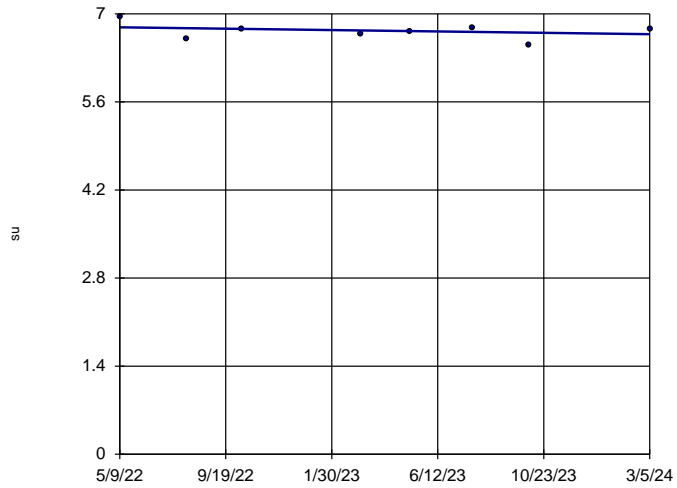
Iron, Total OW-57ROUT



n = 8
 Slope = -4.525
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

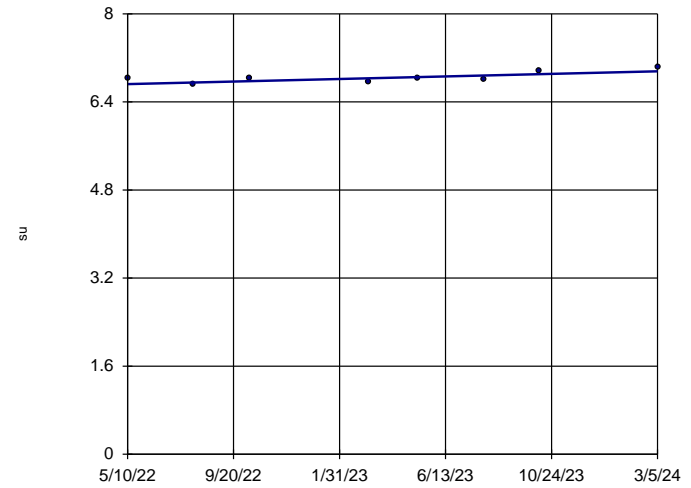
pH, Field JCW-MW-18001



n = 8
 Slope = -0.05931
 units per year.
 Mann-Kendall
 statistic = -3
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

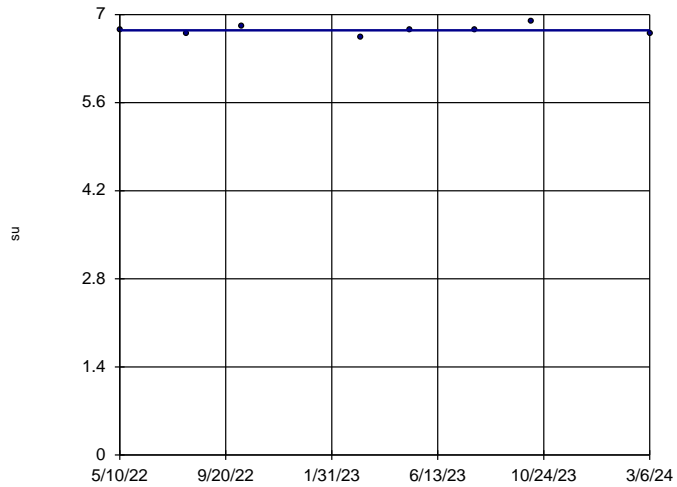
pH, Field JCW-MW-18004



n = 8
 Slope = 0.1285
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

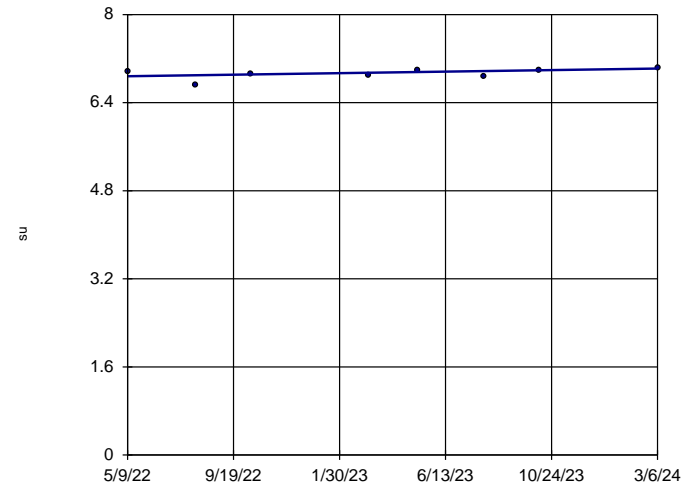
pH, Field JCW-MW-18005



n = 8
 Slope = 0
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

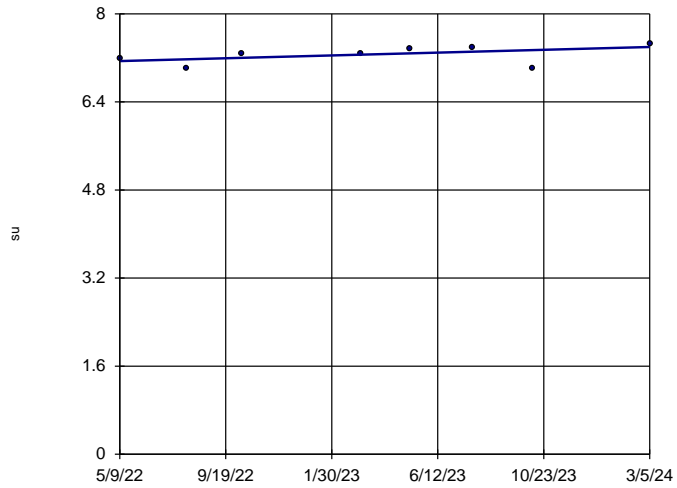
pH, Field JCW-MW-18006



n = 8
 Slope = 0.07547
 units per year.
 Mann-Kendall
 statistic = 12
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

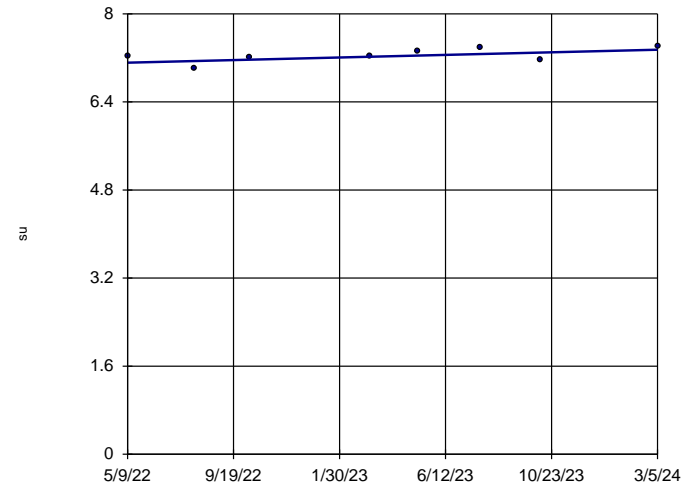
pH, Field MW-50



n = 8
 Slope = 0.1407
 units per year.
 Mann-Kendall
 statistic = 14
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

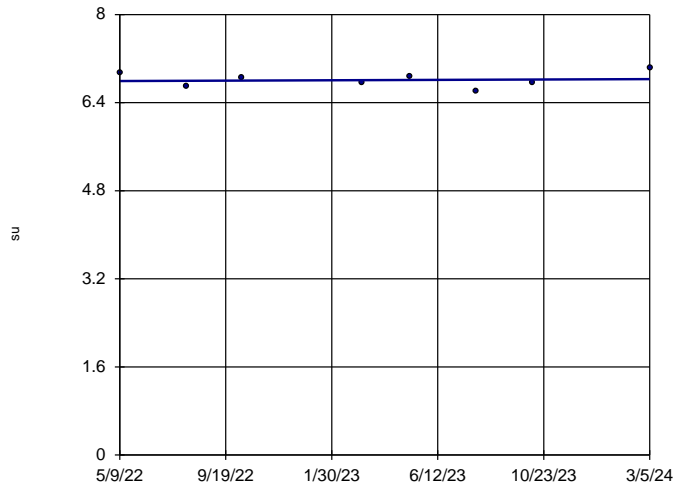
pH, Field MW-51



n = 8
 Slope = 0.1291
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

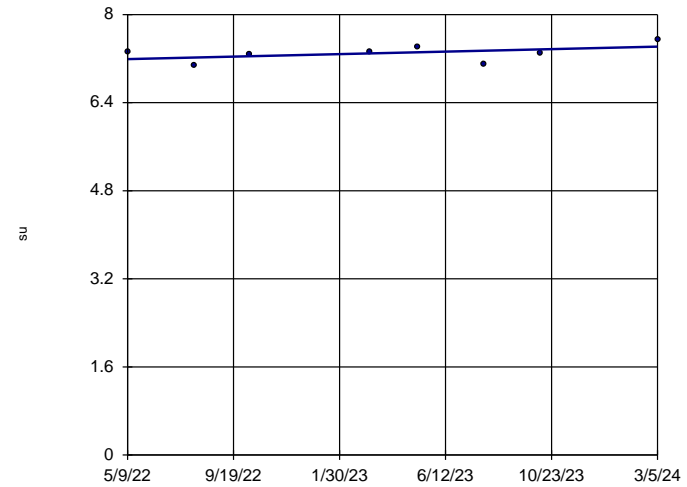
pH, Field MW-52



n = 8
 Slope = 0.01918
 units per year.
 Mann-Kendall
 statistic = 1
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

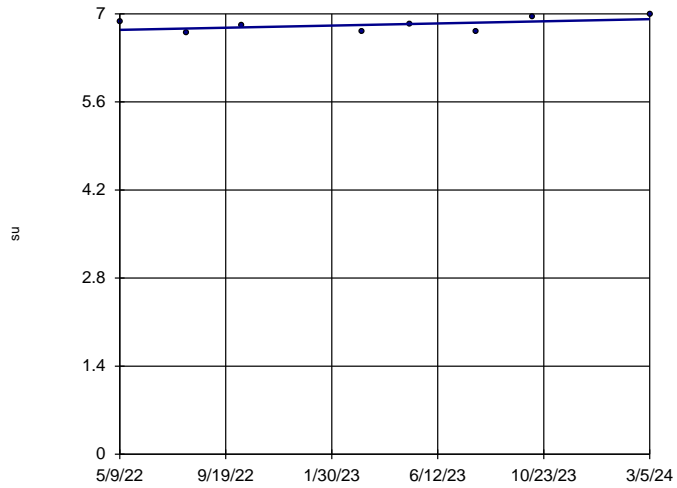
pH, Field MW-53



n = 8
 Slope = 0.1239
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

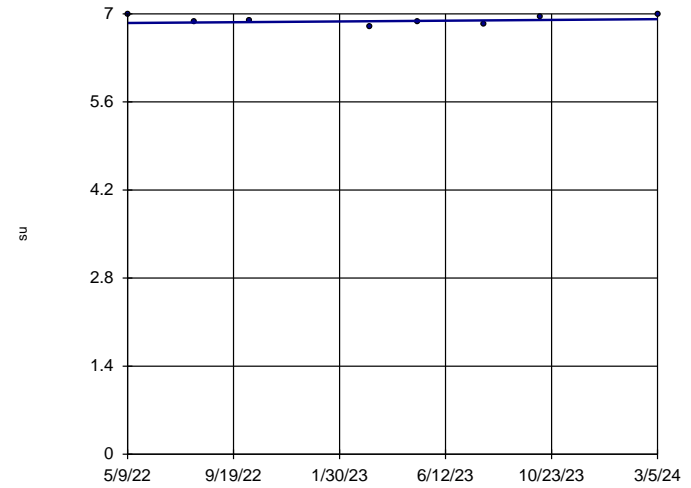
pH, Field MW-53R



n = 8
 Slope = 0.09454
 units per year.
 Mann-Kendall
 statistic = 11
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

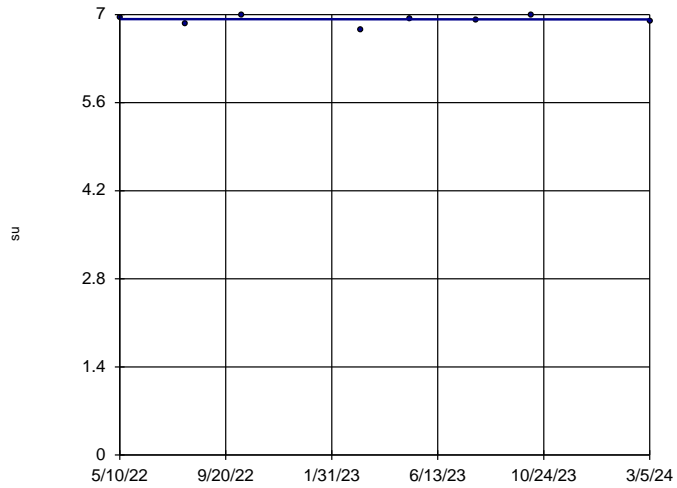
pH, Field MW-54R



n = 8
 Slope = 0.03282
 units per year.
 Mann-Kendall
 statistic = 3
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

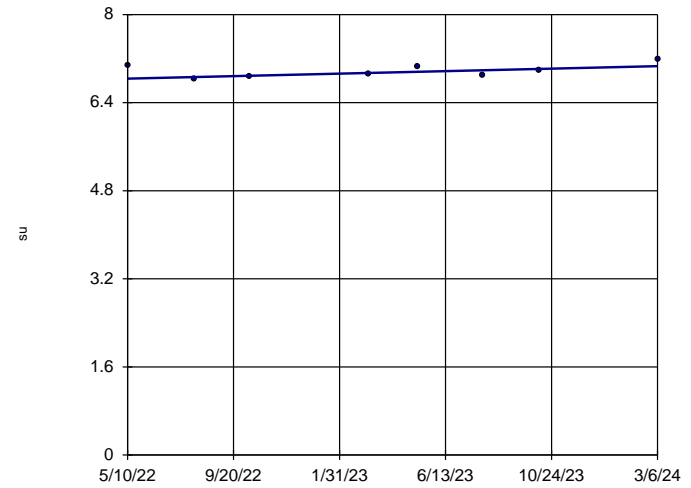
pH, Field MW-55



n = 8
 Slope = -0.003358
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

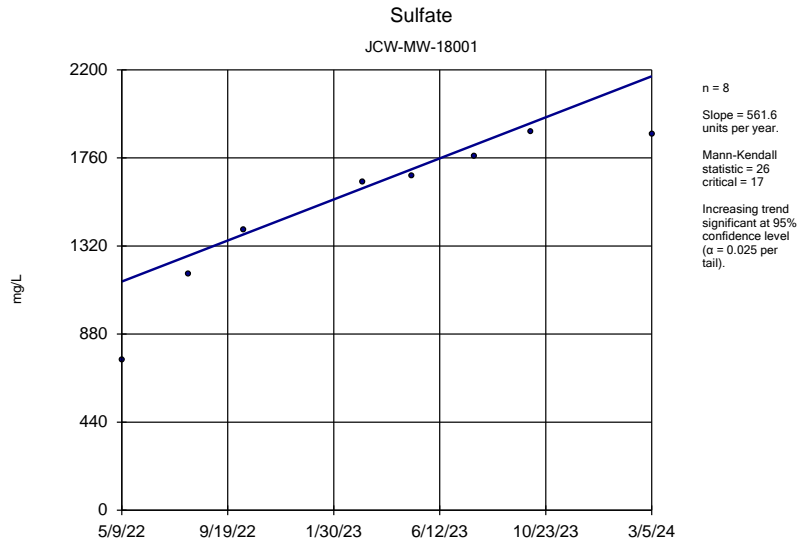
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

pH, Field OW-57ROUT

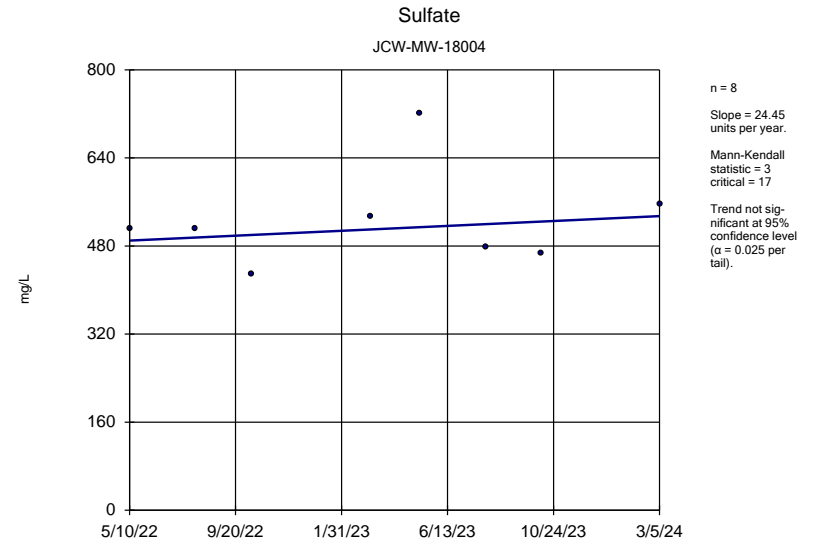


n = 8
 Slope = 0.1235
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

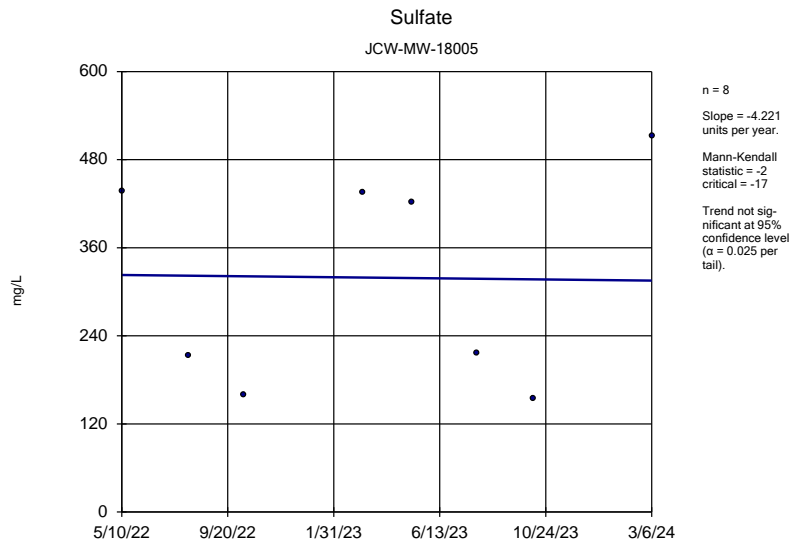
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



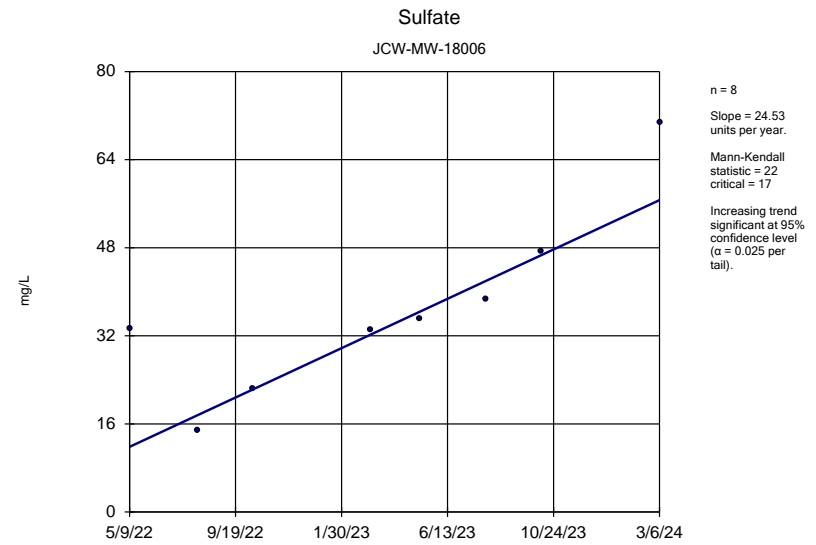
Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

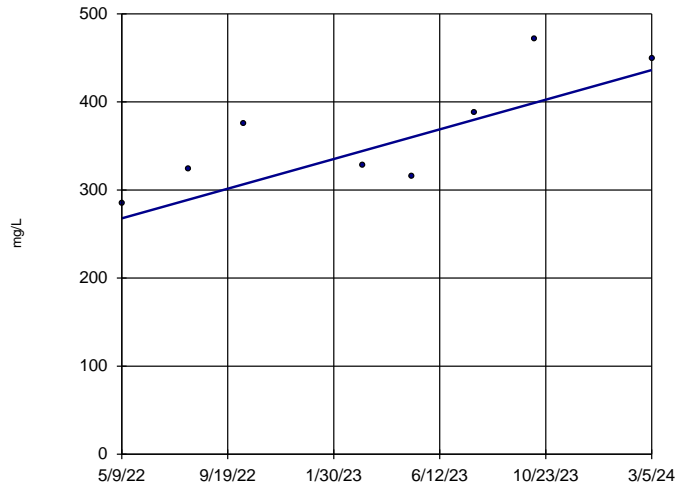


Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

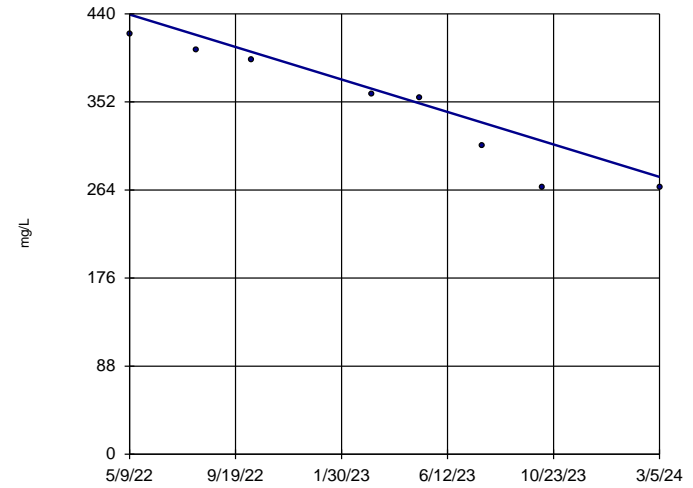
Sulfate MW-50



n = 8
 Slope = 92.3
 units per year.
 Mann-Kendall
 statistic = 18
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

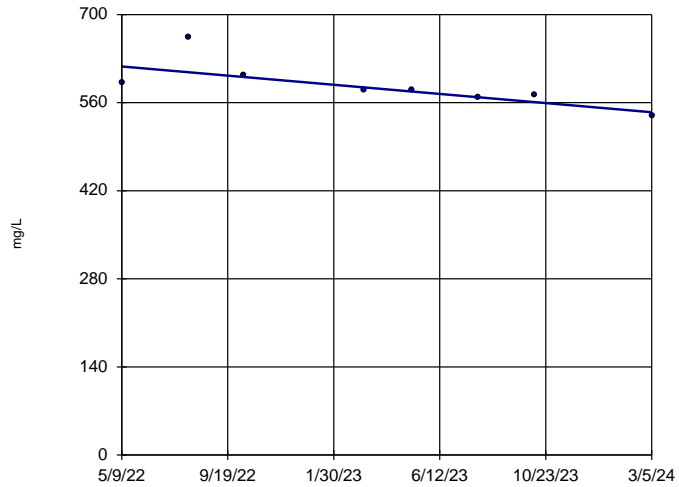
Sulfate MW-51



n = 8
 Slope = -88.9
 units per year.
 Mann-Kendall
 statistic = -28
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

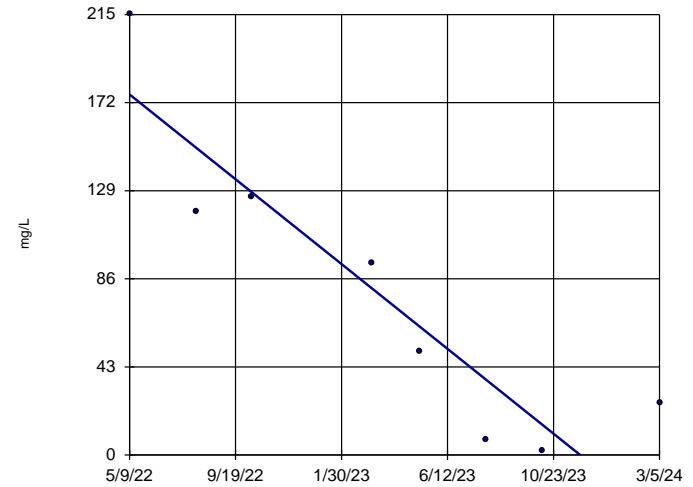
Sulfate MW-52



n = 8
 Slope = -39.79
 units per year.
 Mann-Kendall
 statistic = -21
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

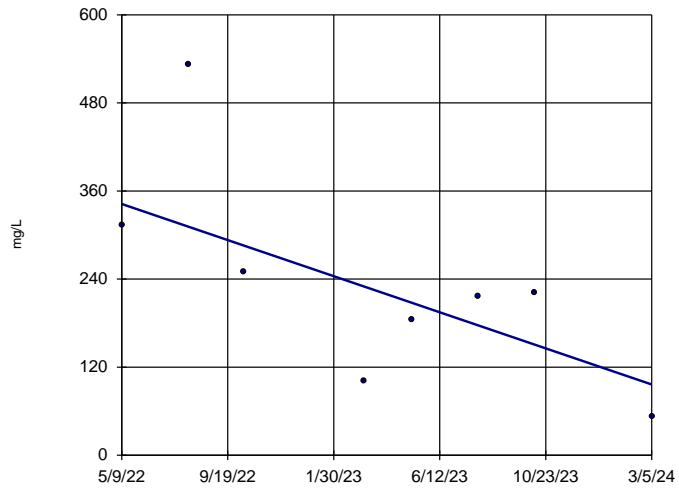
Sulfate MW-53



n = 8
 Slope = -113.5
 units per year.
 Mann-Kendall
 statistic = -22
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

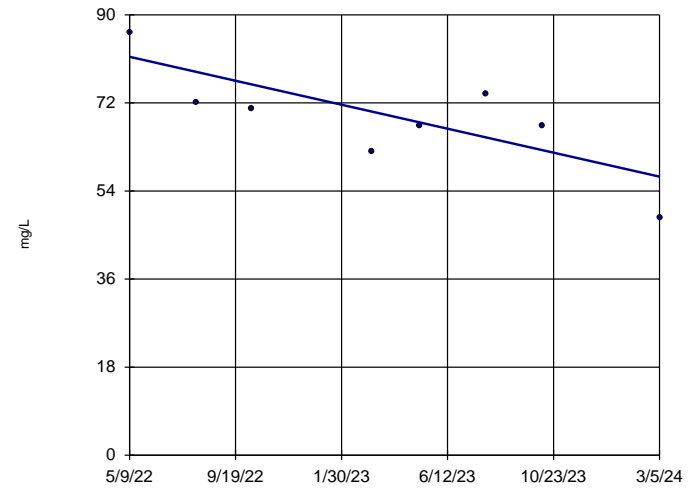
Sulfate MW-53R



n = 8
 Slope = -134.8
 units per year.
 Mann-Kendall
 statistic = -14
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

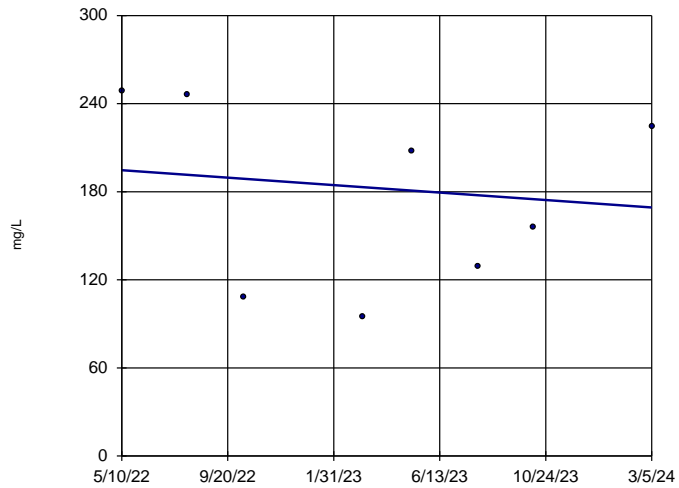
Sulfate MW-54R



n = 8
 Slope = -13.41
 units per year.
 Mann-Kendall
 statistic = -14
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

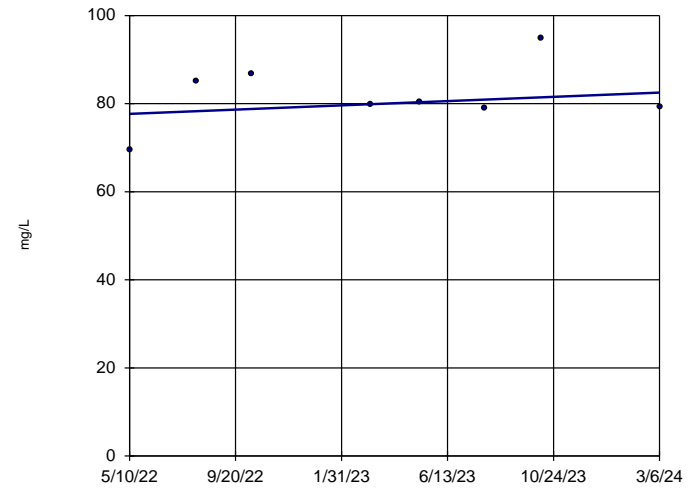
Sulfate MW-55



n = 8
 Slope = -13.92
 units per year.
 Mann-Kendall
 statistic = -4
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Sulfate OW-57ROUT

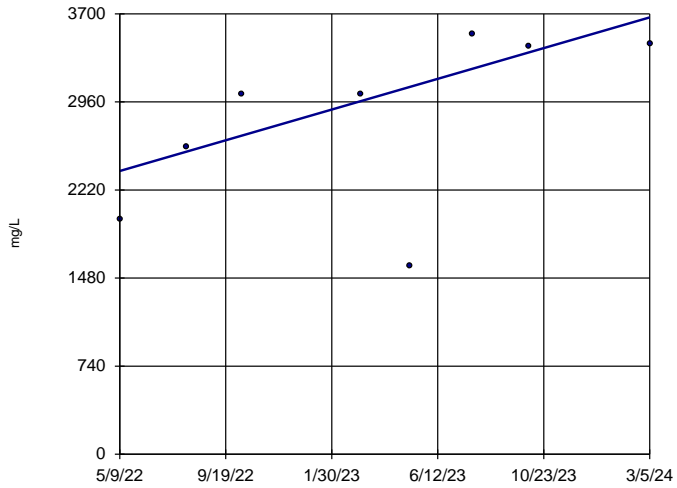


n = 8
 Slope = 2.643
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

JCW-MW-18001

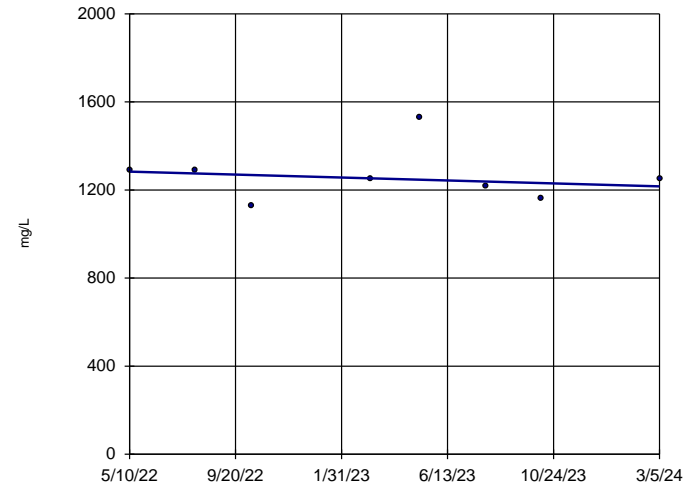


n = 8
 Slope = 706.7
 units per year.
 Mann-Kendall
 statistic = 16
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

JCW-MW-18004

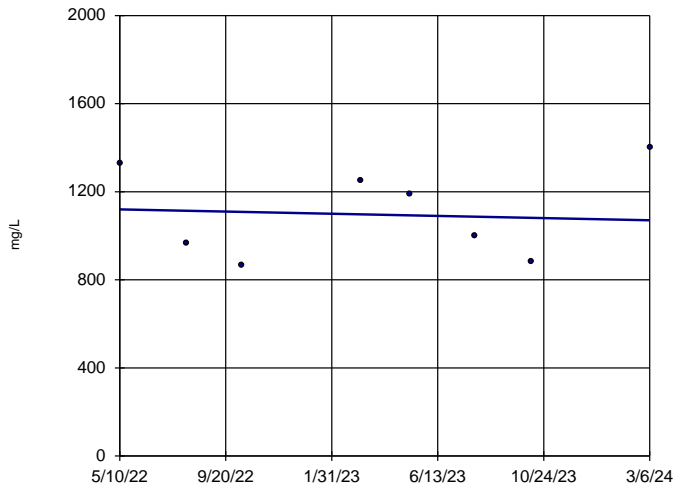


n = 8
 Slope = -36.64
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

JCW-MW-18005

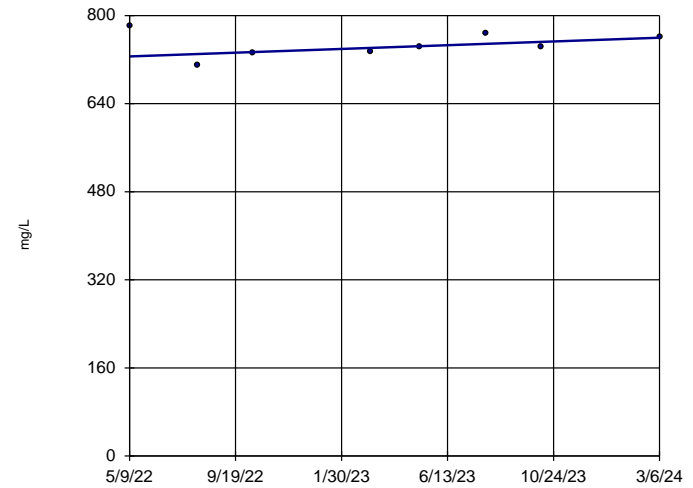


n = 8
 Slope = -26.94
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

JCW-MW-18006

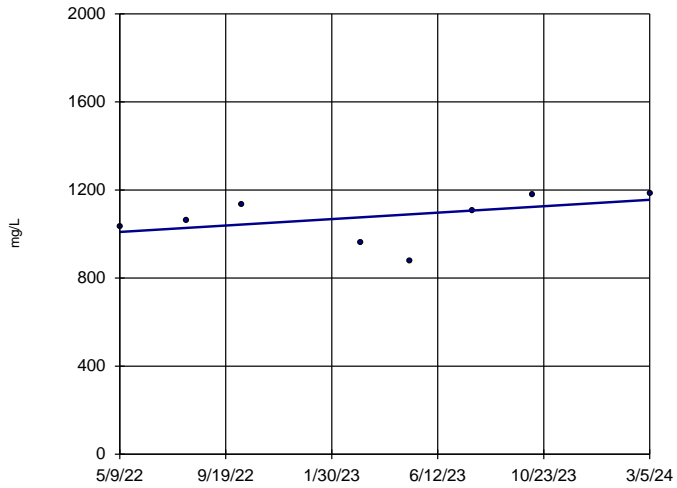


n = 8
 Slope = 18.59
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-50

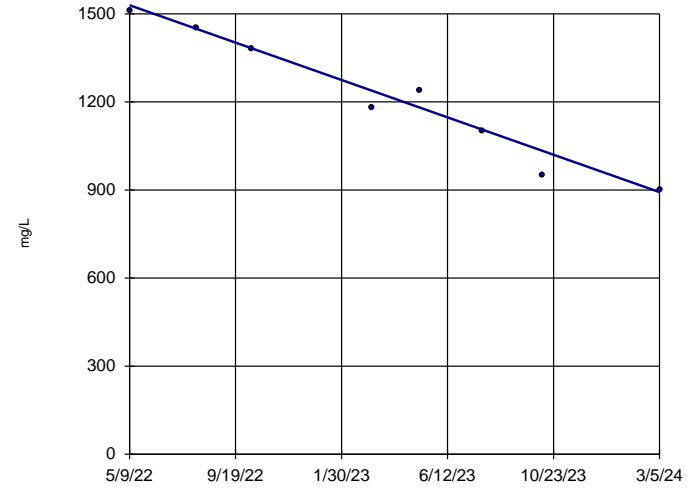


n = 8
 Slope = 80.3
 units per year.
 Mann-Kendall
 statistic = 12
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-51

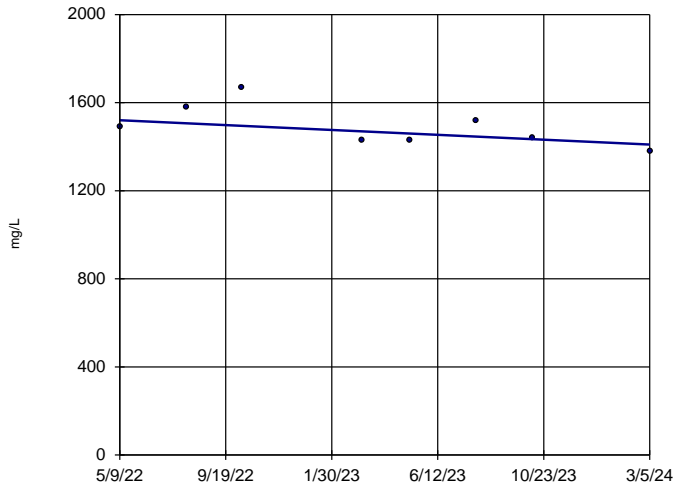


n = 8
 Slope = -348.7
 units per year.
 Mann-Kendall
 statistic = -26
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-52

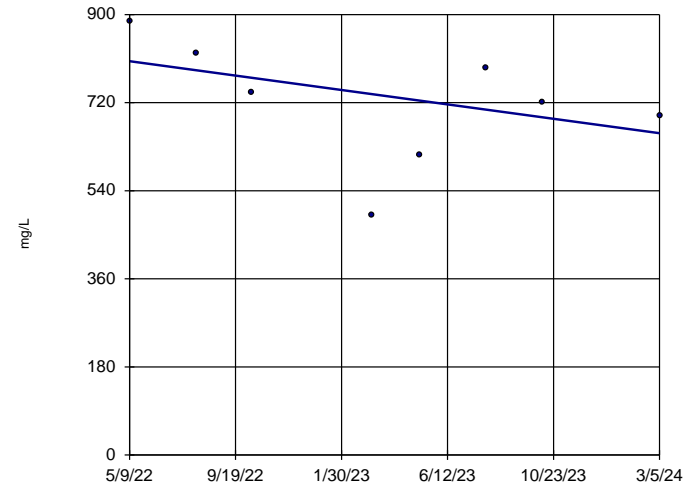


n = 8
 Slope = -60.36
 units per year.
 Mann-Kendall
 statistic = -11
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-53

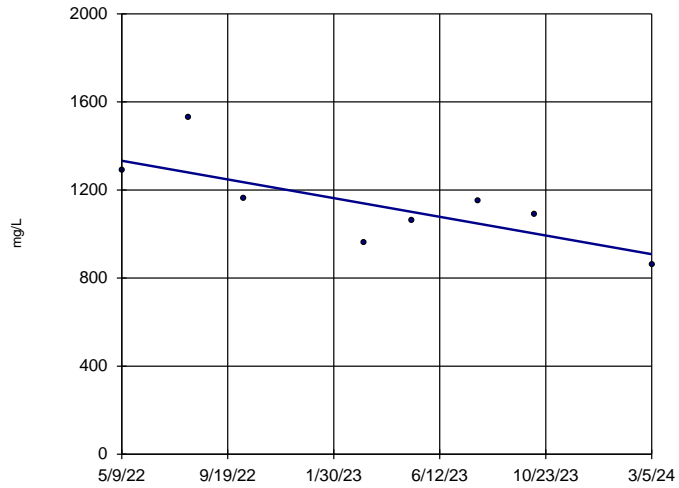


n = 8
 Slope = -80.72
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-53R

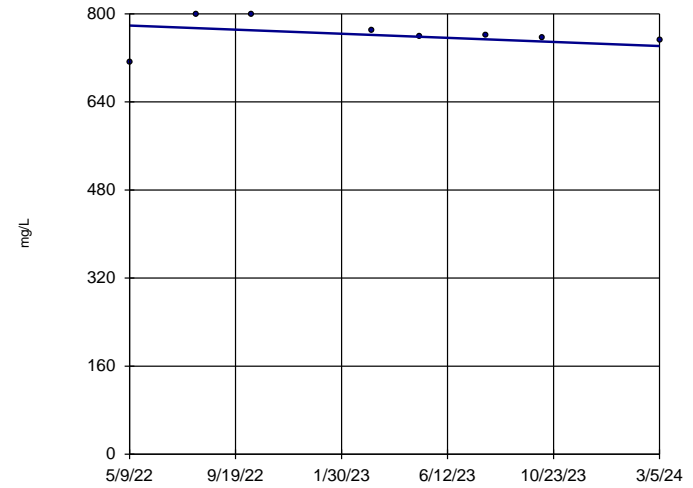


n = 8
 Slope = -232.6 units per year.
 Mann-Kendall statistic = -16
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-54R

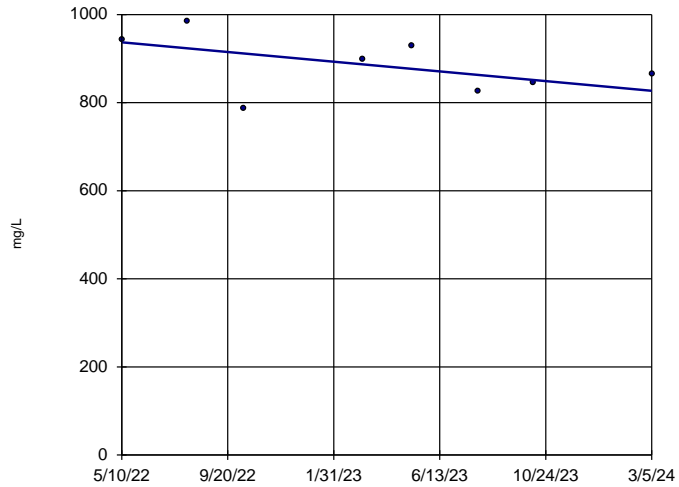


n = 8
 Slope = -20.48 units per year.
 Mann-Kendall statistic = -12
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

MW-55

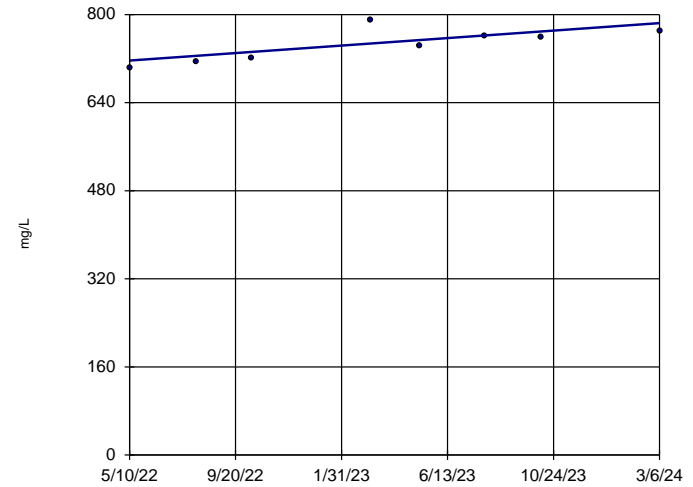


n = 8
 Slope = -60.39 units per year.
 Mann-Kendall statistic = -8
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Total Dissolved Solids

OW-57ROUT



n = 8
 Slope = 37.18 units per year.
 Mann-Kendall statistic = 18
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 4/7/2024 3:39 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Appendix D

Assessment Monitoring and GSI Statistical Evaluation

Technical Memorandum

Date: April 30, 2024

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC
Rebecca Paalanen, TRC

Project No.: 553828.0000 Phase 002, Task 002

Subject: Assessment Monitoring and GSI Statistical Evaluation of the First Quarter 2024 Sampling Event
JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018), arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standards (GWPSs). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019.

Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule¹ at the JC Weadock Power Plant Landfill and quarterly groundwater monitoring in accordance with the February 2021 Weadock Landfill Hydrogeological Monitoring Plan (HMP). The first quarter 2024 monitoring event was conducted on March 4-7, 2024. In accordance with §257.95 and the HMP, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix III and Appendix IV constituents, and additional Michigan Part 115 (as amended by PA 640) Section 11511a(3) and Section 11519b(2) constituents, are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h) and Part 115, as detailed in the April 23, 2021 Groundwater Protection Standards technical memorandum, which was also included in the First Quarter 2021 Hydrogeological Monitoring Report². In accordance with the HMP, groundwater monitoring data from the designated groundwater-surface water (GSI) monitoring wells must be also compared to the GSI criteria to determine whether or not the GSI monitoring constituents are detected at statistically significant levels above the GSI criteria.

The evaluation of the initial semiannual assessment monitoring event data (April and May 2018) indicated that arsenic was present at statistically significant levels above the GWPS at one of the three former downgradient wells. The three downgradient wells were located within a vent (e.g., opening) of the perimeter soil/bentonite slurry wall to assess the quality of groundwater passing the waste

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

² TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.

Technical Memorandum

boundary. As discussed in detail in the HMP, in July 2018, the vent in the perimeter soil/bentonite slurry wall was closed and the slurry wall is now continuous along the entire perimeter of the Weadock Landfill. As a result, the groundwater monitoring system was revised, as documented in the HMP. The monitoring well network now consists of twelve (12) downgradient monitoring wells and eight (8) GSI monitoring wells.

The statistical evaluation of the first quarter 2024 assessment monitoring event data indicates that the following constituents are present at statistically significant levels above the GWPSs in downgradient monitoring wells at the Weadock Landfill:

Constituent	GWPS	#Downgradient Wells Exceeded
Boron	560 µg/L	11 of 12
Calcium	280 mg/L	1 of 12
Sulfate	780 mg/L	1 of 12

Corrective action has been triggered as a result of data collected during the initial assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria.

Statistical Evaluation Procedures

Following each quarterly sampling event, compliance well data for the Weadock Landfill are evaluated in accordance with the Assessment Monitoring Statistical Data Evaluation and GSI Data Evaluation procedures in the HMP. The assessment monitoring and GSI monitoring programs were developed to evaluate concentrations of constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs or GSI criteria). To evaluate whether or not a criterion exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given monitoring event compared to the applicable criterion must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance³, the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the criterion. If the confidence interval straddles the criterion (i.e., the lower confidence level is below the criterion, but the upper confidence level is above), the statistical test result indicates that there is insufficient

³ USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

Technical Memorandum

confidence that the measured concentrations are different from the criterion and thus no compelling evidence that the measured concentration is a result of a release from the CCR unit versus the inherent variability of the sample data. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule and Part 115 and numerous other federal rules are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected constituent, the concentrations for each well were first compared directly to the GWPS, as shown on Table 1, or the GSI criteria, as shown on Table 2. Parameter-well combinations that included a direct exceedance of the criteria within the most recent two years of sampling events (eight quarterly sampling events, May 2022 through March 2024) were retained for further analysis.

Groundwater data were evaluated utilizing Sanitas™ statistical software. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas™ statistical program, confidence limits were used to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each parameter with a direct exceedance using a per test⁴ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas™ output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well-constituent pair;
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the assessment and GSI monitoring programs. Initially, the results were observed visually for potential outliers. No outliers were identified in the data set.

The Sanitas™ software was then used to test compliance at the downgradient monitoring wells using the confidence interval method for the most recent eight sampling events. The tests were run with a per-test significance of $\alpha = 0.01$. Non-detect data was handled in accordance with the HMP for the purposes of calculating the confidence intervals.

⁴ Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes data transformations, as appropriate.

Assessment Monitoring Statistical Evaluation

The assessment monitoring statistical evaluation is performed on the downgradient monitoring wells in accordance with the HMP. The downgradient monitoring wells include:

- JCW-MW-18001 ■ JCW-MW-18004 ■ JCW-MW-18005 ■ JCW-MW-18006
- MW-50 ■ MW-51 ■ MW-52 ■ MW-53
- MW-53R ■ MW-54R ■ MW-55 ■ OW-57R Out

The concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Constituent-well combinations that included a direct exceedance of the GWPS within the past eight monitoring events were retained for further analysis (Attachment 1). Direct comparison GWPS exceedances include the following constituent well combinations:

- Boron in MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006;
- Calcium in JCW-MW-18001 and JCW-MW-18005;
- Sulfate in JCW-MW-18001;
- Arsenic in MW-55 and JCW-MW-18006; and
- Molybdenum in MW-55.

The purpose of assessment monitoring is to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (i.e. GWPS). As detailed in the *Alternate Source Demonstration* (TRC, December 2019), the arsenic and molybdenum concentrations at MW-55 are not the result of a release from the unit; therefore, comparison of these concentrations to the GWPS is not appropriate and assessment monitoring confidence intervals were not calculated.

The software outputs for the assessment monitoring data evaluation are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 1. Visual trends were apparent in multiple wells for arsenic, boron, calcium, and sulfate. These data sets were tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend tests show that the trends for boron at MW-51, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001 are statistically significant (Attachment 1). The trends are causing the confidence intervals to widen. Calculating a confidence interval around a trending data set incorporates not only variability present naturally in the underlying dataset, but also incorporates variability due to the trend itself. Based on the observed trends, confidence bands were selected as a more appropriate assessment for boron at MW-51, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001. Confidence bands are selected by the Unified Guidance as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval.

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normal	Boron at JCW-MW-18001, JCW-MW-18006, MW-50, MW-52, MW-53, MW-54R, MW-55, and OW-57R OUT Calcium at JCW-MW-18005
Normalized by power transformation	Boron at MW-53R (squared) Arsenic at JCW-MW-18006 (squared)
Normalized by natural log transformation	Boron at JCW-MW-18005
Not Applicable – confidence bands used	Boron at MW-51 Calcium at JCW-MW-18001 Sulfate at JCW-MW-18001

The confidence bands and interval tests compare the lower confidence limit to the GWPS. Arsenic concentrations at JCW-MW-18006 were previously considered statistically significant; however, the lower confidence limit has been at or below the GWPS since the second quarter 2021. Calcium concentrations at MW-51 were previously considered statistically significant; however, calcium concentrations are generally decreasing, the lower confidence limit has been below the GWPS since the first quarter 2022, and concentrations have been below the GWPS by direct comparison since first quarter 2022. Concentration trends will continue to be monitored. Statistically significant exceedances of the GWPS were noted for boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001. Boron concentrations have been consistently above the GWPS since monitoring under the Weadock Landfill HMP began in first quarter 2021. Calcium at JCW-MW-18001 was a confirmed GWPS exceedance in first quarter 2023 resulting from increases in calcium concentration since first quarter 2021. Sulfate at JCW-MW-18001 was a confirmed GWPS exceedance in second quarter 2023 resulting from increases in sulfate concentrations. As noted in the Alternate Source Demonstration (Fourth Quarter 2023 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2024), multiple lines of evidence indicate that the increase in sulfate concentration is not a result of a change in flux from the landfill and is instead the result of changing groundwater conditions outside the slurry wall. Corrective action has been triggered for the site as a result of data collected during the initial May 2018 assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

Technical Memorandum

GSI Statistical Evaluation

Eight monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the GSI monitoring program to meet the requirements of Part 31:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

The concentrations from each well were first compared directly to the GSI criteria, as shown on Table 2. Constituent-well combinations that included a direct exceedance of the GSI criteria within the past eight monitoring events were retained for further analysis (Attachment 2). Direct comparison GSI criteria exceedances include the following constituent well combinations:

- Arsenic in MW-55

The purpose of the GSI statistical evaluation is to assess compliance with the GSI pathway. Although the *Alternate Source Demonstration* supports that the arsenic concentrations at MW-55 are not the result of a release from the unit, these concentrations still affect compliance with the GSI pathway. Therefore, it is appropriate to calculate confidence limits for arsenic at MW-55 for comparison to the GSI criteria.

The software outputs for the assessment monitoring data evaluation are included in Attachment 2 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 2.

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normalized by power transformation	Arsenic at MW-55 (square root)

The confidence interval tests compare the lower confidence limit to the GSI. The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria. Arsenic concentrations at MW-55 were previously considered statistically significant; however, the arsenic concentrations decreased in 2022 and 2023. The lower confidence limits for arsenic continued to be below the GWPS in first quarter 2024.

Attachments

- Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
- Table 2 Comparison of Groundwater Sampling Results to GSI

- Attachment 1 Assessment Monitoring Sanitas™ Output Files
- Attachment 2 GSI Evaluation Sanitas™ Output Files

Tables

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-50															
Sample Date:			5/9/2022	5/9/2022	8/1/2022	8/1/2022	10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024
Constituent	Unit	GWPS																
Appendix III⁽¹⁾																		
Boron	ug/L	560	1,360	Field Dup 1,440	1,290	Field Dup 1,290	1,730	Field Dup 1,670	2,020	Field Dup 2,080	1,720	Field Dup 1,720	1,720	Field Dup 1,690	2,070	Field Dup 2,060	2,170	Field Dup 2,140
Calcium	mg/L	280	169	175	161	164	186	181	152	--	142	144	188	187	205	206	199	196
Chloride	mg/L	2,300	53.3	51.6	54.2	54.9	47.7	47.6	35.9	36.7	31.5	31.9	37.4	39.1	37.6	37	40.1	38.6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	285	286	324	325	376	376	341	315	314	316	392	385	470	472	449	448
Total Dissolved Solids	mg/L	4,700	1,020	1,050	1,080	1,040	1,120	1,150	939	984	878	880	1,100	1,110	1,170	1,190	1,180	1,190
pH, Field	SU	6.5 - 8.5	7.2	--	7.0	--	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--
Appendix IV⁽¹⁾																		
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	1	1	2	2	3	3	2	2	2	3	3	3	3	3	3	3
Barium	ug/L	2,000	86	86	90	94	106	108	89	92	114	87	114	113	135	136	187	179
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	1	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	69	66	64	61	62	62	65	65	55	54	58	59	59	59	69	68
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	6	6	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6
Radium-226	pCi/L	NA	< 0.310	< 0.287	--	--	0.158	0.343	--	--	0.155	0.144	--	--	0.291	0.32	--	--
Radium-228	pCi/L	NA	< 0.493	0.648	--	--	1.14	1.37	--	--	0.686	< 0.606	--	--	1.15	1.46	--	--
Radium-226/228	pCi/L	5.0	0.518	0.904	--	--	1.30	1.72	--	--	0.841	0.633	--	--	1.44	1.78	--	--
Selenium	ug/L	50	2	2	2	2	2	2	1	1	1	2	1	1	< 1	2	3	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																		
Iron	ug/L	28,000	723	737	1,830	1,850	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930
Copper	ug/L	1,000	1	1	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1	2	2	1	1	1	1
Nickel	ug/L	100	< 2	6	6	7	4	7	< 2	< 2	3	< 2	2	< 2	< 2	2	8	8
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-51							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,350	1,270	1,490	1,320	1,230	1,180	1,170	935
Calcium	mg/L	280	247	211	211	169	166	162	132	132
Chloride	mg/L	2,300	92.8	102	101	98.4	99.9	97	91.6	78.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	420	404	394	360	356	308	267	266
Total Dissolved Solids	mg/L	4,700	1,510	1,450	1,380	1,180	1,240	1,100	952	902
pH, Field	SU	6.5 - 8.5	7.2	7.0	7.2	7.2	7.3	7.4	7.2	7.4
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	10	15	18	10	8	10	18	10
Barium	ug/L	2,000	150	169	188	178	180	141	141	127
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	1	< 1	< 1	< 1	< 1	2	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	56	53	50	46	40	40	34	31
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.423	--	< 0.397	--	0.143	--	0.285	--
Radium-228	pCi/L	NA	< 0.494	--	2.19	--	1.01	--	1.23	--
Radium-226/228	pCi/L	5.0	0.576	--	2.51	--	1.15	--	1.52	--
Selenium	ug/L	50	2	2	1	2	1	< 1	< 1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,210	1,860	2,880	514	450	1,290	1,660	446
Copper	ug/L	1,000	2	< 1	1	< 1	1	3	2	1
Nickel	ug/L	100	< 2	6	4	< 2	3	4	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-52							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,090	1,070	1,330	1,040	993	1,030	1,140	945
Calcium	mg/L	280	231	222	224	228	217	247	234	237
Chloride	mg/L	2,300	50.5	45.1	40.4	36.3	32.4	31.5	30.2	33.8
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	591	663	603	581	581	569	572	540
Total Dissolved Solids	mg/L	4,700	1,490	1,580	1,670	1,430	1,430	1,520	1,440	1,380
pH, Field	SU	6.5 - 8.5	7.0	6.7	6.9	6.8	6.9	6.6	6.8	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	107	118	122	102	95	99	108	94
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	1	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	25	29	26	27	23	27	27	27
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.489	--	0.205	--	< 0.128	--	0.444	--
Radium-228	pCi/L	NA	< 0.532	--	< 0.694	--	< 0.594	--	1.64	--
Radium-226/228	pCi/L	5.0	0.875	--	0.805	--	< 0.594	--	2.08	--
Selenium	ug/L	50	2	2	2	1	< 1	< 1	< 1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	2,030	5,020	6,340	2,820	2,720	6,720	7,560	3,120
Copper	ug/L	1,000	2	2	2	1	1	2	1	2
Nickel	ug/L	100	< 2	5	3	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	3,880	4,300	4,140	2,150	2,620	4,370	5,530	5,740
Calcium	mg/L	280	147	116	108	82.5	104	146	136	134
Chloride	mg/L	2,300	50.9	66.5	53	24.8	56.5	80.3	77.4	77.4
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	215	119	126	93.6	50.8	7.39	2.28	25.4
Total Dissolved Solids	mg/L	4,700	886	820	740	489	613	792	722	694
pH, Field	SU	6.5 - 8.5	7.3	7.1	7.3	7.3	7.4	7.1	7.3	7.5
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	1	2	< 1	< 1	1	1	1
Barium	ug/L	2,000	356	313	285	202	272	692	719	654
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	41	42	38	33	34	44	42	50
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	7	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.406	--	0.269	--	0.198	--	0.679	--
Radium-228	pCi/L	NA	< 0.518	--	1.15	--	< 0.518	--	1.72	--
Radium-226/228	pCi/L	5.0	0.824	--	1.42	--	0.700	--	2.400	--
Selenium	ug/L	50	1	3	1	1	2	2	2	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,060	1,240	1,140	403	569	1,390	1,080	947
Copper	ug/L	1,000	1	< 1	< 1	< 1	< 1	< 1	< 1	1
Nickel	ug/L	100	< 2	4	2	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53R							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,830	1,560	2,340	2,330	2,140	2,190	2,420	2,300
Calcium	mg/L	280	226	219	203	195	202	220	206	173
Chloride	mg/L	2,300	41.6	50.4	39.2	27.2	30	34.6	35.5	34.7
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	314	533	250	101	185	217	221	53.2
Total Dissolved Solids	mg/L	4,700	1,290	1,530	1,160	960	1,060	1,150	1,090	862
pH, Field	SU	6.5 - 8.5	6.9	6.7	6.8	6.7	6.8	6.7	7.0	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	8	17	20	17	14	17	16	9
Barium	ug/L	2,000	147	97	118	179	174	144	110	165
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	1	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	61	70	63	59	56	62	61	56
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.325	--	0.239	--	0.275	--	0.174	--
Radium-228	pCi/L	NA	< 0.480	--	0.967	--	0.490	--	0.968	--
Radium-226/228	pCi/L	5.0	< 0.480	--	1.21	--	0.765	--	1.14	--
Selenium	ug/L	50	2	2	2	1	1	2	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	460	1,030	702	1,580	1,410	1,180	834	752
Copper	ug/L	1,000	2	2	1	1	1	1	1	2
Nickel	ug/L	100	< 2	5	3	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-54R							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	4,110	4,970	5,310	5,660	5,240	6,170	5,520	5,940
Calcium	mg/L	280	169	158	160	168	163	162	165	170
Chloride	mg/L	2,300	35.8	43.9	47.4	49.6	46.5	48.5	45	61.7
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	86.3	72.1	70.9	62	67.2	73.8	67.4	48.6
Total Dissolved Solids	mg/L	4,700	712	800	799	770	759	761	756	752
pH, Field	SU	6.5 - 8.5	7.0	6.9	6.9	6.8	6.9	6.8	7.0	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	2	2	1	< 1	< 1	1	1
Barium	ug/L	2,000	111	109	123	126	98	106	113	97
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	2	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	64	74	74	71	65	75	70	76
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	9	10	12	15	13	15	17	15
Radium-226	pCi/L	NA	< 0.347	--	0.208	--	< 0.141	--	0.16	--
Radium-228	pCi/L	NA	< 0.552	--	1.31	--	< 0.836	--	1.38	--
Radium-226/228	pCi/L	5.0	< 0.552	--	1.52	--	< 0.836	--	1.54	--
Selenium	ug/L	50	2	1	2	1	1	1	1	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	121	367	1,090	262	74	111	829	159
Copper	ug/L	1,000	1	1	1	2	1	6	2	2
Nickel	ug/L	100	< 2	2	< 2	< 2	< 2	< 2	2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-55								
Sample Date:			5/10/2022	8/1/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS			Field Dup						
Appendix III⁽¹⁾											
Boron	ug/L	560	642	709	687	976	1,110	1,140	1,290	1,200	825
Calcium	mg/L	280	177	159	165	141	162	165	150	163	166
Chloride	mg/L	2,300	11.8	11.8	11.8	12.5	24.2	16.9	18.5	16.7	18.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	249	248	245	108	94.6	208	129	156	224
Total Dissolved Solids	mg/L	4,700	942	930	1,040	786	898	929	827	846	866
pH, Field	SU	6.5 - 8.5	7.0	6.9	--	7.0	6.8	6.9	6.9	7.0	6.9
Appendix IV⁽¹⁾											
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	48	80	78	126	68	44	75	75	46
Barium	ug/L	2,000	222	232	231	223	287	267	240	248	260
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	24	29	28	30	27	24	27	26	26
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	78	80	78	91	50	30	33	56	27
Radium-226	pCi/L	NA	< 0.478	--	--	0.365	--	0.276	--	0.406	--
Radium-228	pCi/L	NA	< 0.646	--	--	0.966	--	< 0.916	--	1.26	--
Radium-226/228	pCi/L	5.0	0.696	--	--	1.33	--	< 0.916	--	1.67	--
Selenium	ug/L	50	3	3	4	< 1	3	< 1	1	1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾											
Iron	ug/L	28,000	15,000	18,000	16,600	22,100	24,800	21,600	21,900	16,800	18,700
Copper	ug/L	1,000	1	< 1	1	1	< 1	< 1	< 1	< 1	1
Nickel	ug/L	100	3	6	6	4	4	5	22	3	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			OW-57R OUT							
Sample Date:			5/10/2022	8/2/2022	10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,990	1,570	1,830	1,860	1,740	1,750	1,790	1,810
Calcium	mg/L	280	131	113	114	116	117	124	120	123
Chloride	mg/L	2,300	57.3	52.0	47.6	59	64.2	53.7	50.6	68.1
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230
Sulfate	mg/L	780	69.4	85.0	86.8	79.7	80.5	79	94.8	79.3
Total Dissolved Solids	mg/L	4,700	702	714	722	790	743	762	758	770
pH, Field	SU	6.5 - 8.5	7.1	6.8	6.9	6.9	7.1	6.9	7.0	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Barium	ug/L	2,000	79	67	75	75	72	72	77	81
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	2	1	< 1	4	< 1	< 1	< 1	2
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	27	23	22	26	23	24	23	28
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	7	7	8	6	6	6	7	6
Radium-226	pCi/L	NA	< 0.440	--	0.199	--	0.149	--	< 0.155	--
Radium-228	pCi/L	NA	< 0.539	--	< 0.711	--	< 0.663	--	0.586	--
Radium-226/228	pCi/L	5.0	< 0.539	--	0.870	--	< 0.663	--	0.680	--
Selenium	ug/L	50	3	1	2	2	2	1	< 1	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	74	37	42	53	78	30	40	44
Copper	ug/L	1,000	2	1	2	1	1	1	2	2
Nickel	ug/L	100	14	17	16	15	15	13	15	12
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18001							
Sample Date:			5/9/2022	8/1/2022	10/10/2022	3/8/2023	5/8/2023	7/26/2023	10/5/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,560	1,470	1,790	1,440	1,380	1,470	1,620	1,420
Calcium	mg/L	280	335	389	465	486	496	555	562	557
Chloride	mg/L	2,300	58.8	64.6	63.6	54.2	51.1	58.9	51.1	44.7
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	752	1,180	1,400	1,640	1,670	1,770	1,890	1,880
Total Dissolved Solids	mg/L	4,700	1,970	2,580	3,020	3,030	1,580	3,530	3,430	3,450
pH, Field	SU	6.5 - 8.5	7.0	6.6	6.8	6.7	6.7	6.8	6.5	6.8
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Barium	ug/L	2,000	80	61	66	47	50	49	48	49
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	2	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	76	95	97	91	83	102	110	106
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.327	--	< 0.142	--	< 0.122	--	< 0.139	--
Radium-228	pCi/L	NA	0.494	--	0.852	--	< 0.547	--	0.783	--
Radium-226/228	pCi/L	5.0	0.586	--	0.893	--	< 0.547	--	0.886	--
Selenium	ug/L	50	2	3	1	2	2	2	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	210	196	818	830	1,180	2,790	3,840	3,570
Copper	ug/L	1,000	3	2	3	2	3	2	2	3
Nickel	ug/L	100	8	14	15	< 2	< 2	41	3	14
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	2	< 2	3
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18004							
Sample Date:			5/10/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	226	313	343	180	227	310	319	192
Calcium	mg/L	280	235	215	193	221	265	229	218	238
Chloride	mg/L	2,300	10.8	12.5	11.4	12.7	16.8	14.2	15.8	16.9
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	512	512	428	533	722	478	466	557
Total Dissolved Solids	mg/L	4,700	1,290	1,290	1,130	1,250	1,530	1,220	1,160	1,250
pH, Field	SU	6.5 - 8.5	6.8	6.7	6.8	6.8	6.8	6.8	7.0	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	26	31	37	24	28	30	34	26
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	42	51	46	39	42	50	49	43
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.417	--	< 0.135	--	< 0.131	--	< 0.155	--
Radium-228	pCi/L	NA	0.790	--	< 0.742	--	< 0.600	--	1.24	--
Radium-226/228	pCi/L	5.0	0.910	--	< 0.742	--	< 0.600	--	1.3	--
Selenium	ug/L	50	2	1	1	11	2	2	< 1	4
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	< 20	45	< 20	46	67	24	36	98
Copper	ug/L	1,000	2	2	2	1	2	2	2	2
Nickel	ug/L	100	< 2	2	5	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18005							
Sample Date:			5/10/2022	8/2/2022	10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,010	981	1,290	930	992	1,170	1,470	1,000
Calcium	mg/L	280	280	165	150	262	258	202	159	335
Chloride	mg/L	2,300	32.6	50.9	53.9	25.4	22.3	44.1	48.1	23.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	437	213	160	435	422	216	154	512
Total Dissolved Solids	mg/L	4,700	1,330	967	868	1,250	1,190	1,000	884	1400
pH, Field	SU	6.5 - 8.5	6.8	6.7	6.8	6.6	6.8	6.8	6.9	6.7
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	5	4	5	4	2	< 1	1	3
Barium	ug/L	2,000	110	71	80	115	105	76	74	136
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	33	32	32	36	33	33	32	43
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	< 5	5	6	5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.414	--	0.193	--	0.134	--	0.221	--
Radium-228	pCi/L	NA	< 0.521	--	< 0.800	--	< 0.573	--	1.17	--
Radium-226/228	pCi/L	5.0	0.622	--	< 0.800	--	< 0.573	--	1.39	--
Selenium	ug/L	50	2	< 1	2	3	2	2	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,680	2,810	3,220	1,720	676	171	948	4,020
Copper	ug/L	1,000	2	< 1	< 1	1	< 1	2	1	7
Nickel	ug/L	100	< 2	9	11	< 2	9	8	9	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18006														
Sample Date:			5/9/2022	5/9/2022	8/2/2022	10/11/2022	10/11/2022	3/9/2023	3/9/2023	5/9/2023	5/9/2023	7/31/2023	7/31/2023	10/9/2023	10/9/2023	3/6/2024	3/6/2024
Constituent	Unit	GWPS		Field Dup			Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																	
Boron	ug/L	560	2,990	3,030	2,260	2,720	2,650	1,730	1,760	2,450	2,480	2,100	2,140	2,280	2,470	2,650	2,700
Calcium	mg/L	280	136	136	109	118	119	121	121	118	120	126	126	117	119	137	136
Chloride	mg/L	2,300	67.3	67.7	79.0	74.2	74.7	79.9	82.8	73.6	76.6	73	75.9	72.3	71.1	61.3	64.7
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	32.8	34.0	14.9	21.6	23.0	32.5	33.9	34.2	36.1	39.4	37.9	46.9	47.6	69.7	71.6
Total Dissolved Solids	mg/L	4,700	788	772	709	720	746	715	753	734	751	765	770	738	748	748	776
pH, Field	SU	6.5 - 8.5	7.0	--	6.7	6.9	--	6.9	--	7.0	--	6.9	--	7.0	--	7.0	--
Appendix IV⁽¹⁾																	
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	22	23	21	25	25	5	5	23	23	18	19	17	18	22	23
Barium	ug/L	2,000	514	509	452	480	499	232	238	464	465	354	346	342	381	445	464
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	56	57	52	52	52	21	23	45	47	36	36	37	39	52	54
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.416	--	--	0.516	0.259	--	--	0.337	< 0.192	--	--	0.506	0.431	--	--
Radium-228	pCi/L	NA	< 0.518	--	--	< 0.609	0.869	--	--	0.746	< 0.816	--	--	0.783	1.39	--	--
Radium-226/228	pCi/L	5.0	0.690	--	--	0.999	1.13	--	--	1.08	< 0.816	--	--	1.29	1.82	--	--
Selenium	ug/L	50	< 1	1	< 1	1	1	2	2	1	2	2	2	< 1	1	3	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																	
Iron	ug/L	28,000	6,600	6,360	7,670	7,620	7,630	2,930	2,910	6,890	7,210	6,910	6,860	5,660	5,930	7,970	7,890
Copper	ug/L	1,000	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	2	2
Nickel	ug/L	100	< 2	< 2	5	5	6	< 2	< 2	4	< 2	< 2	< 2	< 2	3	5	9
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	3	3	3	3	4	< 2	2	2	3	3	3	2	2	4	4
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-50																
Sample Date:						5/9/2022	5/9/2022	8/1/2022	8/1/2022	10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup	
Appendix III⁽¹⁾																						
Boron	ug/L	4,000	44,000	69,000	44,000	1,360	1,440	1,290	1,290	1,730	1,670	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	285	286	324	325	376	376	341	315	314	316	392	385	470	472	449	448	
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.2	--	7.0	--	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	
Appendix IV⁽¹⁾																						
Arsenic	ug/L	10	100	680	100	1	1	2	2	3	3	2	2	2	2	3	3	3	3	3	3	
Chromium	ug/L	11 ^H	NC	NC	11	1	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	
Lithium	ug/L	440	NC	NC	440	69	66	64	61	62	62	65	65	55	54	58	59	59	59	69	68	
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	6	6	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	
Selenium	ug/L	5.0	55	120	55	2	2	2	2	2	2	1	1	1	2	1	1	< 1	2	3	3	
MI Part 115 Parameters⁽²⁾																						
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	723	737	1,830	1,850	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930	
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 NC - no criteria.
 -- - not analyzed.
[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).
^{*} - Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.
^{**} - GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.
^F - Criterion is the Final Acute Value (FAV).
^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).
^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).
Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-51							
Sample Date:						5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,350	1,270	1,490	1,320	1,230	1,180	1,170	935
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	420	404	394	360	356	308	267	266
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.2	7.0	7.2	7.2	7.3	7.4	7.2	7.4
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	10	15	18	10	8	10	18	10
Chromium	ug/L	11 ^H	NC	NC	11	1	< 1	< 1	< 1	< 1	2	< 1	1
Lithium	ug/L	440	NC	NC	440	56	53	50	46	40	40	34	31
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	2	1	2	1	< 1	< 1	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,210	1,860	2,880	514	450	1,290	1,660	446
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
Comparison of Groundwater Sampling Results to GSI
JC Weadock Landfill – Hydrogeological Monitoring Program
Essexville, Michigan

Sample Location:						MW-52							
Sample Date:						5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,090	1,070	1,330	1,040	993	1,030	1,140	945
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	591	663	603	581	581	569	572	540
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	6.7	6.9	6.8	6.9	6.6	6.8	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	1	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	440	NC	NC	440	25	29	26	27	23	27	27	27
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	2	2	1	< 1	< 1	< 1	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	2,030	5,020	6,340	2,820	2,720	6,720	7,560	3,120
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53							
Sample Date:						5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	3,880	4,300	4,140	2,150	2,620	4,370	5,530	5,740
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	215	119	126	93.6	50.8	7.39	2.28	25.4
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.3	7.1	7.3	7.3	7.4	7.1	7.3	7.5
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	1	2	< 1	< 1	1	1	1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	440	NC	NC	440	41	42	38	33	34	44	42	50
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	7	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	3	1	1	2	2	2	3
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,060	1,240	1,140	403	569	1,390	1,080	947
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53R							
Sample Date:						5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,830	1,560	2,340	2,330	2,140	2,190	2,420	2,300
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	314	533	250	101	185	217	221	53.2
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.9	6.7	6.8	6.7	6.8	6.7	7.0	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	8	17	20	17	14	17	16	9
Chromium	ug/L	11 ^H	NC	NC	11	1	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	440	NC	NC	440	61	70	63	59	56	62	61	56
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	2	2	1	1	2	1	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	460	1,030	702	1,580	1,410	1,180	834	752
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP. All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-54R							
Sample Date:						5/9/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	4,110	4,970	5,310	5,660	5,240	6,170	5,520	5,940
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	86.3	72.1	70.9	62	67.2	73.8	67.4	48.6
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	6.9	6.9	6.8	6.9	6.8	7.0	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	2	2	1	< 1	< 1	1	1
Chromium	ug/L	11 ^H	NC	NC	11	2	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	440	NC	NC	440	64	74	74	71	65	75	70	76
Molybdenum	ug/L	120	NC	NC	120	9	10	12	15	13	15	17	15
Selenium	ug/L	5.0	55	120	55	2	1	2	1	1	1	1	3
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	121	367	1,090	262	74	111	829	159
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-55								
Sample Date:						5/10/2022	8/1/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI ^A	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**			Field Dup						
Appendix III⁽¹⁾														
Boron	ug/L	4,000	44,000	69,000	44,000	642	709	687	976	1,110	1,140	1,290	1,200	825
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	249	248	245	108	94.6	208	129	156	224
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	6.9	--	7.0	6.8	6.9	6.9	7.0	6.9
Appendix IV⁽¹⁾														
Arsenic	ug/L	10	100	680	100	48	80	78	126	68	44	75	75	46
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	24	29	28	30	27	24	27	26	26
Molybdenum	ug/L	120	NC	NC	120	78	80	78	91	50	30	33	56	27
Selenium	ug/L	5.0	55	120	55	3	3	4	< 1	3	< 1	1	1	1
MI Part 115 Parameters⁽²⁾														
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	15,000	18,000	16,600	22,100	24,800	21,600	21,900	16,800	18,700
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

^A - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						JCW-MW-18004							
Sample Date:						5/10/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	226	313	343	180	227	310	319	192
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	512	512	428	533	722	478	466	557
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.7	6.8	6.8	6.8	6.8	7.0	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	440	NC	NC	440	42	51	46	39	42	50	49	43
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	1	1	11	2	2	< 1	4
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	< 20	45	< 20	46	67	24	36	98
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

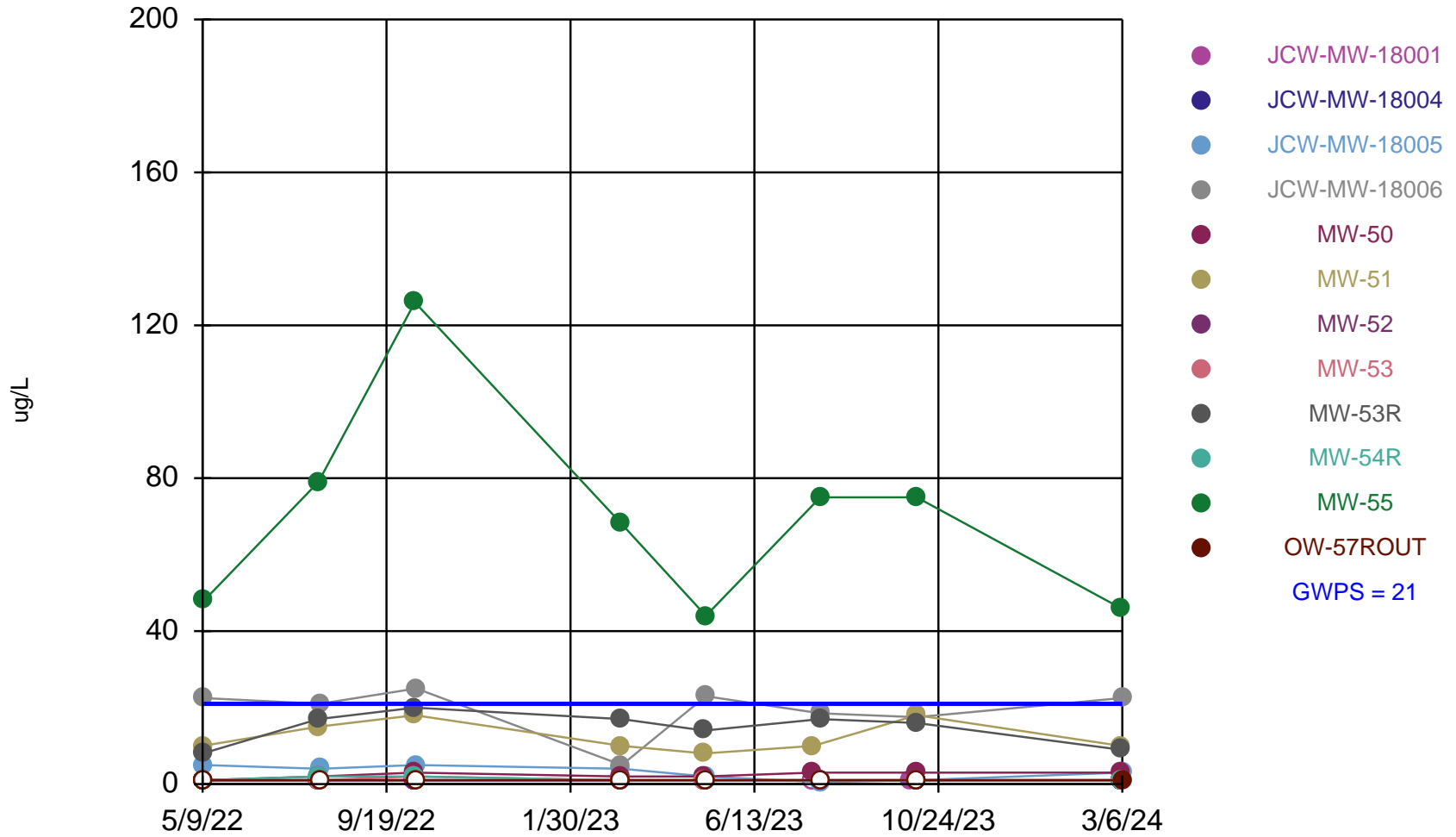
All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

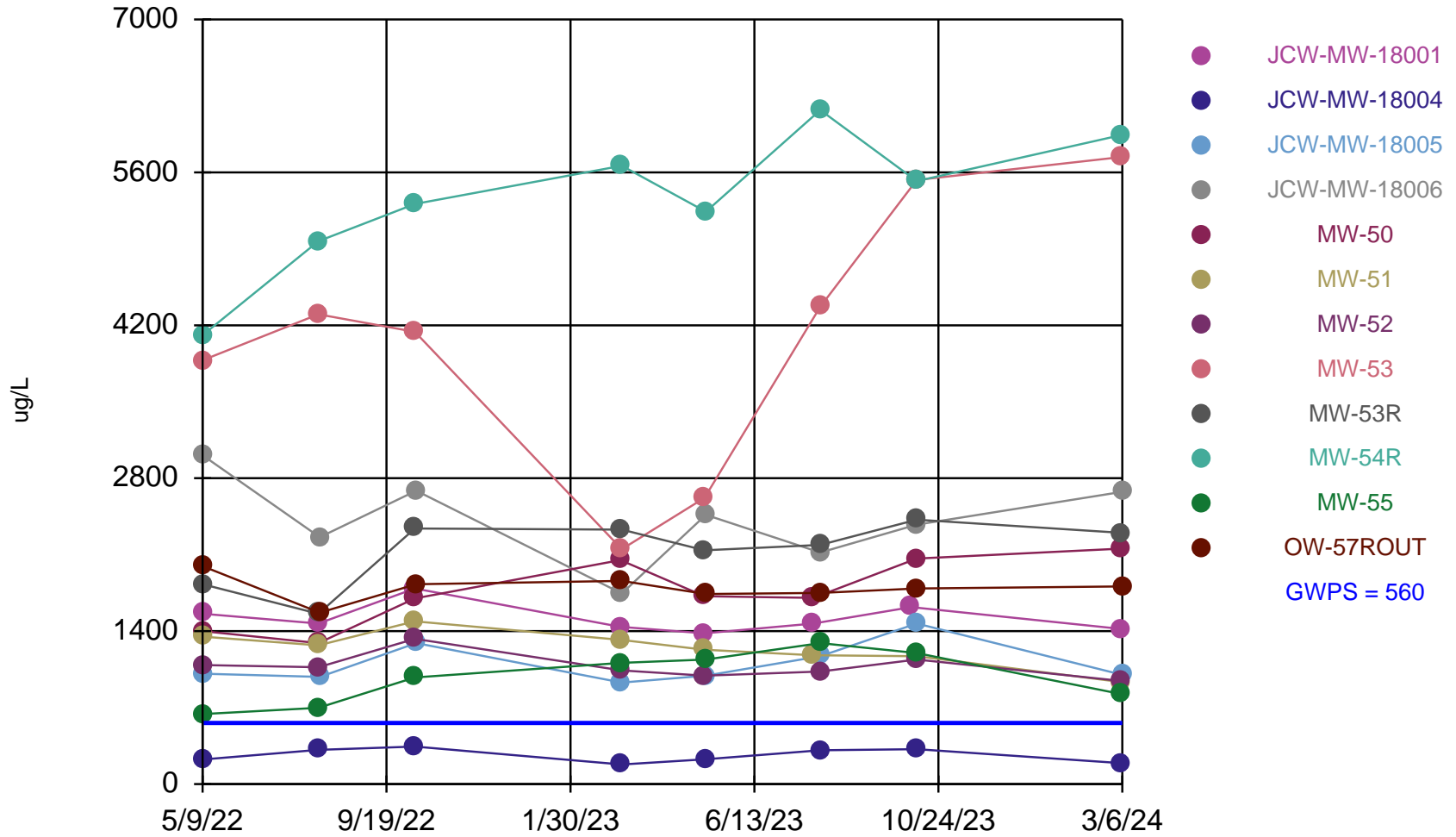
Attachment 1
Assessment Monitoring Sanitas™ Output Files

Arsenic Comparison to GWPS



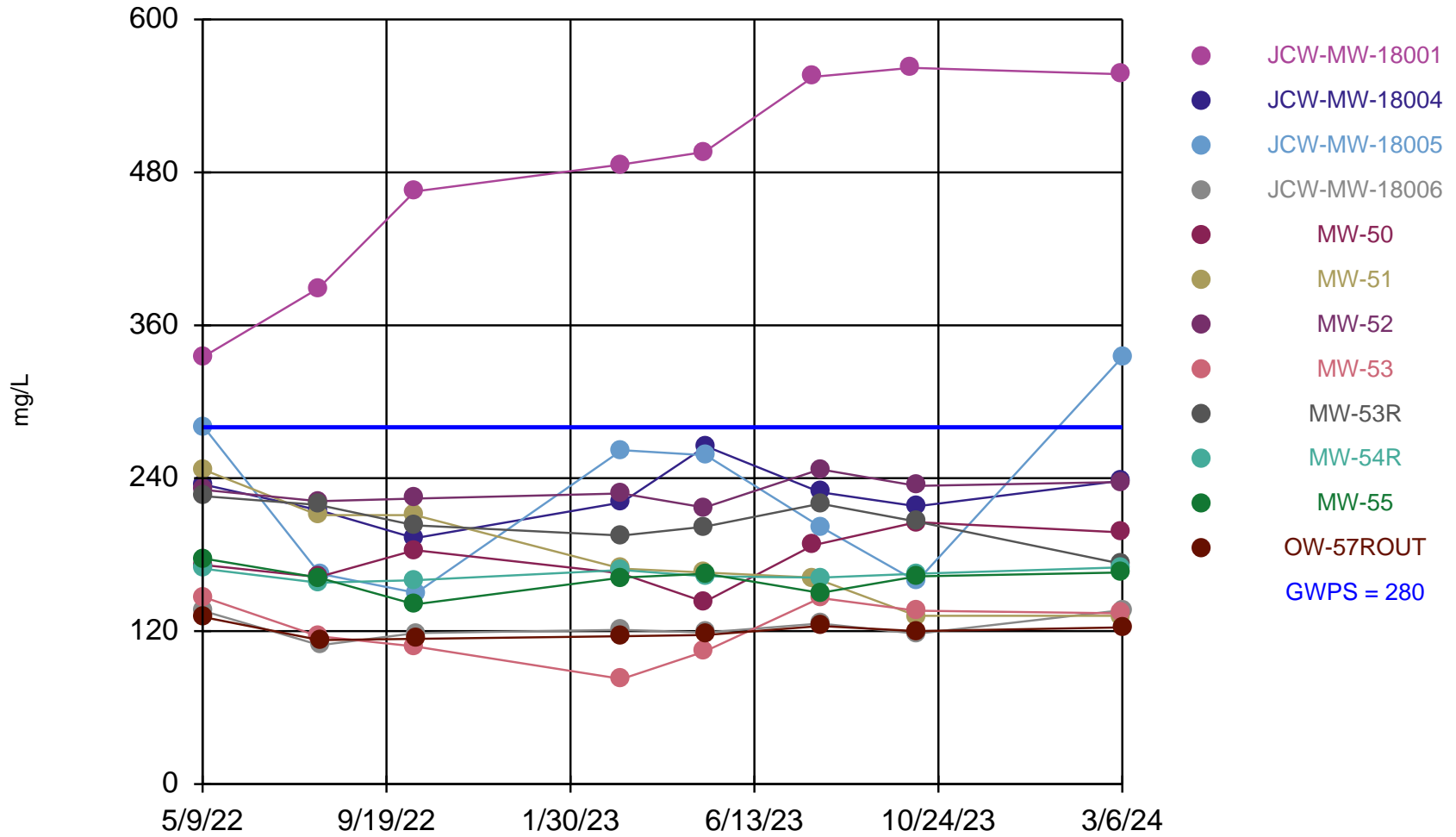
Time Series Analysis Run 4/7/2024 8:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Boron Comparison to GWPS



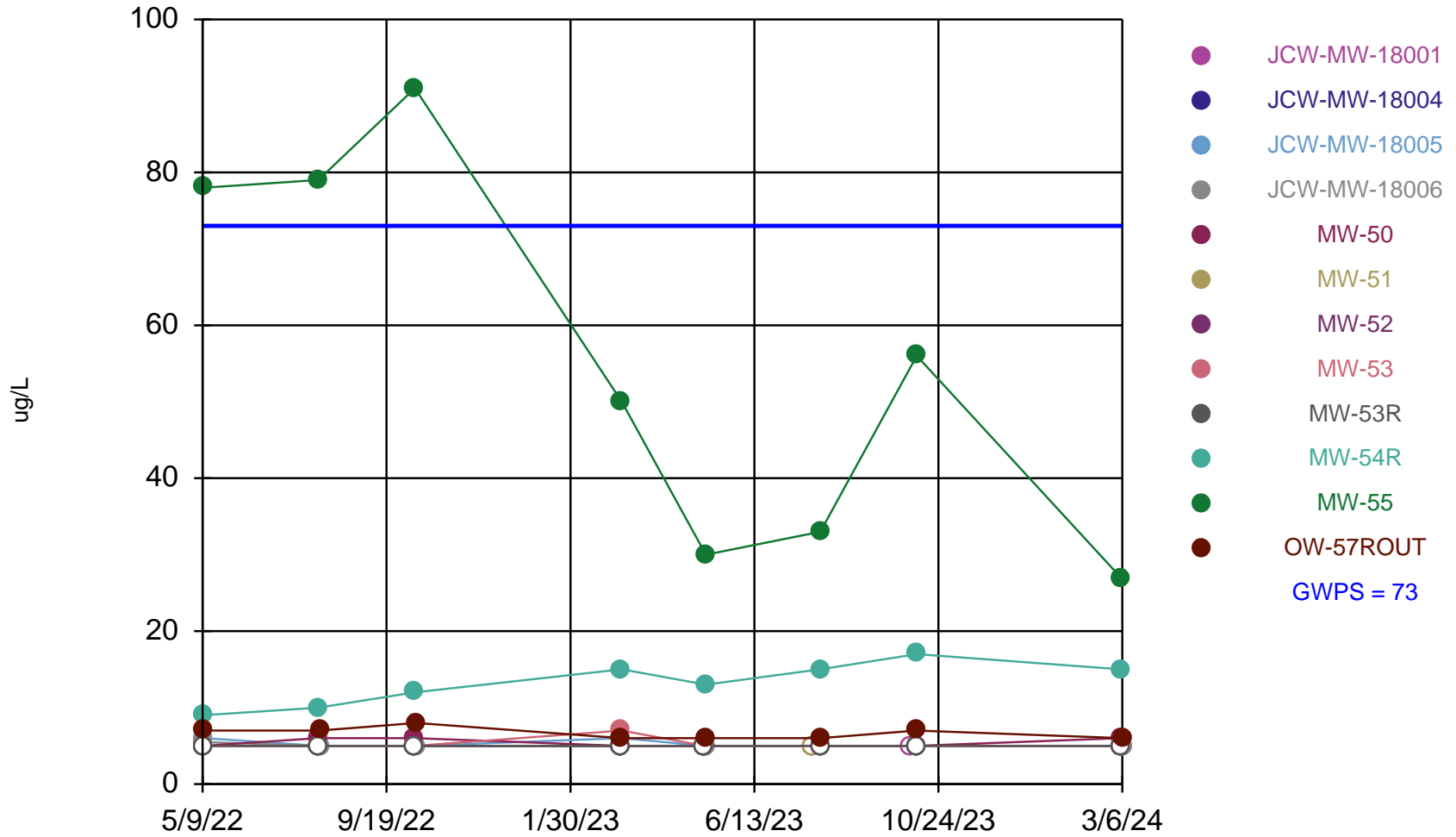
Time Series Analysis Run 4/7/2024 8:59 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Calcium Comparison to GWPS



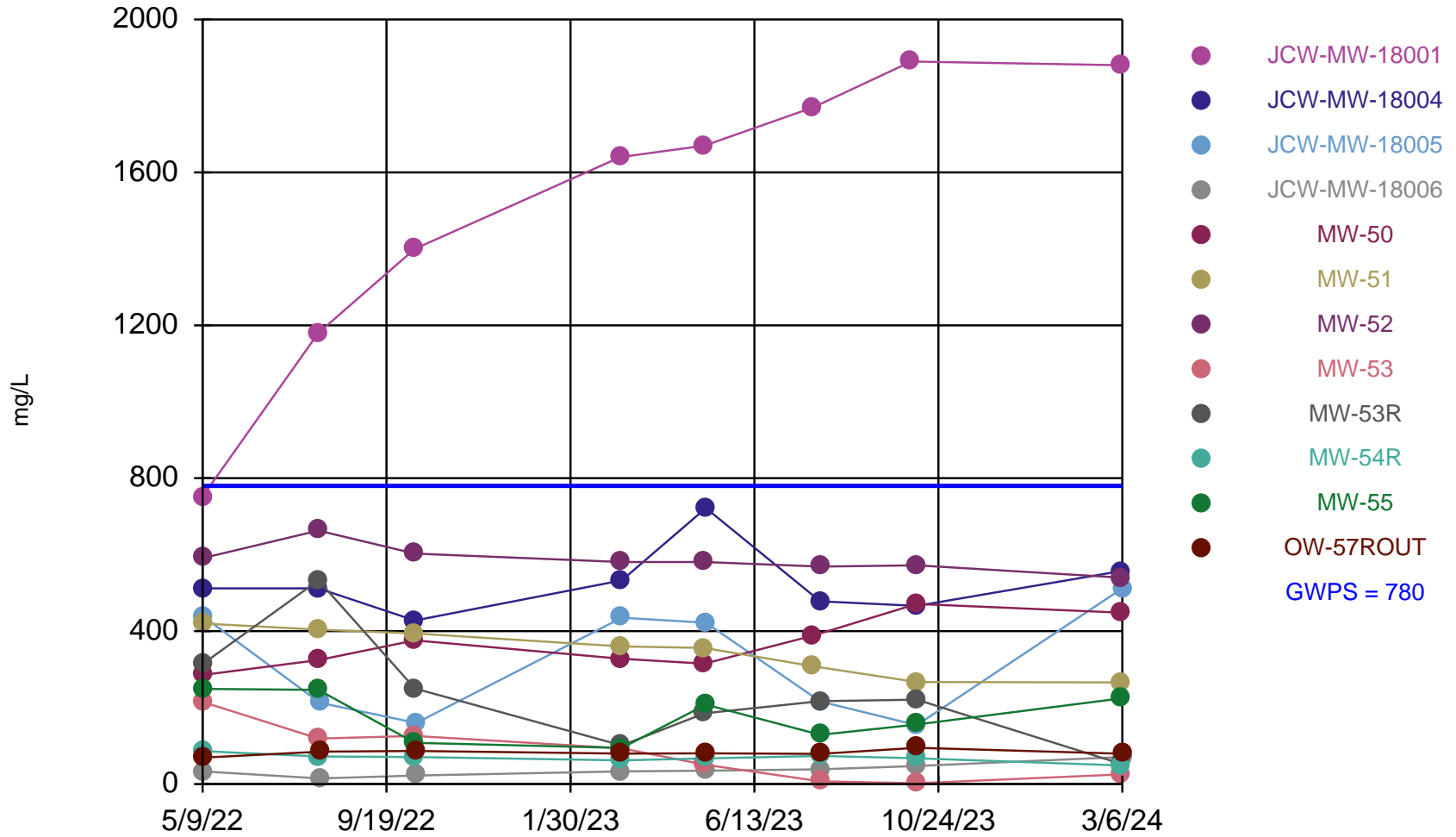
Time Series Analysis Run 4/7/2024 9:01 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Molybdenum Comparison to GWPS



Time Series Analysis Run 4/7/2024 9:05 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Sulfate Comparison to GWPS



Time Series Analysis Run 4/7/2024 9:07 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Summary Report

Constituent: Arsenic, Total Analysis Run 4/7/2024 9:11 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

Observations = 96
 NDs = 38%
 Wells = 12
 Minimum Value = 0.5
 Maximum Value = 126
 Mean Value = 10.7
 Median Value = 1.5
 Standard Deviation = 20.53
 Coefficient of Variation = 1.918
 Skewness = 3.259

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	87%	1	1	1	1	0	0	NaN
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
JCW-MW-18005	8	12%	0.5	5	3.063	3.5	1.741	0.5685	-0.3069
JCW-MW-18006	8	0%	5	25	19.38	21.75	6.301	0.3252	-1.641
MW-50	8	0%	1	3	2.375	2.5	0.744	0.3133	-0.6605
MW-51	8	0%	8	18	12.38	10	3.998	0.3231	0.5658
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	37%	1	2	1.125	1	0.3536	0.3143	2.268
MW-53R	8	0%	8	20	14.75	16.5	4.2	0.2848	-0.6538
MW-54R	8	37%	1	2	1.25	1	0.4629	0.3703	1.155
MW-55	8	0%	44	126	70.13	71.5	26.74	0.3814	1.059
OW-57ROUT	8	87%	1	1	1	1	0	0	NaN

Summary Report

Constituent: Boron, Total Analysis Run 4/7/2024 9:11 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 180
 Maximum Value = 6170
 Mean Value = 1980
 Median Value = 1560
 Standard Deviation = 1441
 Coefficient of Variation = 0.7275
 Skewness = 1.466

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1380	1790	1519	1470	133.9	0.08816	1.063
JCW-MW-18004	8	0%	180	343	263.8	268.5	64.18	0.2433	-0.1013
JCW-MW-18005	8	0%	930	1470	1105	1005	189.2	0.1711	0.9978
JCW-MW-18006	8	0%	1745	3010	2417	2420	388.9	0.1609	-0.2289
MW-50	8	0%	1290	2155	1761	1713	314.4	0.1786	-0.1859
MW-51	8	0%	935	1490	1243	1250	161.9	0.1302	-0.4737
MW-52	8	0%	945	1330	1080	1055	117.2	0.1086	1.195
MW-53	8	0%	2150	5740	4091	4220	1247	0.3049	-0.2376
MW-53R	8	0%	1560	2420	2139	2245	296.4	0.1386	-1.065
MW-54R	8	0%	4110	6170	5365	5415	636.9	0.1187	-0.7681
MW-55	8	0%	642	1290	985.1	1043	240.4	0.244	-0.2666
OW-57ROUT	8	0%	1570	1990	1793	1800	119.1	0.06646	-0.2861

Summary Report

Constituent: Calcium, Total Analysis Run 4/7/2024 9:11 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 82.5
 Maximum Value = 562
 Mean Value = 201.2
 Median Value = 169
 Standard Deviation = 99.07
 Coefficient of Variation = 0.4923
 Skewness = 2.183

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	335	562	480.6	491	82.89	0.1725	-0.6601
JCW-MW-18004	8	0%	193	265	226.8	225	20.87	0.09205	0.2861
JCW-MW-18005	8	0%	150	335	226.4	230	67.27	0.2972	0.2587
JCW-MW-18006	8	0%	109	136.5	123	120	9.423	0.07661	0.3016
MW-50	8	0%	143	205.5	177.1	177.8	20.38	0.1151	-0.2145
MW-51	8	0%	132	247	178.8	167.5	40.79	0.2282	0.3891
MW-52	8	0%	217	247	230	229.5	9.472	0.04118	0.4292
MW-53	8	0%	82.5	147	121.7	125	22.86	0.1878	-0.4231
MW-53R	8	0%	173	226	205.5	204.5	16.89	0.08221	-0.6784
MW-54R	8	0%	158	170	164.4	164	4.373	0.02661	-0.06214
MW-55	8	0%	141	177	160.8	162.5	10.85	0.06747	-0.5288
OW-57ROUT	8	0%	113	131	119.8	118.5	6.042	0.05045	0.6675

Summary Report

Constituent: Molybdenum, Total Analysis Run 4/7/2024 9:11 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

Observations = 96
 NDs = 65%
 Wells = 12
 Minimum Value = 5
 Maximum Value = 91
 Mean Value = 10.11
 Median Value = 5
 Standard Deviation = 15.51
 Coefficient of Variation = 1.534
 Skewness = 3.817

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18004	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18005	8	50%	5	6	5.25	5	0.4629	0.08817	1.155
JCW-MW-18006	8	87%	5	5.5	5.063	5	0.1768	0.03492	2.268
MW-50	8	62%	5	6	5.375	5	0.5175	0.09629	0.5164
MW-51	8	100%	5	5	5	5	0	0	NaN
MW-52	8	100%	5	5	5	5	0	0	NaN
MW-53	8	87%	5	7	5.25	5	0.7071	0.1347	2.268
MW-53R	8	100%	5	5	5	5	0	0	NaN
MW-54R	8	0%	9	17	13.25	14	2.765	0.2086	-0.3198
MW-55	8	0%	27	91	55.5	53	24.84	0.4475	0.1776
OW-57ROUT	8	0%	6	8	6.625	6.5	0.744	0.1123	0.6605

Summary Report

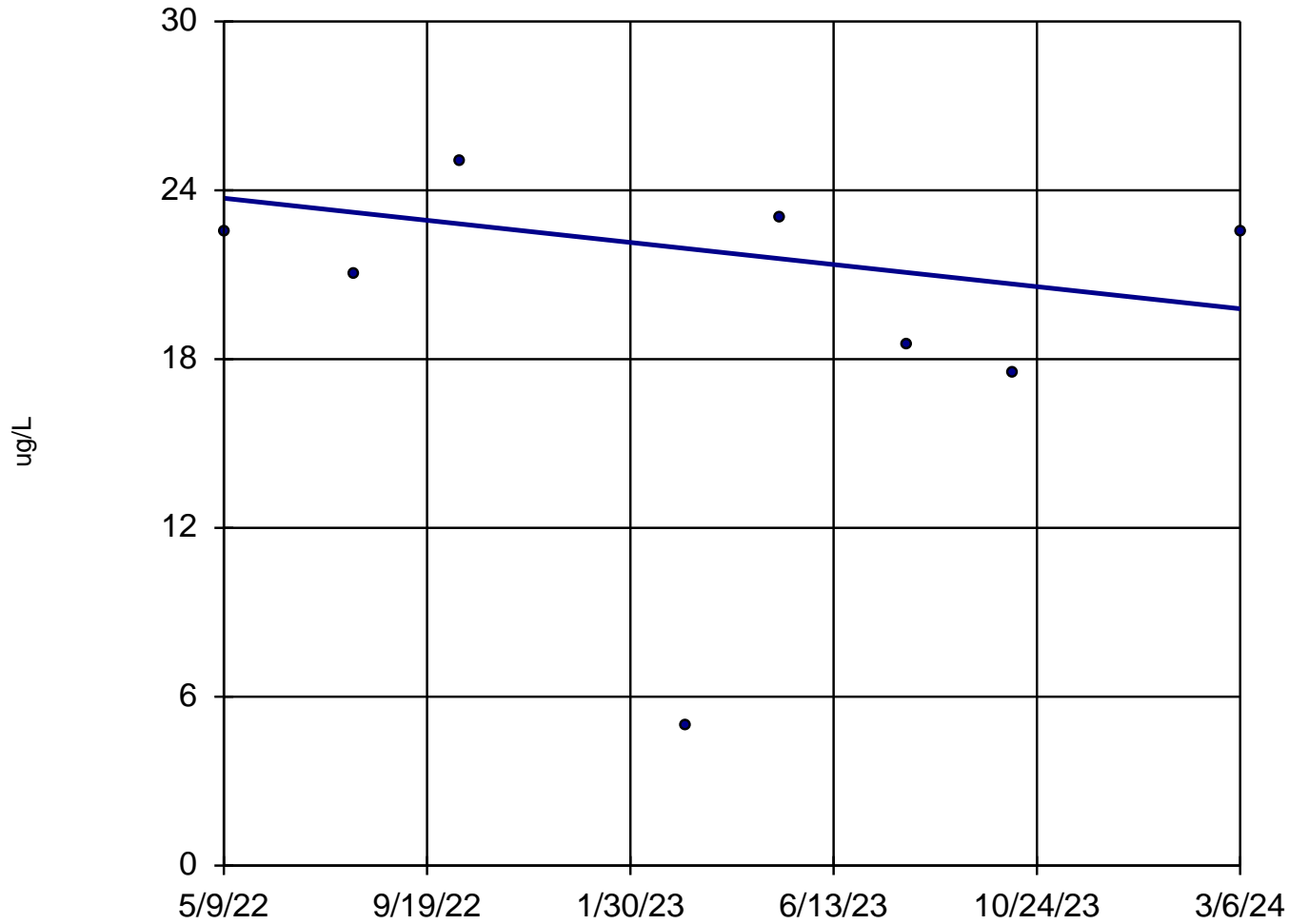
Constituent: Sulfate Analysis Run 4/7/2024 9:11 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 2.28
 Maximum Value = 1890
 Mean Value = 362.3
 Median Value = 247.8
 Standard Deviation = 412.9
 Coefficient of Variation = 1.14
 Skewness = 2.263

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	752	1890	1523	1655	393.8	0.2586	-0.9625
JCW-MW-18004	8	0%	428	722	526	512	88.9	0.169	1.366
JCW-MW-18005	8	0%	154	512	318.6	319	146.2	0.4588	0.04197
JCW-MW-18006	8	0%	14.9	70.65	36.94	34.28	16.8	0.4548	0.8207
MW-50	8	0%	285.5	471	367.1	352	66.2	0.1803	0.4461
MW-51	8	0%	266	420	346.9	358	60.38	0.1741	-0.286
MW-52	8	0%	540	663	587.5	581	35.61	0.06061	1.07
MW-53	8	0%	2.28	215	79.93	72.2	72.89	0.9119	0.6258
MW-53R	8	0%	53.2	533	234.3	219	146	0.6234	0.9187
MW-54R	8	0%	48.6	86.3	68.54	69.15	10.72	0.1564	-0.2973
MW-55	8	0%	94.6	249	176.9	182	62.66	0.3542	-0.09686
OW-57ROUT	8	0%	69.4	94.8	81.81	80.1	7.35	0.08984	0.148

Arsenic, Total JCW-MW-18006



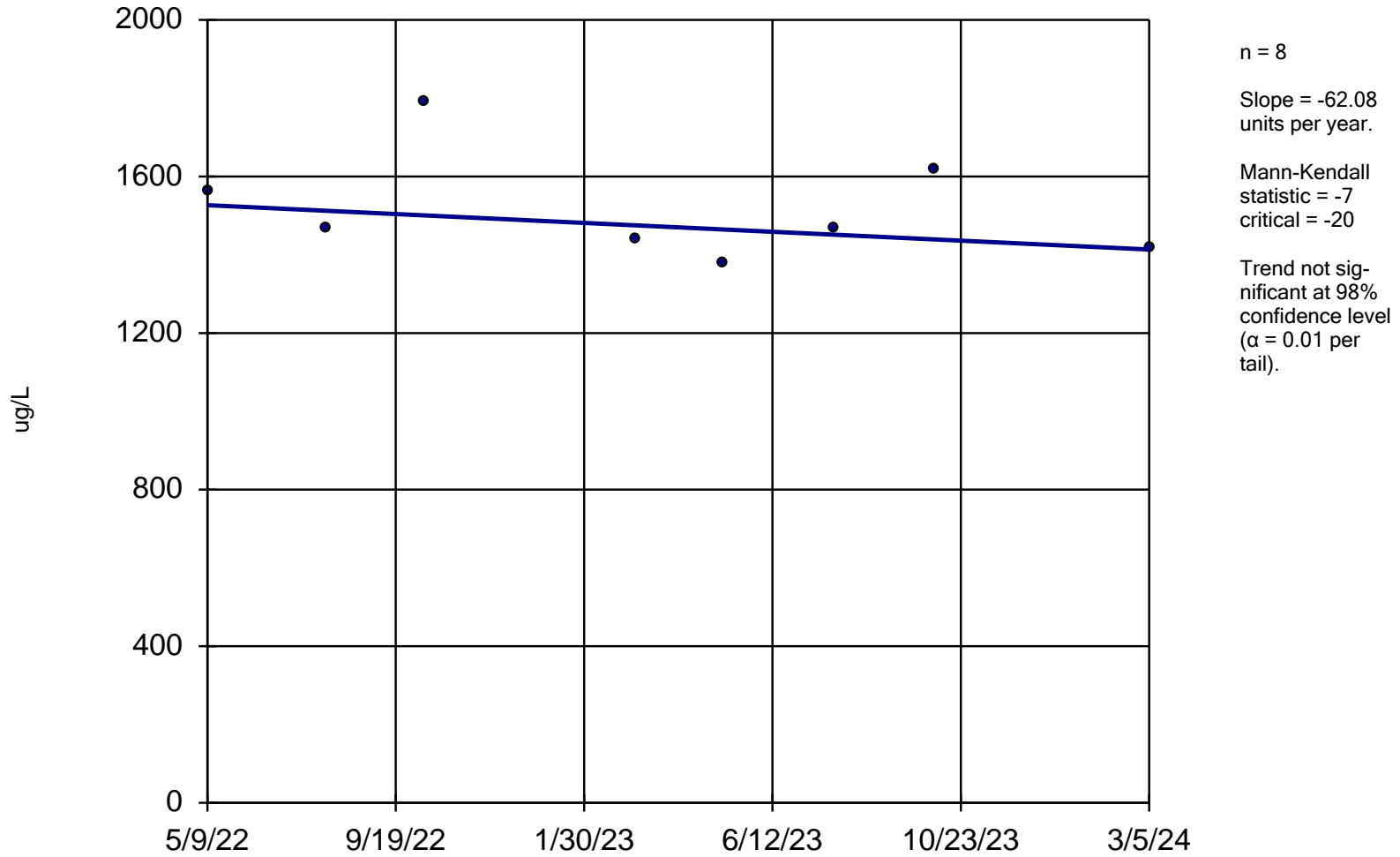
n = 8
Slope = -2.148
units per year.
Mann-Kendall
statistic = -5
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:50 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

JCW-MW-18001

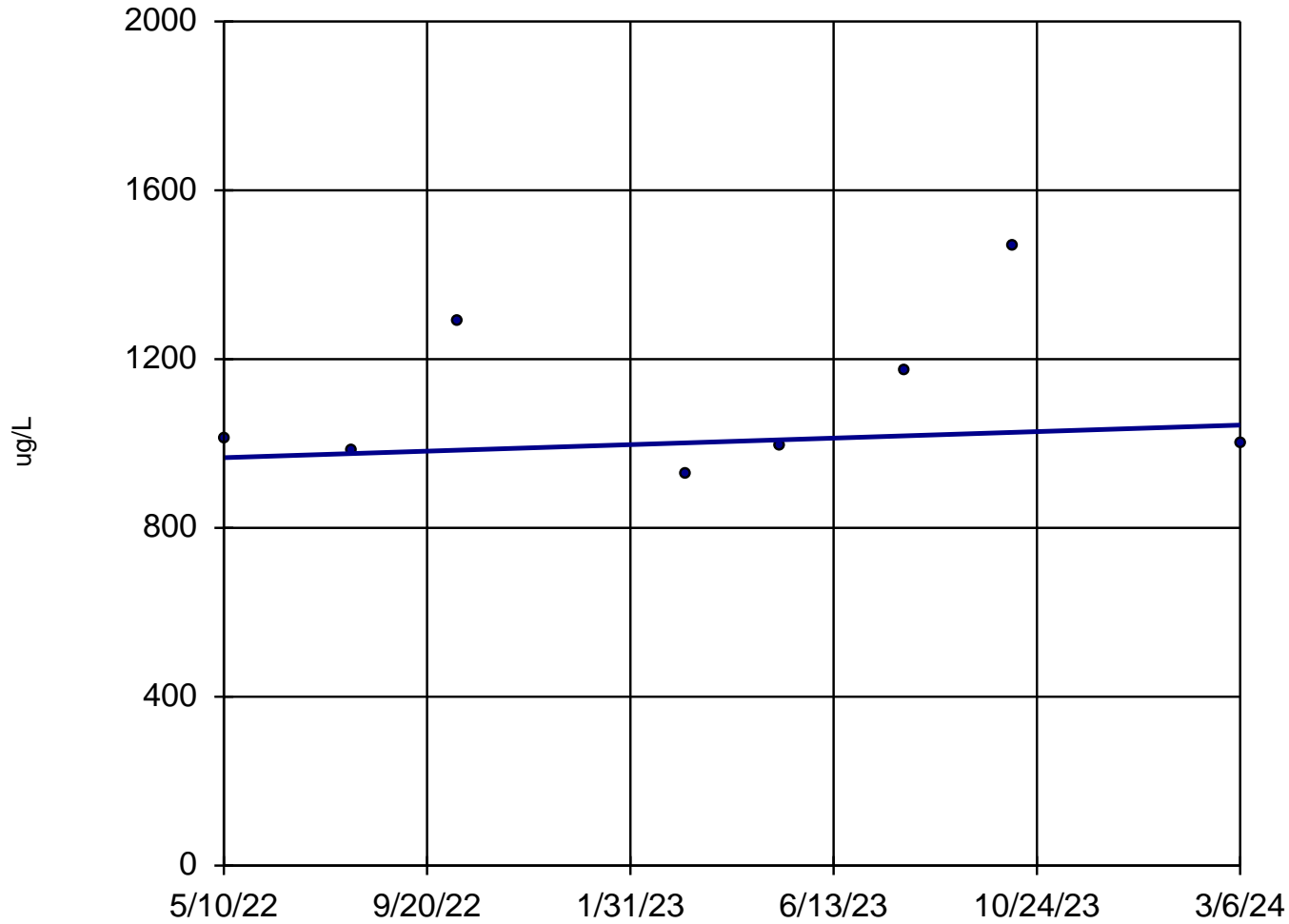


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

JCW-MW-18005



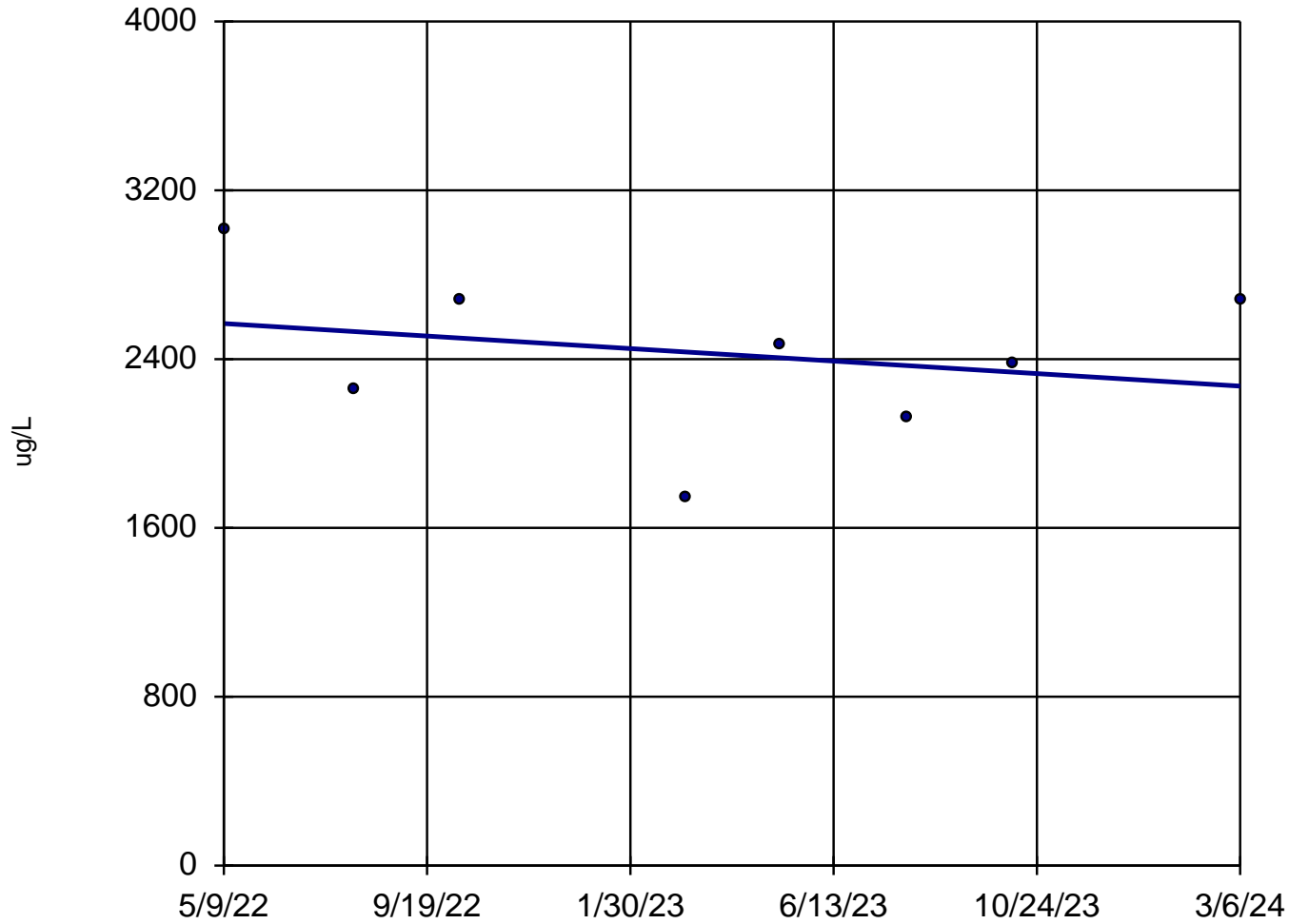
n = 8
Slope = 42.36
units per year.
Mann-Kendall
statistic = 6
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

JCW-MW-18006



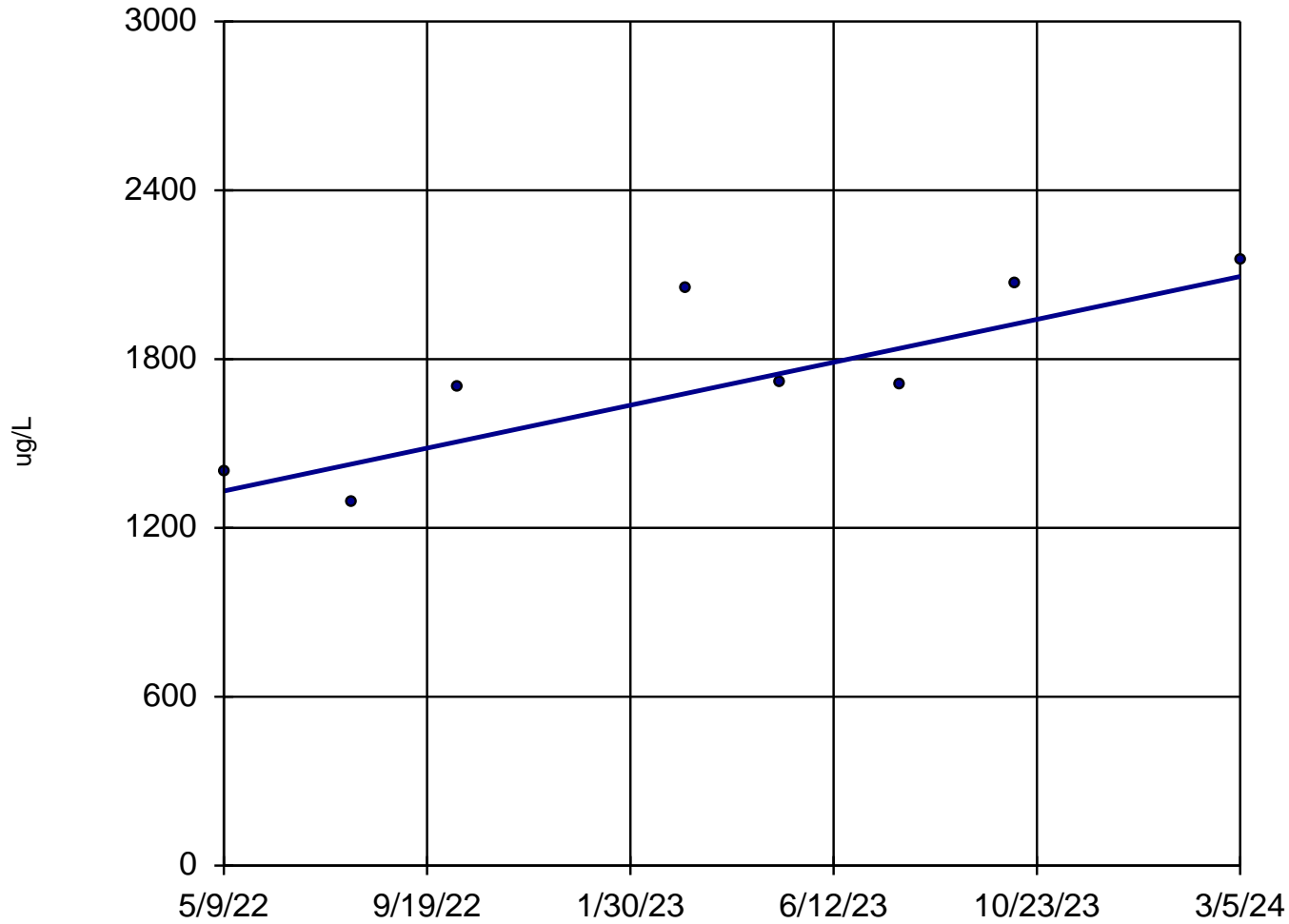
n = 8
Slope = -162
units per year.
Mann-Kendall
statistic = -4
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-50



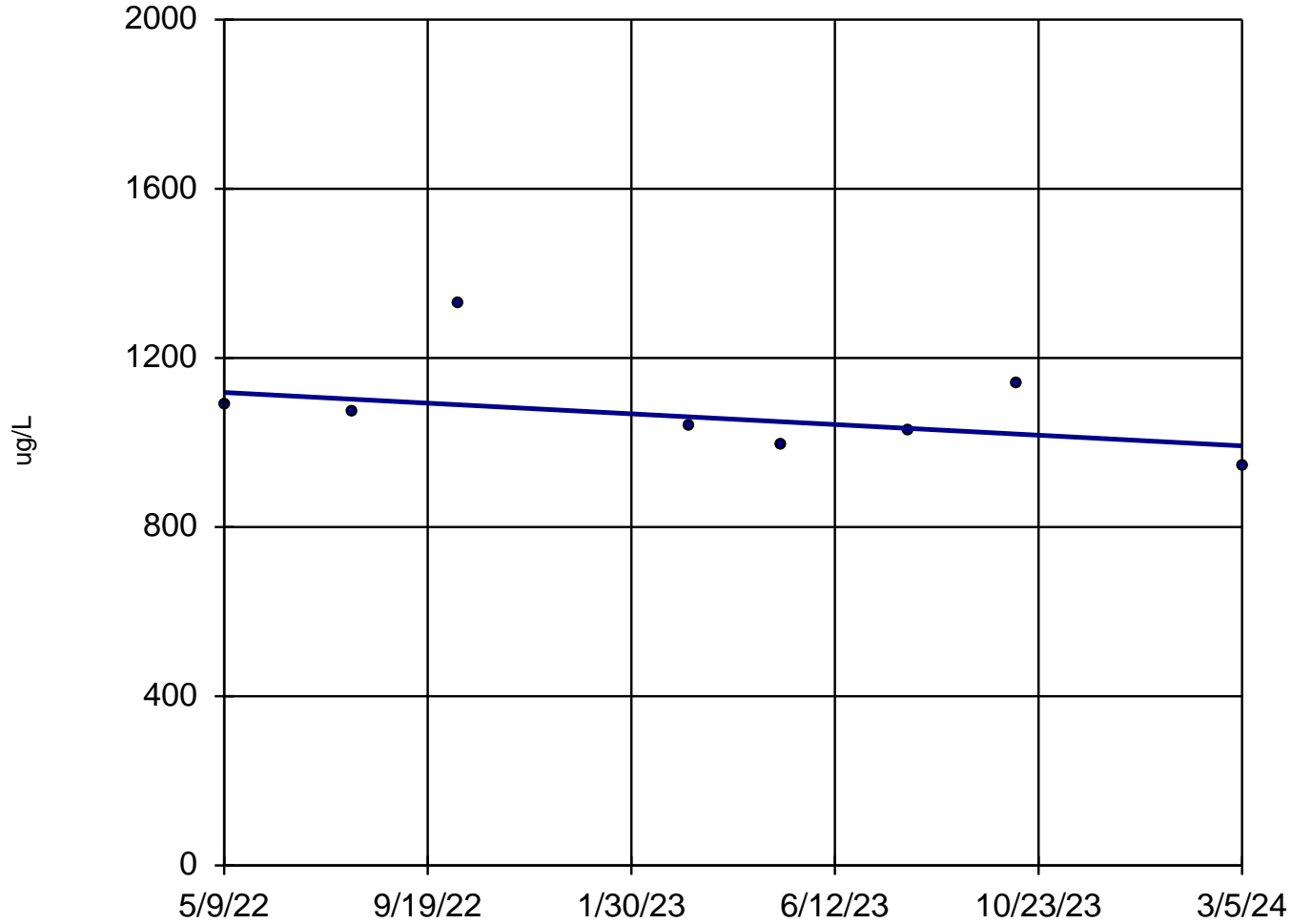
n = 8
Slope = 417.9
units per year.
Mann-Kendall
statistic = 20
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-52



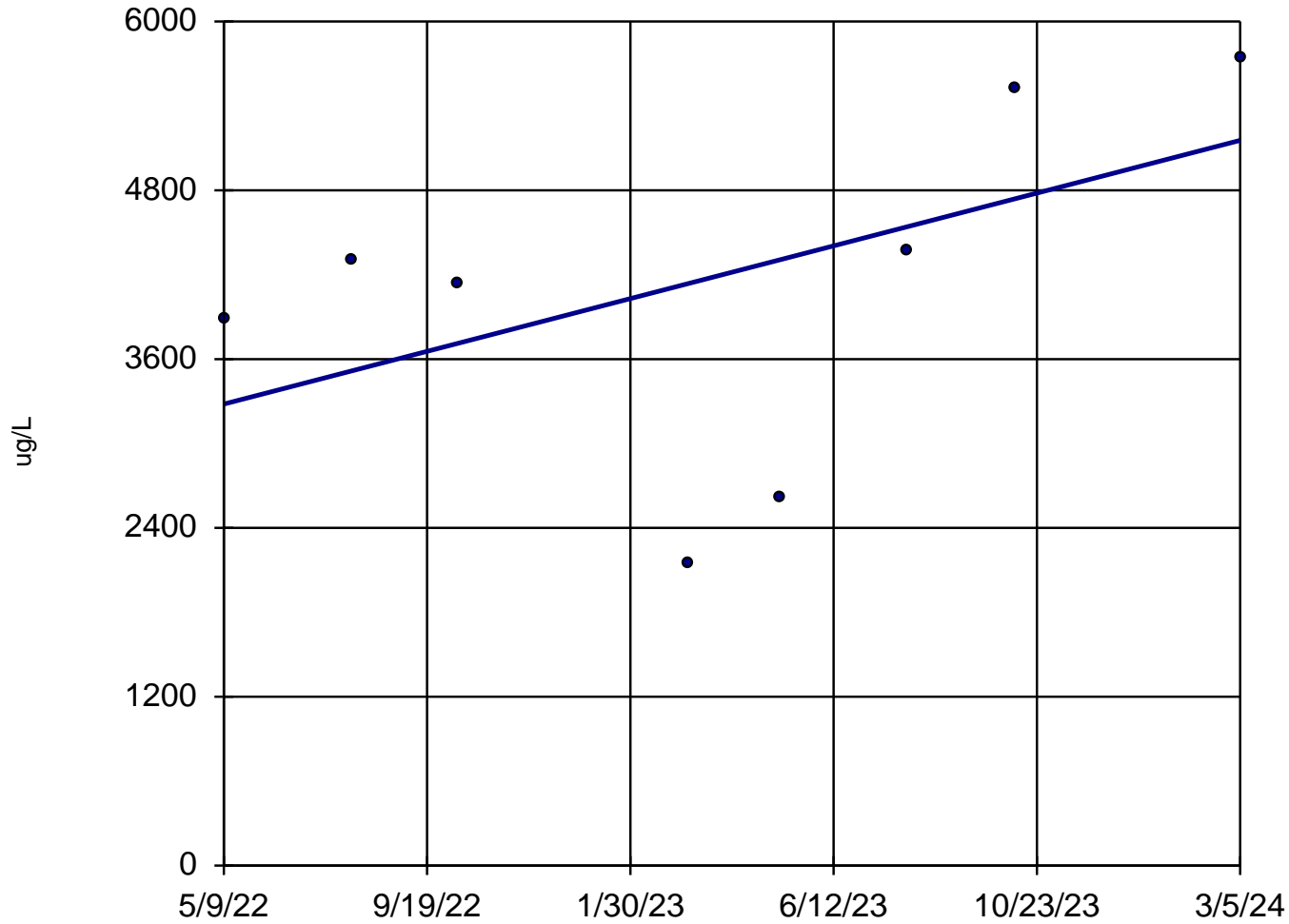
n = 8
Slope = -69.21
units per year.
Mann-Kendall
statistic = -12
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-53



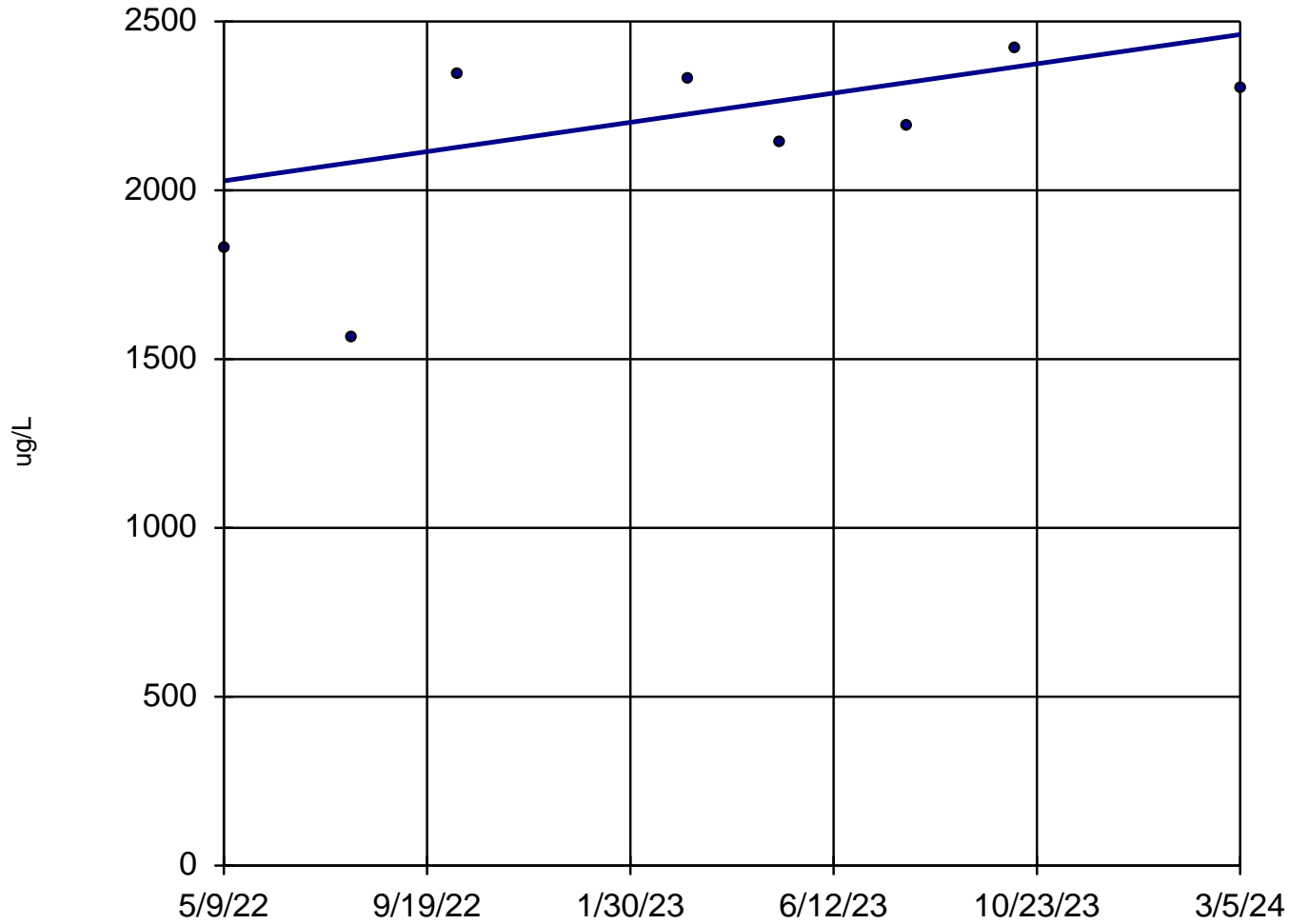
n = 8
Slope = 1027
units per year.
Mann-Kendall
statistic = 14
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-53R



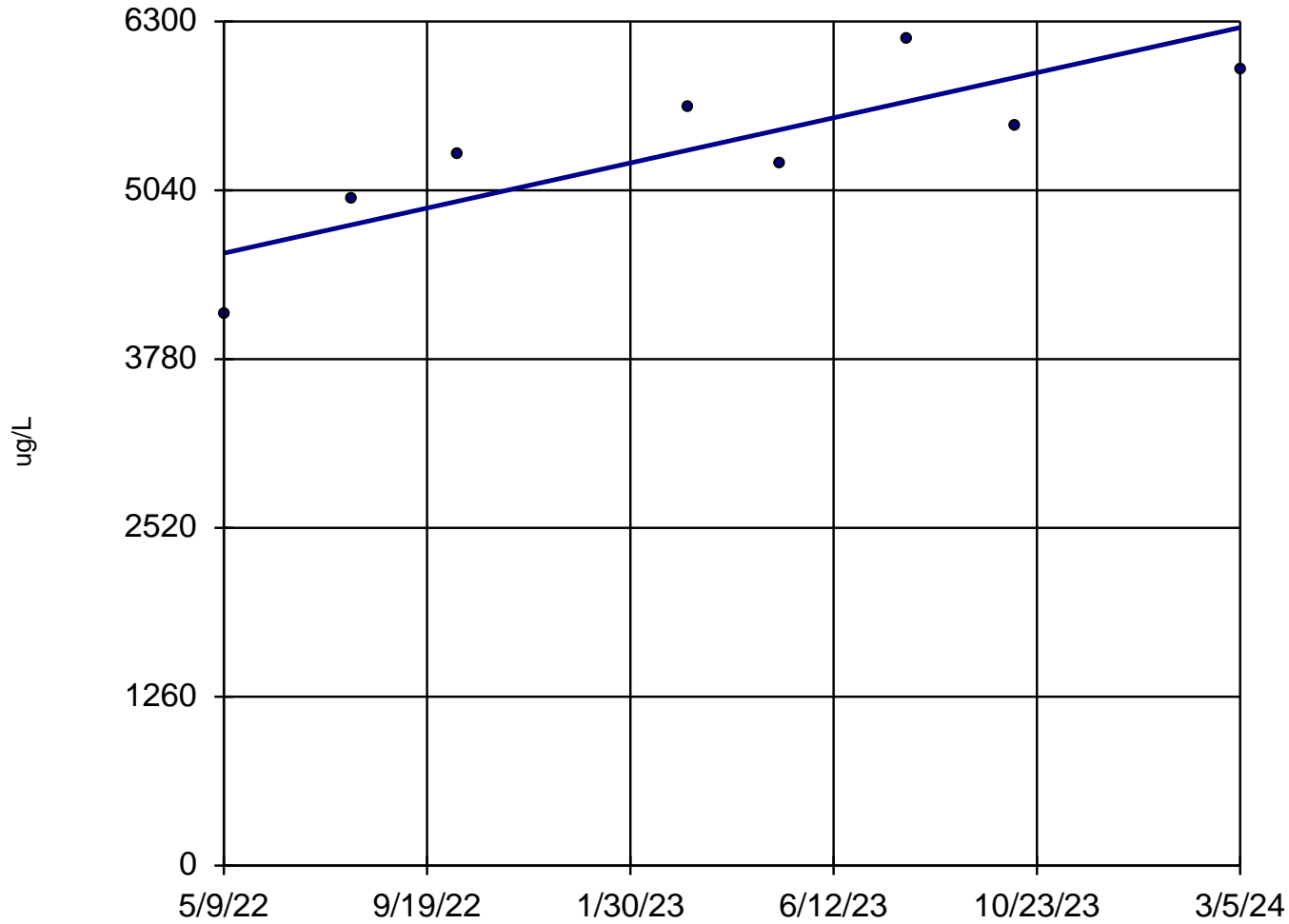
n = 8
Slope = 237.4
units per year.
Mann-Kendall
statistic = 10
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-54R



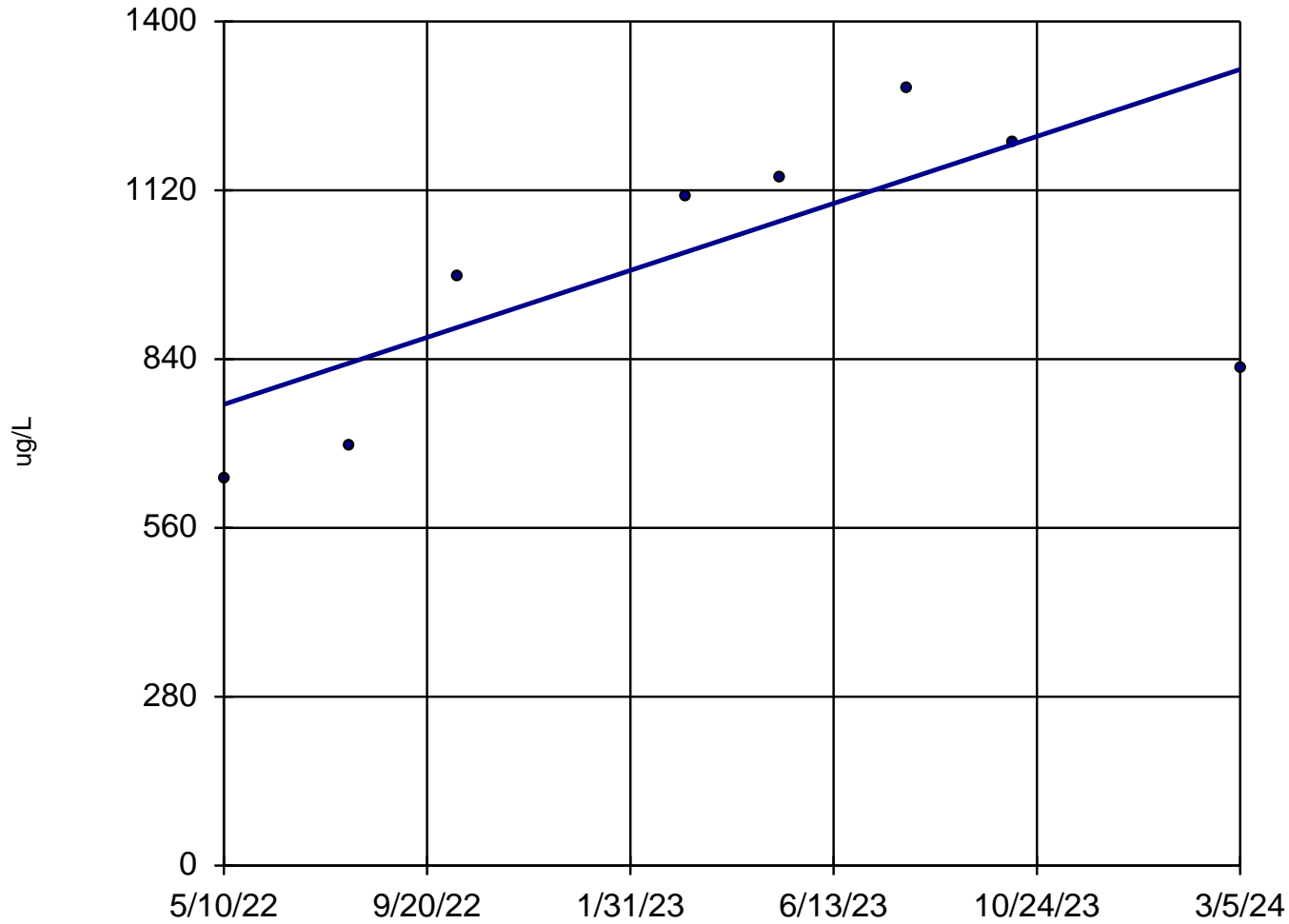
n = 8
Slope = 922.6
units per year.
Mann-Kendall
statistic = 18
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-55

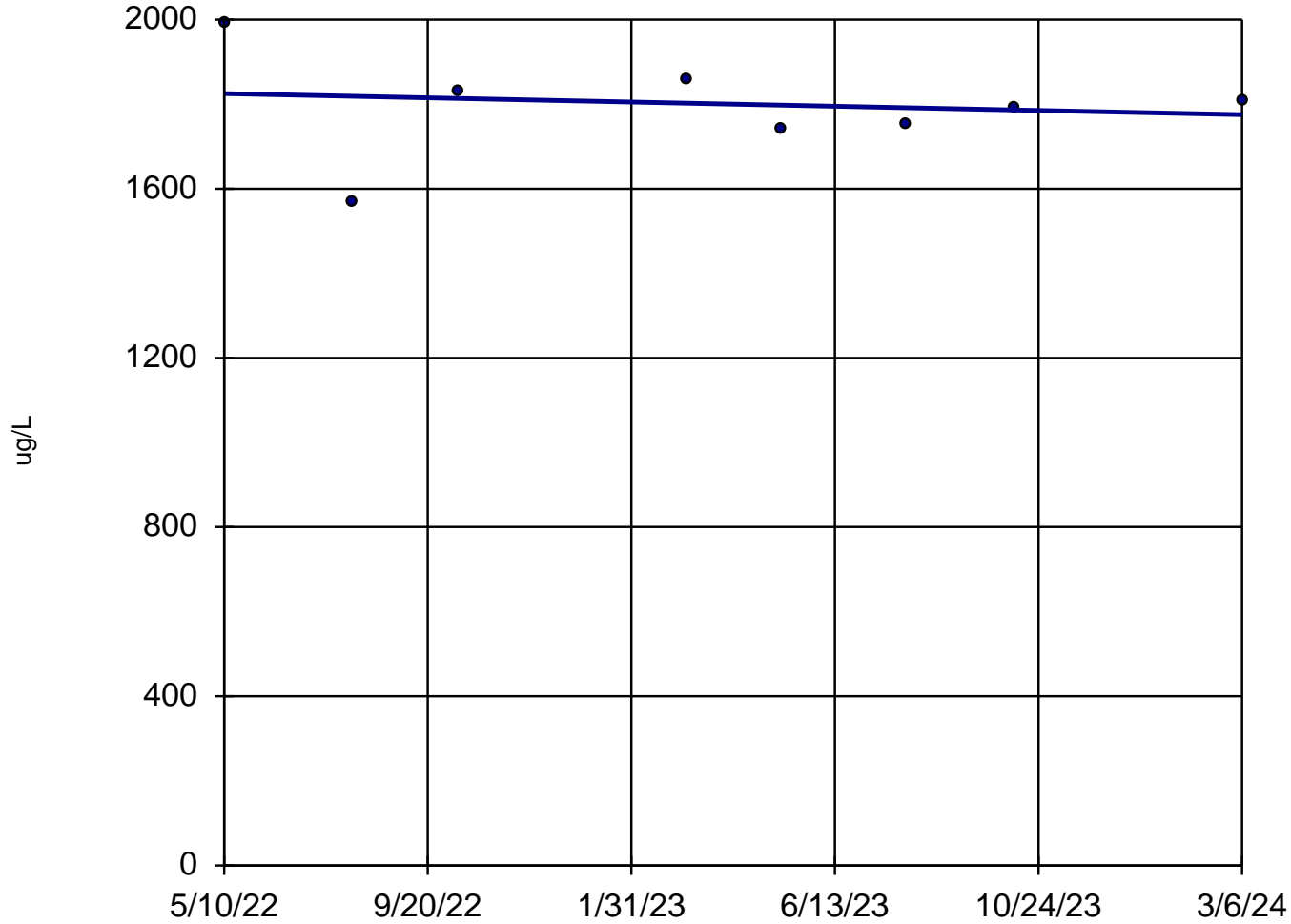


n = 8
Slope = 304.9
units per year.
Mann-Kendall
statistic = 16
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/10/2024 11:23 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total OW-57ROUT



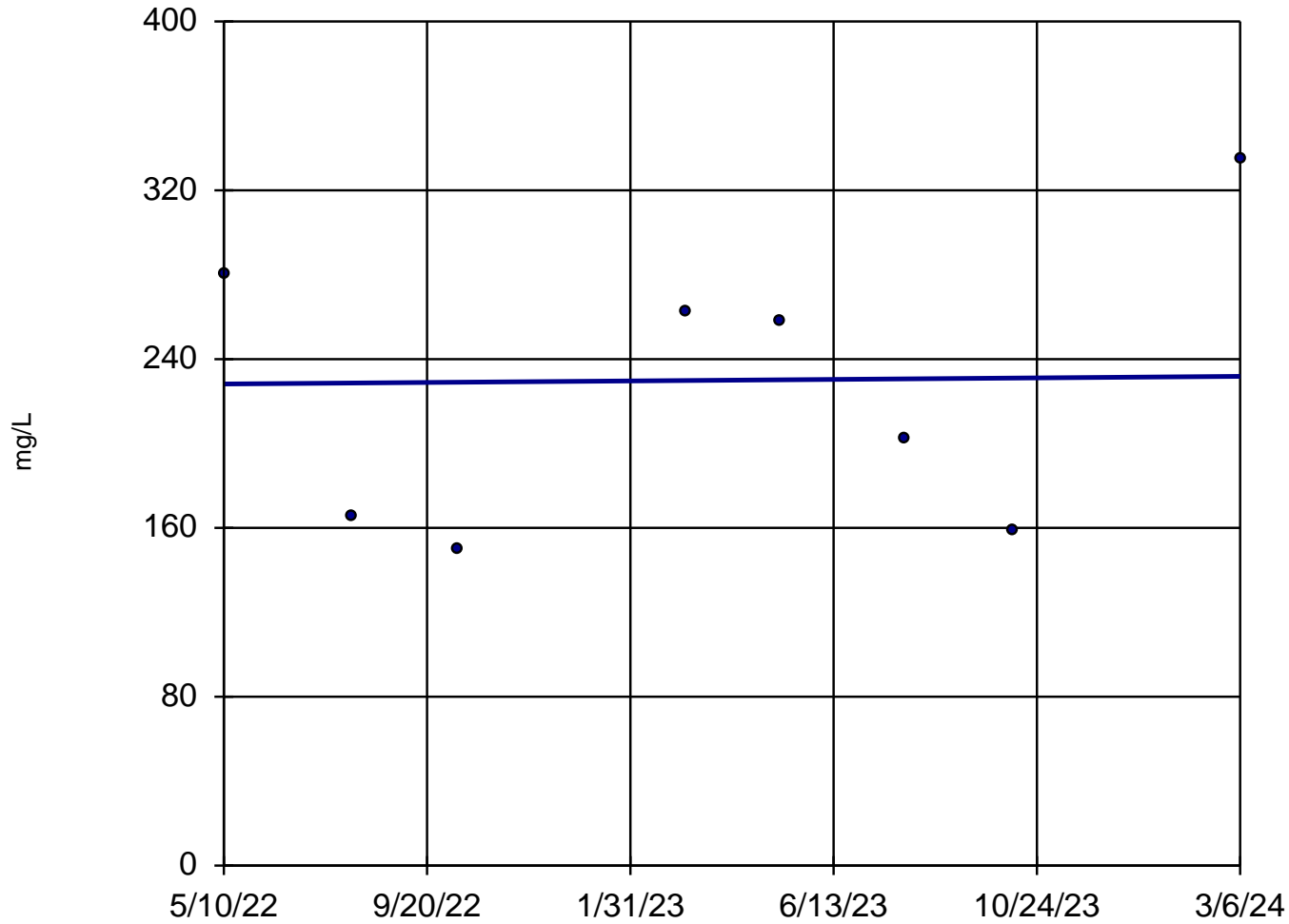
n = 8
Slope = -27.24
units per year.
Mann-Kendall
statistic = -2
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Calcium, Total

JCW-MW-18005



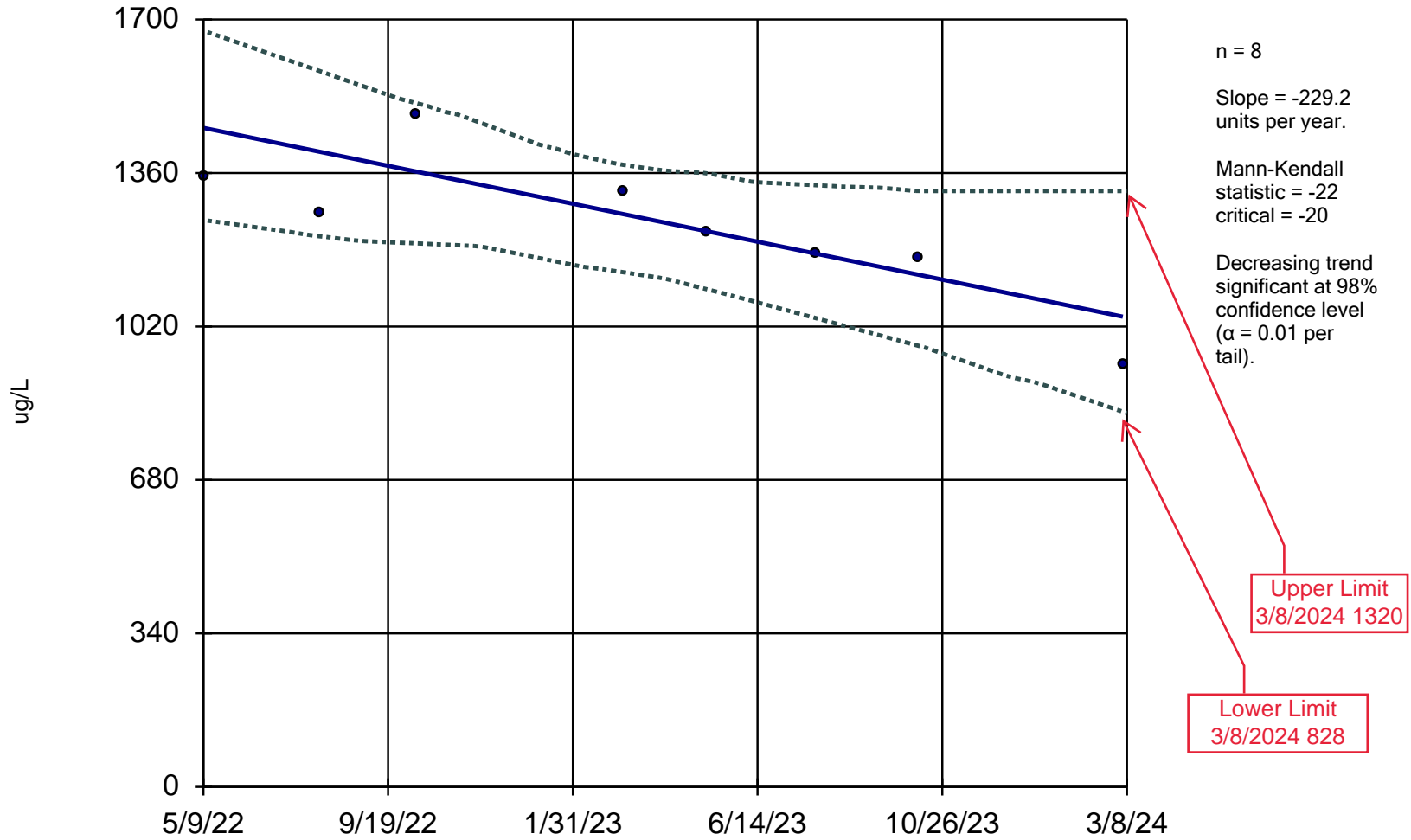
n = 8
Slope = 1.996
units per year.
Mann-Kendall
statistic = 0
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:59 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Boron, Total

MW-51

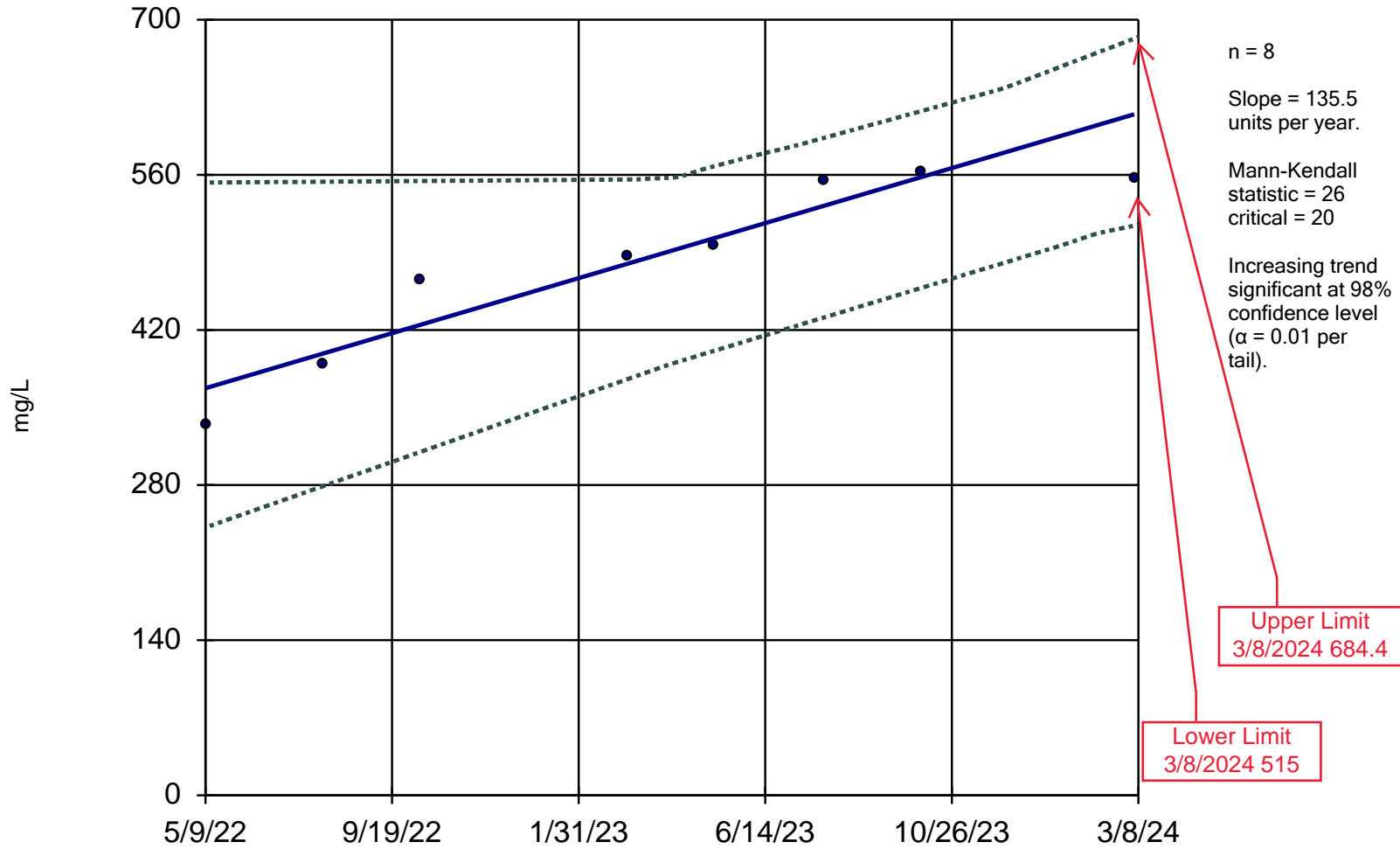


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:02 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Calcium, Total

JCW-MW-18001

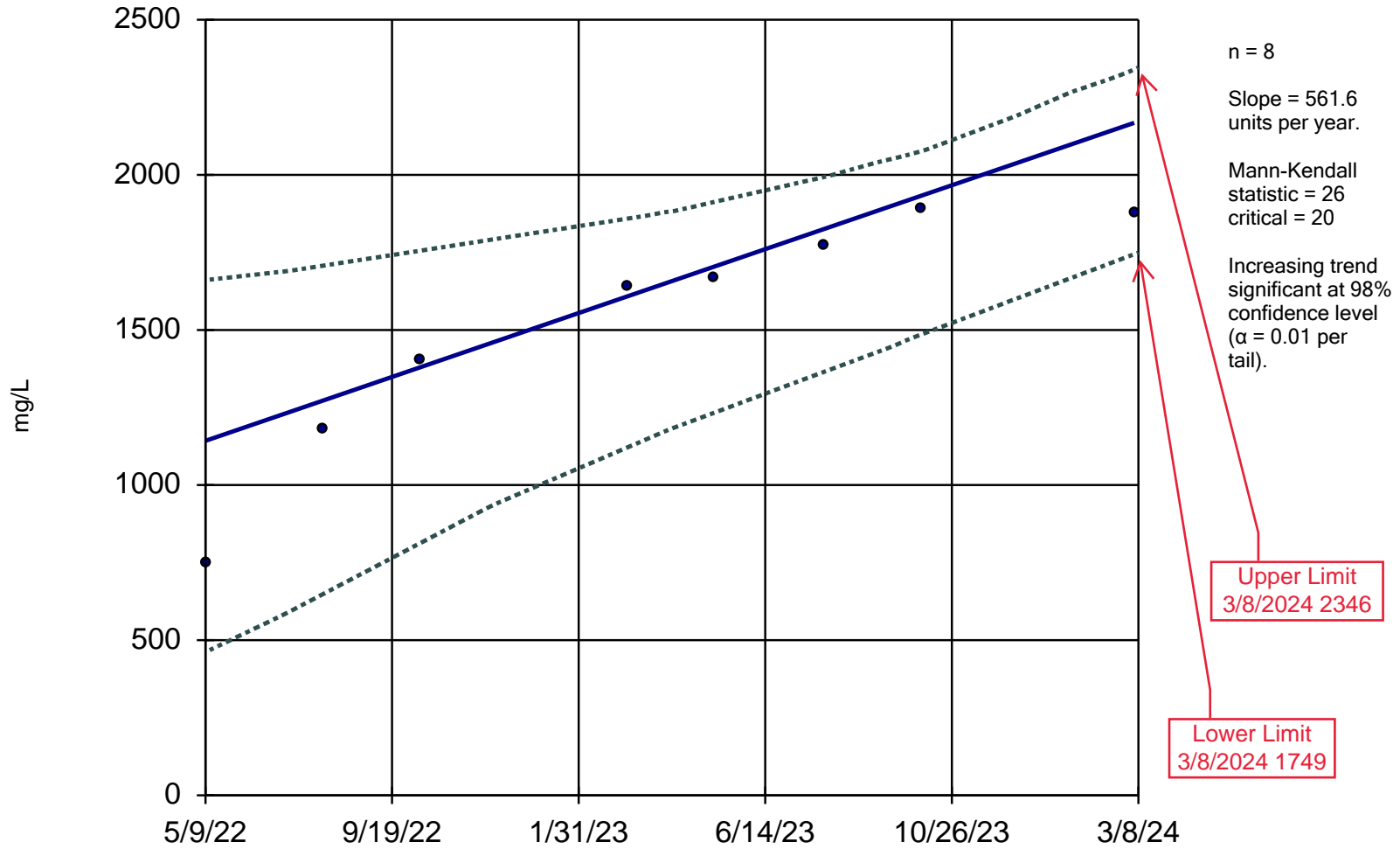


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:05 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Sulfate

JCW-MW-18001

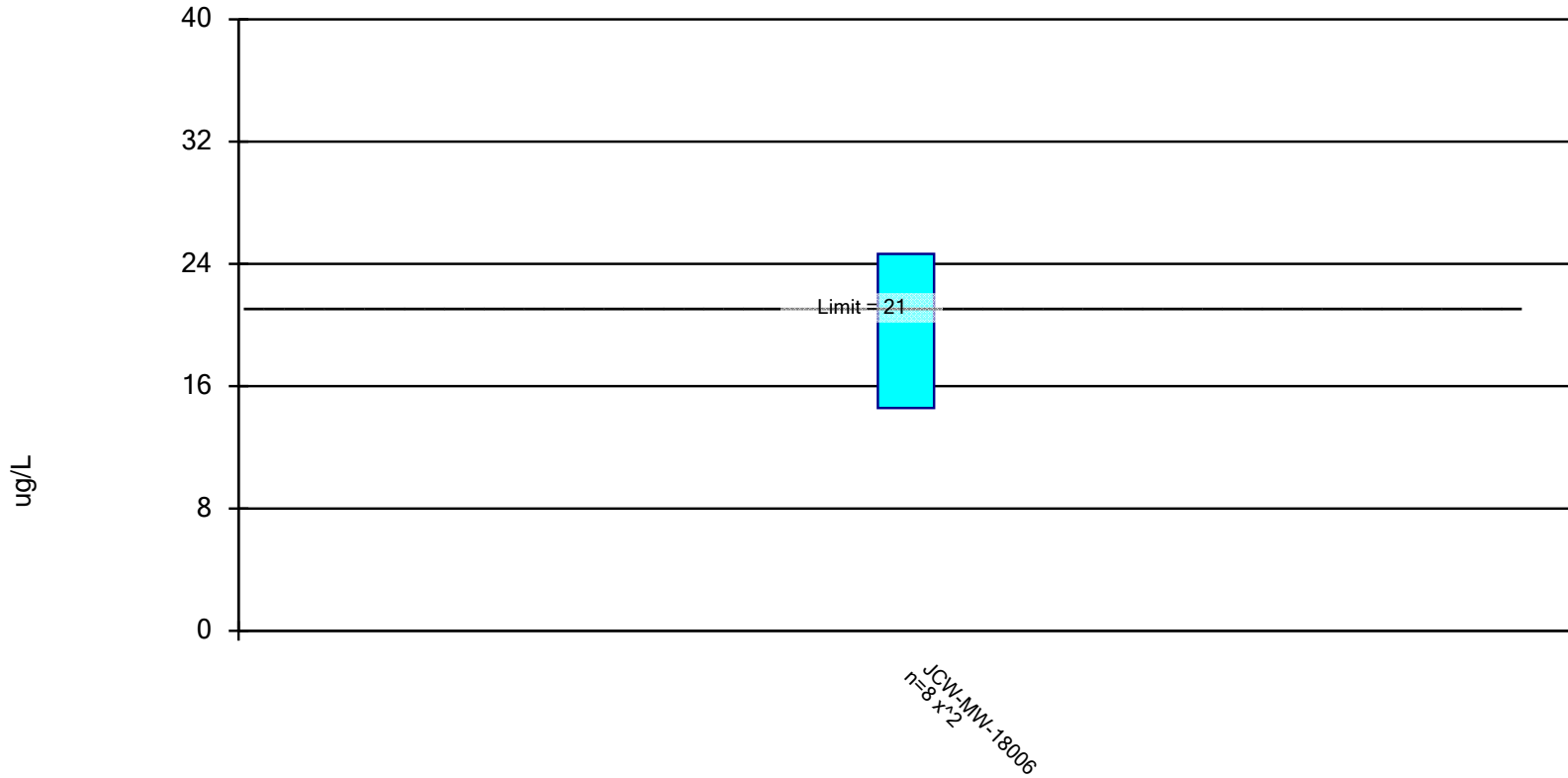


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:07 PM

Data: JCW_HMPCCR_Sanitas_24Q1

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 4/10/2024 11:31 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 4/10/2024 11:37 AM

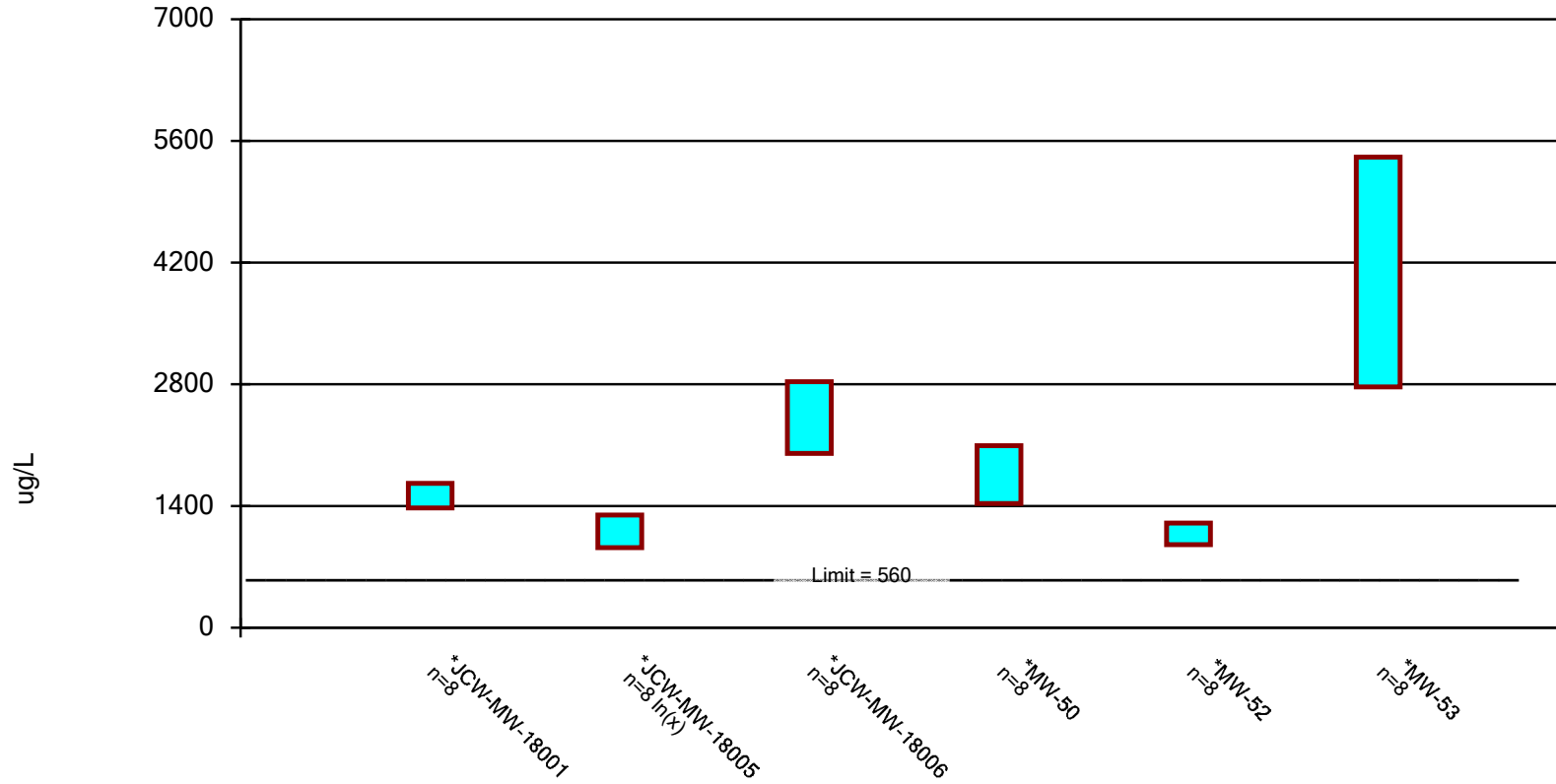
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

JCW-MW-18006

5/9/2022	22.5 (D)
8/2/2022	21
10/11/2022	25 (D)
3/9/2023	5 (D)
5/9/2023	23 (D)
7/31/2023	18.5 (D)
10/9/2023	17.5 (D)
3/6/2024	22.5 (D)
Mean	19.38
Std. Dev.	6.301
Upper Lim.	24.65
Lower Lim.	14.58

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 4/10/2024 11:39 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Confidence Interval

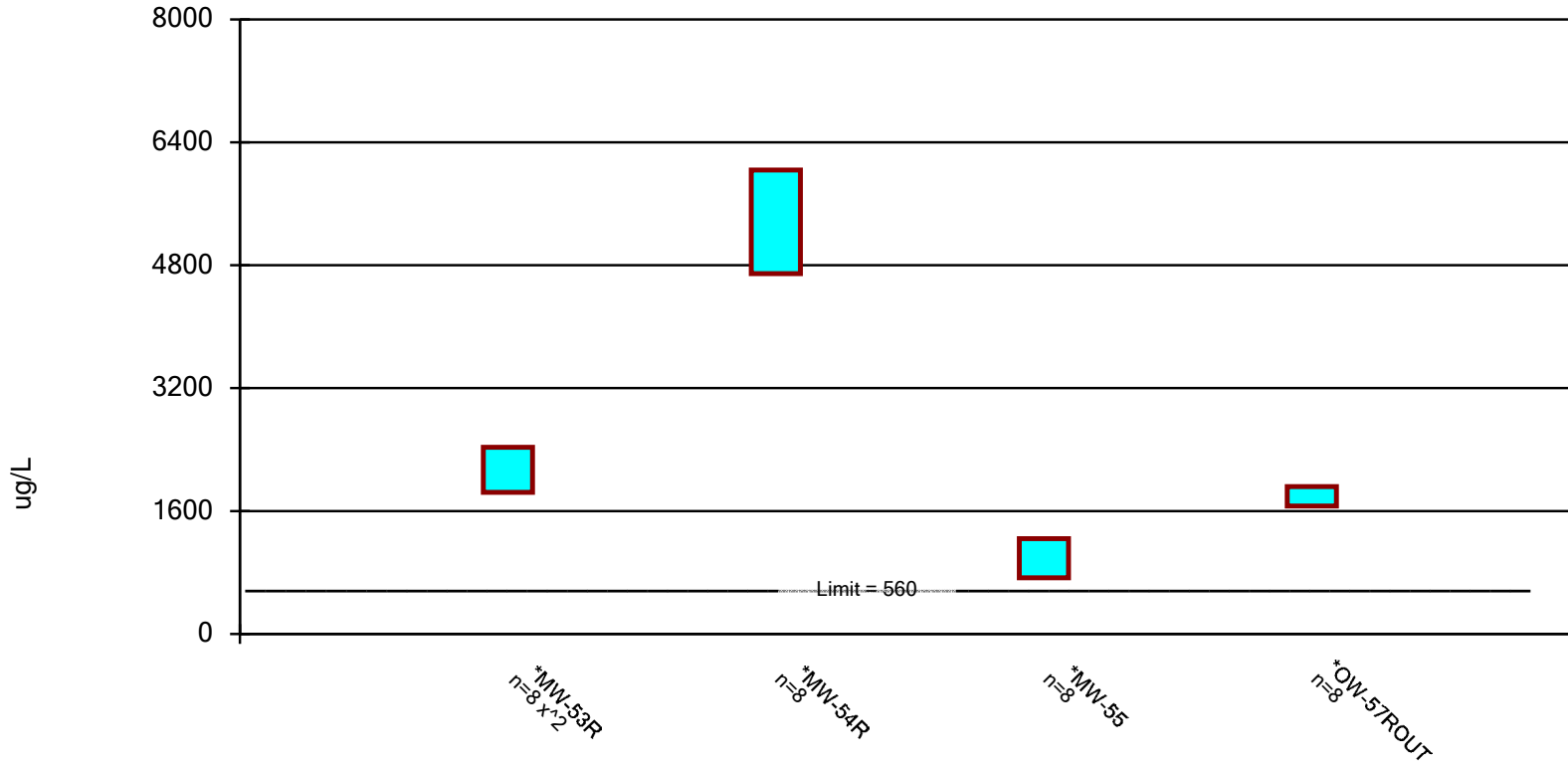
Constituent: Boron, Total (ug/L) Analysis Run 4/10/2024 11:39 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

	JCW-MW-18001	JCW-MW-18005	JCW-MW-18006	MW-50	MW-52	MW-53
5/9/2022	1560		3010 (D)	1400 (D)	1090	3880
5/10/2022		1010				
8/1/2022	1470			1290 (D)	1070	4300
8/2/2022		981	2260			
10/10/2022	1790			1700 (D)	1330	4140
10/11/2022		1290	2685 (D)			
3/8/2023	1440			2050 (D)		
3/9/2023		930	1745 (D)		1040	2150
5/8/2023	1380			1720 (D)	993	2620
5/9/2023		992	2465 (D)			
7/26/2023	1470			1705 (D)		
7/31/2023		1170	2120 (D)		1030	4370
10/5/2023	1620					
10/9/2023		1470	2375 (D)	2065 (D)	1140	5530
3/5/2024	1420			2155 (D)	945	5740
3/6/2024		1000	2675 (D)			
Mean	1519	1105	2417	1761	1080	4091
Std. Dev.	133.9	189.2	388.9	314.4	117.2	1247
Upper Lim.	1661	1296	2829	2094	1204	5413
Lower Lim.	1377	921.1	2005	1427	955.5	2769

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 4/10/2024 11:39 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Confidence Interval

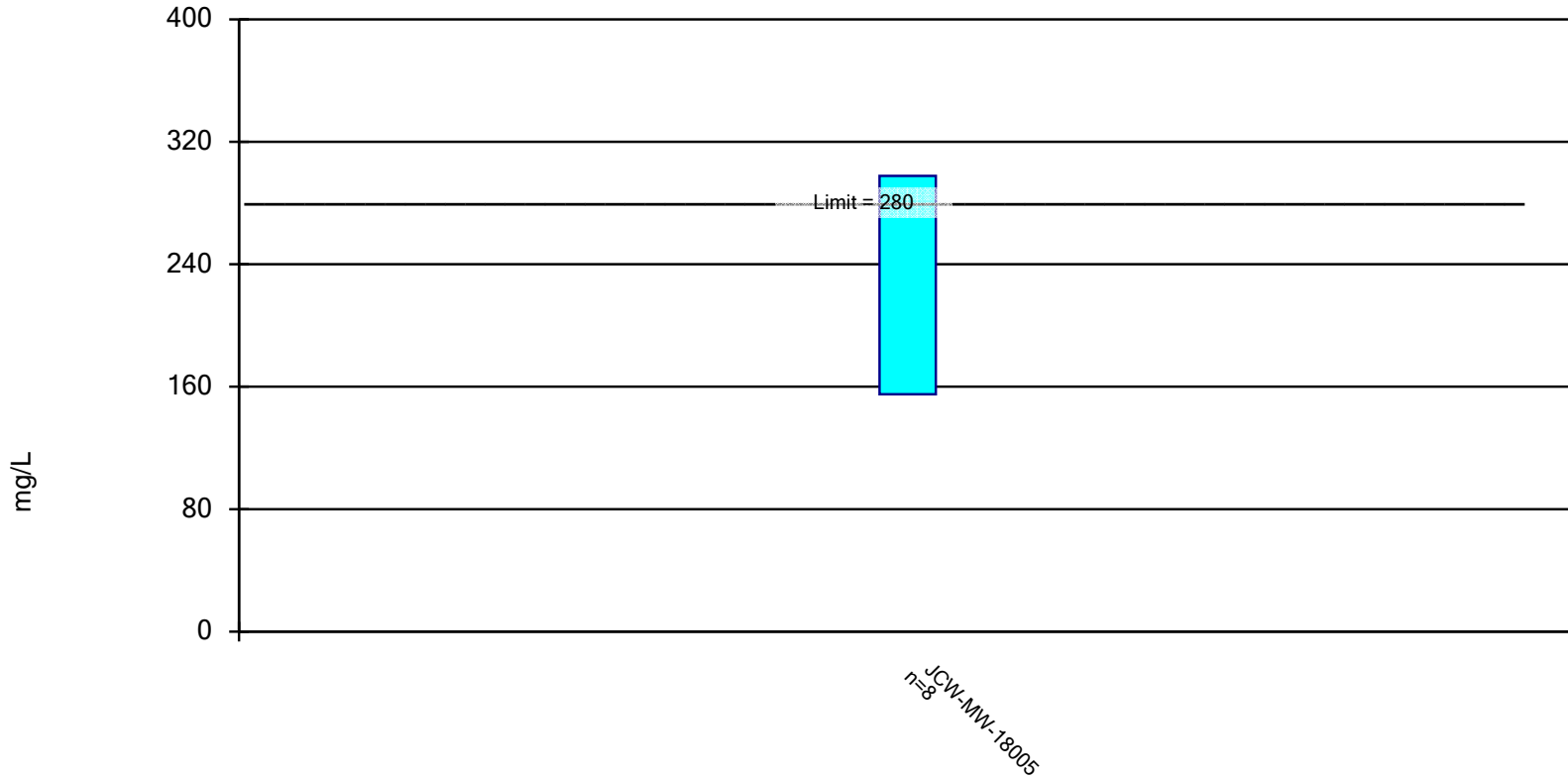
Constituent: Boron, Total (ug/L) Analysis Run 4/10/2024 11:39 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

	MW-53R	MW-54R	MW-55	OW-57ROUT
5/9/2022	1830	4110		
5/10/2022			642	1990
8/1/2022	1560	4970	698 (D)	
8/2/2022				1570
10/10/2022	2340	5310	976	
10/11/2022				1830
3/9/2023	2330	5660	1110	1860
5/8/2023	2140			
5/9/2023		5240	1140	1740
7/31/2023	2190	6170	1290	1750
10/9/2023	2420	5520	1200	1790
3/5/2024	2300	5940	825	
3/6/2024				1810
Mean	2139	5365	985.1	1793
Std. Dev.	296.4	636.9	240.4	119.1
Upper Lim.	2430	6040	1240	1919
Lower Lim.	1843	4690	730.3	1666

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium, Total Analysis Run 4/10/2024 11:41 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q1

Appendix E

Laboratory Analytical Report

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: HMP GROUNDWATER MONITORING – JCW POREWATER – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0132R

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 03/04/2024 for the 1st Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 03/07/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q1-2024 Weadock Porewater Wells
Date Received: 3/7/2024
Chemistry Project: 24-0132

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0132-01	JCW-MW-18001	Groundwater	03/05/2024 06:37	JCW Solid Waste Disposal Area, Porewater
24-0132-02	JCW-MW-18004	Groundwater	03/05/2024 11:03	JCW Solid Waste Disposal Area, Porewater
24-0132-03	JCW-MW-18005	Groundwater	03/06/2024 07:23	JCW Solid Waste Disposal Area, Porewater
24-0132-04	JCW-MW-18006	Groundwater	03/06/2024 08:57	JCW Solid Waste Disposal Area, Porewater
24-0132-05	MW-50	Groundwater	03/05/2024 08:29	JCW Solid Waste Disposal Area, Porewater
24-0132-06	MW-51	Groundwater	03/05/2024 09:21	JCW Solid Waste Disposal Area, Porewater
24-0132-07	MW-52	Groundwater	03/05/2024 13:50	JCW Solid Waste Disposal Area, Porewater
24-0132-08	MW-53	Groundwater	03/05/2024 13:11	JCW Solid Waste Disposal Area, Porewater
24-0132-09	MW-53R	Groundwater	03/05/2024 12:32	JCW Solid Waste Disposal Area, Porewater
24-0132-10	MW-54R	Groundwater	03/05/2024 11:46	JCW Solid Waste Disposal Area, Porewater
24-0132-11	MW-55	Groundwater	03/05/2024 10:23	JCW Solid Waste Disposal Area, Porewater
24-0132-12	OW-57ROUT	Groundwater	03/06/2024 08:10	JCW Solid Waste Disposal Area, Porewater
24-0132-13	MW-58	Groundwater	03/06/2024 09:24	JCW Solid Waste Disposal Area, Porewater
24-0132-14	DUP-JCW-LF-01	Groundwater	03/05/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0132-15	DUP-JCW-LF-02	Groundwater	03/06/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0132-16	JCW-MW-18001 MS	Groundwater	03/05/2024 06:37	JCW Solid Waste Disposal Area, Porewater
24-0132-17	JCW-MW-18001 MSD	Groundwater	03/05/2024 06:37	JCW Solid Waste Disposal Area, Porewater
24-0132-18	FB-01	Water	03/06/2024 09:46	JCW Solid Waste Disposal Area, Porewater
24-0132-19	EB-01	Water	03/06/2024 09:43	JCW Solid Waste Disposal Area, Porewater

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001**
 Lab Sample ID: 24-0132-01
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 06:37 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	49		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	1420		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	557000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	3		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	3570		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	106		ug/L	10.0	03/11/2024	AB24-0311-03
Magnesium	138000		ug/L	1000.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	14		ug/L	2.0	03/11/2024	AB24-0311-03
Potassium	17400		ug/L	100.0	03/11/2024	AB24-0311-03
Selenium	2		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Sodium	231000		ug/L	1000.0	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	3		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	44700		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	1880000		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-01-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	3450		mg/L	10.0	03/07/2024	AB24-0308-02



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
Field Sample ID: **JCW-MW-18001**
Lab Sample ID: 24-0132-01
Matrix: Groundwater

Laboratory Project: **24-0132**
Collect Date: 03/05/2024
Collect Time: 06:37 AM

Alkalinity by SM 2320B

Aliquot #: 24-0132-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	717000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	717000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18004**
 Lab Sample ID: 24-0132-02
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 11:03 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	26		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	192		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	238000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	98		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	43		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	4		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-02-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	16900		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	557000		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-02-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1250		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18005**
 Lab Sample ID: 24-0132-03
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 07:23 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	3		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	136		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	1000		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	335000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	7		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	4020		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	43		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	2		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-03-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	23300		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	512000		ug/L	1000.0	03/12/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-03-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18006**
 Lab Sample ID: 24-0132-04
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 08:57 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-04-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	22		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	445		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	2650		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	137000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	7970		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	52		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	5		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	4		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-04-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61300		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	69700		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-04-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	748		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-50**
 Lab Sample ID: 24-0132-05
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 08:29 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-05-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	3		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	187		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	2170		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	199000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	889		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	69		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	6		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	8		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-05-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-05-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	40100		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	449000		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-05-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1180		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-51**
 Lab Sample ID: 24-0132-06
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 09:21 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-06-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	10		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	127		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	935		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	132000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	446		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	31		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	2		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-06-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-06-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	78300		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	266000		ug/L	1000.0	03/10/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-06-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	902		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-52**
 Lab Sample ID: 24-0132-07
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 01:50 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-07-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	94		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	945		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	237000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	3120		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	27		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	2		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-07-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-07-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	33800		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	540000		ug/L	1000.0	03/10/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-07-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1380		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53**
 Lab Sample ID: 24-0132-08
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 01:11 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-08-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	1		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	654		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	5740		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	134000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	947		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	50		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	2		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-08-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-08-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	77400		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	25400		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-08-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	694		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53R**
 Lab Sample ID: 24-0132-09
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 12:32 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-09-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	9		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	165		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	2300		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	173000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	752		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	56		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	2		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-09-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-09-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	34700		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	53200		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-09-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	862		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-54R**
 Lab Sample ID: 24-0132-10
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 11:46 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-10-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	1		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	97		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	5940		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	170000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	159		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	76		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	15		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-10-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-10-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61700		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	48600		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-10-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	752		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-55**
 Lab Sample ID: 24-0132-11
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 10:23 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-11-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	46		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	260		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	825		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	166000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	18700		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	26		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	27		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-11-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-11-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	18300		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	224000		ug/L	1000.0	03/12/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-11-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	866		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **OW-57ROUT**
 Lab Sample ID: 24-0132-12
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 08:10 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-12-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	1		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	81		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	1810		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	123000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	2		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	44		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	28		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	6		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	12		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-12-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-12-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	68100		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	1230		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	79300		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-12-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	770		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-58**
 Lab Sample ID: 24-0132-13
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 09:24 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-13-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	5		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	162		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	98		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	119000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	17700		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	23		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	4		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	8		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-13-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-13-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	518000		ug/L	1000.0	03/10/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	27800		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-13-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1230		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-01**
 Lab Sample ID: 24-0132-14
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-14-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	3		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	179		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	2140		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	196000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	930		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	68		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	6		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	8		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-14-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-14-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	38600		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	448000		ug/L	1000.0	03/10/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-14-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1190		mg/L	10.0	03/07/2024	AB24-0308-02

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-02**
 Lab Sample ID: 24-0132-15
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-15-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	23		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	464		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	2700		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	136000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	2		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	7890		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	54		ug/L	10.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	9		ug/L	2.0	03/11/2024	AB24-0311-03
Selenium	3		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	4		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-15-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-15-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	64700		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	71600		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0132-15-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	776		mg/L	10.0	03/07/2024	AB24-0308-02



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MS**
 Lab Sample ID: 24-0132-16
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 06:37 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-16-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	111		%	1.0	03/11/2024	AB24-0311-03
Arsenic	107		%	1.0	03/11/2024	AB24-0311-03
Barium	111		%	5.0	03/11/2024	AB24-0311-03
Beryllium	96		%	1.0	03/11/2024	AB24-0311-03
Boron	100		%	20.0	03/11/2024	AB24-0311-03
Cadmium	108		%	0.2	03/11/2024	AB24-0311-03
Calcium	120		%	1000.0	03/11/2024	AB24-0311-03
Chromium	106		%	1.0	03/11/2024	AB24-0311-03
Cobalt	100		%	6.0	03/11/2024	AB24-0311-03
Copper	90		%	1.0	03/11/2024	AB24-0311-03
Iron	116		%	20.0	03/11/2024	AB24-0311-03
Lead	94		%	1.0	03/11/2024	AB24-0311-03
Lithium	98		%	10.0	03/11/2024	AB24-0311-03
Magnesium	118		%	1000.0	03/11/2024	AB24-0311-03
Molybdenum	111		%	5.0	03/11/2024	AB24-0311-03
Nickel	96		%	2.0	03/11/2024	AB24-0311-03
Potassium	110		%	100.0	03/11/2024	AB24-0311-03
Selenium	103		%	1.0	03/11/2024	AB24-0311-03
Silver	96.5		%	0.2	03/11/2024	AB24-0311-03
Sodium	120		%	1000.0	03/11/2024	AB24-0311-03
Thallium	96		%	2.0	03/11/2024	AB24-0311-03
Vanadium	112		%	2.0	03/11/2024	AB24-0311-03
Zinc	97		%	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-16-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	96.0		%	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-16-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	107		%	1000.0	03/09/2024	AB24-0308-01
Fluoride	99		%	1000.0	03/09/2024	AB24-0308-01
Sulfate	114		%	1000.0	03/09/2024	AB24-0308-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MSD**
 Lab Sample ID: 24-0132-17
 Matrix: Groundwater

Laboratory Project: **24-0132**
 Collect Date: 03/05/2024
 Collect Time: 06:37 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-17-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	111		%	1.0	03/11/2024	AB24-0311-03
Arsenic	107		%	1.0	03/11/2024	AB24-0311-03
Barium	113		%	5.0	03/11/2024	AB24-0311-03
Beryllium	99		%	1.0	03/11/2024	AB24-0311-03
Boron	104		%	20.0	03/11/2024	AB24-0311-03
Cadmium	110		%	0.2	03/11/2024	AB24-0311-03
Calcium	110		%	1000.0	03/11/2024	AB24-0311-03
Chromium	108		%	1.0	03/11/2024	AB24-0311-03
Cobalt	102		%	6.0	03/11/2024	AB24-0311-03
Copper	92		%	1.0	03/11/2024	AB24-0311-03
Iron	119		%	20.0	03/11/2024	AB24-0311-03
Lead	95		%	1.0	03/11/2024	AB24-0311-03
Lithium	99		%	10.0	03/11/2024	AB24-0311-03
Magnesium	113		%	1000.0	03/11/2024	AB24-0311-03
Molybdenum	115		%	5.0	03/11/2024	AB24-0311-03
Nickel	98		%	2.0	03/11/2024	AB24-0311-03
Potassium	107		%	100.0	03/11/2024	AB24-0311-03
Selenium	107		%	1.0	03/11/2024	AB24-0311-03
Silver	98.1		%	0.2	03/11/2024	AB24-0311-03
Sodium	116		%	1000.0	03/11/2024	AB24-0311-03
Thallium	97		%	2.0	03/11/2024	AB24-0311-03
Vanadium	111		%	2.0	03/11/2024	AB24-0311-03
Zinc	96		%	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-17-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-17-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	108		%	1000.0	03/09/2024	AB24-0308-01
Fluoride	99		%	1000.0	03/09/2024	AB24-0308-01
Sulfate	106		%	1000.0	03/09/2024	AB24-0308-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **FB-01**
 Lab Sample ID: 24-0132-18
 Matrix: Water

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 09:46 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-18-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	ND		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	ND		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	ND		ug/L	10.0	03/11/2024	AB24-0311-03
Magnesium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Potassium	ND		ug/L	100.0	03/11/2024	AB24-0311-03
Selenium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Sodium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-18-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-18-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	ND		ug/L	1000.0	03/09/2024	AB24-0308-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **EB-01**
 Lab Sample ID: 24-0132-19
 Matrix: Water

Laboratory Project: **24-0132**
 Collect Date: 03/06/2024
 Collect Time: 09:43 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0132-19-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	ND		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	ND		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	ND		ug/L	10.0	03/11/2024	AB24-0311-03
Magnesium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Molybdenum	ND		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Potassium	ND		ug/L	100.0	03/11/2024	AB24-0311-03
Selenium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Sodium	ND		ug/L	1000.0	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0132-19-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0132-19-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	ND		ug/L	1000.0	03/09/2024	AB24-0308-01



Analytical Report

Report Date: 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0132

Inspection Date: 3/7/24 Inspection By: CIE/LMO

Sample Origin/Project Name: 01-7024 Wadock Porcupine

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) _____

Tracking Number: 27183682-2968 Shipping Form Attached: Yes No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.4-2.0 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration 015402
5-23-24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>4</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>3ce</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
500 mL (plastic)	_____	_____	_____	_____	_____
Other <u>150 mL</u> <u>plastic</u>	<u>1ce</u>	_____	_____	_____	_____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Porewater Wells			PROJECT NUMBER: 24-0132		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____													
SEND REPORT TO:	Joseph Firlit		email:		phone:						REMARKS					
COPY TO:	Harold Register TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS											
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION		TOTAL #	PRESERVATIVE						Total Metals	Anions	TDS	Alkalinity
	DATE	TIME					None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH					Other
24-0132-01	3/5/24	0637	GW	JCW-MW-18001		5	4	1					x	x	x	x
-02	3/5/24	1103	GW	JCW-MW-18004		3	2	1					x	x	x	
-03	3/6/24	0723	GW	JCW-MW-18005		3	2	1					x	x	x	
-04	3/6/24	0857	GW	JCW-MW-18006		3	2	1					x	x	x	
-05	3/5/24	0839	GW	MW-50		3	2	1					x	x	x	
-06	3/5/24	0921	GW	MW-51		3	2	1					x	x	x	
-07	3/5/24	1320	GW	MW-52		3	2	1					x	x	x	
-08	3/5/24	1311	GW	MW-53		3	2	1					x	x	x	
-09	3/5/24	1232	GW	MW-53R		3	2	1					x	x	x	
-10	3/5/24	1144	GW	MW-54R		3	2	1					x	x	x	
-11	3/5/24	1023	GW	MW-55		3	2	1					x	x	x	
-12	3/6/24	0810	GW	OW-57ROUT		3	2	1					x	x	x	

RELINQUISHED BY:		DATE/TIME: 3/6/24 1545		RECEIVED BY: Fed Ex		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>0.4-2.0</u> °C Cal. Due Date: <u>05-23-24</u>			
RELINQUISHED BY: Fed Ex		DATE/TIME: 03/06/24 0945 03-03-24		RECEIVED BY:					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Porewater Wells			PROJECT NUMBER: 24-0132		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____				
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____														
SEND REPORT TO:	Joseph Firit		email:		phone:								REMARKS				
COPY TO:	Harold Register TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS												
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION		TOTAL #	PRESERVATIVE						Total Metals	Anions	TDS	Alkalinity	
	DATE	TIME					None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH					Other
24-0132-13	3/4/24	0924	GW	MW-58		3	2	1									
-14	3/5/24	—	GW	DUP-JCW-LF-01		3	2	1									
-15	3/4/24	—	GW	DUP-JCW-LF-02		3	2	1									
-16	3/5/24	0637	GW	JCW-MW-18001 MS		2	1	1									
-17	4/11	0637	GW	JCW-MW-18001 MSD		2	1	1									
-18	3/4/24	0946	W	FB-01		2	1	1									
-19	3/4/24	0943	W	EB-01		2	1	1									

RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		COMMENTS:					
		3/4/24 0545		Fed Ex							
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u>					
Fed Ex		03/26/24 032124				Temperature: <u>0.4-2.0</u> °C Cal. Due Date: <u>05-23-24</u>					

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0131R

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 03/04/2024 for the 1st Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 03/07/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q1-2024 DEK-JCW Background Wells
Date Received: 3/7/2024
Chemistry Project: 24-0131

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0131-01	MW-15002	Groundwater	03/05/2024 10:52	DEK JCW Background
24-0131-02	MW-15008	Groundwater	03/05/2024 09:19	DEK JCW Background
24-0131-03	MW-15016	Groundwater	03/05/2024 11:40	DEK JCW Background
24-0131-04	MW-15019	Groundwater	03/05/2024 10:00	DEK JCW Background
24-0131-05	DUP-Background	Groundwater	03/05/2024 00:00	DEK JCW Background
24-0131-06	FB- Background	Water	03/05/2024 00:00	DEK JCW Background

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15002**
 Lab Sample ID: 24-0131-01
 Matrix: Groundwater

Laboratory Project: **24-0131**
 Collect Date: 03/05/2024R
 Collect Time: 10:52 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0131-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0131-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	474		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	116		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	175000		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	1		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	2		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	17600		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	13		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	6		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	16		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	12		ug/L	10.0	03/13/2024	AB24-0313-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0131-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	1860000		ug/L	1000.0	03/12/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	3790		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0131-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	3300		mg/L	10.0	03/08/2024	AB24-0308-07



Analytical Report

Report Date: 03/20/24
04/15/24R

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15008**
 Lab Sample ID: 24-0131-02
 Matrix: Groundwater

Laboratory Project: **24-0131**
 Collect Date: 03/05/2024R
 Collect Time: 09:19 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0131-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0131-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	3		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	92		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	128		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	124000		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	18900		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	20		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	4		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	7		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	ND		ug/L	10.0	03/13/2024	AB24-0313-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0131-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	400000		ug/L	1000.0	03/10/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	5640		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C Aliquot #: 24-0131-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1010		mg/L	10.0	03/08/2024	AB24-0308-07

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15016**
 Lab Sample ID: 24-0131-03
 Matrix: Groundwater

Laboratory Project: **24-0131**
 Collect Date: 03/05/2024R
 Collect Time: 11:40 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0131-03-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0131-03-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	12		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	131		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	336		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	227000		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	2		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	18200		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	72		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	7		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	ND		ug/L	10.0	03/13/2024	AB24-0313-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0131-03-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	117000		ug/L	1000.0	03/10/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	271000		ug/L	1000.0	03/10/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0131-03-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1090		mg/L	10.0	03/08/2024	AB24-0308-07



Analytical Report

Report Date: 03/20/24
04/15/24R

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15019**
 Lab Sample ID: 24-0131-04
 Matrix: Groundwater

Laboratory Project: **24-0131**
 Collect Date: 03/05/2024R
 Collect Time: 10:00 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0131-04-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0131-04-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	2		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	361		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	241		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	174000		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	1		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	23000		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	14		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	4		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	2		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	ND		ug/L	10.0	03/13/2024	AB24-0313-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0131-04-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	383000		ug/L	1000.0	03/10/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	92700		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C Aliquot #: 24-0131-04-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1220		mg/L	10.0	03/08/2024	AB24-0308-07

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **DUP-Background**
 Lab Sample ID: 24-0131-05
 Matrix: Groundwater

Laboratory Project: **24-0131**
 Collect Date: 03/05/2024R
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0131-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0131-05-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	3		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	92		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	126		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	122000		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	18600		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	20		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	4		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	6		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	ND		ug/L	10.0	03/13/2024	AB24-0313-01

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0131-05-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	399000		ug/L	1000.0	03/10/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	5940		ug/L	1000.0	03/09/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0131-05-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1030		mg/L	10.0	03/08/2024	AB24-0308-07

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
Field Sample ID: **FB- Background**
Lab Sample ID: 24-0131-06
Matrix: Water

Laboratory Project: **24-0131**
Collect Date: 03/05/2024R
Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0131-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/11/2024	AB24-0311-02

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0131-06-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Arsenic	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Barium	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Beryllium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Boron	ND		ug/L	20.0	03/13/2024	AB24-0313-01
Cadmium	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Calcium	2410		ug/L	1000.0	03/13/2024	AB24-0313-01
Chromium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Cobalt	ND		ug/L	6.0	03/13/2024	AB24-0313-01
Copper	5		ug/L	1.0	03/13/2024	AB24-0313-01
Iron	344		ug/L	20.0	03/13/2024	AB24-0313-01
Lead	2		ug/L	1.0	03/13/2024	AB24-0313-01
Lithium	ND		ug/L	10.0	03/13/2024	AB24-0313-01
Molybdenum	ND		ug/L	5.0	03/13/2024	AB24-0313-01
Nickel	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Selenium	ND		ug/L	1.0	03/13/2024	AB24-0313-01
Silver	ND		ug/L	0.2	03/13/2024	AB24-0313-01
Thallium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Vanadium	ND		ug/L	2.0	03/13/2024	AB24-0313-01
Zinc	13		ug/L	10.0	03/13/2024	AB24-0313-01



Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0131

Inspection Date: 3/7/24 Inspection By: CIE/LMO

Sample Origin/Project Name: Q1-2024 JCW-DEK Background

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) _____

Tracking Number: 271839379620 Shipping Form Attached: Yes No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.4-1.4°C Samples Received on Ice: Yes No _____

M&TE # and Expiration 015402
5-23-24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>11</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
²⁵⁰ 500 mL (plastic)	<u>5</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 JCW-DEK Background Wells		PROJECT NUMBER: 24-0131		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																											
SAMPLING TEAM: TRC		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																					
SEND REPORT TO: Joseph Firlit		email:		phone:		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <th rowspan="3">Total Metals</th> <th rowspan="3">Anions</th> <th rowspan="3">TDS</th> <th colspan="8"></th> </tr> <tr> <th colspan="8">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>						Total Metals	Anions	TDS									PRESERVATIVE								TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	REMARKS
Total Metals	Anions	TDS																																					
			PRESERVATIVE																																				
			TOTAL #	None	HNO ₃							H ₂ SO ₄	NaOH	HCl	MeOH	Other																							
COPY TO: Harold Register	MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste	CONTAINERS																																					
LAB SAMPLE ID	SAMPLE COLLECTION	MATRIX	FIELD SAMPLE ID / LOCATION																																				
	DATE TIME																																						

RELINQUISHED BY: <i>Al Ky</i>		DATE/TIME: <i>3/6/24 11:00</i>		RECEIVED BY: <i>Fedex</i>		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>0.4-1.4</u> °C Cal. Due Date: <u>05-23-24</u>					
RELINQUISHED BY: <i>Fed EX</i>		DATE/TIME: <i>03/07/24 09:45</i>		RECEIVED BY: <i>Ji</i>							

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: HMP GROUNDWATER MONITORING – JCWEADOCK ASD – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0133R

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 03/04/2024 for the 1st Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The sample was received for analysis by the Chemistry department of Laboratory Services on 03/07/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q1-2024 Weadock ASD
Date Received: 3/7/2024
Chemistry Project: 24-0133

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0133-01	JCW-OW-18001	Groundwater	03/05/2024 07:40	JC Weadock ASD

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18001**
 Lab Sample ID: 24-0133-01
 Matrix: Groundwater

Laboratory Project: **24-0133**
 Collect Date: 03/05/2024
 Collect Time: 07:40 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0133-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Arsenic	136		ug/L	1.0	03/11/2024	AB24-0311-03
Barium	85		ug/L	5.0	03/11/2024	AB24-0311-03
Beryllium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Boron	1710		ug/L	20.0	03/11/2024	AB24-0311-03
Cadmium	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Calcium	246000		ug/L	1000.0	03/11/2024	AB24-0311-03
Chromium	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Cobalt	ND		ug/L	6.0	03/11/2024	AB24-0311-03
Copper	1		ug/L	1.0	03/11/2024	AB24-0311-03
Iron	10100		ug/L	20.0	03/11/2024	AB24-0311-03
Lead	ND		ug/L	1.0	03/11/2024	AB24-0311-03
Lithium	67		ug/L	10.0	03/11/2024	AB24-0311-03
Magnesium	56100		ug/L	1000.0	03/11/2024	AB24-0311-03
Molybdenum	8		ug/L	5.0	03/11/2024	AB24-0311-03
Nickel	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Potassium	11100		ug/L	100.0	03/11/2024	AB24-0311-03
Selenium	1		ug/L	1.0	03/11/2024	AB24-0311-03
Silver	ND		ug/L	0.2	03/11/2024	AB24-0311-03
Sodium	67300		ug/L	1000.0	03/11/2024	AB24-0311-03
Thallium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Vanadium	ND		ug/L	2.0	03/11/2024	AB24-0311-03
Zinc	ND		ug/L	10.0	03/11/2024	AB24-0311-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0133-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0133-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	55300		ug/L	1000.0	03/09/2024	AB24-0308-01
Fluoride	ND		ug/L	1000.0	03/09/2024	AB24-0308-01
Sulfate	544000		ug/L	1000.0	03/10/2024	AB24-0308-01

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0133-01-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1280		mg/L	10.0	03/07/2024	AB24-0308-02



Analytical Report

Report Date: 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18001**
Lab Sample ID: 24-0133-01
Matrix: Groundwater

Laboratory Project: **24-0133**
Collect Date: 03/05/2024
Collect Time: 07:40 AM

Alkalinity by SM 2320B

Aliquot #: 24-0133-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	401000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Bicarbonate	401000		ug/L	10000.0	03/07/2024	AB24-0308-12
Alkalinity Carbonate	ND		ug/L	10000.0	03/07/2024	AB24-0308-12



Count on Us®

Laboratory Services

A CENTURY OF EXCELLENCE

Analytical Report

Report Date: 03/20/24

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0133

Inspection Date: 3-07-24 Inspection By: Lmg

Sample Origin/Project Name: Q1-2024 Weadock ASD

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) _____

Tracking Number: 271834822968 Shipping Form Attached: Yes No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.4-2.0 Samples Received on Ice: Yes _____ No _____

M&TE # and Expiration 015402 5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>2</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
500 mL (plastic)	_____	_____	_____	_____	_____
Other <u>250 mL plastic</u>	<u>1</u>	_____	_____	_____	_____

pH paper Lot # 265522 Expiration 2.15.25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock ASD		PROJECT NUMBER: 24-0133		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____				
SAMPLING TEAM:		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____												
SEND REPORT TO: Joseph Firlit		email:		phone:		Total Metals	Anions	TDS	Alkalinity					
COPY TO: Harold Register TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS							Total Metals	Anions	TDS	Alkalinity
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION		PRESERVATIVE	TOTAL #	None	HNO ₃	H ₂ SO ₄				
DATE TIME		MATRIX									None	HNO ₃	H ₂ SO ₄	NaOH
24-0133-01 3/5/24 0740		GW		JCW-OW-18001		x	x	x	x					

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	COMMENTS:
	3/5/24 1545	Fed Ex	
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u>
Fed Ex	03/05/24 EB 032424	09:45 	Temperature: <u>0.4-2.0</u> °C Cal. Due Date: <u>05-23-24</u>

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: March 20, 2024

Subject: HMP GROUNDWATER MONITORING – JCW LEACHATE WELLS – 2024 Q1

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0134

TRC Environmental, Inc. conducted groundwater monitoring at the JC Weadock site during the week of 03/04/2024 for the 1st Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry Department of Laboratory Services on 03/07/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements. In order to minimize contamination, the samples submitted for Low Level Mercury analysis were preserved in the Mercury clean-room upon receipt at the laboratory, as specified in the corresponding test method.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q1-2024 Weadock Leachate Wells
Date Received: 3/7/2024
Chemistry Project: 24-0134

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0134-01	LH-103R	Groundwater	03/06/2024 10:33	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-02	LH-103R Dup	Groundwater	03/06/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-03	LH-103R MS	Groundwater	03/06/2024 10:33	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-04	LH-103R MSD	Groundwater	03/06/2024 10:33	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-05	LH-104	Groundwater	03/06/2024 11:50	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-06	LH-104 Dup	Groundwater	03/06/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-07	FB-02	Water	03/06/2024 10:55	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-08	EB-02	Water	03/06/2024 12:10	JCW Solid Waste Disposal Area - Leachate Wells
24-0134-09	TB-02	Water	03/06/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R**
Lab Sample ID: 24-0134-01
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 10:33 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-01-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R Dup**
Lab Sample ID: 24-0134-02
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-02-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R MS**
Lab Sample ID: 24-0134-03
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 10:33 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	103		%	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R MSD**
Lab Sample ID: 24-0134-04
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 10:33 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-04-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	109		%	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-104**
Lab Sample ID: 24-0134-05
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 11:50 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-05-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	0.67		ng/L	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-104 Dup**
Lab Sample ID: 24-0134-06
Matrix: Groundwater

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	0.68		ng/L	0.5	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **FB-02**
Lab Sample ID: 24-0134-07
Matrix: Water

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 10:55 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-07-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **EB-02**
Lab Sample ID: 24-0134-08
Matrix: Water

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 12:10 PM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-08-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	03/13/2024	AB24-0312-08



Analytical Report

Report Date: 03/20/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **TB-02**
Lab Sample ID: 24-0134-09
Matrix: Water

Laboratory Project: **24-0134**
Collect Date: 03/06/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0134-09-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	03/13/2024	AB24-0312-08

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0134

Inspection Date: 03/07/24 Inspection By: CIE/LMO

Sample Origin/Project Name: Q1-2024 Deadock Leachate

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) _____

Tracking Number: 271839319610 Shipping Form Attached: Yes No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range NA Samples Received on Ice: Yes _____ No

M&TE # and Expiration NA

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	_____	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
500 mL (plastic)	_____	_____	_____	_____	_____
Other <u>602</u>	<u>9</u>	_____	_____	_____	_____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Leachate Wells		PROJECT NUMBER: 24-0134		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)					QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____						
SAMPLING TEAM: TRC		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: phone:													
SEND REPORT TO: Joseph Firlit		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS		Low Level Mercury					REMARKS						
COPY TO: Harold Register TRC		FIELD SAMPLE ID / LOCATION		PRESERVATIVE													
LAB SAMPLE ID				TOTAL #													
SAMPLE COLLECTION																	
DATE TIME																	
24-0134-01		3/6/24 1033		GW		LH-103R		1							x		
-02		11 1		GW		LH-103R Dup		1							x		
-03		11 11		GW		LH-103R MS		1							x		
-04		11 11		GW		LH-103R MSD		1							x		
-05		11 11		GW		LH-104		1							x		
-06		11 11		GW		LH-104 Dup		1							x		
-07		3/6/24 1055		W		FB-02		1							x		
-08		3/6/24 1210		W		EB-02		1							x		
-09		3/6/24 -		W		TB-02		1							x		

RELINQUISHED BY: 		DATE/TIME: 3/6/24/1600		RECEIVED BY: Fedex		COMMENTS: Received on Ice? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No M&TE #: <u>N/A</u> Temperature: <u>N/A</u> °C Cal. Due Date: <u>N/A</u>				
RELINQUISHED BY: Fed Ex		DATE/TIME: 3.7.24 0945		RECEIVED BY: 						

Appendix F Field Records



PROJECT NAME: CEC Weadock LF: 2024 GW Compliance

PROJECT NUMBER: 553828.0000.0000

PROJECT MANAGER: Darby Litz

SITE LOCATION: 2742 Weadock Hwy
Essexville, MI 48732

DATES OF FIELDWORK: 3/14/24 3/4/2024 TO 3/6/2024

PURPOSE OF FIELDWORK: First Quarter 2024 Groundwater Sampling

WORK PERFORMED BY: Jake Krenz, Javier Jasso, Andrew Whaley, Elric Rinehart

[Signature] 3/14/24
SIGNED DATE

[Signature] 3/21/24
CHECKED BY DATE



GENERAL NOTES

Weedoch LF

PROJECT NAME: CEC Karr DAP/LI 2024 GW Comp	DATE: <i>3/12/24</i>	TIME ARRIVED: <i>0700</i>
PROJECT NUMBER: 5538 0000 00000	AUTHOR: <i>JJ</i> JK AW	TIME LEFT: <i>1530</i>

WEATHER		
TEMPERATURE: <i>60</i> °F	WIND: <i>15</i> MPH	VISIBILITY: <i>Clear</i>
WORK / SAMPLING PERFORMED		
<i>S4L</i>		
<i>Annual Safety Training</i>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

Adam Why 3/12/24
 SIGNED DATE

3/12/24 *Adam Why*
 CHECKED BY DATE



GENERAL NOTES

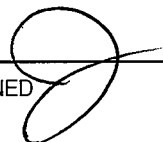
PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 3/5/24	TIME ARRIVED: 0550
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ ER	TIME LEFT: 1410

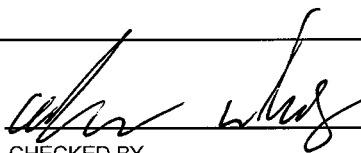
WEATHER		
TEMPERATURE: 40 °F	WIND: 20 MPH	VISIBILITY: overcast Rain
WORK / SAMPLING PERFORMED		
Jcw-mw-1800 (ms, msd), jcw-ow-1800, 50, Dup #01		
51, 55, 1800f, 54R, 53R, 52,		
Eric - Background wells		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED:  3/14/24 DATE

CHECKED BY:  3/14/24 DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 3/14/24	TIME ARRIVED: 0545
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ ER	TIME LEFT: 1230

WEATHER		
TEMPERATURE: 37 °F	WIND: 25 MPH	VISIBILITY: Overcast
WORK / SAMPLING PERFORMED		
JCW-mw 18005, 18006, Dup #02, du 57Rou +		
SB, EB #1, FA #01,		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED [Signature] 3/14/24 DATE 3/14/24 CHECKED BY [Signature] DATE 3/14/24



EQUIPMENT SUMMARY

PROJECT NAME: CEC Weadock LF: 2024 GW Cd	SAMPLER NAME: J. Jasso,
PROJECT NO.: 553828.0000.0000	

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

PURGE WATER DISPOSAL METHOD

GROUND
 DRUM
 POTW
 POLYTANK
 OTHER _____

DECONTAMINATION AND FIELD BLANK WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
3/14/24	3/21/24
SIGNED _____ DATE	CHECKED BY _____ DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: <u>PRODESS</u>	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: <u>AA</u>	DATE: <u>3/5/24</u>

PH CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
pH 7 (LOT #): <u>3610918</u>	<u>10/25</u>	<u>700 / 700</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>050</u>
pH 4 / 10 (LOT #): <u>3610691</u>	<u>9/25</u>	<u>400 / 400</u>	<input checked="" type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME
<u>3610901</u>	<u>11/24</u>	<u>1360 / 1360</u>	<u>24.</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>050</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME
<u>3310037</u>	<u>5/20</u>	<u>223 / 223</u>	<u>20</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>050</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / SATURATED AIR	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME
		<u>8.25 / 8.85</u>	<u>20</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>050</u>
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	
		/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

LOT #	EXP. DATE	POST-CAL. READING / STANDARD	CAL. RANGE	TIME
<u>A3097</u>	<u>4/25</u>	<u>0 / 0</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>050</u>
		<u>100 / 100</u>	<input checked="" type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	
		/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

[Signature] 3/14/24

DATE

CHECKED BY

[Signature] 3/21/24

DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: <i>DM155</i>	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: <i>AN</i>	DATE: <i>3/16/24</i>

PH CALIBRATION CHECK

pH 7 (LOT #): <i>3650910</i> (EXP. DATE): <i>10/5</i>	pH 4 / 10 (LOT #): <i>3610691</i> (EXP. DATE): <i>9/1</i>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD <i>7.0 / 7.0</i>	POST-CAL. READING / STANDARD <i>4.00 / 4.00</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <i>3610901</i> (EXP. DATE): <i>11/24</i>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD <i>1700 / 1700</i>	<i>24</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): <i>3610070</i> (EXP. DATE): <i>9/8</i>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD <i>223 / 223</i>	<i>22</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR <i>8.85 / 8.85</i>	<i>20</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <i>43051</i> (EXP. DATE): <i>4/15</i>	(LOT #):	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
POST-CAL. READING / STANDARD <i>0 / 0</i>	POST-CAL. READING / STANDARD <i>/</i>		
<i>100 / 100</i>	<i>/</i>		
/	/		

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	

⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED: *[Signature]* DATE: *3/14/24*

CHECKED BY: *[Signature]* DATE: *3/16/24*



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 3/4/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	0618	TOC	17.95	23.75	NA	NM
JCW-MW-18004	0658	TOC	12.98	14.74	NA	NM
JCW-MW-18005	0734	TOC	8.15	14.28	NA	NM
JCW-MW-18006	0918	TOC	12.73	23.42	NA	NM
JCW-OW-18001	0619	TOC	6.60	20.75	NA	NM
JCW-OW-18002	0624	TOC	10.78	19.78	NA	NM
JCW-OW-18003	0625	TOC	8.28	18.62	NA	NM
JCW-OW-18004	0700	TOC	6.36	14.85	NA	NM
JCW-OW-18006	0920	TOC	7.02	23.45	NA	NM
LH-103R	0717	TOC	21.28	33.46	NA	NM
LH-104	0767	TOC	8.65	14.00	NA	NM
JCW-MW-20	0738	TOC	6.16	14.00	NA	NM
MW-50	0623	TOC	14.53	20.00	NA	NM
MW-51	0630	TOC	15.24	20.00	NA	NM
MW-52	0634	TOC	16.60	19.74	NA	NM
MW-53	0640	TOC	14.58	18.18	NA	NM
MW-53R	0647	TOC	15.38	18.18	NA	NM
MW-54R	0653	TOC	14.75	17.22	NA	NM
MW-55	0711	TOC	14.84	16.34	NA	NM
MW-58	0943	TOC	5.33	18.28	NA	NM
OW-51	0631	TOC	9.15	17.28	NA	NM
OW-53	0642	TOC	7.48	18.00	NA	NM
OW-54	0651	TOC	6.52	16.48	NA	NM
OW-55	0712	TOC	6.16	18.42	NA	NM
OW-56	0741	TOC	5.65	19.27	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 3/19/24 DATE

CHECKED [Signature] 3/21/24 DATE



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 3/4/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-56R	0742	TOC	5.60	22.20	NA	NM
OW-57 IN	0744	TOC	5.65	24.60	NA	NM
OW-57R IN	0744	TOC	5.80	20.18	NA	NM
OW-57 OUT	0746	TOC	8.60	19.44	NA	NM
OW-57R OUT	0748	TOC	9.60	20.20	NA	NM
JCW-MW-15007	0935	TOC	3.02	8.95	NA	NM
JCW-MW-15009	0936	TOC	9.40	13.00	NA	NM
JCW-MW-15010	0938	TOC	18.03	19.57	NA	NM
JCW-MW-15028	0930	TOC	7.80	25.10	NA	NM
MW-15002	0953	TOC	6.73	16.80	NA	NM
MW-15008	0939	TOC	4.30	17.40	NA	NM
MW-15016	0951	TOC	5.53	9.94	NA	NM
MW-15019	0949	TOC	5.46	16.67	NA	NM
JCMW15003	0634	"	7.78	100 plus	"	"
JCMW 15002	0648	"	14.25	100 plus	"	"
MW 114R	0693	"	15.00	19.87	"	"
JCW-MW15021	0703	"	15.05	100 plus	"	"
JCW-61	0722	"	6.20	37.10	"	"
MW-19	0751	"	8.40	20.83	"	"
JCMW M15003	0927	"	8.78	100 plus	"	"
MW 104B	0933	"	7.45	41.18	"	"
MW-15020	0941	"	5.00	17.17	"	"
MW-114B	0944	"	4.68	32.76	"	"
MW15024	0947	"	6.00	17.17	"	"
JCW MW15021	0955	"	8.18	100 plus	"	"
MW-15014	0957	"	3.5	8.16	"	"

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED 3/14/24
DATE

CHECKED 3/14/24
DATE



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24
	BY: AW	DATE: 3/15/24

SAMPLE ID: JCW-MW-1801	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0607	DATE: 3/15/24	SAMPLE	TIME: 0637	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.75	SU	CONDUCTIVITY: 3433	umhos/cm	
	ORP: -36.7	mV	DO: 0.91	mg/L	
DEPTH TO WATER: 17.91	T/ PVC		TURBIDITY: 6.5	NTU	
DEPTH TO BOTTOM: 237.5	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 9.7	°C	FERROUS Fe	mg/L	
VOLUME REMOVED: 3 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear		ODOR: none		
COLOR: clear	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0607	100	4.4	2985	273	8.8	10.8	10.7	17.68	INITIAL
0612		6.60	3243	18.9	1.81	6.6	10.1	1770	.5
0617		6.70	3306	-28	1.3	6.6	10.4	1770	1
0622		6.75	3390	-34	1.0	6.7	10.5	1770	1.5
0627		6.75	3124	-36.0	0.97	6.5	9.8	1770	2
0632		6.75	3437	-36.2	0.97	6.3	9.7	1770	2.5
0637		6.75	3433	-36.7	0.95	6.5	9.7	1770	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:
 pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/15/24	AIRBILL NUMBER: -
COC NUMBER: -	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/15/24
	BY: Aw	DATE: 3/21/24

SAMPLE ID: <u>YW-00-18001</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0700</u>	DATE: <u>3/15/24</u>	SAMPLE	TIME: <u>0740</u>	DATE: <u>3/15/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.40</u> SU	CONDUCTIVITY: <u>1547</u> umhos/cm	ORP: <u>-11.2</u> mV	DO: <u>3.9</u> mg/L	
DEPTH TO WATER: <u>6.60</u> T/ PVC	TURBIDITY: <u>10</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>20.71</u> T/ PVC	TEMPERATURE: <u>8.7</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	VOLUME REMOVED: <u>4</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>		
COLOR: <u>cloudy</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____	FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0700	100	7.58	1547	12.5	10.0	55	7.6	6.65	INITIAL
0705		7.18	1526	26.8	6.67	36	8.4	6.70	.5
0710		7.00	1529	12.7	6.1	25	8.4	6.70	1
0715		7.00	1533	6.1	3.8	25	8.4	6.70	1.5
0720		6.94	1530	0.5	5.6	26	8.3	6.70	2
0725		6.95	1537	-4.8	5.0	28	8.5	6.70	2.5
0730		6.40	1541	-10.5	4.0	10	8.6	6.70	3
0735		6.90	1544	-11.0	4.0	10	8.6	6.70	3.5
0740		6.90	1547	-11.2	3.9	10	8.7	6.70	4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>FedEx</u>	DATE SHIPPED: <u>3/15/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>3/15/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/11/24	BY: Aw	DATE: 3/21/24
SAMPLE ID: MW-50		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 0754	DATE: 3/5/24	SAMPLE	TIME: 0829	DATE: 3/5/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.45	SU	CONDUCTIVITY: 1447 umhos/cm	
		ORP: -49.5	mV	DO: 1.0 mg/L	
DEPTH TO WATER: 14.53 T/ PVC		TURBIDITY: 6.0 NTU			
DEPTH TO BOTTOM: 20.00 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 8.6 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 3.5 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Clear		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- #01			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0754	100	7.93	1362	27	9.5	4.5	7.4	14.20	INITIAL
0759		7.40	1394	18.5	2.4	13.7	8.5	1435	1
0804		7.41	1428	-1.2	1.4	7.3	8.6	1435	1
0809		7.45	1433	-21.5	1.3	7.5	8.7	1435	1.5
0814		7.45	1444	-32.0	1.1	6.0	8.7	1435	2
0819		7.45	1448	-45.0	1.0	6.0	8.6	1435	2.5
0824		7.45	1440	-45.2	1.0	6.0	8.6	1435	3
0829		7.45	1447	-45.5	1.0	6.0	8.6	1435	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/5/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24
	BY: AW	DATE: 3/15/24

SAMPLE ID: <u>mw 51</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0851</u>	DATE: <u>3/15/24</u>	SAMPLE	TIME: <u>0921</u>	DATE: <u>3/15/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.41</u> SU	CONDUCTIVITY: <u>1256</u> umhos/cm	ORP: <u>-16.0</u> mV	DO: <u>1.41</u> mg/L	
DEPTH TO WATER: <u>15.24</u> T/ PVC	TURBIDITY: <u>6.4</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>20.0</u> T/ PVC	TEMPERATURE: <u>8.0</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <u>3</u> NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>3</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>clear</u> ODOR: <u>none</u>	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0851	100	7.94	1225	13.5	10	13	7.0	15.24	INITIAL
0856		7.56	1236	5.1	3.9	8.0	7.8	15.20	1
0904		7.45	1237	0.5	2.4	7.7	8.1	1530	1
0906		7.45	1242	-4.5	2.0	7.2	8.1	1530	1.1
0911		7.41	1250	-15.5	1.50	6.5	8.0	1530	2
0916		7.41	1254	-15.8	1.50	6.4	8.1	1530	2.1
0921		7.41	1256	-16.0	1.45	6.4	8.0	1530	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/15/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>3/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/14/24	BY: ACW	DATE: 3/21/24
SAMPLE ID: MW 55		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 0943	DATE: 3/15/24	SAMPLE	TIME: 1023	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 6.90 SU		CONDUCTIVITY: 1210 umhos/cm	
		ORP: -57.2 mV		DO: 1.0 mg/L	
DEPTH TO WATER: 14.84 T/ PVC		TURBIDITY: 9.9 NTU			
DEPTH TO BOTTOM: 16.39 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 7.6 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 4 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Brownish		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0943	100	7.20	1208	-6.5	8.8	100	8.0	1478	INITIAL
0948		6.95	1213	-39.0	2.2	6.1	7.8	1485	.5
0953		6.90	1214	-51	1.3	2.0	7.7	1485	1
0958		6.95	1210	-40	1.1	2.1	7.6	1485	1.5
1003		6.93	1209	-6.1	1.0	1.7	7.6	1485	2
1008		6.93	1209	-60.5	1.0	1.5	7.5	1485	2.5
1013		6.90	1209	-57.5	1.0	1.0	7.6	1485	3
1018		6.90	1210	-57.3	1.0	1.0	7.6	1485	3.5
1023		6.90	1210	-57.2	1.0	9.9	7.6	1485	4.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/14/24	BY: ACW	DATE: 3/21/24
SAMPLE ID: Jcw Mw 18004		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1038	DATE: 3/15/24	SAMPLE	TIME: 1103	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.04 SU		CONDUCTIVITY: 1451 umhos/cm	
		ORP: 78.5 mV		DO: 9.0 mg/L	
DEPTH TO WATER: 1298 T/ PVC		TURBIDITY: 6.2 NTU			
DEPTH TO BOTTOM: 1474 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 6.1 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 2.1 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: clear		ODOR: non	
COLOR: clear		ODOR: non		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1038	100	7.26	1396	76.9	10	10.3	6.3	1283	INITIAL
1043		7.05	1414	50	9.6	6.6	6.5	1320	.5
1048		7.05	1438	78.5	9.4	6.4	6.4	13.46	1
1053		7.04	1448	78.6	9.8	6.3	6.5	13.55	1.5
1058		7.04	1451	78.8	9.6	6.2	6.5	13.55	2
1103		7.04	1455	78.5	9.0	6.2	6.5	13.60	2.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/14/24	BY: AW	DATE: 3/15/24
SAMPLE ID: MW-542		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1116	DATE: 3/15/24	SAMPLE	TIME: 1146	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.00	SU	CONDUCTIVITY: 1131 umhos/cm	
		ORP: 49.5	mV	DO: 1.9	mg/L
DEPTH TO WATER: 14.75 T/ PVC		TURBIDITY: 8.9 NTU			
DEPTH TO BOTTOM: 17.25 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 6.9 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 3 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Brown		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1116	100	7.39	1103	58.8	9.8	185	7.0	1433	INITIAL
1121		7.66	1113	65.7	4.8	32	7.0	1440	1
1126		7.60	1117	63.5	3.8	15	7.1	1445	1
1131		7.00	1127	59	2.0	10	7.0	1445	1.5
1136		7.00	1130	50	2.0	9.0	7.0	1445	2
1141		7.00	1131	50	1.9	8.9	7.0	1445	2.5
1146		7.00	1131	49.5	1.9	8.9	6.9	1445	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24
	BY: AW	DATE: 3/15/24

SAMPLE ID: MW 53R	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1202	DATE: 3/15/24	SAMPLE	TIME: 1232	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.00	SU	CONDUCTIVITY: 1245	umhos/cm	
	ORP: 8.5	mV	DO: 091	mg/L	
DEPTH TO WATER: 15.30 T/ PVC	TURBIDITY: 6.9		NTU		
DEPTH TO BOTTOM: 18.10 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 7.7	°C FERROUS Fe _____ mg/L			
VOLUME REMOVED: 3 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none			
COLOR: Brownish	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1202	100	7.33	1252	59.7	9.3	270	7.8	1492	INITIAL
1207		7.00	1273	52.0	2.2	100	7.8	1510	1.5
1212		7.07	1272	40	1.3	23	7.7	1510	1
1217		7.00	1259	30	1.0	9	7.7	1510	1.5
1222		7.00	1244	8.5	0.97	7	7.7	1510	2
1227		7.00	1241	8.4	0.91	6.9	7.7	1510	2.5
1232		7.4	1245	8.5	0.91	6.9	7.7	1510	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24
	BY: Aw	DATE: 3/21/24

SAMPLE ID: MW 53	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1241	DATE: 3/15/24	SAMPLE	TIME: 1311	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.54	SU	CONDUCTIVITY: 1104	umhos/cm	
	ORP: -32.5	mV	DO: 0.85	mg/L	
DEPTH TO WATER: 1458	T/ PVC		TURBIDITY: 10	NTU	
DEPTH TO BOTTOM: 18.12	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 7.8	°C FERROUS Fe mg/L		
VOLUME REMOVED: 3	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none		
COLOR: Brownish	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1241	100	7.63	1072	21.5	9.5	80	7.2	1438	INITIAL
1246		7.64	1090	4.1	1.5	30	7.4	1445	.1
1251		7.60	1097	-3.5	1.2	19	7.7	1445	1
1256		7.58	1100	-13.5	1.0	17	7.8	1445	1.9
1301		7.55	1101	-32.0	0.94	10	7.6	1445	2
1306		7.54	1103	-32.1	0.87	10	7.7	1445	2.5
1311		7.54	1104	-32.5	0.85	10	7.8	1445	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: -
COC NUMBER: -	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/16/24	BY: AW	DATE: 3/16/24
SAMPLE ID: Jwmu 10005		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 0608	DATE: 3/16/24	SAMPLE	TIME: 0723	DATE: 3/16/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 6.70 SU		CONDUCTIVITY: 1505 umhos/cm	
		ORP: -8.5 mV		DO: 0.85 mg/L	
DEPTH TO WATER: 8.81 T/ PVC		TURBIDITY: 9.1 NTU			
DEPTH TO BOTTOM: 16.38 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 6.1 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 7.5 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: 100		ODOR: AOK	
COLOR: BROWN		ODOR: AOK		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
060810	10	6.4	771	200	6.8	200	7.0	0.58	INITIAL
0613		6.54	1561	95	2.6	186	6.1	9.00	.5
0618		6.70	1501	84	1.80	89	6.0	9.48	1
0623		6.71	1560	70	1.5	45	6.0	9.71	1.5
0628		6.71	1560	60	1.3	34	5.9	9.85	2
0633		6.71	1560	50	1.3	30	6.0	9.90	2.5
0638		6.71	1564	41	1.2	30	6.1	10.0	3
0643		6.71	1561	30	1.1	28	6.2	10.0	3.5
0648		6.71	1563	20	1.1	28	6.1	10.0	4
0653		6.71	568	20	1.1	26	6.2	10.0	4.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: -
COC NUMBER: -	SIGNATURE:	DATE SIGNED: 3/16/24



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Weadock LF: 2024 GW Cd	PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24	BY: Aw	DATE: 3/21/24

SAMPLE ID: JCU MW 18005

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0658	100	6.71	1573	10	1.0	19	6.1	1003	5
0703		6.70	1574	5.6	1.0	17	6.3	1003	5.5
0706		6.70	1576	1.1	0.95	15	6.3	1005	6
0713		6.70	1588	-8.0	0.88	10	6.1	10.10	6.5
0718		6.70	1595	-8.3	0.87	9.5	6.1	10.10	7
0723		6.70	1605	-8.5	0.85	9.5	6.1	10.10	7.5

SIGNATURE: 3/14/24

DATE SIGNED: _____



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/14/24	BY: Aw	DATE: 3/21/24
SAMPLE ID: 06-57 Rout		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING		TIME: 0740	DATE: 3/16/24	SAMPLE	
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.19	SU	CONDUCTIVITY: 1167 umhos/cm	
		ORP: 43.0	mV	DO: 4.3 mg/L	
DEPTH TO WATER: 8.42 T/ PVC		TURBIDITY: 5.7 NTU			
DEPTH TO BOTTOM: 19.46 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 6.1 °C		FERROUS Fe: _____ mg/L	
VOLUME REMOVED: 3 LITERS <input checked="" type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Clear		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0740	100	7.38	1147	31.9	10	6.0	5.7	9.97	INITIAL
0745		7.19	1168	40.5	5.4	1.6	6.6	10.12	.5
0750		7.18	1169	35	4.7	7.8	6.9	11.35	1
0755		7.19	1171	34	4.4	6.0	6.5	11.95	1.5
0800		7.19	1166	42.5	4.4	5.8	6.5	12.55	2
0805		7.19	1167	42.5	4.3	5.7	6.5	12.95	2.5
0810		7.19	1167	43.0	4.3	5.7	6.5	13.45	3
									3.5
									4
									4.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 3/14/24	BY: Acs DATE: 3/14/24

SAMPLE ID: JCW-MW-18006	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0827	DATE: 3/14/24	SAMPLE	TIME: 0857	DATE: 3/14/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.04 SU		CONDUCTIVITY: 1157 umhos/cm		
DEPTH TO WATER: 12.73 T/ PVC		ORP: -66.3 mV		DO: 0.87 mg/L	
DEPTH TO BOTTOM: 23.65 T/ PVC		TURBIDITY: 9.3 NTU			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 7.6 °C		FERROUS Fe: _____ mg/L	
VOLUME REMOVED: 3 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Brown		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- #02			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0807	100	7.19	1162	24.5	10	205	5.5	1274	INITIAL
0832		7.00	1179	-37	2.6	50	6.9	1285	1
0837		7.02	1116	-57.0	1.1	11.9	7.5	1285	1
0842		7.01	1116	-65	1.0	11.0	7.6	1285	1.5
0847		7.04	1142	-65.5	0.9	9.5	7.5	1285	2
0852		7.03	1152	-66.3	0.89	9.5	7.6	1285	2.5
0857		7.04	1157	-66.3	0.87	9.3	7.6	1285	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 3/14/24
	BY: Aw	DATE: 3/21/24

SAMPLE ID: Mw 58	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0909	DATE: 3/16/24	SAMPLE	TIME: 0934	DATE: 3/16/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.00 SU	CONDUCTIVITY: 2195 umhos/cm	ORP: -76.0 mV	DO: 084 mg/L	
DEPTH TO WATER: 533 T/ PVC	TURBIDITY: 5.4 NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: 1595 T/ PVC	TEMPERATURE: 6.7 °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear	ODOR: none			
VOLUME REMOVED: 5 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
COLOR: clear	ODOR: none	FILTRATE COLOR: _____	FILTRATE ODOR: _____		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0909	200	7.34	1933	4.1	10.	5.7	5.1	5.7	INITIAL
0914		6.97	2496	-38.4	1.7	7.9	6.7	533	1
0919		7.03	2385	-59.5	1.00	5.6	6.6	533	2
0924		7.08	2224	-75.8	0.95	5.5	6.7	533	3
0929		7.08	2215	-76.0	0.86	5.5	6.7	533	4
0934		7.08	2195	-76.0	0.84	5.4	6.7	533	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/20



WATER SAMPLE LOG

PROJECT NAME: <u>CEC Kern BAPWSP: Addition</u>	PREPARED	CHECKED
PROJECT NUMBER: 553814.0002.0000	BY: AW, JJ, JK, ER DATE: <u>3/14/24</u>	BY: <u>AW</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>FB 01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>0940</u>	DATE: <u>3/21/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	
			ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: _____ LITERS <input type="checkbox"/> GALLONS			COLOR: <u>clear</u>	ODOR: <u>NA</u>	
COLOR: _____ ODOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL
/									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/21/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>3/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: <u>CEC Kam RAP/WSP: Addition</u>	PREPARED	CHECKED
PROJECT NUMBER: <u>553844-0002-0000</u>	BY: <u>AW, JJ, JK, ER</u> DATE: <u>3/14/24</u>	BY: <u>AW</u> DATE: <u>3/21/24</u>

SAMPLE ID: <u>EB#01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>0943</u>	DATE: <u>3/21/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.1</u> SU	CONDUCTIVITY: <u>41</u> umhos/cm	
			ORP: <u>211</u> mV	DO: <u>4.1</u> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>1.1</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>11</u> °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: _____ LITERS <input type="checkbox"/> GALLONS			COLOR: <u>1.0</u> ODOR: <u>0.1</u>		
COLOR: _____ ODOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL
/									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N			125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N			40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N						<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N						<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N						<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fed Ex</u>	DATE SHIPPED: <u>3/14/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>3/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: <u>CEC Kam RAP/WSP: Addition</u>	PREPARED	CHECKED
PROJECT NUMBER: <u>553814-0002-0000</u>	BY: <u>AW, JJ, JK, ER</u> DATE: <u>3/14/24</u>	BY: <u>AW</u> DATE: <u>3/14/24</u>

SAMPLE ID: <u>LA-103R</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1003</u>	DATE: <u>3/14/24</u>	SAMPLE	TIME: <u>1033</u>	DATE: <u>3/14/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>6.98</u> SU	CONDUCTIVITY: <u>2795</u> umhos/cm	
			ORP: <u>-98.5</u> mV	DO: <u>0.87</u> mg/L	
DEPTH TO WATER: <u>21.38</u> T/ PVC			TURBIDITY: <u>4.9</u> NTU		
DEPTH TO BOTTOM: <u>334</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>9.6</u> °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>0</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>clear</u> ODOR: <u>yes</u>		
COLOR: <u>Blackish</u> ODOR: <u>yes</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP		
COMMENTS: <u>LL Hg</u>					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1003	<u>100</u>	<u>7.08</u>	<u>3094</u>	<u>-77.0</u>	<u>9.8</u>	<u>17.0</u>	<u>7.3</u>	<u>21.33</u>	INITIAL
1008		<u>6.99</u>	<u>2903</u>	<u>-63.8</u>	<u>2.0</u>	<u>12.6</u>	<u>8.5</u>	<u>21.57</u>	<u>1.0</u>
1013		<u>6.99</u>	<u>2886</u>	<u>-77.0</u>	<u>1.35</u>	<u>7.1</u>	<u>8.8</u>	<u>21.60</u>	<u>2.0</u>
1018		<u>6.99</u>	<u>2879</u>	<u>-85.0</u>	<u>1.16</u>	<u>5.3</u>	<u>8.9</u>	<u>21.61</u>	<u>3.0</u>
1023		<u>6.98</u>	<u>2849</u>	<u>-98.0</u>	<u>0.97</u>	<u>5.0</u>	<u>8.9</u>	<u>21.63</u>	<u>4.0</u>
1028		<u>6.98</u>	<u>2800</u>	<u>-98.3</u>	<u>0.88</u>	<u>4.9</u>	<u>9.0</u>	<u>21.62</u>	<u>5.0</u>
1033		<u>6.98</u>	<u>2795</u>	<u>-98.5</u>	<u>0.87</u>	<u>4.9</u>	<u>9.0</u>	<u>21.63</u>	<u>6.0</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N	<u>4</u>	<u>250</u>	<u>Glass</u>	<u>A E</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: _____	DATE SHIPPED: _____	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>3/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn RAP/WSP: Addition	PREPARED	CHECKED
PROJECT NUMBER: 553814.0002.0000	BY: AW, JJ, JK, ER DATE: 3/14/24	BY: Aw DATE: 3/16/24

SAMPLE ID: LH104	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1120	DATE: 3/16/24	SAMPLE	TIME: 1150	DATE: 3/16/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 8.55 SU	CONDUCTIVITY: 928 umhos/cm	ORP: -91.3 mV	DO: 2.5 mg/L	
DEPTH TO WATER: 805 T/ PVC	TURBIDITY: 5.5 NTU	TEMPERATURE: 8.0 °C FERROUS Fe _____ mg/L			
DEPTH TO BOTTOM: 14.0 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____	FILTRATE ODOR: _____
VOLUME REMOVED: 3 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
COLOR: Clear	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS: LL Hg					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1120	10.0	8.38	928	-240	10	9.0	7.4	7.96	INITIAL
1125		8.37	944	-19.1	6.20	5.8	7.8	8.50	.5
1130		8.37	936	-18.2	5.5	5.9	7.9	8.95	1
1135		8.4	926	-36	3.4	5.5	8.0	8.65	1.5
1140		8.55	928	-50.5	2.5	5.5	8.1	8.65	2
1145		8.54	928	-91.0	2.5	5.5	8.1	8.65	2.5
1148		8.55	928	-91.3	2.5	5.5	8.0	8.65	3
									7.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N	4	250	Glass	E	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553844.0000.0000 553828	BY: AW, JJ, JK, ER DATE: 3/5/24	BY: AW DATE: 3/5/24

SAMPLE ID: MW-15008	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 843	DATE: 11	SAMPLE	TIME: 919	DATE: 3/5/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 6.7	SU	CONDUCTIVITY: 1505.7 umhos/cm
			ORP: -115.1 mV	DO: 1.51 mg/L	
DEPTH TO WATER: 4.25 T/ PVC			TURBIDITY: 0.0 NTU		
DEPTH TO BOTTOM: 17.42 T/ PVC			<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: 8.48 °C FERROUS Fe 7.0 mg/L		
VOLUME REMOVED: 7.2 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: yellowish ODOR: No		
COLOR: yellowish ODOR: No			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- Background		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
843	200	6.61	1951.1	-80.4	1.72	1.15	8.84	4.25	INITIAL
846		6.64	1791.0	-97.9	1.57	0.0	8.73	—	0.6
849		6.67	1670.6	-104.6	1.54	8.92	8.67	—	1.2
852		6.7	1547.5	-110.4	1.53	2.14	8.56	—	1.8
855		6.71	1495.3	-112.9	1.53	88.41	8.43		2.4
858		6.71	1484.3	-113.4	1.57	0.0	8.48		3.0
901		6.71	1496.9	-112.7	1.60	22.44	8.49		3.6
904		6.71	1488.9	-113.4	1.57	0.0	8.48		4.2
907		6.7	1485.7	-113.3	1.57	3.29	8.46		4.8
910		6.7	1492.3	-113.6	1.58	16.23	8.52		5.4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
42	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
42	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
42	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Carrier	DATE SHIPPED: 3/5/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn LF: 2024 GW Compli	PREPARED	CHECKED
PROJECT NUMBER:	553844-0000-0000 553844	BY: W, JJ, JK, E	DATE: 3/5/24 BY: AW DATE: 3/21/24

SAMPLE ID: MW - 18008

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
9:13	200	6.7	1463.2	-113.0	1.59	0.0	8.52	4.25	6.0
9:16	↓	6.7	1494.9	-113.1	1.52	0.0	8.49	↓	6.6
9:19	↓	6.7	1505.7	-115.1	1.51	0.0	8.48	↓	7.2

SIGNATURE: 

DATE SIGNED: 3/5/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000.0000 553828	BY: AW, JJ, JK, ER DATE: 3/5/24	BY: AW DATE: 3/21/24

SAMPLE ID: MW - 15049	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 951	DATE: u	SAMPLE	TIME: 1000	DATE: u
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.72 SU	CONDUCTIVITY: 1765.1 umhos/cm	ORP: -87.9 mV	DO: 1.63 mg/L	
DEPTH TO WATER: 5.33 T/ PVC	TURBIDITY: 0.0 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: 16.85 T/ PVC	WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 7.27 °C	FERROUS Fe 6.0 mg/L		
VOLUME REMOVED: 1.8 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: yellowish	ODOR: slight	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
COLOR: yellowish	ODOR: slight	TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR:	FILTRATE ODOR:
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
951	200	6.75	1763.1	-75.1	2.38	0.0	7.51	5.37	INITIAL
954	↓	6.72	1765.3	-82.2	1.76	5.65	7.46	5.43	0.6
957	↓	6.72	1765.4	-86.5	1.65	0.0	7.35	—	1.2
1000	↓	6.72	1765.1	-87.9	1.63	0.0	7.27	—	1.8
									2.4
									3.0

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Carrier	DATE SHIPPED: 3/5/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



WATER SAMPLE LOG

PROJECT NAME: CEC Kam LF: 2024 GW Comp	PREPARED	CHECKED
PROJECT NUMBER: 553814.0000-0000 553825	BY: AW, JJ, JK, <i>[Signature]</i> DATE: 3/5/24	BY: <i>[Signature]</i> DATE: 3/21/24

SAMPLE ID: MW - 15002	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING TIME: 1025 DATE: 11	SAMPLE TIME: 1052 DATE: "
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.71 SU CONDUCTIVITY: 4227.6 umhos/cm
DEPTH TO WATER: 6.61 T/ PVC	ORP: -69.2 mV DO: 1.76 mg/L
DEPTH TO BOTTOM: 16.88 T/ PVC	TURBIDITY: 0.0 NTU
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY
VOLUME REMOVED: 5.2 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 8.25 °C FERROUS Fe: 6.0 mg/L
COLOR: Orange ODOR: Slight	COLOR: Orange ODOR: Slight
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	FILTRATE COLOR: FILTRATE ODOR: QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-
COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1025	201	7.46	576.4	-85.9	2.52	7.64	8.18	6.61	INITIAL
1028		6.82	3062.1	-61.4	1.73	511.66	8.22	6.81	0.6
1031		6.76	3747.5	-63.2	1.65	273.06	8.14	6.85	1.2
1034		6.74	4010.2	-64.5	1.61	177.1	8.02	6.86	1.8
1037		6.73	4231.1	-65.9	1.61	0.0	8.2	—	2.4
1040		6.72	4367.6	-67.6	1.6	0.0	8.22	—	3.0
1043		6.72	4461.0	-68.5	1.63	13.61	8.14	—	3.6
1046		6.71	4591.4	-69.2	1.65	0.0	8.26	—	4.2
1049		6.71	4648.9	-69.3	1.72	0.23	8.2	6.86	4.8
1052		6.71	4227.6	-69.2	1.76	0.0	8.25	"	5.2

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -												
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N					
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N					
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N					
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N					
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N					

SHIPPING METHOD: Courier	DATE SHIPPED: 3/5/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn LF: 2024 GW Comp		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0000.0000		BY: AW, JJ, JK DATE: 3/5/24		BY: AW DATE: 3/21/24	
SAMPLE ID: MW-15016		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING TIME: 1116 DATE: 3/5/24		SAMPLE TIME: 1140 DATE: "			
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 6.98 SU		CONDUCTIVITY: 1317.8 umhos/cm	
		ORP: -102.4 mV		DO: 1.53 mg/L	
DEPTH TO WATER: 3.12 T/ PVC		TURBIDITY: 0.0 NTU			
DEPTH TO BOTTOM: 7.76 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 5.84 °C		FERROUS Fe: 3.6 mg/L	
VOLUME REMOVED: 4.8 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clearish		ODOR: No	
COLOR: Clearish		ODOR: No		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1116	200	6.99	936.92	-70.3	2.99	215.9	7.12	3.12	INITIAL
1119	"	7.03	1076.3	-86.2	1.75	98.16	6.07	—	0.6
1122	↓	7.0	1209.0	-91.4	1.61	45.75	5.95	—	1.2
1125	↓	6.99	1246.2	-94.5	1.58	21.33	5.91	—	1.8
1128	↓	6.99	1264.8	-96.6	1.56	8.3	5.88	↓	2.4
1131	↓	6.99	1266.7	-98.3	1.59	5.35	5.83	↓	3.0
1134	↓	6.98	1307.7	-100.3	1.54	0.09	5.79	↓	3.6
1137	↓	6.98	1312.9	-101.3	1.53	0.0	5.84	↓	4.2
1140	↓	6.98	1317.8	-102.4	1.53	0.0	5.84	↓	4.8

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Courier	DATE SHIPPED: 3/5/24	AIRBILL NUMBER: —
COC NUMBER: —	SIGNATURE: <i>[Signature]</i>	DATE SIGNED: 3/5/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 3/14/24	BY: AW	DATE: 3/14/24
SAMPLE ID: MW 53		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1320	DATE: 3/15/24	SAMPLE	TIME: 1350	DATE: 3/15/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 7.02 SU	CONDUCTIVITY: 1635 umhos/cm	
		ORP: -15.0 mV		DO: 6.0 mg/L	
DEPTH TO WATER: 16.00 T/ PVC		TURBIDITY: 10 NTU			
DEPTH TO BOTTOM: 19.74 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 28 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 3 LITERS <input type="checkbox"/> GALLONS		COLOR: 100		ODOR: none	
COLOR: Brownish		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1320	100	7.03	1542	-5.9	9.0	60	7.3	15.70	INITIAL
1325		7.20	1605	5.4	2.8	43	7.8	15.85	0.5
1330		7.10	1619	4.6	1.7	27	7.9	15.85	1
1335		7.00	1628	-3.5	1.2	16	7.9	15.85	1.1
1340		7.02	1632	-14.5	1.0	10	7.8	15.85	2
1345		7.02	1633	-14.5	1.0	10	7.8	15.85	2.1
1350		7.02	1635	-15.0	1.0	10	7.8	15.85	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fed Ex	DATE SHIPPED: 3/16/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 3/14/24



WELL INSPECTION REPORT

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance
 PROJECT NO.: 553828.0000.0000

SAMPLER NAME: ~~Javier Jasso~~ Jake Krenz
 DATE: 3/6/2024

WELL ID	PROTECTIVE CASING Condition	SURFACE SEAL	DEGREE OF IMMOBILITY OF PROTECTIVE CASING	PERMANENT LEGIBLE LABELS	LOCK	WELL CAP	EASE OF INSERTING / REMOVING BAILER	SEDIMENT IN WELL	COMMENT
SCW-MW-1800	Good	Good	No mobility	Legible	✓	✓	No resistance N/A	Slight	
SCW-OW-18001	Good	Good	Slight mobility	legible	✓	✓	N/A	Slight	Bollards move easily by hand
MW-50	Good	Good	No mobility	legible	✓	✓	N/A	None Slight	
SCW-OW-18002	Good	Good	Slight mobility	Legible	✓	✓	N/A	None Slight	Bollards move easily by hand
MW-51	Good	Good	No mobility	Legible	✓	✓	N/A	None	
OW-51	Good	Good	No mobility	Legible	✓	✓	N/A	None	stainless steel casing
MW-52	Good	Good	No mobility	legible	✓	✓	N/A	None	
SCW-OW-18003	Good	Good	No mobility	legible	✓	✓	↓	None	
SCW-MW-18002	Good	Good	No mobility	legible	✓	✓		N/A	Bedrock well, over 102' deep
MW-53	Good	Good	No mobility	Legible	✓	✓		None	
OW-53	Good	Good	No mobility	Legible	✓	✓		None	
MW-53R	Good	Good	No mobility	Legible	✓	✓		None	Bollards move slightly by hand
SCW-MW-15002	Good	Good	No mobility	legible	✓	✓		N/A	Bedrock well, over 102' deep
MW-16R	Good	Good	No mobility	legible	✓	✓		None	Renamed MW-54?
MW-54R	Good	Good	Slight mobility	Legible	✓	✓		None	
OW-54	Good	Good	No mobility	legible	✓	✓		None	
LH-104R	Good	Good	Moderate/High mobility		✓	✓		None	

SIGNED: [Signature] DATE: 3-15-24

CHECKED BY: [Signature] DATE: 3/21/24

Pg # 34 of 42

Well ID	Protective casing condition	Surface Seal	Pro casing mobility	well label	Lock	cap	Sediment	Comments
SCW-MW-18004	Good	Good	No Mobility	Legible	✓	✓	None	
SCW-OW-18004	Good	Good	No Mobility	legible	✓	✓	None	
SCW-MW-15021	Good	Good	No Mobility	Legible	✓	✓	N/A	
ICW-MW-18006	Good	Good	Slight Mobility	legible	✓	✓	None	Bollards easily moved by hand
SCW-OW-18006	Good	Good	No Mobility	legible	✓	✓	None	
ICW-MW-18025	Good	Good	Slight Mobility	Legible	✓	✓	None	Bollards easily moved by hand
W-20/SCW-MW-20	Good	Good	No Mobility	legible	✓	✓	Moderate	
LH-103R	Good	Good	No Mobility	Legible	✓	✓	None	unable to close pro cover, pro cover sank around well w 4"
OW-56	Good	Good	No Mobility	Legible	NO	✓	None	
OW-56R	Good	Good	No Mobility	Legible	NO	✓	None	
DW-57IN	Good	Good	No Mobility	legible	NO	✓	None	
OW-57OUT	Good	Good	No Mobility	Legible	NO	✓	None	
DW-57RIN	Good	Good	No Mobility	Legible	✓	✓	None	
DW-57ROOT	Good	Good	No Mobility	legible	NO	✓	None	
SCW-MW-15010	Good	Good	No mobility	Legible	✓	✓	None	
OW-61	Good	Good	High Mobility	legible	✓	✓	None	
OW-MW-15009	Good	Good	No Mobility	legible	✓	✓	None	NO concrete pad around Pro Cover
OW-MW-15003	Good	Good	No mobility	legible	✓	✓	None	
MW-106A/ OW-MW-15028	Good	Good	No mobility	legible	✓	✓	N/A	Bedrock well, over 102' deep
OW-106B	Good	Good	No Mobility	legible	✓	✓	None	Bollards easily moved by hand
OW-MW-15007	Good	Good	No Mobility	legible	NO	✓	None	Bollards easily moved by hand
OW-MW-15001	Good	Good	High mobility	legible	✓	✓	None	Lock broke when opened
OW-15002	Good	Good	No mobility	legible	✓	✓	N/A	Bedrock well, over 102' deep

Well ID	Protective casing condition	Surface Seal	Pro casing mobility	well label	Lock	cap	Sediment	Comments
W-MW-18004	Good	Good	No Mobility	Legible	✓	✓	None	
W-MW-18004	Good	Good	No Mobility	Legible	✓	✓	None	
W-MW-15021	Good	Good	No Mobility	Legible	✓	✓	N/A	
W-MW-18006	Good	Good	Slight Mobility	legible	✓	✓	None	Bollards easily moved by hand
W-MW-18006	Good	Good	No Mobility	legible	✓	✓	None	
W-MW-18005	Good	Good	Slight Mobility	legible	✓	✓	None	Bollards easily moved by hand
20/50W-MW-20	Good	Good	No Mobility	legible	✓	✓	Moderate	
H-103R	Good	Good	No mobility	Legible	✓	✓	None	unable to close pro cover, pro cover sank around well w 4"
W-56	Good	Good	No mobility	legible	NO	✓	None	
W-56R	Good	Good	No mobility	legible	NO	✓	None	
W-57IN	Good	Good	No mobility	legible	NO	✓	None	
W-57OUT	Good	Good	No mobility	Legible	✓	✓	None	
W-57RIN	Good	Good	No mobility	Legible	NO	✓	None	
W-57ROOT	Good	Good	No mobility	legible	✓	✓	None	
W-MW-15010	Good	Good	No mobility	legible	✓	✓	None	
W-61	Good	Good	High Mobility	legible	✓	✓	None	
W-MW-15009	Good	Good	No Mobility	legible	✓	✓	None	No concrete pad around Pro Cover
W-MW-15003	Good	Good	No mobility	legible	✓	✓	None	
W-106A/ W-MW-15028	Good	Good	no mobility	legible	✓	✓	N/A	Bedrock well, over 102' deep
W-106B	Good	Good	No mobility	legible	✓	✓	None	Bollards easily moved by hand
W-MW-15007	Good	Good	No mobility	legible	NO	✓	None	Bollards easily moved by hand
W-MW-15001	Good	Good	High mobility	legible	✓	✓	N/A	Lock broke when opened
W-15002	Good	Good	No mobility	Legible	✓	✓	N/A	Bedrock well, over 102' deep

AW sketch

36 of 112



WELL INSPECTION REPORT

1. We do not have background

PROJECT NAME: CEC Karn ~~LF-2024 GW Compliance~~

PROJECT NO.: 553814.0000.0000 / *553828.0000.0000*

SAMPLER NAME: Jake Krenz, Javier Jasso, Andrew Whaley

DATE: *3/6/24*

WELL ID	PROTECTIVE CASING	SURFACE SEAL	DEGREE OF IMMOBILITY OF PROTECTIVE CASING	PERMANENT LEGIBLE LABELS	LOCK	WELL CAP	EASE OF INSERTING / REMOVING BAILER	SEDIMENT IN WELL	COMMENT
MW-15016	Good	Good	No Mobility	Legible	✓	✓	N/A	None	<i>unable to fully close pro cover As it has sunk around the well.</i>
MW-15018	Good	Good	No Mobility	Legible	NO	✓	N/A	None	
MW-15019	Good	Good	No Mobility	Legible	✓	✓	N/A	None	
MW-15024	Good	Good	No Mobility	Legible	✓	✓	N/A	Slight	
MW-116A MW-58 MW-15027	Good	Good	NO mobility	legible	✓	✓	N/A	none	
MW-116B	Good	Good	No Mobility	legible	✓	✓	N/A	None	
MW-15020	Good	Good	No Mobility	legible	✓	✓	N/A	Slight	
MW-15008	Good	Good	NO Mobility	legible	✓	✓		None	

Je My 3-15-24
 SIGNED _____ DATE _____

Andrew Whaley 3/21/24
 CHECKED BY _____ DATE _____

Pg # 37 of 44
 3/7/24

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Porewater Wells		PROJECT NUMBER: 24-0132		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____						
SAMPLING TEAM:		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____														
SEND REPORT TO:	Joseph Firlit	email:		phone:												
COPY TO:	Harold Register TRC	MATRIX CODES: GW = Groundwater OX = Other _____ WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS PRESERVATIVE												
LAB SAMPLE ID	SAMPLE COLLECTION DATE TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS	Alkalinity	REMARKS
24-0132-01	3/5/24 0637	GW	JCW-MW-18001	5	4	1						x	x	x	x	
-02	3/5/24 1103	GW	JCW-MW-18004	3	2	1						x	x	x		
-03	3/6/24 0522	GW	JCW-MW-18005	3	2	1						x	x	x		
-04	3/6/24 0857	GW	JCW-MW-18006	3	2	1						x	x	x		
-05	3/5/24 0839	GW	MW-50	3	2	1						x	x	x		
-06	3/5/24 0921	GW	MW-51	3	2	1						x	x	x		
-07	3/5/24 1350	GW	MW-52	3	2	1						x	x	x		
-08	3/5/24 1311	GW	MW-53	3	2	1						x	x	x		
-09	3/5/24 1232	GW	MW-53R	3	2	1						x	x	x		
-10	3/5/24 1146	GW	MW-54R	3	2	1						x	x	x		
-11	3/5/24 1023	GW	MW-55	3	2	1						x	x	x		
-12	3/6/24 0810	GW	OW-57ROUT	3	2	1						x	x	x		
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		COMMENTS:										
		3/6/24 1545		Fed Ex												
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No						M&TE #: <u>015402</u>				
Fed Ex		03/06/24 0945				Temperature: <u>0.4-2.0</u> °C						Cal. Due Date: <u>05-23-24</u>				

Pg # 20384 42

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Porewater Wells			PROJECT NUMBER: 24-0132		SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____														
SEND REPORT TO: Joseph Firlit		email:		phone:													
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste			CONTAINERS												
TRC					PRESERVATIVE												
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION		TOTAL #		None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other		Total Metals		Anions		TDS		Alkalinity	
		DATE TIME MATRIX															
24-0132-13		3/6/24 0924		MW-58		3		2 1		x x x							
-14		3/5/24 —		DUP-JCW-LF-01		3		2 1		x x x							
-15		3/4/24 —		DUP-JCW-LF-02		3		2 1		x x x							
-16		3/5/24 0637		JCW-MW-18001 MS		2		1 1		x x							
-17		4 11 0637		JCW-MW-18001 MSD		2		1 1		x x							
-18		3/4/24 0946		FB-01		2		1 1		x x							
-19		3/6/24 0943		EB-01		2		1 1		x x							

RELINQUISHED BY:		DATE/TIME: 3/6/24 0545		RECEIVED BY: Fed Ex		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Temperature: <u>0.4-2.0</u> °C M&TE #: <u>015402</u> Cal. Due Date: <u>05-23-24</u>			
RELINQUISHED BY: Fed Ex		DATE/TIME: 03/06/24		RECEIVED BY:					

Pg 2 of 2 4/2/24

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page ____ of ____

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock ASD				PROJECT NUMBER: 24-0133				SAP CC or WO#: REQUESTER: Harold Register				ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																																																																								
SAMPLING TEAM:				TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																																																																				
SEND REPORT TO:		Joseph Firlit		email:				phone:				<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Metals</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Anions</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">TDS</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Alkalinity</td> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>				Total Metals	Anions	TDS	Alkalinity																																																																					
Total Metals	Anions	TDS	Alkalinity																																																																																					
COPY TO:		Harold Register		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste				CONTAINERS				<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">TOTAL #</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">None</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">HNO₃</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">H₂SO₄</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">NaOH</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">HCl</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">MeOH</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Other</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">PRESERVATIVE</td> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>				TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	PRESERVATIVE																																																																
TOTAL #	None	HNO ₃	H ₂ SO ₄					NaOH	HCl	MeOH	Other														PRESERVATIVE																																																															
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION				<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>																																																																																
DATE		TIME		MATRIX				<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>																																																																																
24-0133-01		3/5/24 0740		GW				JCW-OW-18001				<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> <tr> <td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td> </tr> </table>																																																																												

RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		COMMENTS:			
		3/06/24 15:15		Fed EX					
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>0.4-2.0</u> °C Cal. Due Date: <u>05-23-24</u>			
Fed EX		03/06/24		09:45		<div style="position: absolute; right: -100px; top: 50%; transform: translateY(-50%); font-size: 24px; font-weight: bold;"> 42 40 38 36 </div>			

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q1-2024 JCW-DEK Background Wells			PROJECT NUMBER: 24-0131			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____								
SAMPLING TEAM: TRC			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																				
SEND REPORT TO: Joseph Firlit			email:			phone:																	
COPY TO: Harold Register			MATRIX CODES: GW = Groundwater OX = Other _____ WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste			CONTAINERS																	
TRC						PRESERVATIVE																	
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS	REMARKS					
	DATE	TIME																					
24-0131-01	3/5/24	1052	GW	MW-15002			3	2	1						x	x	x						
-02	3/5/24	919	GW	MW-15008			3	2	1						x	x	x						
-03	3/5/24	1140	GW	MW-15016			3	2	1						x	x	x						
-04	3/5/24	1000	GW	MW-15019			3	2	1						x	x	x						
-05	3/5/24	—	GW	DUP-Background			3	2	1						x	x	x						
-06	3/5/24	—	W	FB- Background			1								x								

RELINQUISHED BY: <i>Je Ky</i>		DATE/TIME: 3/6/24/1600		RECEIVED BY: <i>Fedex</i>		COMMENTS: Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>0.4-1.4</u> °C Cal. Due Date: <u>05-23-24</u>					
RELINQUISHED BY: <i>Fed Ex</i>		DATE/TIME: 03/07/24 09:45		RECEIVED BY: <i>Ji</i>							

Pg # 48 of 49

Appendix G

Alternate Source Demonstration Supporting Information

Figure G1: Time Series Plots for JCW-MW-18001 ASD

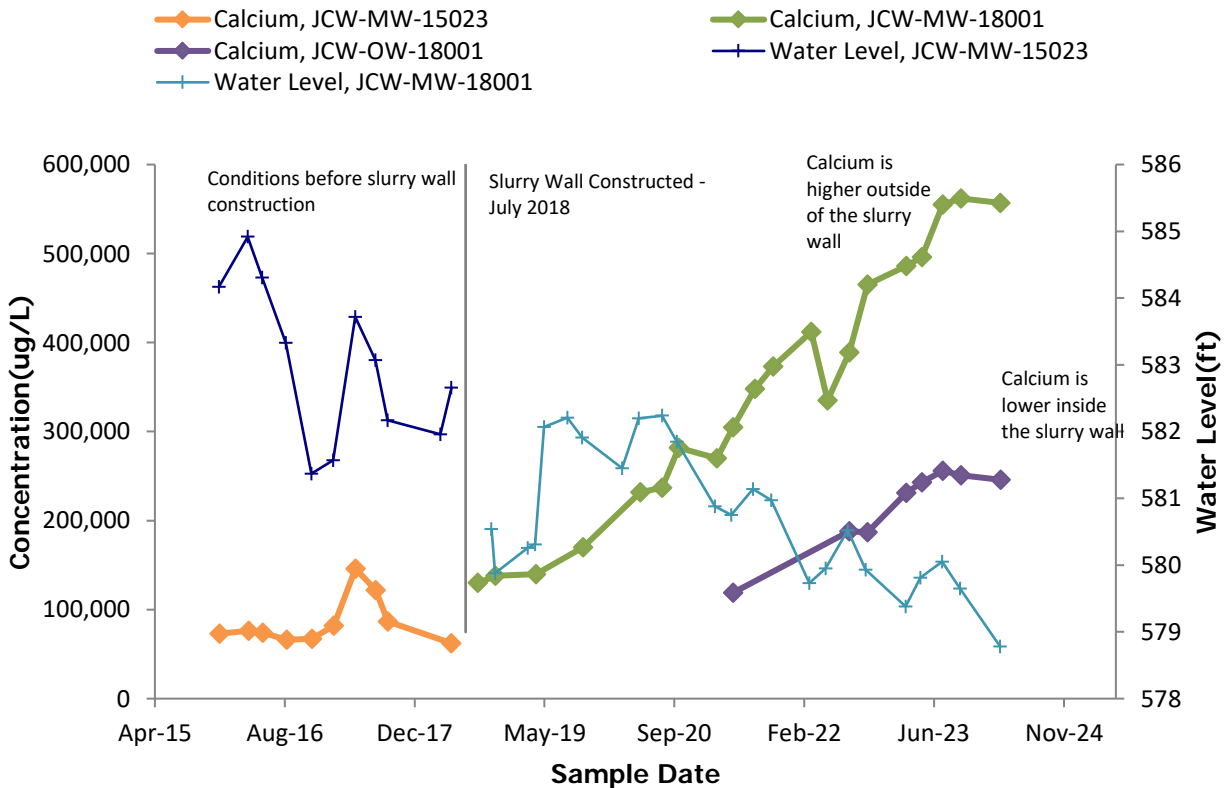
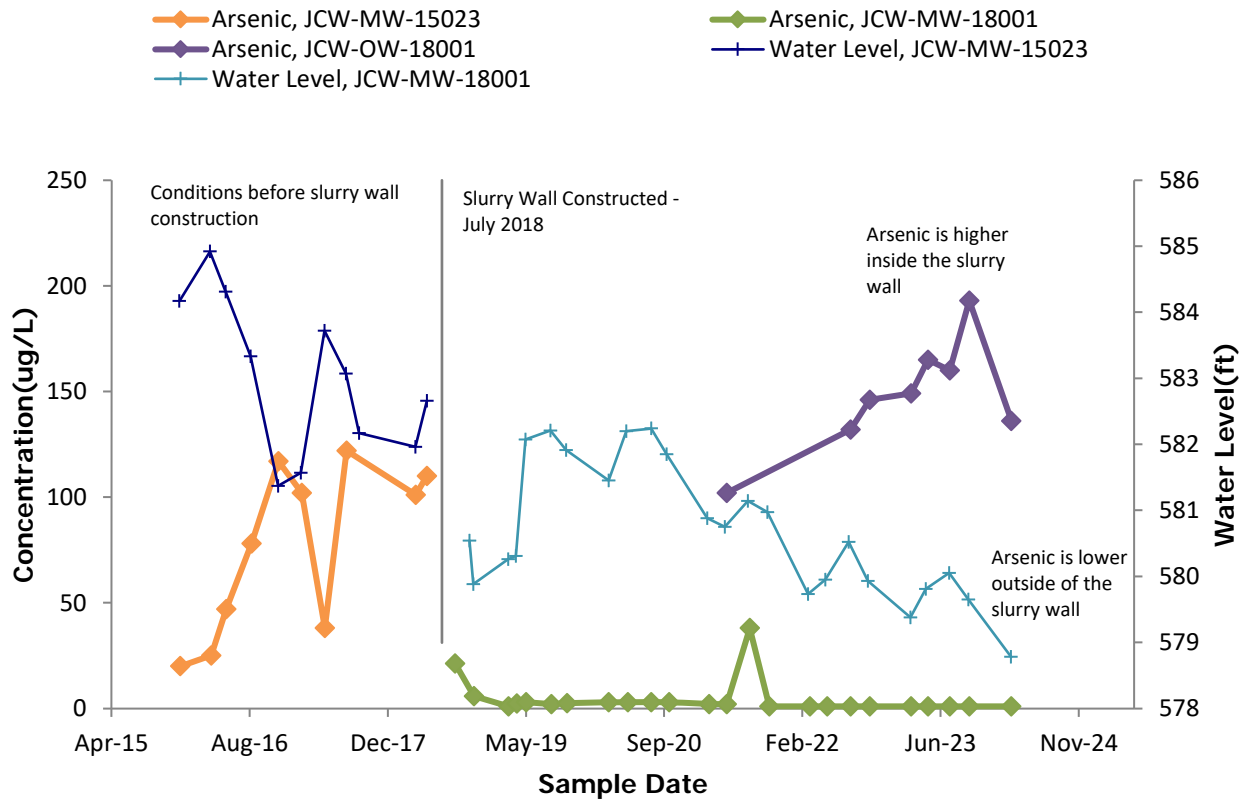


Figure G1: Time Series Plots for JCW-MW-18001 ASD

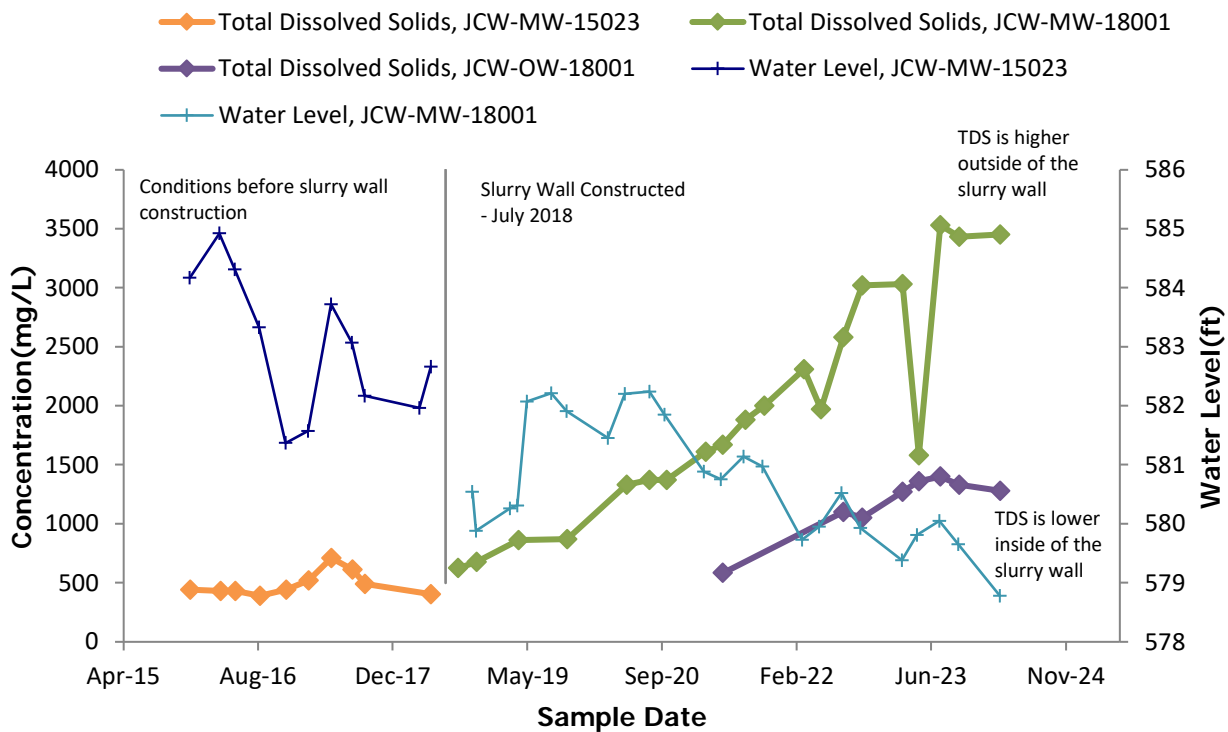
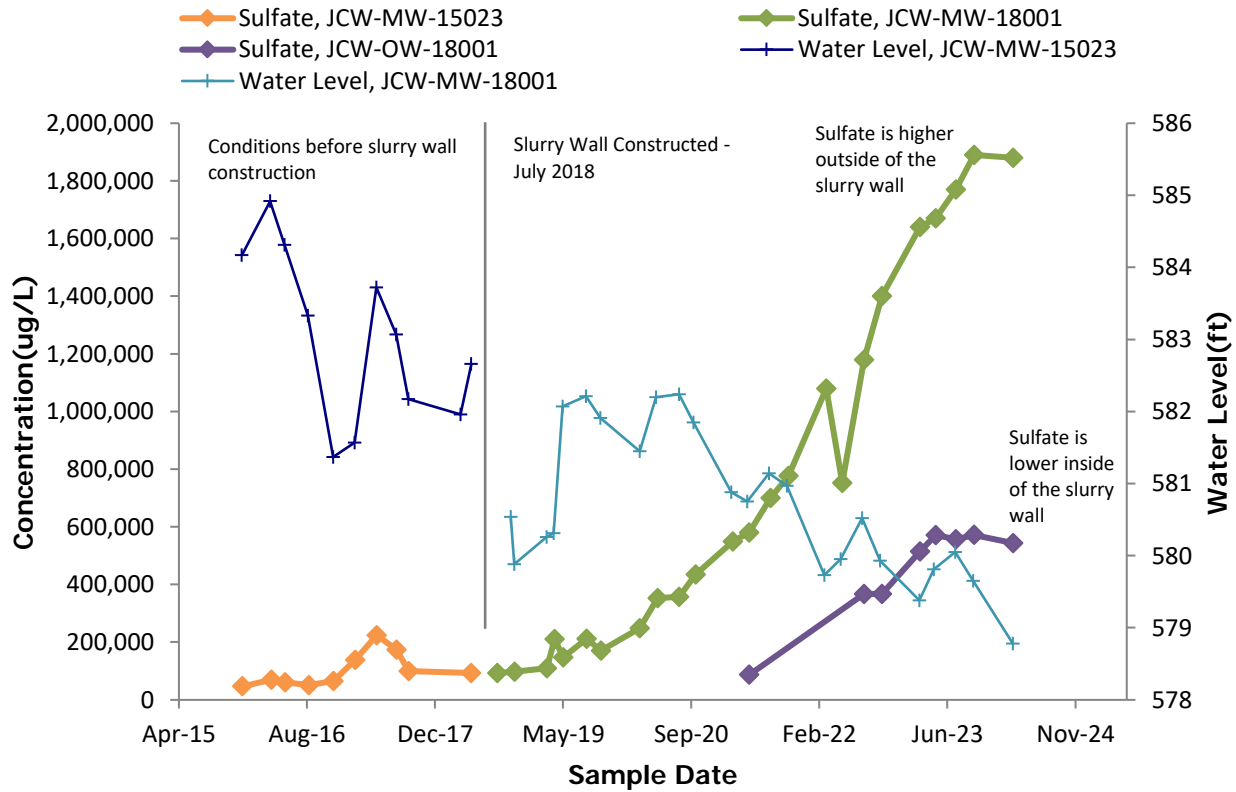


Figure G1: Time Series Plots for JCW-MW-18001 ASD

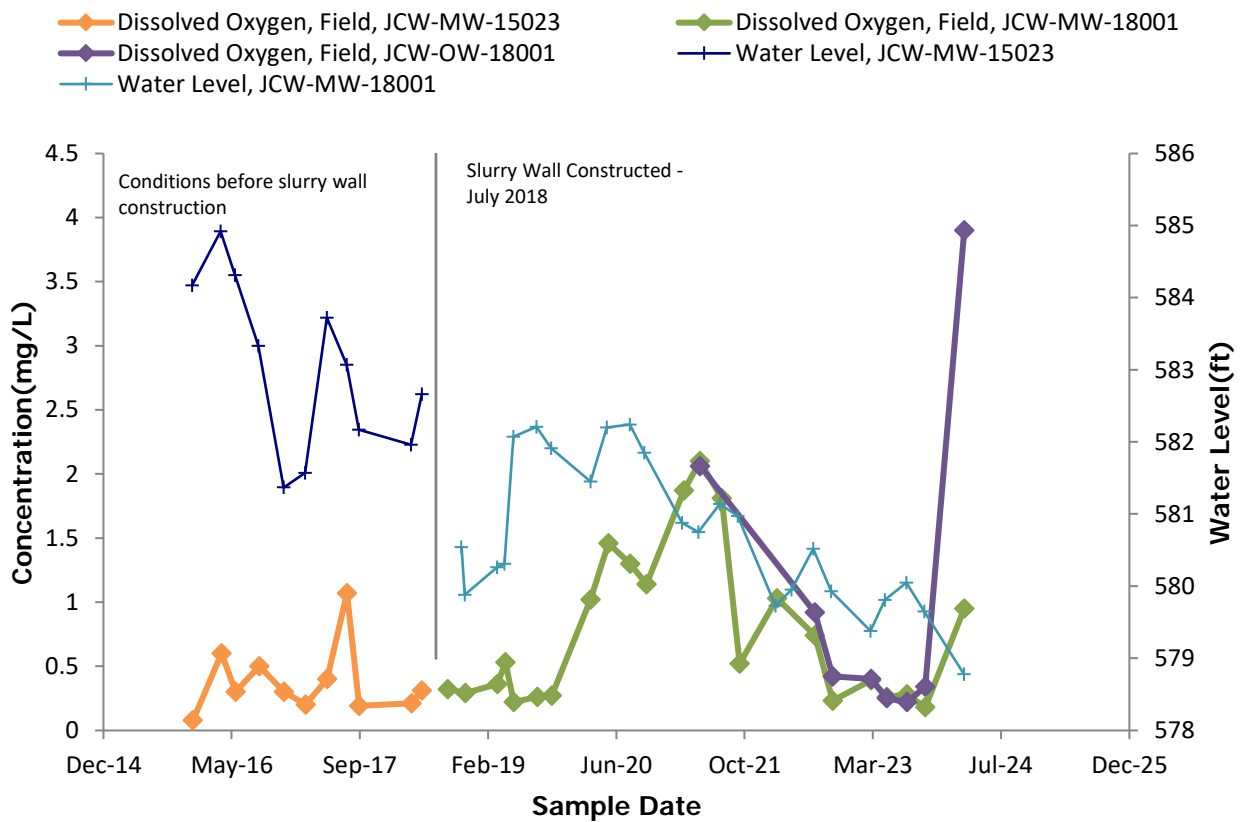
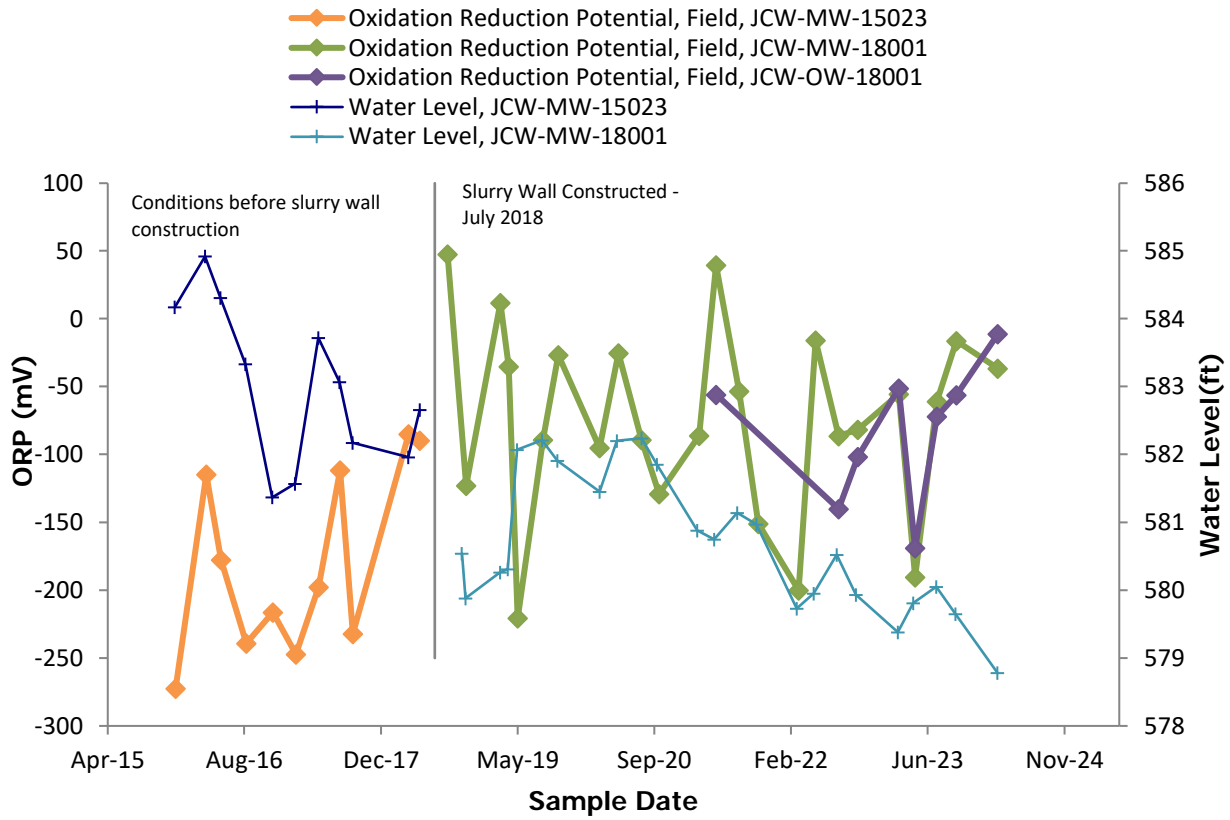
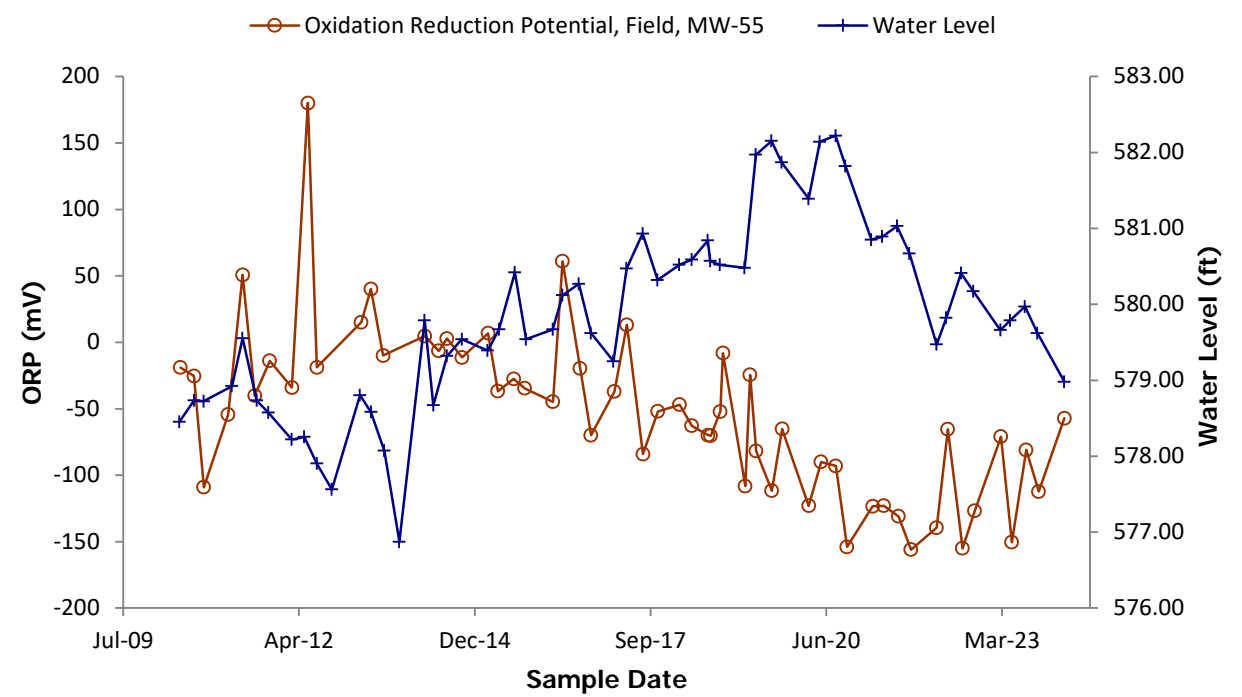
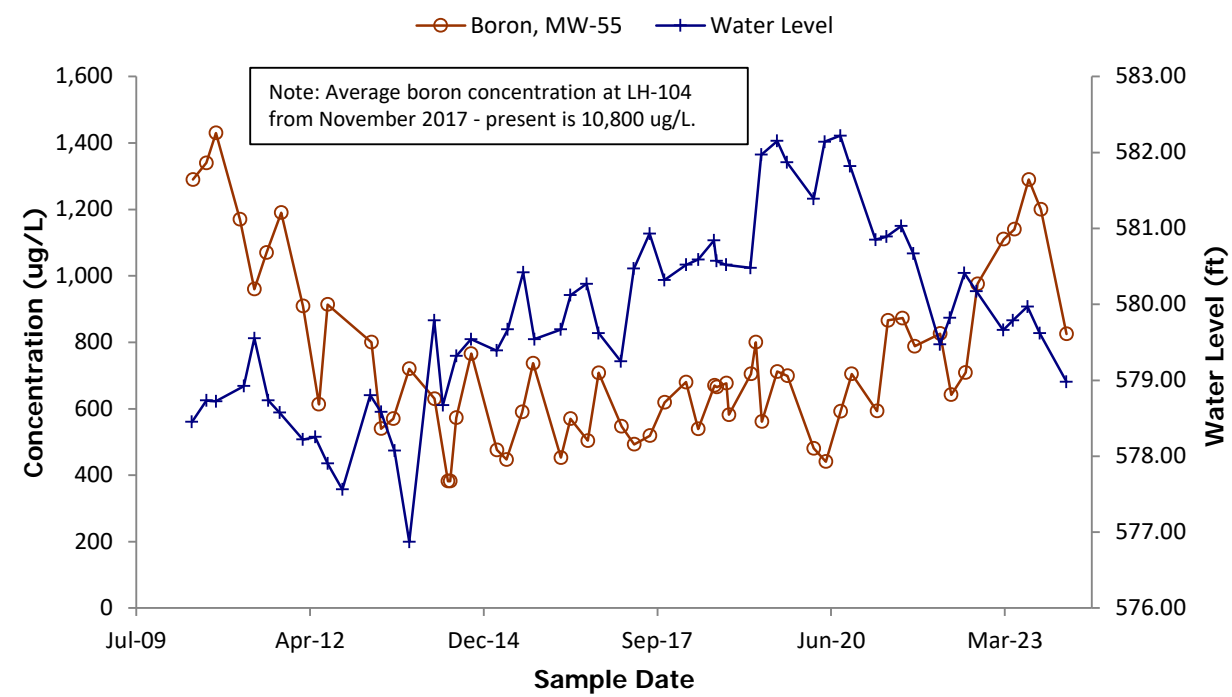
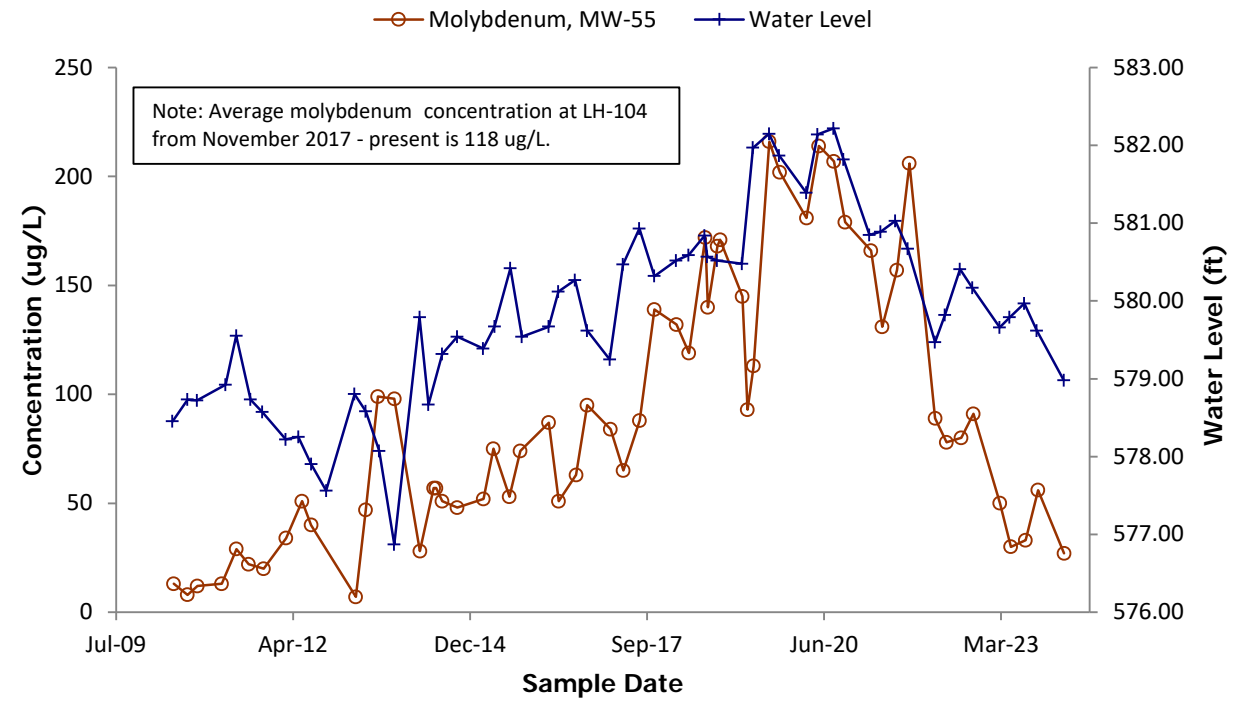
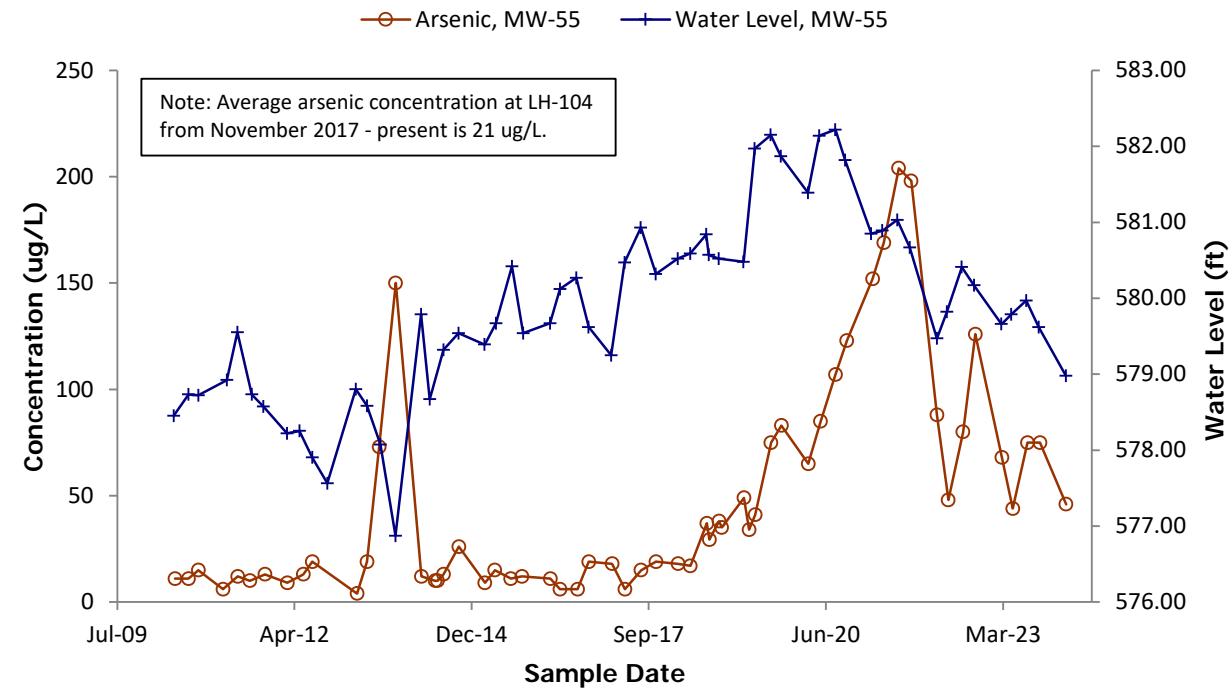


Figure G2: Time Series Plots for MW-55 ASD



Enclosure 3

**2024 Semiannual Groundwater Monitoring Report and
Second Quarter 2024 Hydrogeological Monitoring Report,
JC Weadock Solid Waste Disposal Area, Essexville,
Michigan. (TRC, July 30, 2024)**



2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report

JC Weadock Solid Waste Disposal Area
Essexville, Michigan

July 2024

A handwritten signature in blue ink, appearing to read "Darby Litz", written over a horizontal line.

Darby Litz
Project Manager/Hydrogeologist

Prepared For:

Consumers Energy
1945 W. Parnall Road
Jackson, MI 49201

Prepared By:

TRC
1540 Eisenhower Place
Ann Arbor, Michigan 48108

A handwritten signature in blue ink, appearing to read "Kristin Lowery", written over a horizontal line.

Kristin Lowery, P.E.
Project Engineer

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1
1.2	Program Summary	1
1.3	Site Overview	3
1.4	Geology/Hydrogeology.....	3
2.0	Leachate Monitoring	5
3.0	Groundwater Monitoring.....	6
3.1	Monitoring Well Network	6
3.2	May 2024 Monitoring Event	7
3.2.1	<i>Data Quality Review</i>	8
3.3	Groundwater Flow Rate and Direction	8
3.4	Groundwater Analytical Data and Relevant Screening Criteria	9
3.4.1	<i>Detection Monitoring</i>	10
3.4.2	<i>Assessment Monitoring Data Evaluation</i>	11
3.4.2.1	Establishing Groundwater Protection Standards.....	11
3.4.2.2	Data Comparison to Groundwater Protection Standards.....	11
3.4.3	<i>GSI Compliance Monitoring</i>	12
3.5	Alternate Source Demonstration	14
3.5.1	<i>Monitoring Well JCW-MW-18001: Calcium and Sulfate</i>	15
3.5.2	<i>Monitoring Well MW-55: Arsenic and Molybdenum</i>	15
4.0	Conclusions and Recommendations	17
5.0	References	18

TABLES

Table 1	Summary of Groundwater Elevation Data
Table 2	Summary of Field Parameters
Table 3	Summary of Groundwater Sampling Results (Analytical): DE Karn & JC Weadock Background
Table 4	Summary of Groundwater Sampling Results (Analytical): JC Weadock Solid Waste Disposal Area
Table 5	Summary of Confidence Interval Evaluation: May 2024
Table 6	EGLE Exceedance Summary Table

FIGURES

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Potentiometric Surface Map – May 2024

APPENDICES

Appendix A	Static Water Level Evaluation
Appendix B	Data Quality Review
Appendix C	Detection Monitoring Statistical Trend Tests
Appendix D	Assessment Monitoring and GSI Statistical Evaluation
Appendix E	Laboratory Analytical Report
Appendix F	Field Records
Appendix G	Alternate Source Demonstration Supporting Information

1.0 Introduction

Consumers Energy implemented a comprehensive compliance monitoring plan documented in the *Revised Hydrogeological Monitoring Plan* (Natural Resource Technology, 2010) for the JC Weadock Solid Waste Disposal Area as required by Special License Condition 20.b in Solid Waste Disposal Area Operating License No. 9233 issued on October 15, 2009. Since that time, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended) imposing groundwater monitoring and corrective action requirements that apply to the landfill (Weadock Landfill). Subsequently, Michigan amended Part 115 of the Natural Resources and Environmental Protection Act (NREPA) PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management) to provide a basis for establishing a groundwater monitoring system and initiating detection and assessment monitoring to conform requirements for any licensed coal ash impoundment or landfill after December 28, 2018, with Part 115 amendments and the CCR Rule.

On January 15, 2021, Consumers Energy submitted the *Landfill Hydrogeological Monitoring Plan, JC Weadock Power Plant, Essexville, Michigan* (Weadock Landfill HMP), which includes components for Detection Monitoring and Assessment Monitoring, as well as Groundwater Surface Water Interface (GSI) Compliance Monitoring, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115 and the CCR Rule. The Weadock Landfill HMP (TRC, February 2021) was revised per EGLE comments, submitted, and approved by EGLE on February 19, 2021, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Second Quarter 2024 JC Weadock Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring and reporting requirements during the active life of the coal ash landfill. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 *Format for Solid Waste Disposal Facility Monitoring Submittals*. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the Weadock Landfill HMP that was approved by the EGLE on February 19, 2021. The Weadock Landfill HMP is compliant with Public Act No. 640 of 2018 (PA 640) to amend the NREPA, also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the second quarter 2024 at the JC Weadock Solid Waste Disposal Area located at 2742 Weadock Highway

in Essexville, Michigan (Figure 1). This JC Weadock Disposal Area is currently authorized under a permit (Groundwater Discharge Authorization GWE-0005) issued pursuant to Part 31 to discharge to the unusable aquifer directly underlying the solid waste that vents almost immediately to the Saginaw River and Saginaw Bay.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule. Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report JC Weadock Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming SSIs over background were as follows:

- Boron at JCW-MW-15011, JCW-MW-15012, JCW-MW-15023; and
- Field pH at JCW-MW-15023 (high).

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notice to the Department on January 14, 2019 that arsenic was detected at statistically significant levels above the federal groundwater protection standards (GWPS) established pursuant to §257.95(h) in one monitoring well at the JC Weadock Landfill (JCW-MW-15023), which was located downgradient of a 1,600 linear foot vent within the slurry wall enclosing the historical fly ash disposal area. The vent was designed to direct groundwater flow beneath the landfill to the discharge channel immediately upgradient from the National Pollutant Discharge Elimination System (NPDES) external outfall to prevent water from building up within the facility. In July 2018, this vent was closed (Golder, 2018) and the engineering improvement was approved by the Department (MDEQ, 2018). As a part of the vent closure, monitoring wells JCW-MW-15011, JCW-MW-15012, and JCW-MW-15023 were decommissioned by overdrilling, removing the well material, and sealing the borehole to allow for the slurry wall construction as discussed in the *2018 Annual Groundwater Monitoring Report for the JC Weadock Landfill CCR Unit* (TRC, 2019a). Consumers Energy installed an additional nine monitoring wells in August 2018 to supplement the preexisting Michigan Part 115 compliance groundwater well network and provide appropriate coverage for the collection of groundwater levels and water quality data along the perimeter of the Weadock Landfill, as discussed in the Weadock Landfill HMP. Closing the vent and completely encircling the Weadock Landfill with a soil-bentonite slurry wall has demonstrated reduced groundwater flux around the entire perimeter of the landfill.

In March 2019, Consumers Energy submitted a Response Action Plan (Consumers, 2019), which identified interim response activities taken or to be taken to control possible sources of contamination. Consumers Energy further evaluated arsenic in groundwater at the Weadock Landfill as part of the nature and extent analysis and outlined potential remedies in the *Assessment of Corrective Measures* (TRC, 2019b), which was initiated on April 14, 2019, and completed on September 11, 2019, and focused on materials management with an emphasis on improving source control through the closure plan.

Compliance monitoring is being implemented under the Weadock Landfill HMP dated February 2021 and approved by the EGLE on February 19, 2021. Groundwater data collected in accordance with the Weadock Landfill HMP are used to:

- Assess background groundwater quality for the purposes of establishing and updating GWPS (HMP Section 7.1 Background Determination)
- Perform detection monitoring to assess whether a new release has occurred during operation of the landfill (*i.e.* statistically significant increase (SSI) over background) (HMP Section 7.2 Detection Monitoring)
- Perform assessment monitoring to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the GWPS) (HMP Section 7.3 Assessment Monitoring)
- Assess compliance with the GSI pathway (HMP Section 7.4)

Consumers Energy also continues to execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98 of the CCR Rule, which includes semiannual assessment monitoring in accordance with §257.95. Assessment monitoring data collected in accordance with the CCR Rule is used to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the Appendix IV GWPS).

1.3 Site Overview

The JC Weadock Solid Waste Disposal Area is located within the former JC Weadock Power Plant (Site), located south of the DE Karn Power Plant, east of the Saginaw River, west of Underwood Drain and Saginaw Bay, and north of Tacey Drain and agricultural land (Figure 1). In addition to the disposal area, the Site consists of the generating facility which retired eight coal-fired generating units and infrastructure and utilities that support electrical transmission. Units 1 to 6 commenced operation in 1940 and retired in 1980 and Units 7 and 8 were added in 1955 and 1958 continued to operate through April 15, 2016.

1.4 Geology/Hydrogeology

The majority of Weadock Landfill area is comprised of surficial CCR and sand fill, as described in the Weadock Landfill HMP. USGS topographic maps and aerial photographs dating back to 1950, in addition to field descriptions of subsurface soil at the Site, indicate that the Site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10-30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25-75 ft bgs. A sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts, and sands deposited in or on the shores of glacial lakes) at other areas. Along the perimeter of the landfill, there is a

well-graded sand unit present at depths ranging from 10 to 20 ft bgs. The sand is variable in thickness, ranging from <1 to ~6.5 feet, and is discontinuous along the landfill perimeter, as evidenced by the soil boring logs and slurry wall construction documentation.

The alluvium soils pinch out and are not observed in soil borings located south and east of the Weadock Bottom Ash Pond and Weadock Landfill, along the location of the historic shoreline. The non-water-bearing region south of these units extends for at least a mile south and southeast of the Site.

Beneath the surficial fill and sand unit (where present) is 70 to 80 feet of clay till. Along the southern perimeter of the landfill, some of the upper portion of the clay till is sand-rich (generally greater than 20 ft bgs). The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. The sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs.

The Weadock Landfill is bounded by several surface water features (Figures 1 and 2): the Saginaw River to the west, a discharge channel and Saginaw Bay (Lake Huron) to the north, Underwood Drain to the east, and Tacey Drain to the south. Groundwater flow in this water bearing zone is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay.

2.0 Leachate Monitoring

The leachate monitoring program consists of an annual laboratory leachate sampling program (Q1) and an annual field leachate sampling program (Q4) per the Weadock Landfill HMP. This program was instituted to maintain the facility under the applicable portions of Part 115, Rule 311 – Leaching tests to evaluate potential for groundwater contamination at unlined industrial waste landfills. Specifically, Subrule (3) states that waste that is disposed of in an industrial waste landfill shall be retested to evaluate potential for groundwater contamination annually or on a more frequent schedule as specified by the solid waste control agency. In addition to field leachate testing conducted annually to evaluate appropriateness of monitored constituents and changes to fate and transport properties, an annual laboratory leachate analysis program was included to better understand what, if any, changes to waste placement may be occurring at the Weadock Landfill based on the addition of air emissions controls and the commingling of air emissions controls residuals (Spray Dry Absorber – SDA) over time. The Weadock Landfill HMP includes the laboratory leachate testing program, consisting of four dry-handled Coal Combustion Residual (CCR) samples commingled with SDA materials collected from each of the disposal silos dedicated to DE Karn Electrical Generating Units 1 and 2. Karn Units 1 & 2 permanently ceased operation on May 31, 2023, so additional CCR and air emissions residuals are not being generated; therefore, there are no results to report for this waste stream. It is noteworthy that the Weadock Landfill continues to receive materials facilitating the closure of the landfill in the form of uncontaminated soil from documented sources, and limited contaminated soil that has been authorized for placement in the Weadock Landfill under the Beneficial Use 3 designation as other materials designated for construction at a licensed solid waste disposal facility. These results are maintained with the closure certification documentation.

Additional support for evaluating the potential for groundwater contamination at the unlined industrial waste landfill includes the field leachate monitoring program conducted during the fourth quarter of each year. This program consists of an annual sampling collection from two (2) leachate headwells; LH-103R and LH-104. This program was implemented to determine constituents in the leachate as measured under actual conditions in the field and to assess which constituents have the potential to exceed applicable criteria at the compliance well locations.

There are no leachate data to report this quarter.

3.0 Groundwater Monitoring

3.1 Monitoring Well Network

The groundwater monitoring system presented in the Weadock Landfill HMP has been established in accordance with R 299.4906 and the CCR Rule §257.91 and consists of 27 monitoring wells (four background monitoring wells, 12 downgradient monitoring wells, and 11 additional wells used for static water level measurements only) that are screened in the uppermost aquifer. The monitoring well network has been designed to provide appropriate coverage for water level and water quality data collection along the perimeter of the landfill. The monitoring well locations are shown on Figure 2. Monitoring well specifications and purpose (i.e. static water level monitoring, groundwater quality monitoring, or GSI monitoring) are included in Table 1.

The Weadock Landfill HMP groundwater monitoring system consists of the following:

- **Background Groundwater Quality:** Four monitoring wells located southwest of the Weadock Landfill provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019) and are used to establish groundwater protection standards (GWPSs) for the landfill:
 - MW-15002 – MW-15008 – MW-15016 – MW-15019
- **Downgradient Groundwater Quality:** The twelve downgradient monitoring wells, located on the outside of the perimeter slurry wall include:
 - JCW-MW-18001 – JCW-MW-18004 – JCW-MW-18005 – JCW-MW-18006
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – OW-57R Out
- **Groundwater-Surface Water Interface (GSI) Monitoring:** Monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the monitoring program to meet the requirements of Part 31. Locations and alignments were established in the Phase II Groundwater Discharge Evaluation, Figure: Appendix K (Natural Resource Technology, 2005) as a baseline for monitoring future results. These monitoring wells are screened across the water table of the uppermost aquifer and serve as GSI monitoring wells to determine compliance with generic GSI criteria or site-specific mixing zone-based criteria as appropriate. The eight GSI compliance monitoring wells include:
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – JCW-MW-18004
- **Static Water Level Measurement Only:** Eleven additional monitoring wells, located on the inside of the perimeter slurry wall, at paired locations with several of the downgradient monitoring wells include:
 - JCW-OW-18001 – JCW-OW-18002 – JCW-MW-18003 – JCW-MW-18004
 - JCW-MW-18005 – JCW-MW-18006 – MW-20 – OW-51
 - OW-53 – OW-54 – OW-55 – OW-56R
 - OW-57R IN – OW-61 – OW-63

3.2 May 2024 Monitoring Event

In accordance with the Weadock Landfill HMP, TRC conducted the second quarter 2024 monitoring event for the Weadock Landfill by collecting water levels and groundwater samples on May 6 through 8, 2024. Samples that were collected during this event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan for analysis of total metals and inorganic parameters. Radium analysis was performed by Eurofins Environment Testing in Earth City, Missouri. Semiannual monitoring constituents include:

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents	
Boron	Antimony	Lithium
Calcium	Arsenic	Mercury
Chloride	Barium	Molybdenum
Fluoride	Beryllium	Nickel
Iron	Cadmium	Selenium
pH	Chromium, total	Silver
Sulfate	Cobalt	Thallium
Total Dissolved Solids (TDS)	Copper	Vanadium
	Fluoride	Zinc
	Lead	Radium 226/228

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity. Analytical results from the monitoring event are included in the attached laboratory reports (Appendix E).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure and immediately prior to purging. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the Weadock Landfill HMP. Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Static water elevation data are included in the attached field records (Appendix F).

Groundwater samples were collected using a peristaltic pump. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Groundwater sample preparation and analyses were performed in accordance with SW-846 “Test Methods for Evaluation Solid Waste – Chemical / Physical Methods,” USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of two field blanks, one equipment blank, three field duplicates (MW-15008, JCW-MW-18006, and MW-50), and one field matrix spike/matrix

spike duplicate sample pair (JCW-MW-18001).

3.2.1 Data Quality Review

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The laboratory data were found to be complete and usable for the purposes of the Weadock Landfill HMP. The data quality reviews for the JC Weadock Disposal Area network wells are summarized in Appendix B.

3.3 Groundwater Flow Rate and Direction

Potentiometric monitoring in the unusable aquifer beneath the facility includes static water level data collected for development of water table contours and evaluation of the potential for discharge from the facility. The monitoring under this section will be conducted quarterly until closure, as approved by the Director, and semiannually during the 30-year post-closure period. Monitoring will continue until the end of post closure (30 years) or as otherwise approved by the Director.

The measurements for top of casing (TOC) and recorded depth to water (DTW) with corresponding calculated static water level (SWL) is tabulated and presented in Table 1. A potentiometric surface map is provided as Figure 3.

Groundwater elevations measured at the Site in May 2024 are generally within the range of 579 to 596 feet above mean sea level (ft NAVD88). Groundwater elevations in monitoring wells located adjacent to Saginaw Bay and adjoining surface water bodies are typically encountered at a similar or slightly higher elevation relative to surrounding surface water features measured by the NOAA gauging station. A time-series plot included in Appendix A compares the groundwater elevation of at the GSI monitoring wells (MW-50, MW-51, MW-52, MW-53, MW-54R, JCW-MW-18004, and MW-55) to the nearby NOAA staff gauge. Water levels in wells adjacent to surface water bodies (e.g. Saginaw Bay, Tacey Drain) closely mirror the surface water elevation. Such conditions would result in a minimal gradient to potentially a reverse gradient (i.e., toward the landfill) between the well and the drain which would result in minimal to zero mass flux to the drain (Appendix A: Table A1).

The groundwater monitoring system is structured such that there are eleven monitoring well pairs used to evaluate the hydraulic gradient and potential for water flux across the slurry wall. Static water level observations from the paired wells are shown on time series charts in Appendix A. The static water level elevations inside of the Weadock Landfill perimeter slurry wall are generally significantly different (>3 ft) than static water levels outside of the slurry wall, which demonstrates the presence of a low permeability feature between the well pairings inside and outside of the constructed slurry wall. As such, the water level elevations indicate that the slurry wall is performing as designed. The general flow direction observed within the confinement of the slurry wall is similar to that identified in previous monitoring rounds. Due to the potential for radial flow, the downgradient wells are appropriately positioned to detect the presence of detection or assessment parameters that could potentially migrate from the Weadock Landfill. As shown on Figure 3 and in Appendix A, the static water level outside of the

slurry wall is lower than the static water level inside of the wall; therefore, the potential groundwater flux across the slurry wall was calculated and included in Table A2 of Appendix A.

3.4 Groundwater Analytical Data and Relevant Screening Criteria

Groundwater analytical data are evaluated in accordance with the Weadock Landfill HMP to determine the effectiveness of landfill structural and operational enhancement measures on the quality and quantity of groundwater flow beneath the footprint of the facility (Section 3.4.1 Detection Monitoring and Section 3.4.2 Assessment Monitoring). Additionally, analytical results are evaluated in support of GSI compliance. GSI criteria only apply to the designated compliance point as specified in Section 3.4.3 below; however, analytical results and data trends in groundwater collected from the perimeter dike wells are evaluated to identify potential GSI compliance issues. Data are evaluated by using a combination of screening against relevant criteria, as well as utilizing statistical analyses.

Analytical results from the second quarter 2024 monitoring event are included in the attached laboratory report (Appendix E). Groundwater analytical data from the second quarter 2024 monitoring event are summarized in Table 3 (background monitoring wells) and Table 4 (Weadock Landfill Monitoring Wells), as well as the associated Part 201 generic GSI and site-specific mixing-zone GSI criteria. Field data are summarized in Table 2.

Mixing-zone criteria for arsenic, boron, and selenium are provided for the Karn-Weadock complex in the mixing zone determination, dated December 23, 2015 (MDEQ, 2015). As such, arsenic, boron, and selenium are compared to site-specific mixing zone-based GSI criteria, and all other constituents are screened against generic GSI criteria. All data are screened against GSI criteria; however, compliance with GSI criteria is determined at select monitoring locations as noted in Section 3.4.3 below.

The mixing zone determination included both final acute values (FAV) and final chronic values (FCV). If a concentration of a constituent at a groundwater well exceeds the acute criteria, and the exceedances are upgradient of the GSI compliance monitoring wells, Consumers Energy must demonstrate that data from all of the compliance monitoring wells are, and will be, in compliance with acute mixing zone-based GSI criteria for those parameters. Averaging of groundwater data is not allowed for comparison to generic GSI or acute mixing zone-based GSI criteria. Acute mixing zone-based or generic GSI criteria may not be exceeded in any individual GSI compliance monitoring well. If a concentration of a constituent at a well exceeds the chronic criterion, compliance can be demonstrated on a mass-flux basis. The facility can choose to demonstrate compliance by evaluating the total chronic loading based upon the contribution from each compliance well with respect to the total flux observed in the mixing zone.

Table 6 provides a summary of the statistically significant increases or exceedances over the most recent four quarters in accordance with the EGLE-prescribed format; only well/constituent pairs that exceed the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3) within the last four quarters are included.

3.4.1 Detection Monitoring

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. The potentiometric analysis, as discussed in Section 3.3, demonstrates that the slurry wall is performing as designed.

In addition to the comparison of analytical data to relevant screening criteria (Table 4), statistical trend analyses are used to evaluate groundwater quality each quarter. Consumers Energy manages and evaluates its groundwater data using Sanitas™ Statistical Software. Consumers Energy conducts intrawell trend analyses to examine data for a given well over time to determine if changes in water quality are occurring that may be associated with the landfill and to identify potential GSI compliance issues. Specifically, the Mann-Kendall test for trend was performed at a significance level (α) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant.

Appendix C includes a table summarizing the results of the trend tests as well as the Sanitas™ output summary statistics and graphs. Data are stable or declining for the majority of the well/constituent pairs, with the following exceptions:

- A new, unconfirmed increasing trend for boron was observed at MW-53 in Q2 2024.
- New, unconfirmed upward trends in calcium at JCW-MW-18006 and OW-57R OUT were observed in Q2 2024.
- The increasing trend for calcium at JCW-MW-18001 continued in Q2 2024.
- The increasing trend for iron at JCW-MW-18001 continued in Q2 2024.
- New, unconfirmed increasing trends in pH were observed at monitoring wells JCW-MW-18006, MW-53R, and OW-57R OUT in Q2 2024.
- The increasing trend for sulfate at JCW-MW-18001 continued in Q2 2024.
- The new increasing trend for sulfate that was observed at JCW-MW-18006 in Q1 2024 was confirmed this quarter.
- A new, unconfirmed increasing trend for total dissolved solids was observed at JCW-MW-18006 in Q2 2024.

Although increasing trends for detection monitoring constituents were observed, individual constituent trends provide a *potential indication* that there may be a release coming from the monitored unit. When these indicator trends are evaluated with other co-monitored conditions and parameters at the Weadock Landfill, the increasing trends for detection monitoring constituents do not appear to be a result of a new release from operation of the landfill. The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill. Several of these recently observed trends, such as those observed for calcium, iron, and sulfate at JCW-MW-18001 and sulfate at JCW-MW-18006 are likely a result of localized geochemical changes influenced by changes in water levels rather than a change in flux from the landfill and will continue to be evaluated. The increasing trends of calcium and sulfate in JCW-MW-18001 have resulted in statistically significant GWPS

exceedances, as noted in Section 3.4.2; however, an alternate source demonstration for these constituents is presented in Section 3.5. Additionally, iron, calcium, and sulfate concentrations in each of the GSI compliance monitoring wells remain below the relevant Part 115 compliance standard – the GSI pathway standard.

Consumers is further evaluating possible causes of the increasing boron concentrations at several porewater compliance monitoring wells. Previous studies (NRT, 2005) documented boron at significantly elevated concentrations at the Karn-Weadock Power Generating Complex. Boron was also identified as an SSI over background levels in the 2017 *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit* (TRC, 2018) and was one of the detection monitoring constituents that triggered the initiation of the assessment monitoring program. Statistical significance above the GWPS established for boron has been noted for these monitoring wells per the Part 115 groundwater monitoring program requirements, as discussed in Section 3.4.2.2. Continued monitoring and assessment for potential future actions is warranted at this time; however, observed concentrations of boron in each of the monitoring wells are less than the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3).

3.4.2 Assessment Monitoring Data Evaluation

Assessment monitoring is continuing at the Weadock Landfill in accordance with the Weadock Landfill HMP and §257.95. The assessment monitoring data were statistically evaluated in accordance with the procedures in the Weadock Landfill HMP. The statistical evaluation details are provided in Appendix D. A summary of the confidence interval evaluation is provided in Table 5.

3.4.2.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess constituent concentrations present in groundwater as a result of CCR unit operations by statistically comparing concentrations in the downgradient wells to each of the respective GWPSs for each detection and assessment monitoring constituent. The calculation of the GWPSs in accordance with the Weadock Landfill HMP is documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). The Federal CCR Rule requires establishment of GWPSs for assessment monitoring (Appendix IV) constituents only. Part 115 requires establishment of GWPSs for both detection and assessment monitoring constituents.

3.4.2.2 Data Comparison to Groundwater Protection Standards

Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009) and the Weadock Landfill HMP, the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient data exceeds the GWPS.

Detection Monitoring Constituents (Part 115): The second quarter 2024 statistical evaluation indicates that boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001 were present at statistically significant levels above the GWPS. Boron was one of the Appendix III SSIs that originally triggered assessment monitoring. Boron concentrations have been consistently above the GWPS but less than the chronic-based mixing zone-based GSI criterion of 44,000 ug/L within the Weadock Landfill monitoring well network since monitoring under the Weadock Landfill HMP began in first quarter 2021.

Calcium at JCW-MW-18001 was present at statistically significant levels above the GWPS beginning in first quarter 2023 resulting from increases in calcium concentration since first quarter 2021. Sulfate was present at JCW-MW-18001 at statistically significant levels above the GWPS for the first time in second quarter 2023 due to increasing concentrations. Consumers is asserting an ASD for the increases in calcium and sulfate at JCW-MW-18001, as detailed in Section 3.5.

The GWPSs for boron, calcium, and sulfate were established based on background concentrations observed in wells unaffected by the Weadock Landfill or Weadock Bottom Ash Pond. Detection monitoring (i.e., Appendix III) constituents do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Overall, data continue to demonstrate compliance with the applicable GSI criteria, as discussed in Section 3.4.3.

Assessment Monitoring Constituents (Part 115 and Federal CCR): Based on the second quarter 2024 statistical evaluation, there are no assessment monitoring constituents present at statistically significant levels above the GWPSs within the Weadock Landfill groundwater monitoring system. Although concentrations of arsenic and molybdenum at MW-55 observed during individual sampling events are above the GWPS, the elevated concentrations of those constituents are not a result of a release from the Weadock Landfill, as detailed in Section 3.5. The head differential of 9.53 feet between OW-55 inside the slurry wall and MW-55 outside of the slurry wall also suggests that the integrity of the slurry wall is maintained and groundwater flow from the landfill to the south is impeded by the low permeability of the slurry wall. Groundwater conditions at MW-55 will continue to be monitored.

3.4.3 GSI Compliance Monitoring

The GSI monitoring program consists of the eight monitoring points located along the surface water features:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

Second quarter 2024 data from the GSI monitoring points are tabulated in Table 4. As described in the Weadock Landfill HMP, GSI monitoring program constituents were identified as detected constituents that have the potential to exceed the generic GSI criteria at the Weadock Landfill downgradient monitoring wells. At a minimum, these constituents include the following, identified based on prior groundwater monitoring as noted in the Weadock Landfill HMP:

- Boron
- pH
- Arsenic
- Lithium
- Selenium
- Iron
- Sulfate
- Chromium
- Molybdenum
- Vanadium

Additional constituents will be added to the GSI monitoring program as appropriate if detected above the relevant GSI criteria at the landfill monitoring wells in two consecutive events. Calcium, chloride, and total dissolved solids have been detected above the generic GSI criteria in one or more wells over two consecutive events; however, it is not appropriate to add these constituents to the GSI monitoring program for the following reasons:

- **Calcium:** Calcium has been detected above the generic GSI criterion at JCW-MW-18001. As discussed further in Section 3.5, the concentrations of calcium at JCW-MW-18001 are attributed to localized changes in geochemistry and are not indicative of a new release from the landfill. Concentrations in all other wells remain below the generic GSI criterion, supporting that the detected concentrations are localized to JCW-MW-18001. Given that JCW-MW-18001 is not a GSI compliance monitoring location and the increase in calcium is not attributed to the landfill operation, it is not appropriate to add calcium to the GSI compliance monitoring program.
- **Chloride:** Chloride has been detected above the generic GSI criterion of 50 mg/L in several wells. Chloride is regionally elevated, as evidenced by the calculated background concentration of 2,300 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All chloride concentrations are below the background concentration. Therefore, chloride is determined to be below the applicable level and is not included in the GSI compliance monitoring program.
- **Total Dissolved Solids:** Total dissolved solids (TDS) has been detected above the generic GSI criterion of 500 mg/L in several wells. TDS is regionally elevated, as evidenced by the calculated background concentration of 4,700 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All TDS concentrations are below the background concentration. Therefore, TDS is determined to be below the applicable level and is not included in the GSI compliance monitoring program.

The confidence interval calculations are provided in Appendix D. The confidence interval test compares the lower confidence limit to the GSI. Overall, data continue to demonstrate compliance with the applicable GSI criteria.

- **Boron:** The assessment monitoring statistical evaluation found that boron was present at statistically significant levels above the GWPS at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT. Boron is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of boron are less than the recommended mixing-zone based GSI value specified in Table 3 of the *Implementation of a Mixing Zone Request, Consumers Energy DE Karn/JC Weadock Complex* (MDEQ, 2015) (Appendix D: Table 2).
- **Sulfate:** The detection monitoring statistical evaluation found that sulfate concentrations were increasing at JCW-MW-18001 and JCW-MW-18006. The assessment monitoring statistical evaluation found that sulfate was present at statistically significant levels above the GWPS at JCW-MW-18001, while sulfate concentrations at JCW-MW-18006 are below the GWPS. Sulfate is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of sulfate are less than the applicable GSI criterion (Appendix D: Table 2).
- **Iron:** The detection monitoring statistical evaluation found that iron concentrations were increasing at JCW-MW-18001. The assessment monitoring statistical evaluation found that iron concentrations at JCW-MW-18001 are below the GWPS. Iron is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of iron are less than the applicable GSI criterion (Appendix D: Table 2).
- **Arsenic and Molybdenum at MW-55:** Concentrations of arsenic and molybdenum at MW-55 have at times exceeded the GSI criteria on a direct comparison to the fixed limit basis (Appendix D: Table 2).¹ The second quarter 2024 sampling event results show that both arsenic and molybdenum concentrations are below applicable GSI criteria. The statistical evaluation presented in Appendix D shows that the lower confidence limit of the arsenic data over the past 8 events does not exceed the GSI criterion. Molybdenum concentrations have not directly exceeded the GSI criterion within the past 8 events; therefore, confidence limits were not calculated. Additionally, water levels in MW-55 closely mirror the surface water elevation measured at the NOAA gauging station, which indicates there is a minimal outward gradient to a potentially, modest reverse gradient (i.e., toward the landfill) between the monitoring well and the drain, resulting in a minimal to zero mass flux to the drain (Appendix A).

3.5 Alternate Source Demonstration

At this time, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD), for the following, as detailed below:

- Calcium and sulfate in monitoring well JCW-MW-18001; and
- Arsenic and molybdenum in monitoring well MW-55.

The groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below.

¹ Molybdenum was last observed at a concentration above the GSI criterion in fourth quarter 2021.

3.5.1 Monitoring Well JCW-MW-18001: Calcium and Sulfate

Although confirmed increasing trends were observed at JCW-MW-18001 for calcium and sulfate (through Q2 2024), these trends are not indicative of a new release from the landfill. Calcium and sulfate are two of several constituents that contribute to the overall TDS concentration and increasing calcium and sulfate concentrations could result in an increase in TDS as well. Although, TDS concentrations are not currently exhibiting a statistically significant upward trend, TDS concentrations have been increasing in past events and the data are discussed as part of this ASD. Increases of calcium, sulfate, and TDS concentrations at JCW-MW-18001 are attributed to changes occurring outside of the slurry wall as a result of changing water levels, rather than a change in flux from the landfill; therefore, Consumers Energy is continuing to assert an ASD for these constituents. The following lines of evidence as well as additional time series charts included in Appendix G support this ASD:

- The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill (Appendix A).
- Concentration data also support that the slurry wall is effective in reducing the flux of groundwater from the landfill, based on the following observations (Appendix G1):
 - JCW-MW-18001 was installed after the 1,600 linear foot gap in the landfill perimeter slurry wall was closed, as discussed in Section 1.2. Prior to the slurry wall expansion in July 2018, monitoring well JCW-MW-15023 was located within the gap of the slurry wall and was sampled between December 2015 and May 2018 as a part of the original Federal CCR program monitoring well network. The groundwater quality data collected from JCW-MW-15023 shows that groundwater in contact with CCR managed within the landfill was high in arsenic, and low in sulfate, calcium, and TDS (Appendix G1).
 - To accommodate the July 2018 slurry wall expansion, JCW-MW-15023 was decommissioned. Once slurry wall construction was completed, JCW-MW-18001 was installed within 10-ft of the location of the former JCW-MW-15023 well, on the discharge channel side of the slurry wall. Additionally, an observation well, JCW-OW-18001, was installed on the landfill side of the slurry wall to monitor water levels to assess the effectiveness of the hydraulic control. Both JCW-MW-18001 (outside) and JCW-OW-18001 (inside) have been sampled recently to assess concentration trends.
 - Concentrations of arsenic are much higher inside of the slurry wall, within the landfill, while arsenic concentration remain low on the outside of the landfill.
 - Concentrations of calcium, sulfate, and TDS are much lower on the inside of the slurry wall and are higher outside of the slurry wall.
- These combined lines of evidence support that increasing concentrations of calcium, sulfate, and TDS are not a result of a change in flux from the landfill and instead are a result of changing groundwater conditions on the outside of the slurry wall.

3.5.2 Monitoring Well MW-55: Arsenic and Molybdenum

Additionally, Consumers Energy is continuing to assert an ASD for arsenic and molybdenum at MW-55 indicating elevated levels of constituents at that location are not related to materials management of the Weadock Landfill (*2021 Annual Groundwater Monitoring and Corrective Action Report*; TRC, January 2022). The basis for this ASD is summarized below and updated

time series plots in support of this ASD are included in Appendix G (Figure G2).

Data collected from the 2018 investigation as well as data collected during routine sampling events for Part 115 and Federal CCR groundwater compliance show the following:

- **Distinct Chemistry from Leachate** – The leachate chemistry from a monitoring well screened at the base of the ash fill (LH-104) is distinctly different from the groundwater chemistry near MW-55 and the temporary monitoring wells installed by TRC in the investigation area, as illustrated Appendix G of the 2019 Annual Groundwater Monitoring and Corrective Action Report (TRC, January 2020). Additionally, concentrations of arsenic are generally much lower, and concentrations of boron are much higher within the landfill (LH-104) than outside of the landfill at MW-55 (Figure G2).
- **Conservative Tracer** – Boron is a metalloid known to be present in coal ash and can be used as a conservative tracer in groundwater. The average concentration of boron in Leachate Headwell LH-104 (10,800 ug/L: November 2017 - October 2023) is significantly higher than concentrations observed at any of the other locations sampled as a part of this monitoring program. Additionally, recently observed boron concentrations at MW-55 are similar to or lower than historical concentrations, which further supports that the water quality at MW-55 is not directly affected by groundwater migrating from the landfill.
- **Reducing Conditions and Groundwater Head Levels** – Water levels observed at MW-55, as shown in Appendices A and G, increased over 4-ft between 2010 and 2020. The oxidation-reduction potential (ORP) at MW-55 has generally decreased (i.e., is more reducing) since 2010. The lowering of ORP over time as a result of increased water levels has changed the geochemical conditions in the vicinity of MW-55 and has resulted in increased solubility of arsenic and molybdenum. Since 2021, water levels have been generally decreasing, resulting in a slight increase in ORP (i.e., is less reducing) and decreases in concentrations of both arsenic and molybdenum, which further illustrates the relationship between groundwater elevations, redox state, and concentration of arsenic and molybdenum in groundwater.

4.0 Conclusions and Recommendations

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. Evaluation of the second quarter 2024 data demonstrate that the slurry wall is functioning as designed.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule, as discussed in the *2023 Annual Groundwater Monitoring and Corrective Action Report*, due to observed groundwater concentrations that are indicative of impact from past landfill operations. Evaluation of the second quarter 2024 data in accordance with the Weadock Landfill HMP demonstrate that boron, calcium, and sulfate are present at concentrations above the GWPSs. Boron, calcium, and sulfate are detection monitoring (i.e., Appendix III) constituents that do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. The statistical evaluation in second quarter 2024 found that no constituents were present at statistically significant levels above applicable GSI criteria.

Therefore, Consumers Energy will continue with the detection and assessment monitoring as required by the CCR rule as well as the monitoring program relative to the implementation of the site-specific mixing zone authorization at the Weadock Landfill unit in conformance with the JC Weadock Landfill HMP. The second quarter monitoring event for is scheduled for July 2024.

5.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. JC Weadock Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. November 6.
- Consumers Energy Company. 2015. *Hydrogeological Monitoring Plan Rev. 2: JC Weadock Solid Waste Disposal Area*. June 9.
- Consumers Energy. 2019. *JC Weadock Landfill Response Action Plan Submittal, JC Weadock Generating Facility (WDS# 395457), Essexville, Michigan*. March 15.
- Golder Associates, Inc. 2018. *J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report*. October 30.
- Michigan Department of Natural Resources (MDNR). 1986. *Determination of Permit Exemption No. GWE-0005*. August 25.
- Michigan Department of Environmental Quality (MDEQ). 2015. *Implementation of a Mixing Zone Request Consumers Energy DE Karn/JC Weadock Complex*. December 23.
- MDEQ. 2018a. *Groundwater-Surface Water Interface Pathway Compliance Options*. April.
- MDEQ. 2018b. *Slurry Wall Construction Certification; JC Weadock Landfill, Bay County, Michigan, Waste Data System Number 395457*. December 19.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. *Closure Certification, Consumers Weadock Complex (Weadock) Bottom Ash Pond, Bay County, Waste Data System No. 395457*. November 30. [Letter]
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation, Final Report.
- Natural Resource Technology. 2010. Revised Hydrogeological Monitoring Plan – JC Weadock Solid Waste Disposal Area. TRC. 2018. Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit. Prepared for Consumers Energy Company. January.
- TRC. 2018. *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit*. Prepared for Consumers Energy Company.
- TRC. 2019a. *2018 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company*. January.
- TRC. 2019b. *Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units*. Prepared for Consumers Energy Company. September.
- TRC. 2020. *2019 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit*. Prepared for Consumers Energy Company. January.

-
- TRC. 2021. *Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan*. Prepared for Consumers Energy Company. February.
- TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.
- TRC. 2022. *2021 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- TRC. 2022. *2022 Semiannual Groundwater Monitoring Report and Second Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. July.
- TRC. 2023. *2022 Semiannual Groundwater Monitoring Report and Fourth Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. January.
- TRC. 2024. *2023 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. 2015. *40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*. 80 Federal Register 74 (April 17, 2015), pp. 21301-21501 (80 FR 21301). April
- USEPA. 2018. *40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule*. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.

Tables

Table 1
Summary of Groundwater Elevation Data
JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
Essexville, Michigan

Well Location	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	May 6, 2024		
				Depth to Water (ft BTOC)	Groundwater Elevation (ft)	
Background Monitoring Wells						
MW-15002	587.71	Sand	580.9 to 570.9	6.65	581.06	
MW-15008	585.36	Sand with clay	578.7 to 568.7	4.25	581.11	
MW-15016	586.49	Sand	581.2 to 578.2	3.45	583.04	
MW-15019	586.17	Sand and Sand/Clay	579.5 to 569.5	5.23	580.94	
Bottom Ash Pond: Downgradient Monitoring Wells						
JCW-MW-15007	587.40	Sand	582.7 to 579.2	3.25	584.15	
JCW-MW-15009	589.64	Sand	581.9 to 576.9	8.85	580.79	
JCW-MW-15010	597.76	Sand	579.7 to 578.2	17.38	580.38	
JCW-MW-15028	589.64	Sand	567.7 to 564.7	7.30	582.34	
Landfill: Downgradient Monitoring Wells (outside slurry wall)						
JCW-MW-18001	596.73	Sand and Sandy Clay	578.3 to 573.3	17.08	579.65	
JCW-MW-18004	593.04	Sandy Clay	583.9 to 578.9	12.38	580.66	
JCW-MW-18005	590.89	Sand and Sandy Clay	580.0 to 575.0	8.50	582.39	
JCW-MW-18006	600.72	Fly Ash and Sandy Clay	582.8 to 577.8	12.40	588.32	
MW-50	593.36	Sand	577.8 to 574.8	13.65	579.71	
MW-51	594.29	Sand and Clay	577.8 to 574.8	14.45	579.84	
MW-52	594.90	Sand	579.3 to 576.3	15.10	579.80	
MW-53	593.68	Sand and Clay	579.1 to 576.1	13.85	579.83	
MW-53R	594.25	Sand and Clay	580.4 to 575.4	14.50	579.75	
MW-54R	593.89	Clay and Sand	581.3 to 576.3	13.92	579.97	
MW-55	593.82	Sand	581.5 to 578.5	14.10	579.72	
OW-57R OUT	591.00	Sandy Clay	577.0 to 572.0	8.21	582.79	
Landfill: Static Water Level Only (inside slurry wall)						
JCW-OW-18001	595.84	Fly Ash and Sand	581.1 to 576.1	6.56	589.28	
JCW-OW-18002	593.63	Sand	578.9 to 573.9	10.40	583.23	
JCW-OW-18003	593.99	Sand and Clay	580.5 to 575.5	6.24	587.75	
JCW-OW-18004	594.19	Sandy Clay	584.6 to 579.6	6.22	587.97	
JCW-OW-18006	600.61	Fly Ash and Clay with Sand	582.9 to 577.9	6.53	594.08	
MW-20	592.73	NR	~581.1 to ~578.1	6.35	586.38	
OW-51	593.62	Clay and Sand	578.9 to 575.9	9.10	584.52	
OW-53	593.64	Clay and Sand	579.0 to 576.0	7.40	586.24	
OW-54	594.10	Clay and Sand	580.0 to 577.0	7.19	586.91	
OW-55	594.67	Clay (or Sand and Clay)	580.9 to 577.9	6.26	588.41	
OW-56R	592.01	Ash and Sand	577.5 to 572.5	5.68	586.33	
OW-57R IN	590.86	Sandy Clay	575.7 to 570.7	5.26	585.60	
OW-61	602.15	Ash and Sand	588.0 to 585.0	6.40	595.75	
Landfill: Leachate Headwells						
LH-103R	612.70	Fly Ash	30.2 to 33.2	20.69	592.01	
LH-104	596.56	Fly Ash	8.0 to 11.0	8.00	588.56	

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G

(Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

Table 2
 Summary of Field Parameters
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
Background							
MW-15002	5/8/2024	1.25	-111.5	7.7	495	12.7	8.5
MW-15008	5/8/2024	0.70	-125.5	7.0	1,760	11.5	10.0
MW-15016	5/8/2024	0.69	-117.5	7.1	1,762	12.5	9.9
MW-15019	5/8/2024	0.77	-104.5	7.0	2,044	10.0	5.8
Weadock Landfill							
JCW-MW-18001	5/7/2024	0.76	-131.0	6.8	3,457	10.3	5.4
JCW-MW-18004	5/8/2024	8.65	20.0	6.9	1,398	9.9	6.0
JCW-MW-18005	5/8/2024	0.83	-103.8	6.8	1,569	10.7	10.0
JCW-MW-18006	5/8/2024	0.75	-155.8	7.1	1,324	13.7	9.9
MW-50	5/7/2024	0.75	-142.5	7.5	1,455	10.0	5.4
MW-51	5/7/2024	0.83	-141.0	7.4	1,269	9.5	6.9
MW-52	5/7/2024	0.79	-119.5	7.0	1,717	10.6	5.2
MW-53	5/7/2024	0.79	-173.5	7.5	1,176	10.8	7.9
MW-53R	5/7/2024	0.84	-149.0	7.1	1,266	11.6	6.9
MW-54R	5/7/2024	2.95	-105.3	7.2	1,127	11.9	7.0
MW-55	5/8/2024	0.84	-107.5	6.9	1,236	10.0	8.0
OW-57ROUT	5/8/2024	2.25	-95.0	7.2	1,223	12.2	9.5

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius.

NTU - Nephelometric Turbidity Unit.

(1) The water quality meter used at this well location was determined to have a bias towards elevated dissolved oxygen readings.

Table 3
 Summary of Groundwater Sampling Results (Analytical)
 DE Karn JC Weadock Background - RCRA CCR Monitoring Program
 Essexville, Michigan

		Sample Location:				MW-15002	MW-15008	MW-15016	MW-15019
		Sample Date:				5/8/2024	5/8/2024	5/8/2024	5/8/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Background			
Appendix III⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	21	142	398	241
Calcium	mg/L	NC	NC	NC	500 ^{EE}	55.9	121	243	173
Chloride	mg/L	250**	250^E	250^E	50	28.3	395	175	374
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	7.53	2.57	194	93.8
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	358	1,280	1,190	1,340
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.7	7.0	7.1	7.0
Appendix IV⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	3	17	2
Barium	ug/L	2,000	2,000	2,000	1,200	43	93	157	364
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	1	1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	< 10	22	68	14
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC	< 0.0742	0.589	< 0.149	0.332
Radium-228	pCi/L	NC	NC	NC	NC	< 0.512	< 0.847	< 0.715	< 0.638
Radium-226/228	pCi/L	5	NC	NC	NC	< 0.512	1.03	< 0.715	0.822
Selenium	ug/L	50	50	50	5.0	< 1	< 1	1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾									
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	526	16,900	21,900	23,100
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	1	2	< 1
Nickel	ug/L	NC	100	100	120	2	4	10	5
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	9	2	3
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Sample Location:	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
								Sample Date:	5/7/2024	5/8/2024	5/8/2024	5/8/2024	5/7/2024	5/7/2024
								Downgradient	Downgradient/GSI	Downgradient	Downgradient	Downgradient/GSI	Downgradient/GSI	
Appendix III⁽¹⁾														
Boron	ug/L	NC	500	500	4,000	44,000	69,000	1,330	206	960	2,740	2,070	798	
Calcium	mg/L	NC	NC	NC	500^{EE}	NC	NC	537	213	302	148	184	128	
Chloride	mg/L	250**	250 ^E	250 ^E	50	NC	NC	45	14	22	49	37	80	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Sulfate	mg/L	250**	250^E	250^E	500^{EE}	NC	NC	1,790	484	475	122	425	262	
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	NC	NC	3,370	1,130	1,390	864	1,250	958	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	6.8	6.9	6.8	7.1	7.5	7.4	
Appendix IV⁽¹⁾														
Antimony	ug/L	6	6.0	6.0	2.0	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Arsenic	ug/L	10	10	10	10	100	680	2	< 1	4	29	3	13	
Barium	ug/L	2,000	2,000	2,000	1,200	NC	NC	46	26	127	390	176	117	
Beryllium	ug/L	4	4.0	4.0	33	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cobalt	ug/L	NC	40	100	100	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	
Lead	ug/L	NC	4.0	4.0	14	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Lithium	ug/L	NC	170	350	440	NC	NC	102	43	41	59	61	28	
Mercury	ug/L	2	2.0	2.0	0.20#	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	73	210	120	NC	NC	< 5	< 5	< 5	< 5	5	< 5	
Radium-226	pCi/L	NC	NC	NC	NC	NC	NC	0.124	0.102	0.165	0.218	0.270	0.181	
Radium-228	pCi/L	NC	NC	NC	NC	NC	NC	0.525	0.672	1.230	0.919	1.470	0.863	
Radium-226/228	pCi/L	5	NC	NC	NC	NC	NC	0.506	0.672	1.070	0.919	1.200	0.681	
Selenium	ug/L	50	50	50	5.0	55	120	2	4	< 1	< 1	1	< 1	
Thallium	ug/L	2	2.0	2.0	2.0	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Additional MI Part 115⁽²⁾														
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	NC	NC	2,630	73	6,550	10,400	834	760	
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	NC	NC	4	2	2	1	2	1	
Nickel	ug/L	NC	100	100	120	NC	NC	4	< 2	< 2	6	< 2	3	
Silver	ug/L	100**	34	98	0.2	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NC	4.5	62	27	NC	NC	2	< 2	< 2	3	< 2	2	
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10	

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

E - Criterion is the aesthetic drinking water value per footnote (E).

EE - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Sample Location:	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57ROUT
								Sample Date:	5/7/2024	5/7/2024	5/7/2024	5/7/2024	5/8/2024	5/8/2024
								Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient
Appendix III⁽¹⁾														
Boron	ug/L	NC	500	500	4,000	44,000	69,000	895	6,110	2,200	5,580	729	1,700	
Calcium	mg/L	NC	NC	NC	500^{EE}	NC	NC	236	134	166	161	161	119	
Chloride	mg/L	250**	250 ^E	250 ^E	50	NC	NC	33	89	33	57	17	72	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,090	
Sulfate	mg/L	250**	250^E	250^E	500^{EE}	NC	NC	550	2	48	51	236	78	
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	NC	NC	1,430	942	880	792	934	790	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	NC	NC	7.0	7.5	7.1	7.2	6.9	7.2	
Appendix IV⁽¹⁾														
Antimony	ug/L	6	6.0	6.0	2.0	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Arsenic	ug/L	10	10	10	10	100	680	< 1	1	10	1	39	1	
Barium	ug/L	2,000	2,000	2,000	1,200	NC	NC	91	582	164	83	235	75	
Beryllium	ug/L	4	4.0	4.0	33	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cadmium	ug/L	5	5.0	5.0	2.5	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium	ug/L	100	100	100	11	NC	NC	< 1	< 1	< 1	< 1	< 1	< 1	
Cobalt	ug/L	NC	40	100	100	NC	NC	< 6	< 6	< 6	< 6	< 6	< 6	
Fluoride	ug/L	4,000	NC	NC	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,090	
Lead	ug/L	NC	4.0	4.0	14	NC	NC	< 1	< 1	1	< 1	< 1	< 1	
Lithium	ug/L	NC	170	350	440	NC	NC	29	50	53	73	26	26	
Mercury	ug/L	2	2.0	2.0	0.20#	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Molybdenum	ug/L	NC	73	210	120	NC	NC	< 5	< 5	< 5	18	25	6	
Radium-226	pCi/L	NC	NC	NC	NC	NC	NC	0.162	0.561	0.155	0.180	0.137	0.115	
Radium-228	pCi/L	NC	NC	NC	NC	NC	NC	1.190	1.810	0.674	0.829	1.110	0.845	
Radium-226/228	pCi/L	5	NC	NC	NC	NC	NC	1.030	1.250	0.567	0.829	0.971	0.731	
Selenium	ug/L	50	50	50	5.0	55	120	1	2	1	2	4	1	
Thallium	ug/L	2	2.0	2.0	2.0	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Additional MI Part 115⁽²⁾														
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	NC	NC	3,680	665	761	87	14,700	94	
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	NC	NC	2	2	1	3	1	2	
Nickel	ug/L	NC	100	100	120	NC	NC	< 2	< 2	< 2	< 2	6	15	
Silver	ug/L	100**	34	98	0.2	NC	NC	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
Vanadium	ug/L	NC	4.5	62	27	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10	

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

E - Criterion is the aesthetic drinking water value per footnote (E).

EE - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 5
 Summary of Confidence Interval Evaluation: Second Quarter 2024
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Assessment Monitoring Statistical Evaluation																								
Constituent	Units	GWPS	MW-50		MW-51		MW-52		MW-53		MW-53R		MW-54R		MW-55		OW-57R OUT		JCW-MW-18001		JCW-MW-18005		JCW-MW-18006	
			LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron ⁽¹⁾	ug/L	560	1,500	2,100	540	1,200	910	1,200	2,900	5,900	2,000	2,400	5,100	6,000	760	1,200	1,700	1,900	1,300	1,600	930	1,500	2,000	2,800
Calcium	mg/L	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	440	570	150	300	--	--
Sulfate	mg/L	780	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,700	2,300	--	--	--	--
Arsenic	ug/L	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13	28
Molybdenum	ug/L	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

GSI Monitoring Statistical Evaluation				
Constituent	Units	GSI	MW-55	
			LCL	UCL
Arsenic	ug/L	100	39	99

Notes:
 ug/L - micrograms per Liter
 mg/L - milligrams per Liter
 -- - Not Applicable; well/parameter pair did not directly exceed the applicable criterion and was not included in further analysis.
 GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated April 23, 2021
 GSI - Groundwater Surface Water Interface Criteria; GSI criteria is the generic Michigan Part 201 GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.
 UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.
 LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

1,300	Indicates a statistically significant exceedance of the GWPS (detection monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the GWPS (assessment monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the applicable GSI criterion. An exceedance occurs when the LCL is greater than the criterion.

(1) Boron concentrations were confirmed as a statistically significant increase (SSI) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).
 (2) The concentrations of arsenic and molybdenum at MW-55 are not a result of a release from the unit, as detailed in the Alternate Source Demonstration (2021 Annual Groundwater Monitoring and Corrective Action Report, TRC, January 2022); therefore, confidence intervals were not calculated for comparison to GWPSs.

Table 6
 EGLE Exceedance Summary Table
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
 SUMMARY OF STATISTICAL EXCEEDANCES

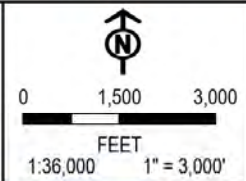
Data is in	(X) ug/L	or
	() mg/L	
unless otherwise stated		

Facility: JC Weadock – WDS# 395457

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	2 Qtr. 2024 (bold >201)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)
No Exceedances at Compliance Locations								

Figures

PROJECT: 1540 EISENHOWER PLACE, ANN ARBOR, MICHIGAN SOUTH RIPS 2113 FEET, MAP ROTATION: 0
 FILE PATH: T:\PROJECTS\CONSUMERS ENERGY\464686 WEADOCK\2-APR\464686 WEADOCK\2-APR\464686 WEADOCK.APRX
 LAYOUT NAME: 533828-2024-001



PROJECT: **CONSUMERS ENERGY COMPANY
 DE KARN AND JC WEADOCK POWER PLANTS
 ESSEXVILLE, MICHIGAN**

TITLE: **SITE LOCATION MAP**

DRAWN BY:	A. ADAIR	PROJ. NO.:	553828.0000
CHECKED BY:	J. KRENZ	FIGURE 1	
APPROVED BY:	D. LITZ		
DATE:	JULY 2024		


 1540 EISENHOWER PLACE
 ANN ARBOR, MI 48108-3284
 PHONE: 734.971.7080

FILE: 464096 WEADOCK

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0
 Saved By: AAD/af on 06/20/24, 11:35:03 AM; File Path: T:\PROJECTS\Consumers Energy\464096 Weadock.aprx; Layout Name: 5031826-2024-002



LEGEND

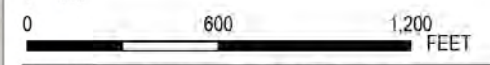
- BACKGROUND MONITORING WELL
- JCW BOTTOM ASH POND MONITORING WELL
- JCW LANDFILL HMP WELL
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- LEACHATE HEADWELL
- DECOMMISSIONED WELL
- SLURRY WALL (APPROXIMATE)

NOTES

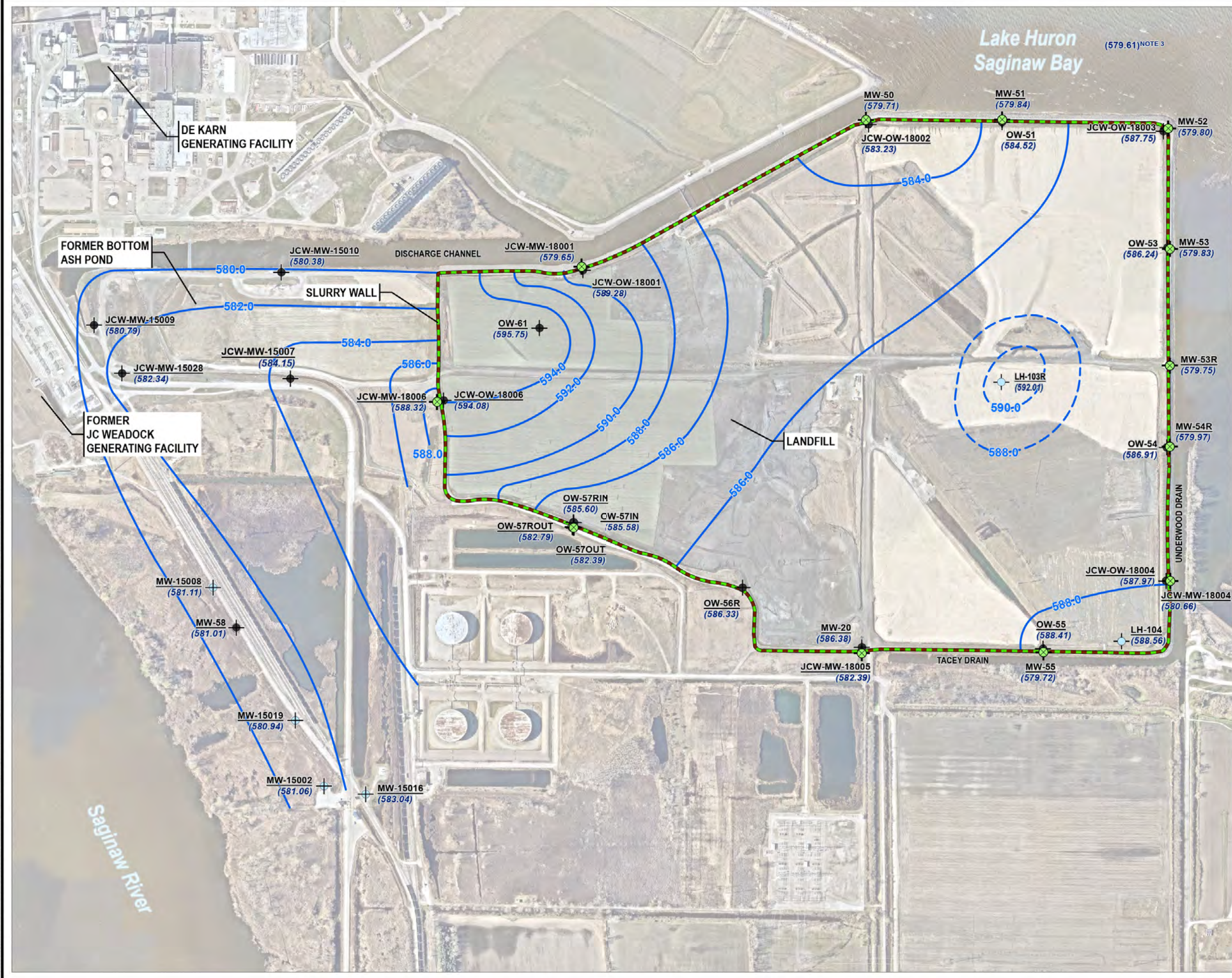
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018.
3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).



1:7,200
 1" = 600'

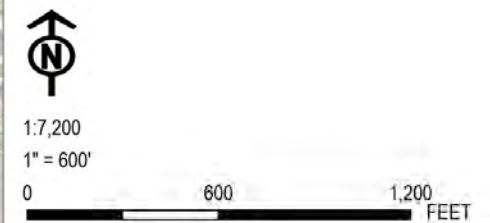


PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SITE MAP	
DRAWN BY: A. ADAIR	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 2
APPROVED BY: D. LITZ	
DATE: JULY 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096 Weadock.aprx



- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOM ASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - DECOMMISSIONED WELL
 - SLURRY WALL (APPROXIMATE)
 - GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
 - (590.51) GROUNDWATER ELEVATION (FEET)
 - (NU) NOT USED TO DEVELOP CONTOURS

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018.
 3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
 4. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: POTENTIOMETRIC SURFACE MAP MAY 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 3
APPROVED BY: D. LITZ	
DATE: JULY 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	484096 Weadock.aprx

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0
 Saved By: AAD/AJC on 07/17/2024 12:56:48 PM. File Path: T:\PROJECTS\Consumers_Energy\484096_Weadock.aprx. Layout Name: 484096 Weadock.aprx

Appendix A

Static Water Level Evaluation

Table A1
 Static Water Levels for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Date Measured	Groundwater Water Elevation (GWE) (ft)	Saginaw Bay Surface Water Elevation (SWE) (ft)	Elevation Difference (GWE-SWE) ⁽¹⁾
MW-50	5/6/2024	579.71	579.61	0.10
MW-51	5/6/2024	579.84		0.23
MW-52	5/6/2024	579.80		0.19
MW-53	5/6/2024	579.83		0.22
MW-53R	5/6/2024	579.75		0.14
MW-54R	5/6/2024	579.97		0.36
MW-55	5/6/2024	579.72		0.11
JCW-MW-18004	5/6/2024	580.66		1.05
Average:		579.91		

Notes:

Elevation in feet above North American Vertical Datum 1988 (NAVD 88)

TOC: top of well casing

ft BTOC: feet below top of well casing

(1) Positive elevation difference indicates flow toward the surface water body.

Table A2
Slurry Wall Gradient and Flux
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Discharge Channel													
JCW-OW-18001	589.28		22.4	4.30E-01	2.00	2.88	1,010	2.30E-08	0.43	2,904	8.15E-02	0.61	223
JCW-MW-18001		579.65			3.75								
JCW-OW-18002	583.23		28.9	1.22E-01	4.00	4.25	970		0.12	4,123	3.28E-02	0.25	89
MW-50		579.71			4.50								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Adjacent Zone													
OW-51	584.52		14.4	3.25E-01	4.00	4.27	1,850	2.30E-08	0.33	7,900	1.68E-01	1.25	458
MW-51		579.84			4.54								
JCW-OW-18003	587.75		33.9	2.35E-01	3.50	3.76	740		0.23	2,779	4.25E-02	0.32	116
MW-52		579.80			4.01								
OW-53	586.24		20.1	3.18E-01	1.25	1.62	730	2.30E-08	0.32	1,183	2.45E-02	0.18	67
MW-53		579.83			1.99								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Non-Adjacent Zone													
OW-54	586.91		21.2	3.27E-01	2.00	2.25	510	2.30E-08	0.33	1,148	2.45E-02	0.18	67
MW-54R		579.97			2.50								
JCW-OW-18004	587.97		26.6	2.75E-01	8.00	4.38	820		0.27	3,592	6.44E-02	0.48	176
JCW-MW-18004		580.66			0.76								
OW-55	588.41		24	3.63E-01	2.00	1.86	1,220	2.30E-08	0.36	2,269	5.37E-02	0.40	147
MW-55		579.72			1.72								
MW-20	586.38		40.9	9.75E-02	1.50	1.38	1,120		0.10	1,540	9.79E-03	0.07	27
JCW-MW-18005		582.39			1.25								

Calculated Groundwater Discharge from JC Weadock (gal per day) = 3.75
(cubic ft per day) = 0.50
(cubic ft per min) 3.5E-04

Calculated Groundwater Discharge from JC Weadock (gal per yr) = 1,369
(cubic ft per yr) = 183

Calculated Groundwater Discharge from JC Weadock (gal per year per linear foot of dike) = 0.15
(cubic feet per year per linear foot of dike) = 2.04E-02

Notes:

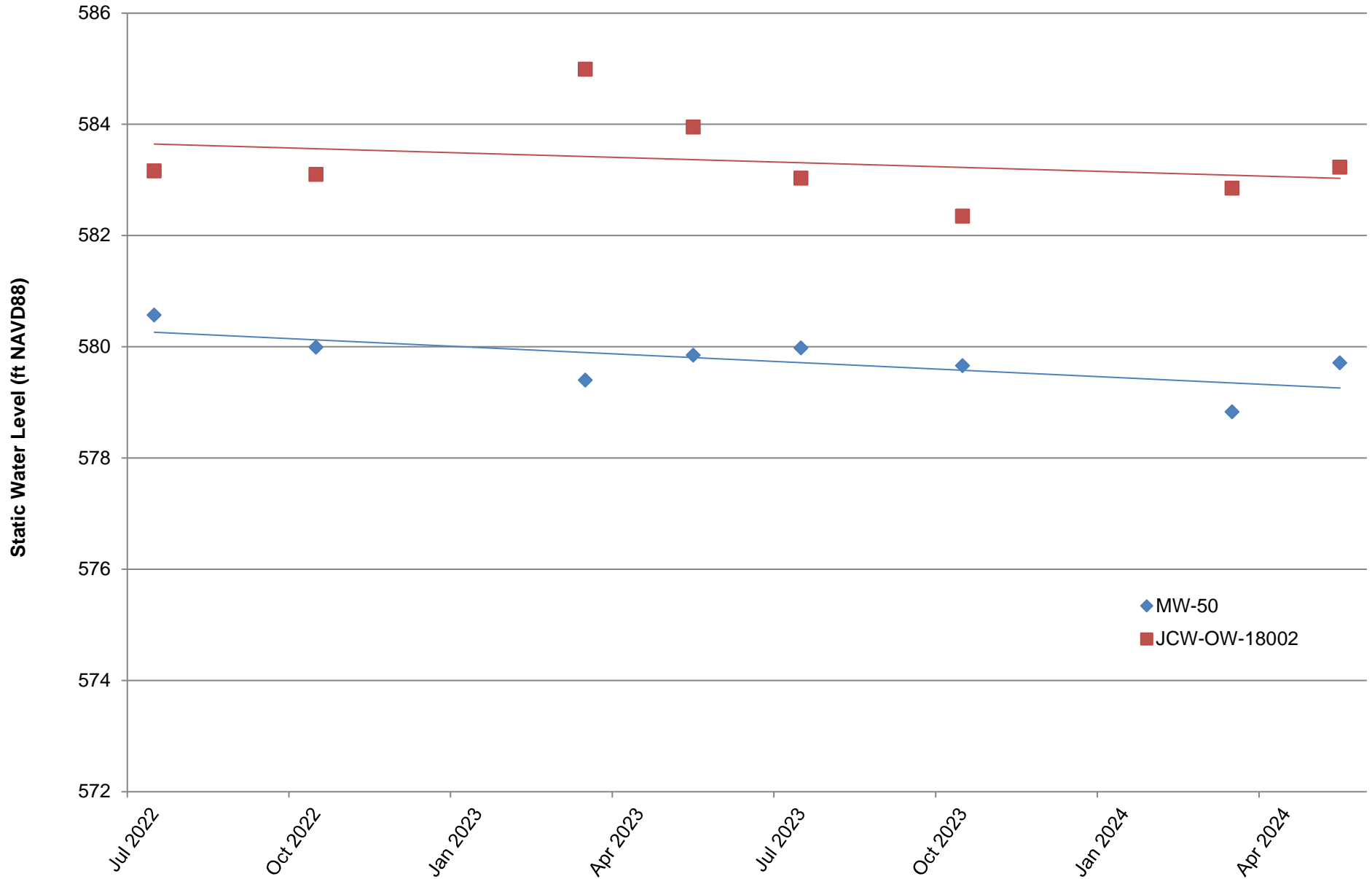
Water level data collected on May 6, 2024 are shown by yellow cells:

579.58

- Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- Saturated thickness will be the thickness of the sand unit when the observed SWL is above the top of the sand unit, or the measured saturated thickness of the sand unit if the SWL is below the top of the sand unit.
- Hydraulic conductivity taken as harmonic mean of laboratory tests done on in-place slurry wall from NTH Certified Quality Assurance Report, Appendix E, April 24, 2009
- Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- If Obs well SWL < MW SWL calculated flow will be zero.

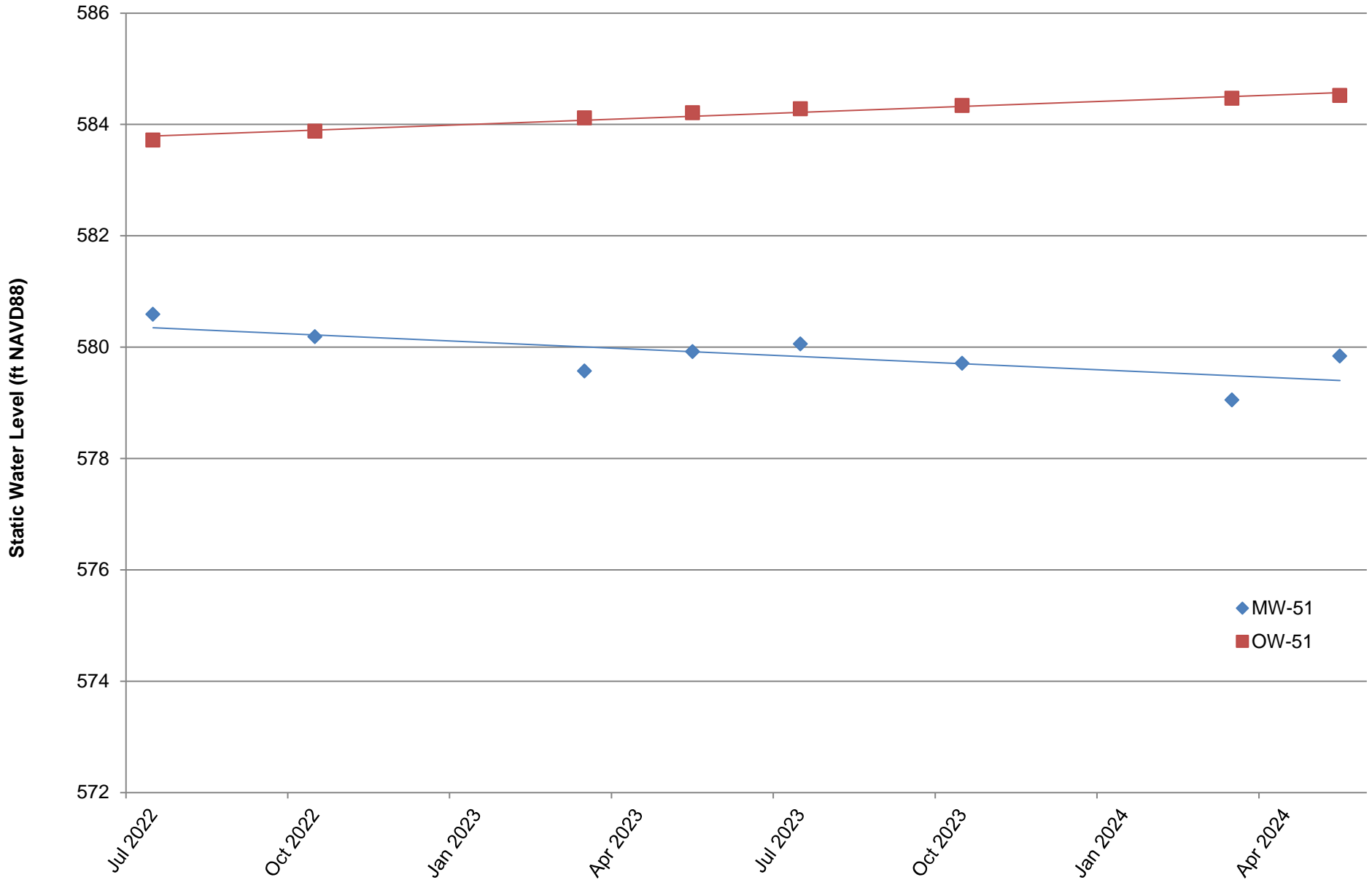
SWL = Static Water Level; Obs Well = Observation Well; MW= Monitoring Well; ft NAVD 88 = feet above North American Vertical Datum 1988
 ft/ft = feet per foot; cm/sec = centimeters per second; ft² = square feet; ft³/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year
 i = hydraulic gradient; K = hydraulic conductivity; x_{wells} = distance between well pairs

Appendix A Static Water Level for MW-50 and JCW-OW-18002



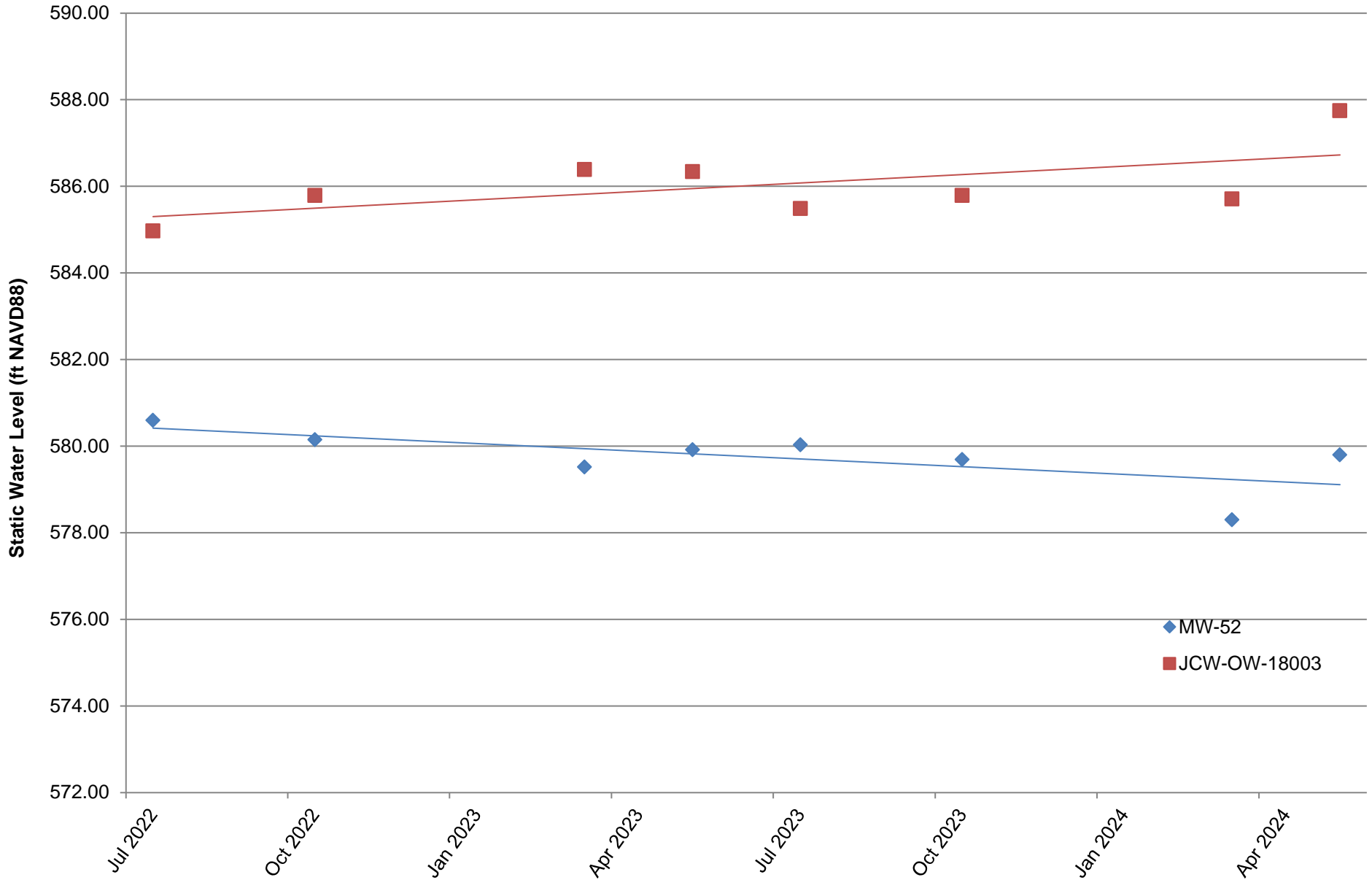
Appendix A

Static Water Level for MW-51 and OW-51

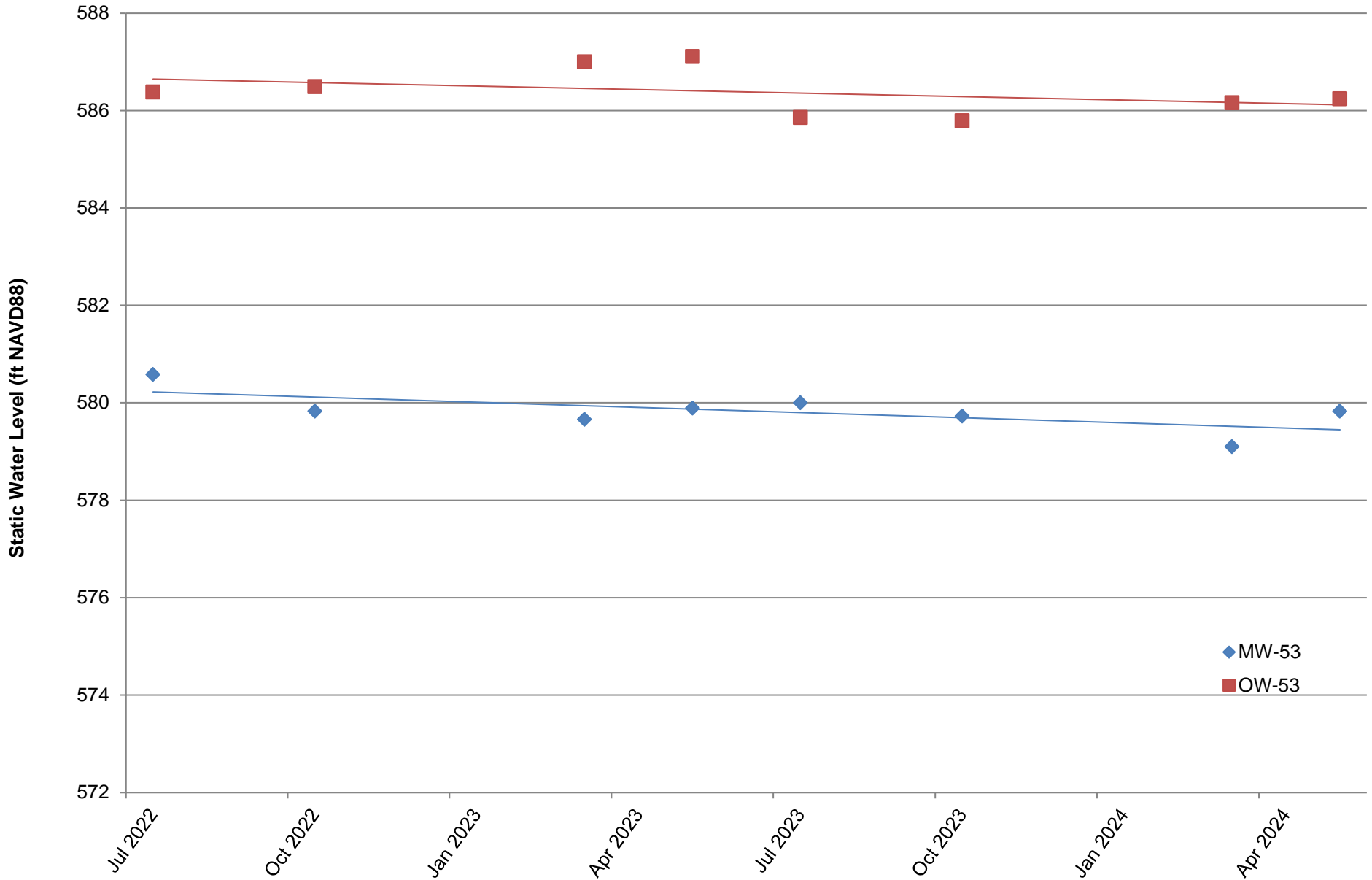


Appendix A

Static Water Level for MW-52 and JCW-OW-18003

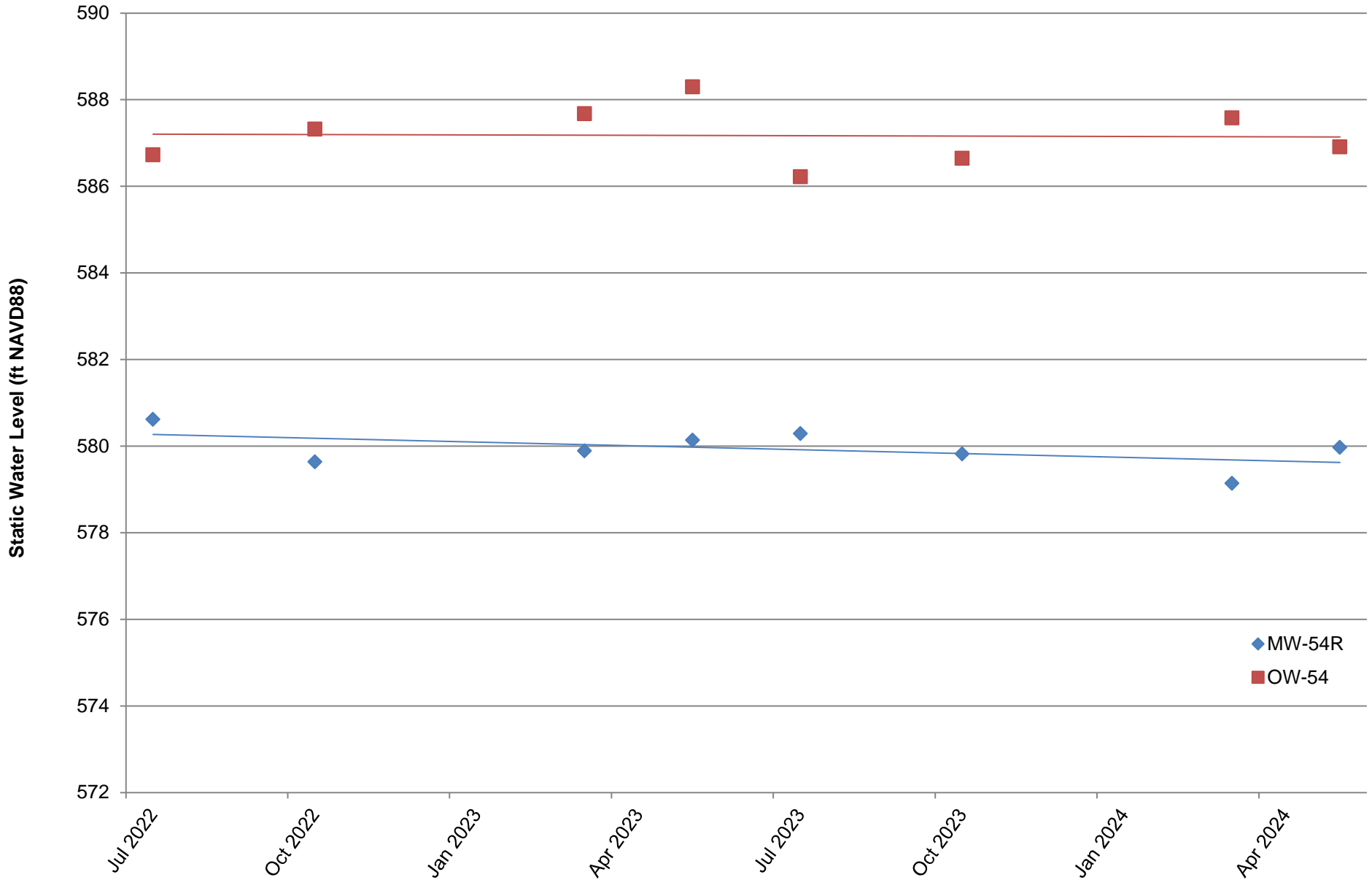


Appendix A Static Water Level for MW-53 and OW-53



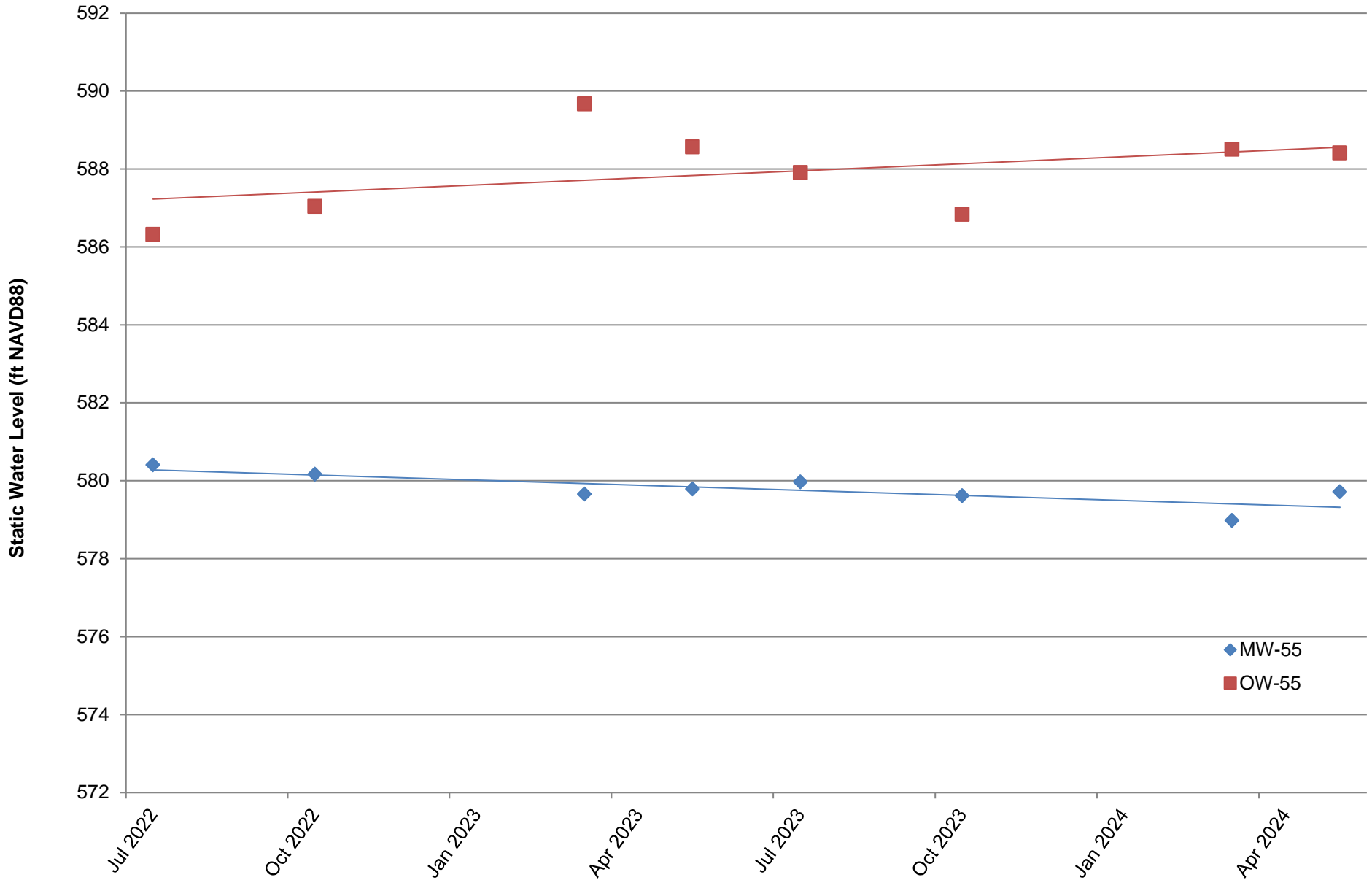
Appendix A

Static Water Level for MW-54R and OW-54

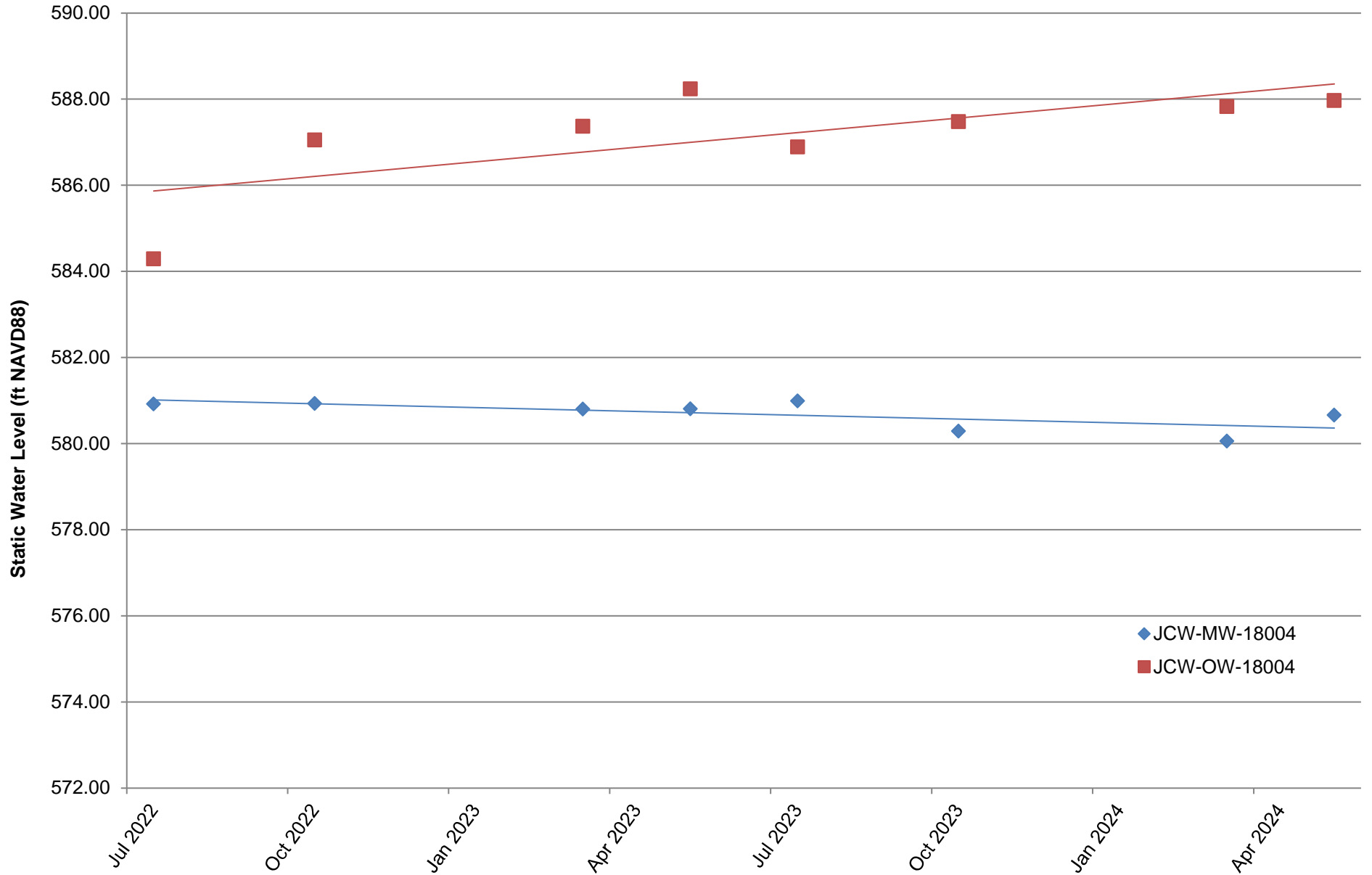


Appendix A

Static Water Level for MW-55 and OW-55

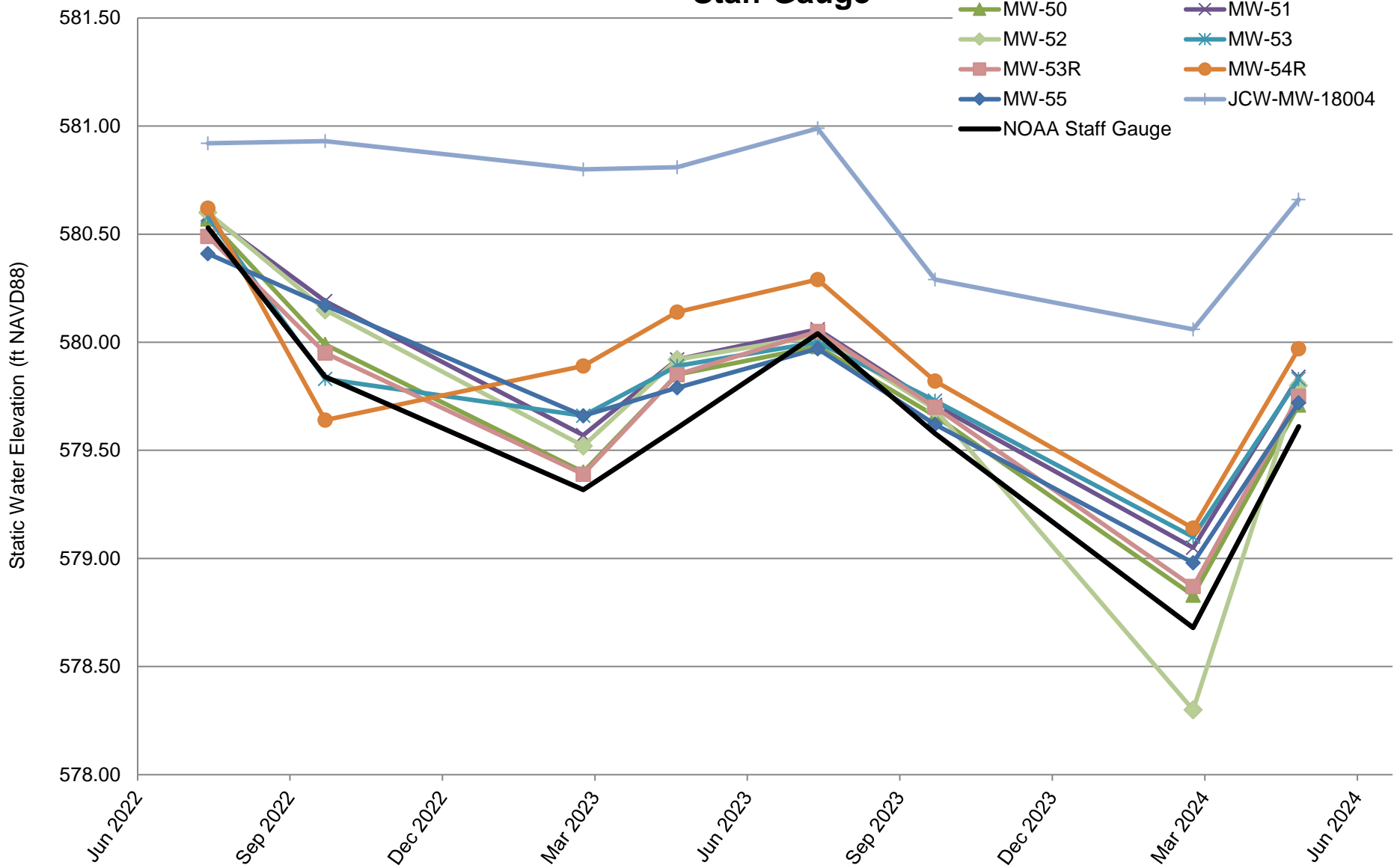


Appendix A Static Water Level for JCW-MW-18004 and JCW-OW-18004



Appendix A

Static Water Elevations for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge



Appendix B

Data Quality Review

Laboratory Data Quality Review Groundwater Monitoring Event April 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the April 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0343.

During the April 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents, as well as magnesium, potassium, and sodium, will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Target analytes were not detected above the RL in this blank sample.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 JC Weadock/Karn DEK Background

Groundwater samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-204358-1.

During the May 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Target analytes were not detected in the method blanks.
- One equipment blank (EQ-BACKGROUND) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on a sample from this data set.
- Samples DUP-BACKGROUND/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Laboratory Data Quality Review Groundwater Monitoring Event April 2024 JC Weadock Landfill

Porewater samples were collected by TRC for the April 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, and/or alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0344R.

During the April 2024 sampling event, a porewater sample was collected from each of the following wells:

- JCW-MW-18001
- JCW-MW-18004
- JCW-MW-18005
- JCW-MW-18006
- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- MW-58
- OW-57R OUT

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;

- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-01) and one equipment blank (EB-01) were collected. Target analytes were not detected in these blank samples with the following exception.
 - Copper was detected in EB-01 at 3 µg/L. Potential false positive exists for the positive results for copper in all porewater samples in this data set as summarized in attachment A.
- MS and MSD analyses were performed on sample JCW-MW-18001 for total metals and anions. The recoveries were within the acceptance limits. Relative percent differences were not provided by the laboratory and therefore were not evaluated; further, MS/MSD

concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.

- Samples DUP-JCW-LF-02/JCW-MW-18006 and DUP-JCW-LF-01/MW-50 were submitted as the field duplicate pairs with this data set; all criteria between the parent and duplicate samples were within the QC limits.
- Laboratory duplicate analyses were not performed on a sample from this data set.
- The RL for sulfate was 1 mg/L and the requested RL was 2 mg/L. Sulfate was detected between the RL and requested RL at 1.530 mg/L in sample MW-53. No adverse impact on data usability since reported RL is lower than requested RL.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 JCW Landfill
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
JCW-MW-18001	5/7/2024	Copper	Equipment blank contamination; potential false positive.
JCW-MW-18004	5/8/2024		
JCW-MW-18005	5/8/2024		
JCW-MW-18006	5/8/2024		
MW-50	5/7/2024		
MW-51	5/7/2024		
MW-52	5/7/2024		
MW-53	5/7/2024		
MW-53R	5/7/2024		
MW-54R	5/7/2024		
MW-55	5/8/2024		
OW-57ROUT	5/8/2024		
MW-58	5/8/2024		
DUP-JCW-LF-01	5/7/2024		
DUP-JCW-LF-02	5/8/2024		

Laboratory Data Quality Review Groundwater Monitoring Event May 2024 JC Weadock Landfill

Groundwater samples were collected by TRC for the May 2024 sampling event. Samples were analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 240-204359-1 and 240-204359-2.

During the May 2024 sampling event, a groundwater sample was collected from each of the following wells:

- JCW-MW-18001
- JCW-MW-18004
- JCW-MW-18005
- JCW-MW-18006
- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- MW-58
- OW-57ROUT

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- For sample JCW-MW-18006, the result for radium-226 was reported without a 21-day waiting period to ensure that short-lived alpha-emitting radium isotopes (e.g. Ra-224) decayed out. The positive radium-226 result reflects the total alpha radium and should be considered potentially biased high in this sample, as summarized in the attached table. This sample had activity below the RL (1.0 picocuries per liter) after the 7 day total alpha radium count time and the result is well below the MCL for combined Radium 226/228 (5.0 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- One equipment blank (EB-1) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD analyses were not performed on a sample from this data set.
- Laboratory duplicate analyses were performed on samples JCW-MW-18006 and MW-54R for radium-226 and radium-228; all criteria were met
- Samples DUP-01/MW-50 and DUP-02/JCW-MW-18006 were submitted as the field duplicate pairs with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A
Summary of Data Non-Conformances for Groundwater Analytical Data
JCW Landfill
Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
JCW-MW-18006	5/8/2024	Radium-226	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The results are well below the applicable screening criteria and are therefore deemed usable as reported.

Appendix C

Detection Monitoring Statistical Trend Tests

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 Second Quarter 2024
 Data from August 2022 to May 2024

Porewater Monitoring Points						
PARAMETER	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
Boron ⁽¹⁾	O	O	O	O	O	↓
Calcium	↑ ^{ASD}	O	O	↑*	O	↓
Chloride	↓*	O	O	↓*	O	↓*
Fluoride	O*	O*	O*	O*	O*	O*
Iron	↑	O	O	O	O	O
pH/Corrosivity ⁽¹⁾	O	O	O	↑*	O	O
Sulfate	↑ ^{ASD}	O	O	↑	O	↓
Total Dissolved Solids	O	O	O	↑*	O	↓

Notes:

- O* = Non-detect (70%)
- O = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new
- ↑^{ASD} = Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 Second Quarter 2024
 Data from August 2022 to May 2024

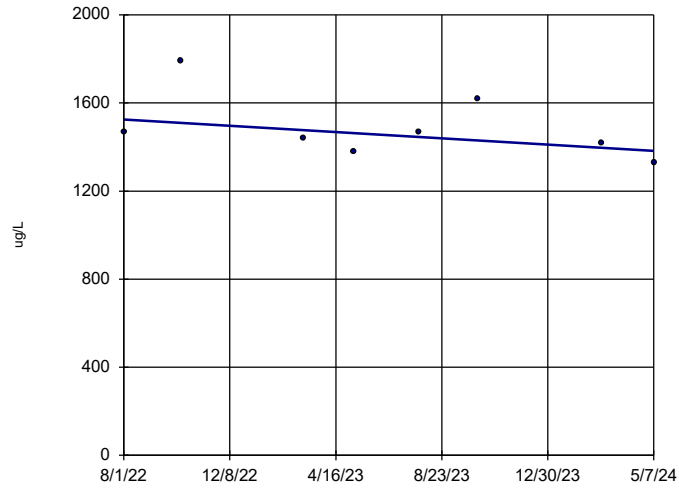
Porewater Monitoring Points						
PARAMETER	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57R OUT
Boron ⁽¹⁾	O	↑*	O	O	O	O
Calcium	O	O	O	O	O	↑*
Chloride	O	O	O	O	O	O
Fluoride	O*	O*	O*	O*	O*	O*
Iron	O	O	O	O	O	O
pH/Corrosivity ⁽¹⁾	O	O	↑*	O	O	↑*
Sulfate	↓	↓	O	O	O	O
Total Dissolved Solids	O	O	O	O	O	O

Notes:

- O* = Non-detect (70%)
- O = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new
- ↑^{ASD} = Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

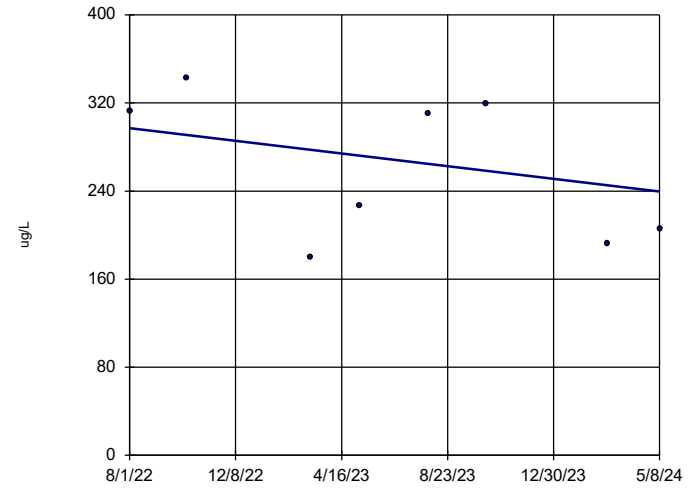
Boron, Total JCW-MW-18001



n = 8
 Slope = -80.53
 units per year.
 Mann-Kendall
 statistic = -11
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

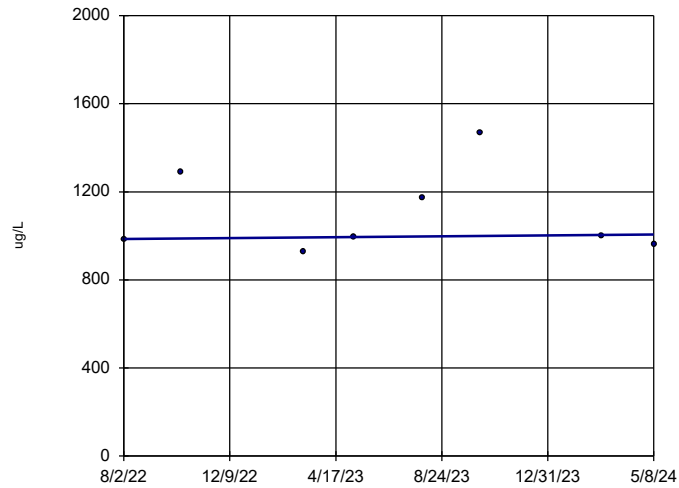
Boron, Total JCW-MW-18004



n = 8
 Slope = -32.52
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

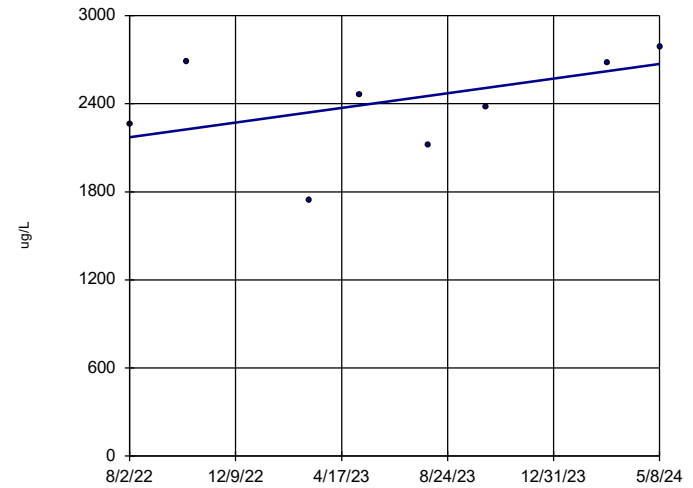
Boron, Total JCW-MW-18005



n = 8
 Slope = 10.79
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total JCW-MW-18006

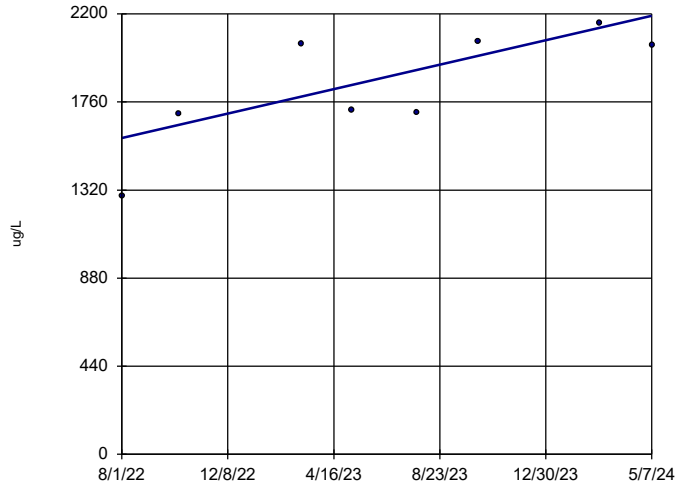


n = 8
 Slope = 282.2
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-50

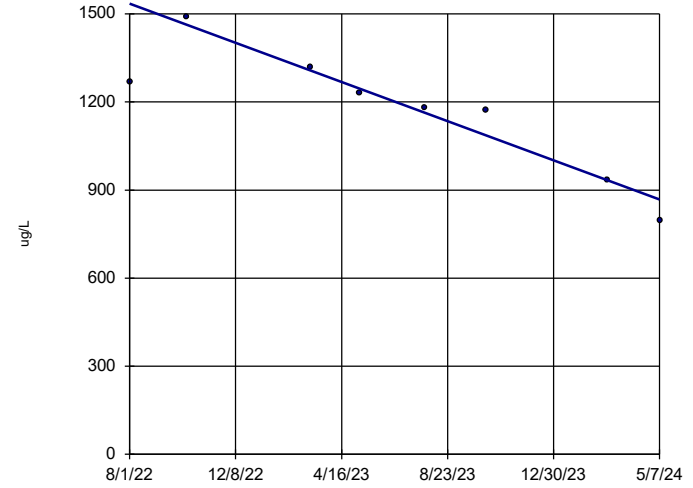


n = 8
 Slope = 345.5 units per year.
 Mann-Kendall statistic = 16
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-51

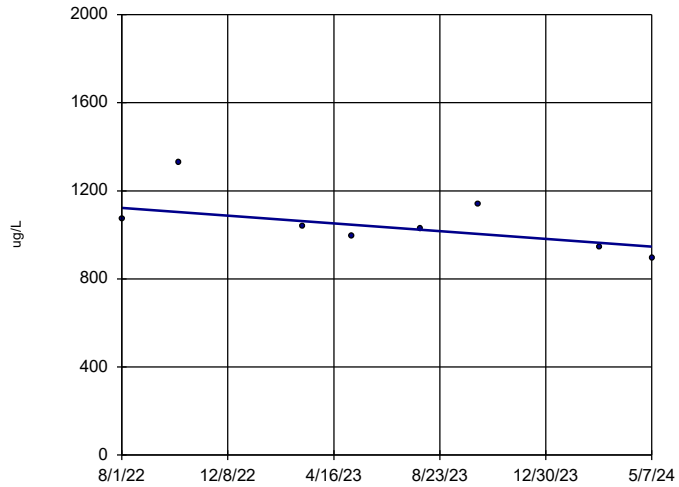


n = 8
 Slope = -377.9 units per year.
 Mann-Kendall statistic = -24
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-52

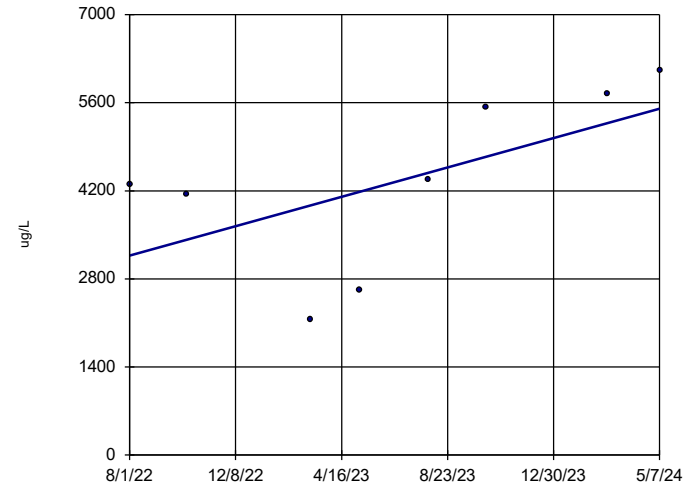


n = 8
 Slope = -99.7 units per year.
 Mann-Kendall statistic = -16
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

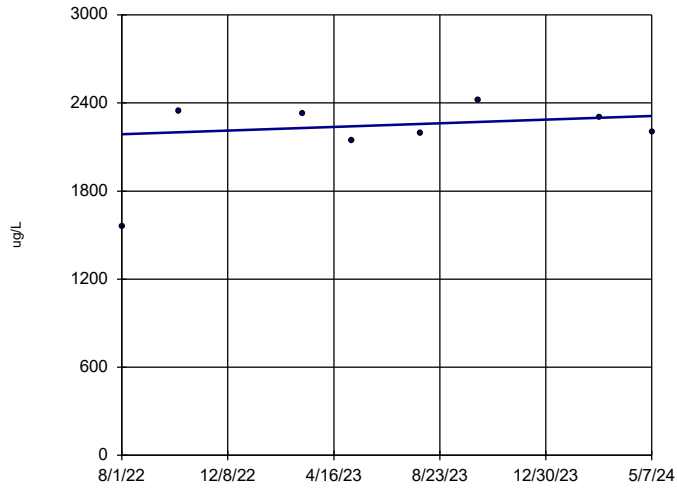
MW-53



n = 8
 Slope = 1322 units per year.
 Mann-Kendall statistic = 18
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

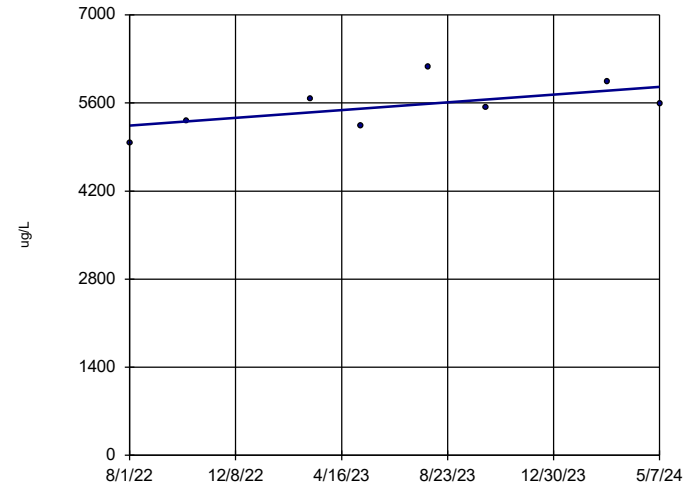
Boron, Total MW-53R



n = 8
 Slope = 70.11
 units per year.
 Mann-Kendall
 statistic = 4
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

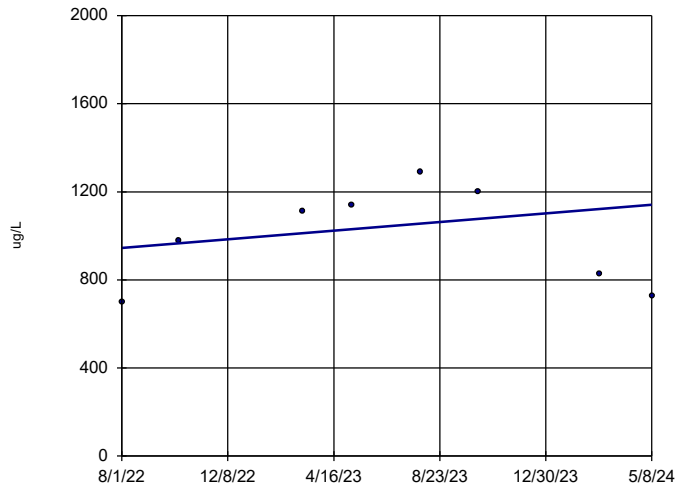
Boron, Total MW-54R



n = 8
 Slope = 348
 units per year.
 Mann-Kendall
 statistic = 12
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

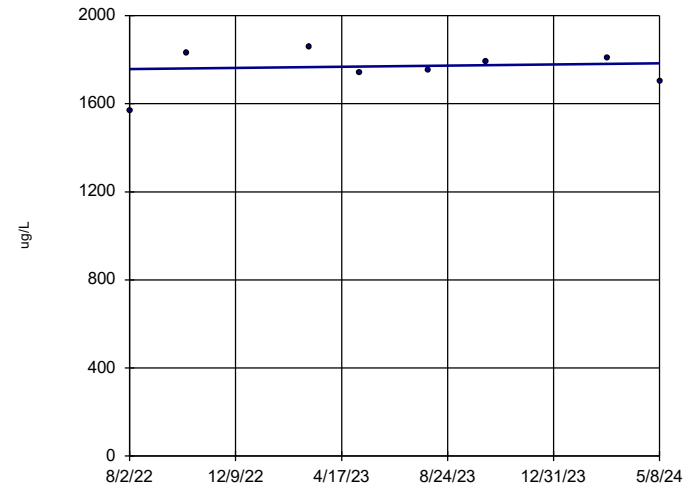
Boron, Total MW-55



n = 8
 Slope = 111.4
 units per year.
 Mann-Kendall
 statistic = 4
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

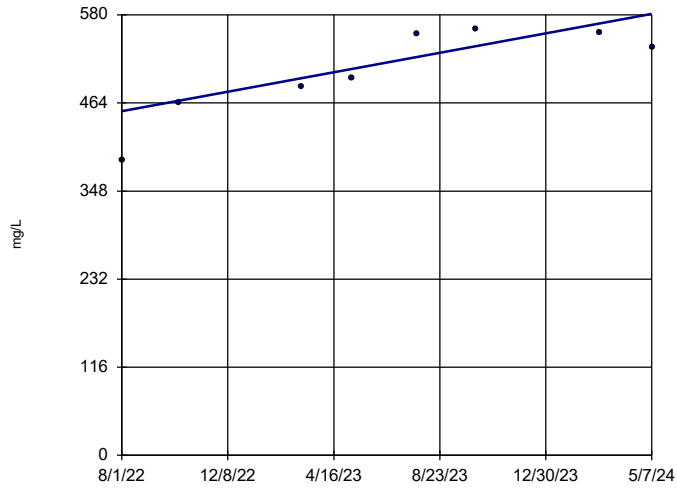
Boron, Total OW-57ROUT



n = 8
 Slope = 14.86
 units per year.
 Mann-Kendall
 statistic = 0
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

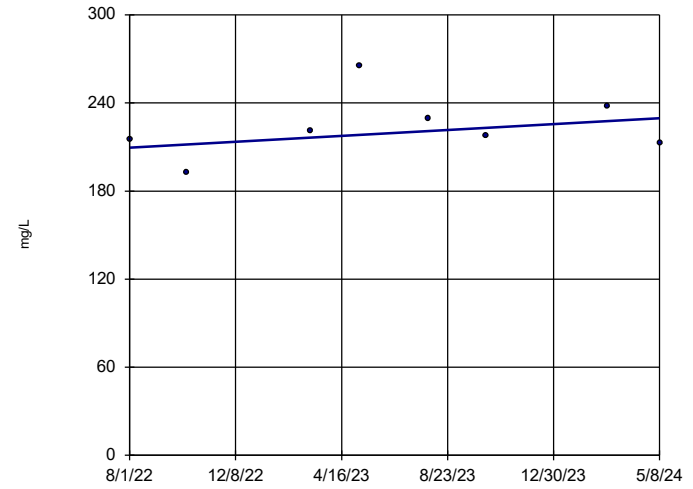
Calcium, Total JCW-MW-18001



n = 8
 Slope = 72.56
 units per year.
 Mann-Kendall
 statistic = 20
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

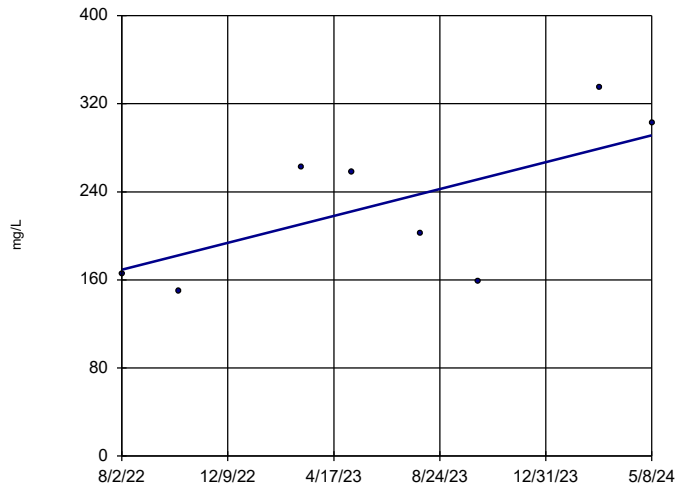
Calcium, Total JCW-MW-18004



n = 8
 Slope = 11.31
 units per year.
 Mann-Kendall
 statistic = 4
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

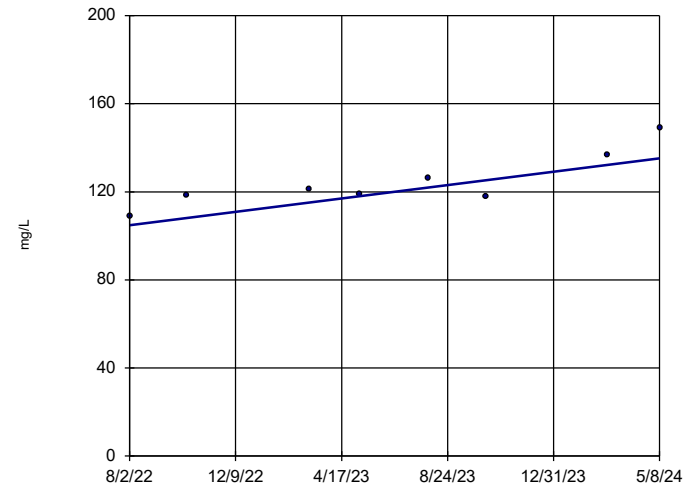
Calcium, Total JCW-MW-18005



n = 8
 Slope = 69.09
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total JCW-MW-18006

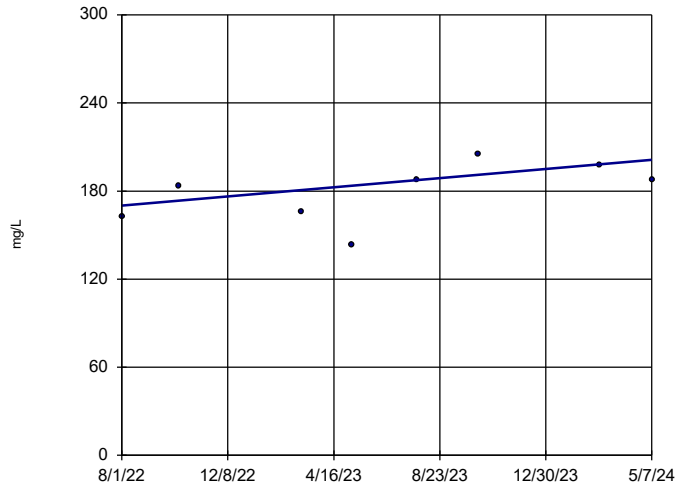


n = 8
 Slope = 17.17
 units per year.
 Mann-Kendall
 statistic = 18
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-50

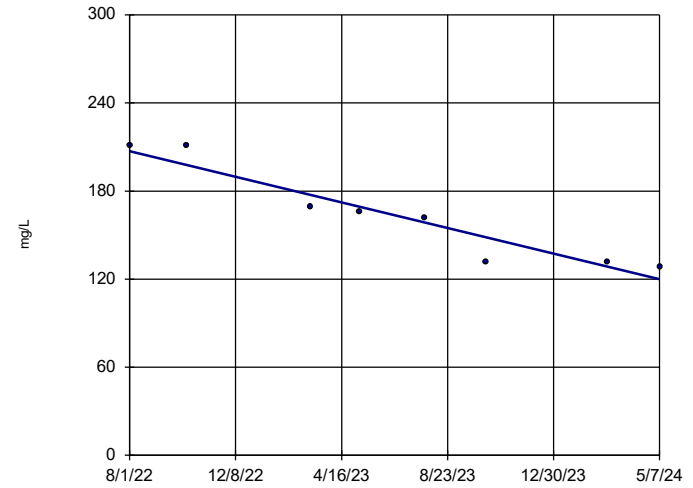


n = 8
 Slope = 17.61
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-51

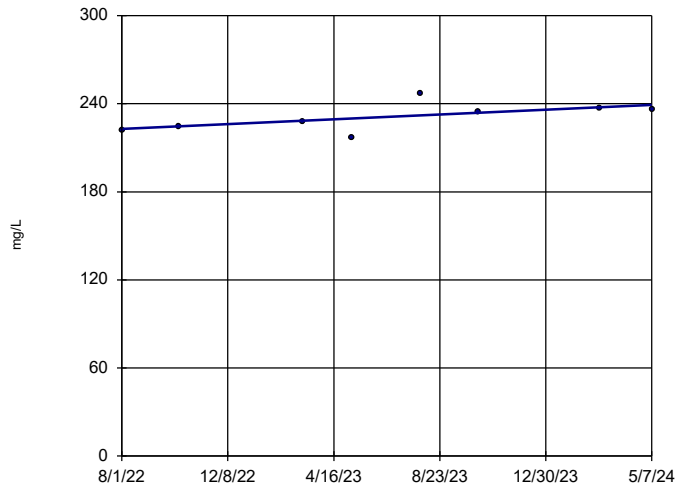


n = 8
 Slope = -49.32
 units per year.
 Mann-Kendall
 statistic = -26
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-52

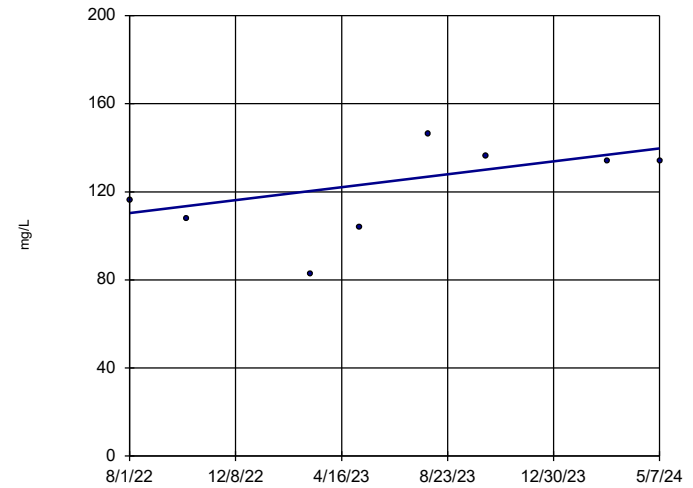


n = 8
 Slope = 9.337
 units per year.
 Mann-Kendall
 statistic = 14
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-53

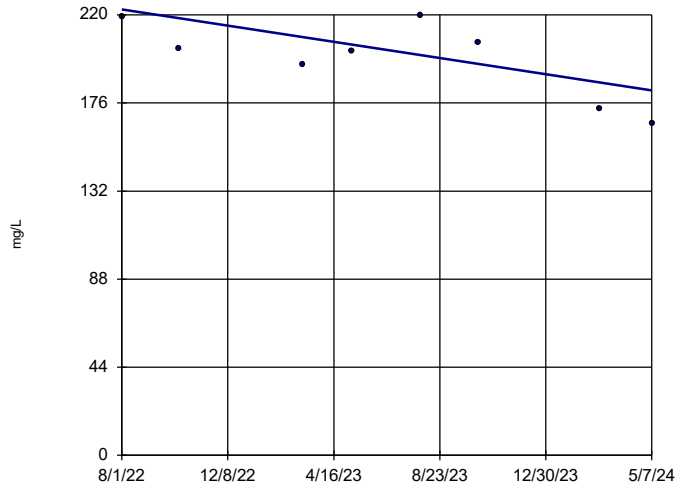


n = 8
 Slope = 16.66
 units per year.
 Mann-Kendall
 statistic = 7
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-53R

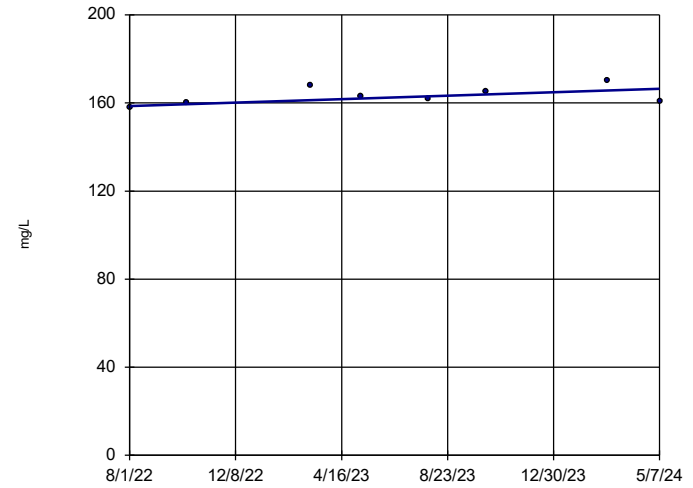


n = 8
 Slope = -22.83 units per year.
 Mann-Kendall statistic = -12
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-54R

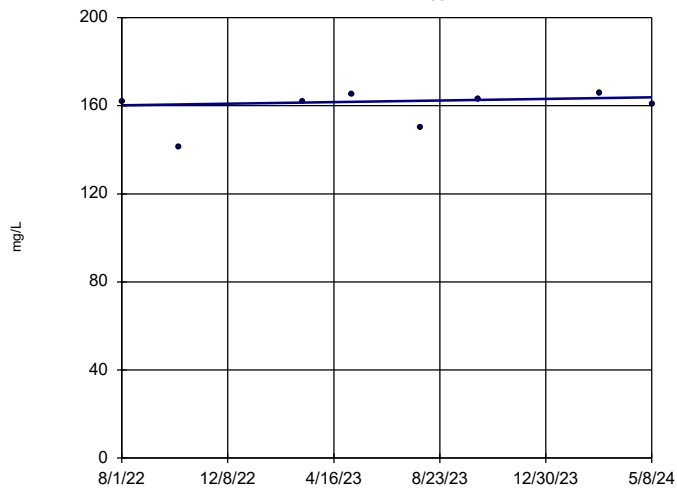


n = 8
 Slope = 4.391 units per year.
 Mann-Kendall statistic = 10
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

MW-55

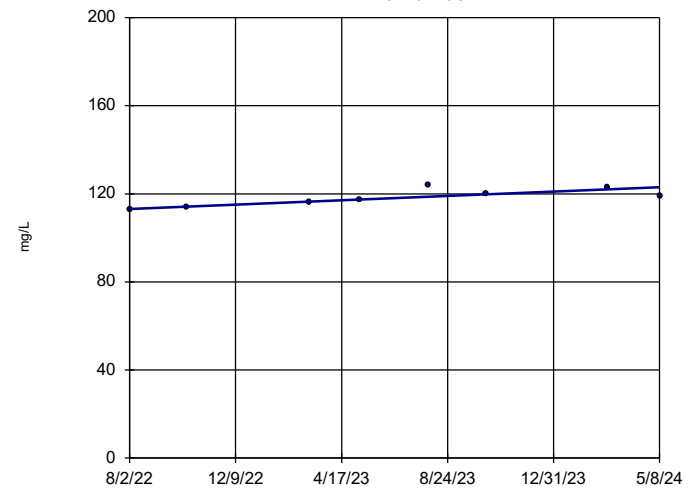


n = 8
 Slope = 2.107 units per year.
 Mann-Kendall statistic = 7
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

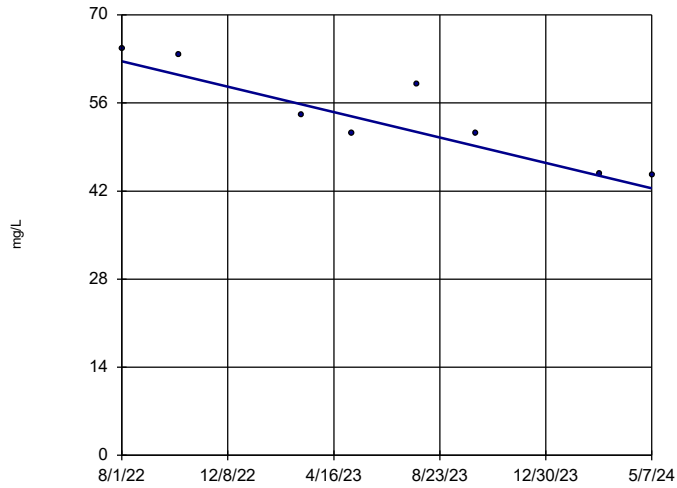
OW-57ROUT



n = 8
 Slope = 5.557 units per year.
 Mann-Kendall statistic = 18
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

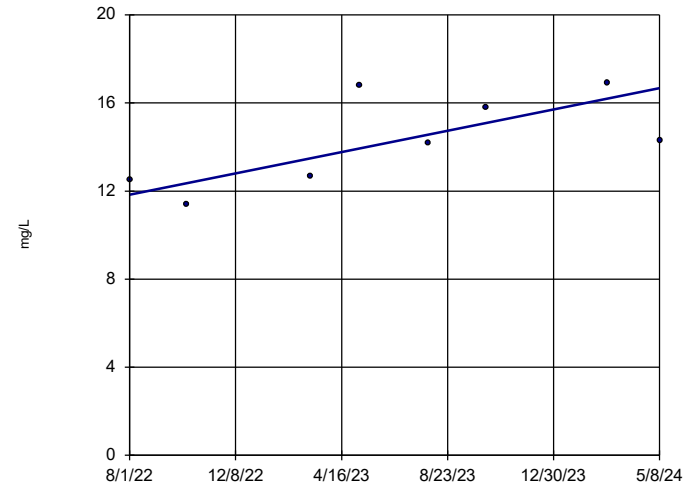
Chloride JCW-MW-18001



n = 8
 Slope = -11.42
 units per year.
 Mann-Kendall
 statistic = -23
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

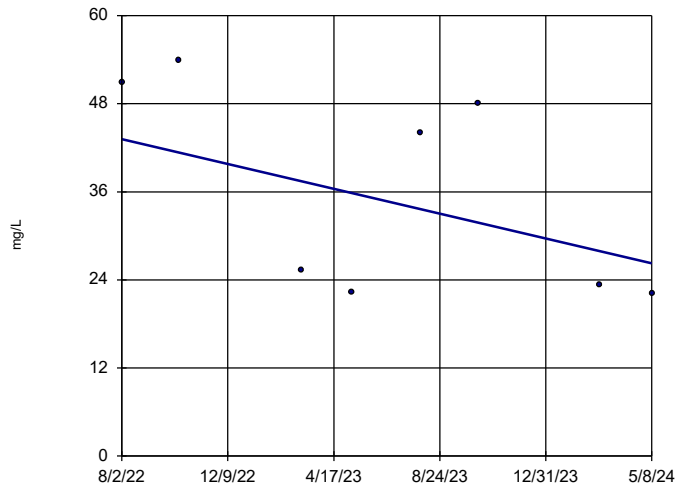
Chloride JCW-MW-18004



n = 8
 Slope = 2.736
 units per year.
 Mann-Kendall
 statistic = 16
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

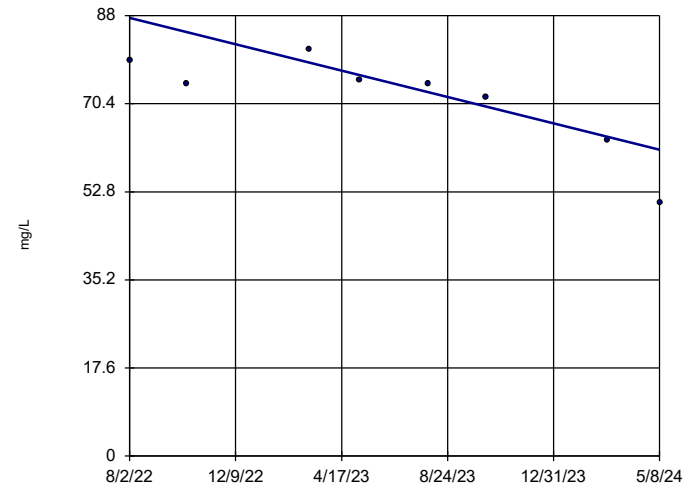
Chloride JCW-MW-18005



n = 8
 Slope = -9.58
 units per year.
 Mann-Kendall
 statistic = -14
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

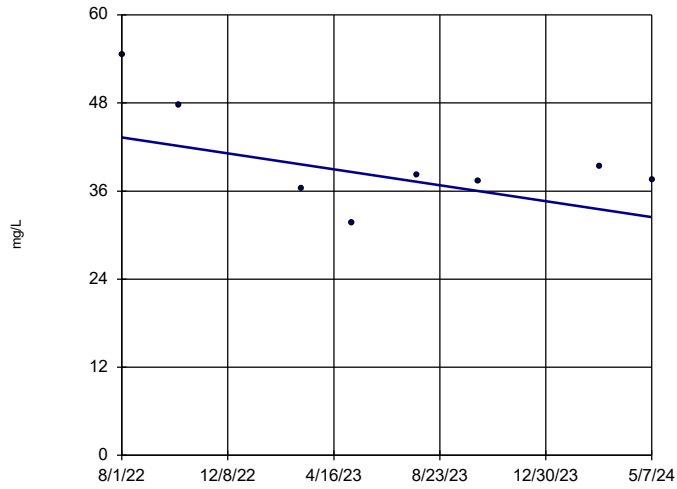
Chloride JCW-MW-18006



n = 8
 Slope = -14.88
 units per year.
 Mann-Kendall
 statistic = -21
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

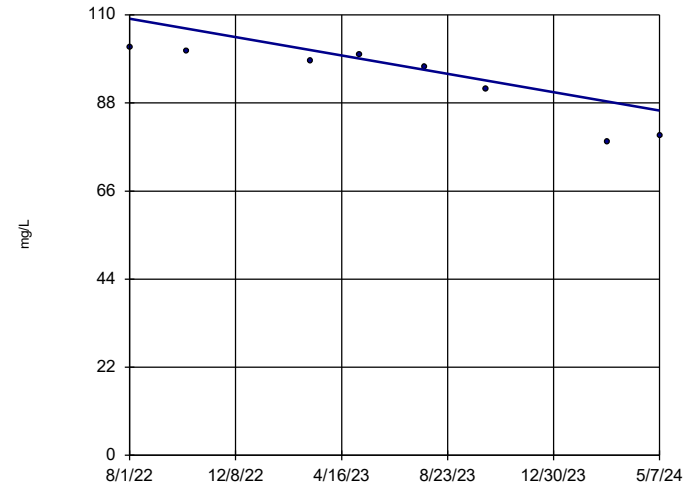
Chloride MW-50



n = 8
 Slope = -6.148
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

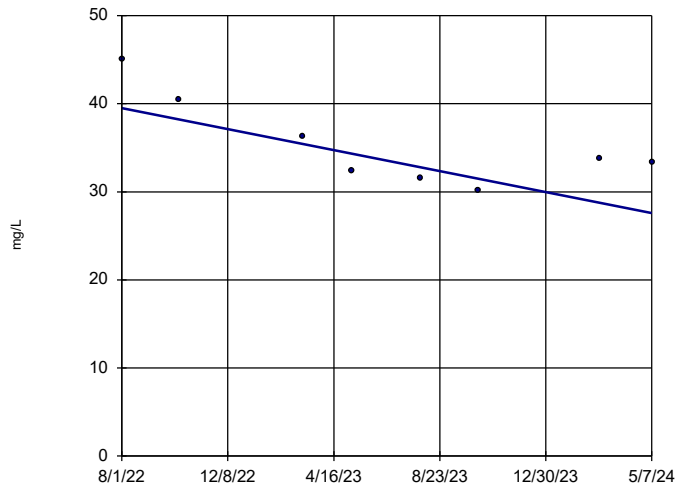
Chloride MW-51



n = 8
 Slope = -12.95
 units per year.
 Mann-Kendall
 statistic = -24
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

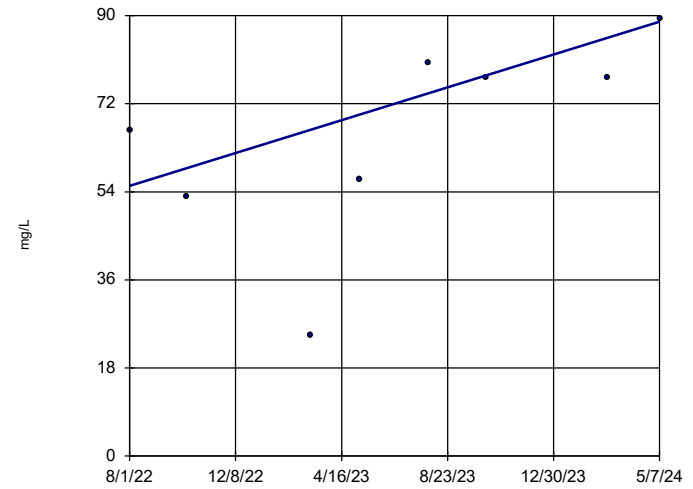
Chloride MW-52



n = 8
 Slope = -6.728
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

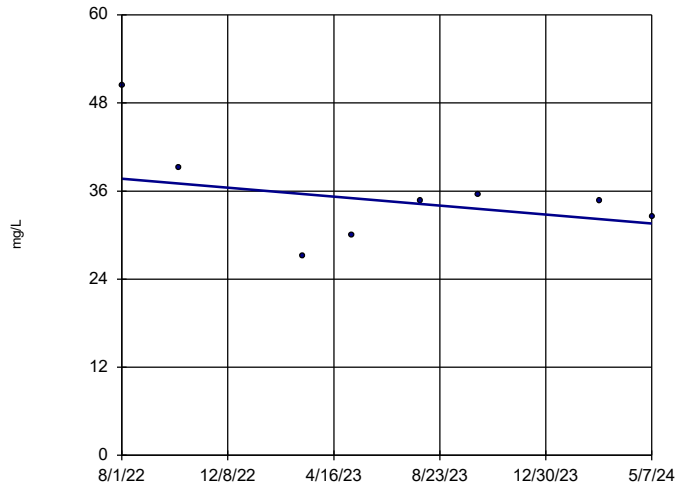
Chloride MW-53



n = 8
 Slope = 18.99
 units per year.
 Mann-Kendall
 statistic = 15
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:50 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

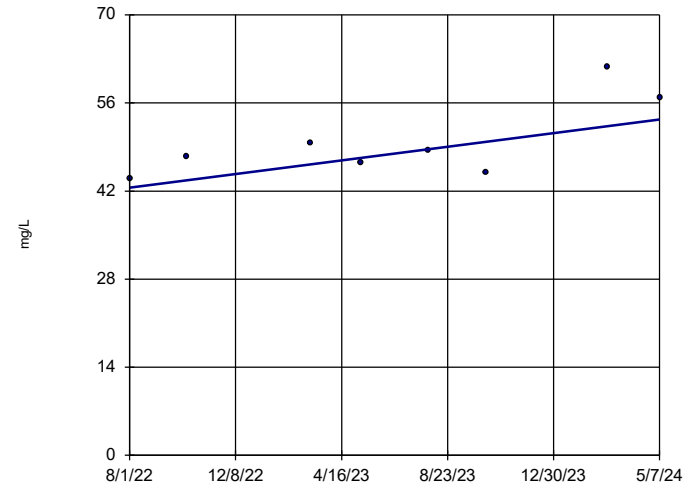
Chloride MW-53R



n = 8
 Slope = -3.459
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

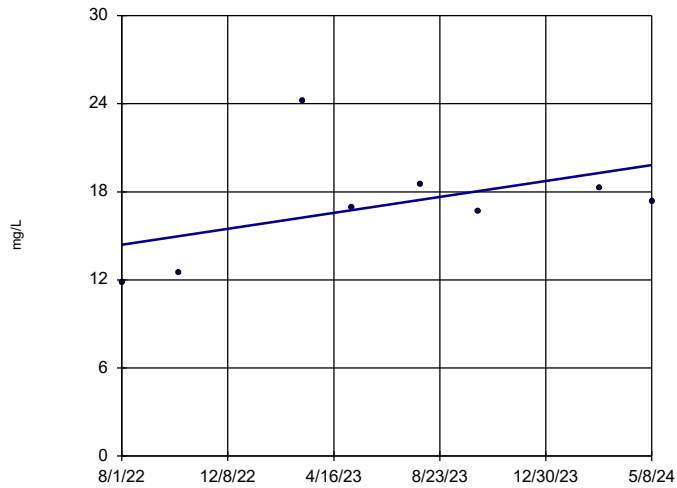
Chloride MW-54R



n = 8
 Slope = 6.15
 units per year.
 Mann-Kendall
 statistic = 12
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

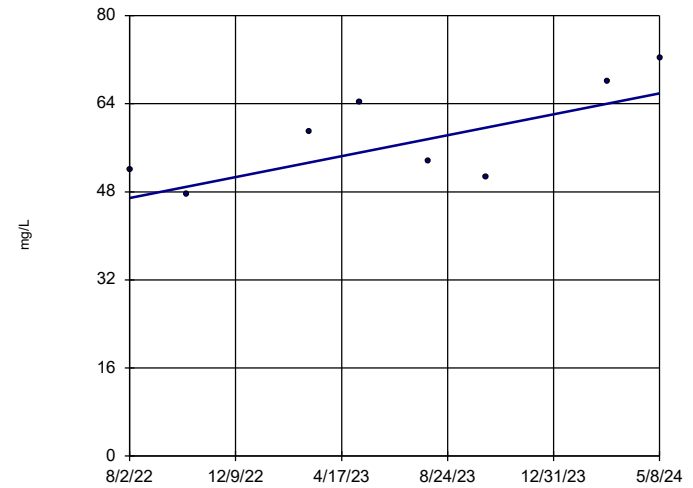
Chloride MW-55



n = 8
 Slope = 3.075
 units per year.
 Mann-Kendall
 statistic = 8
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

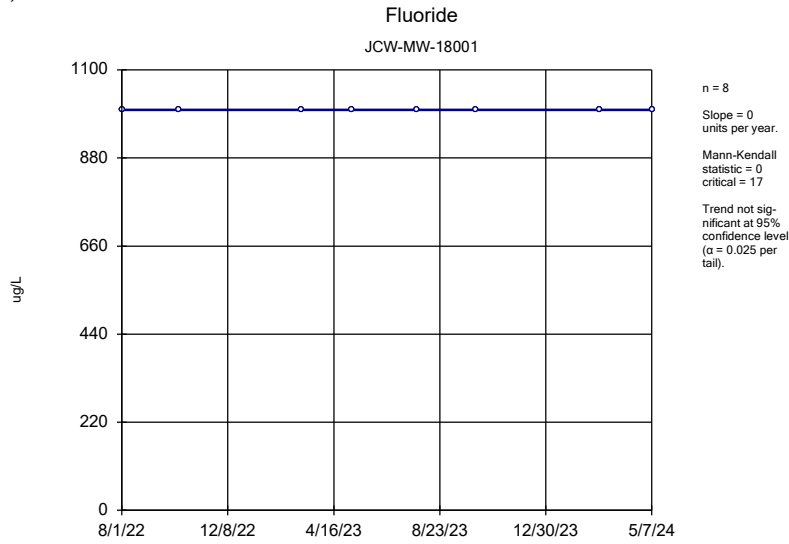
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Chloride OW-57ROUT

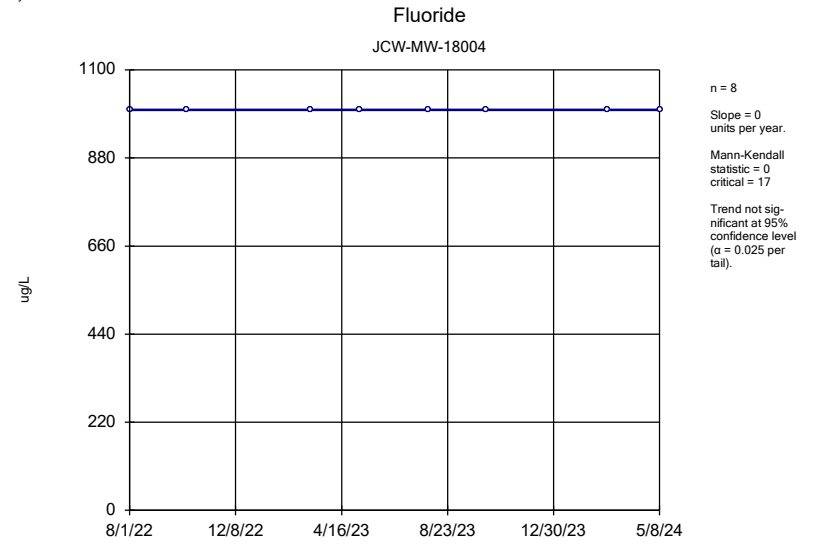


n = 8
 Slope = 10.75
 units per year.
 Mann-Kendall
 statistic = 14
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

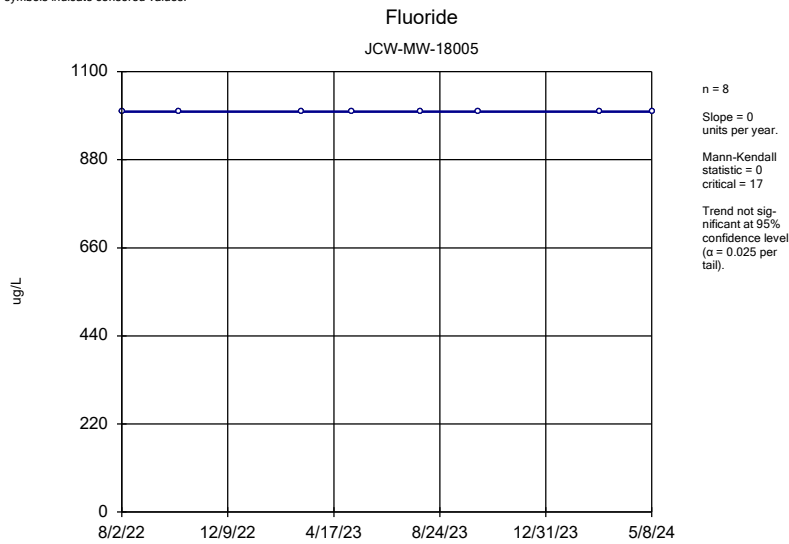
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



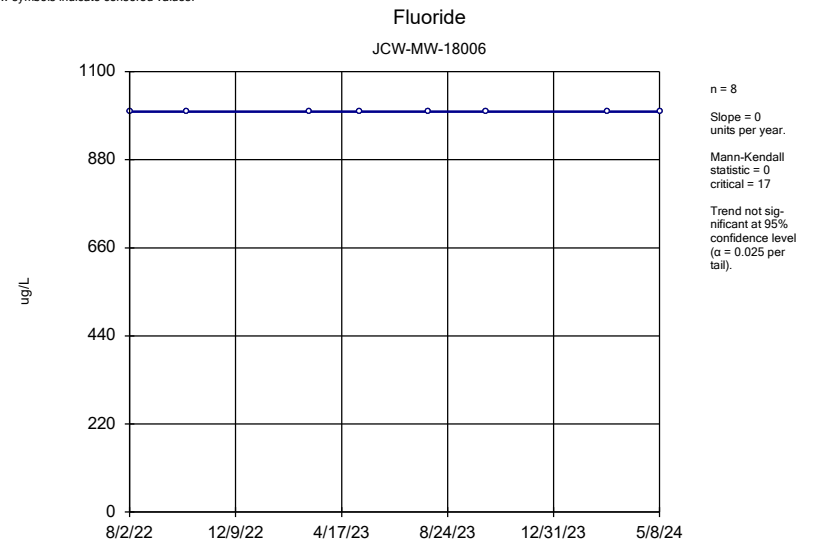
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

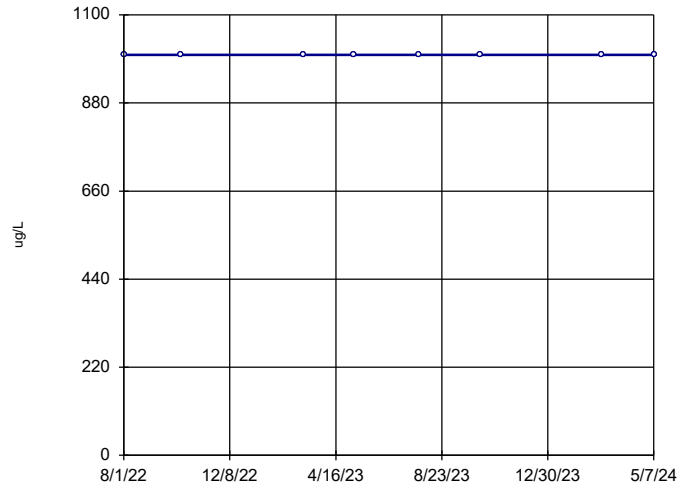


Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

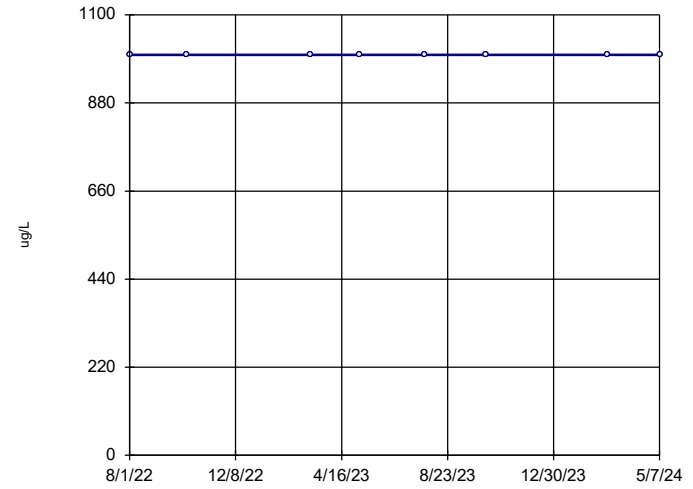
Fluoride MW-50



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

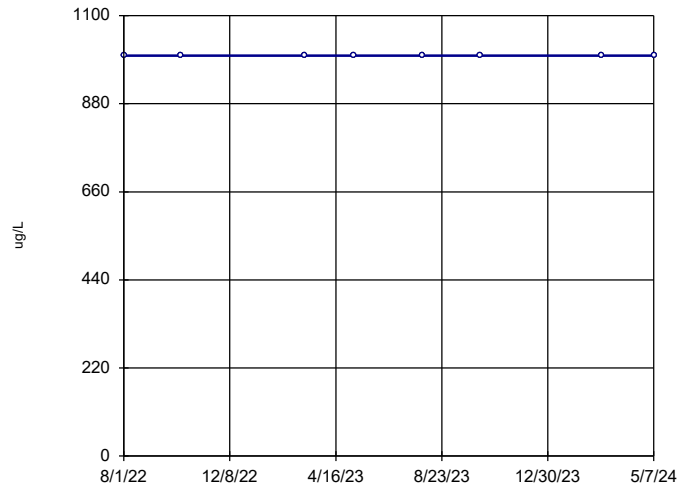
Fluoride MW-51



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

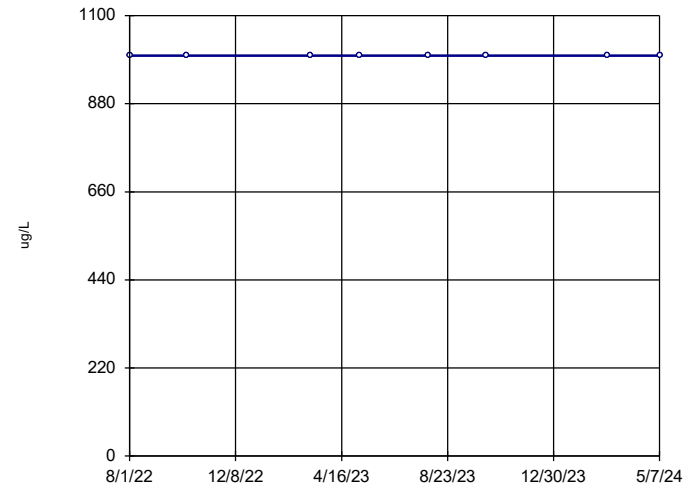
Fluoride MW-52



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

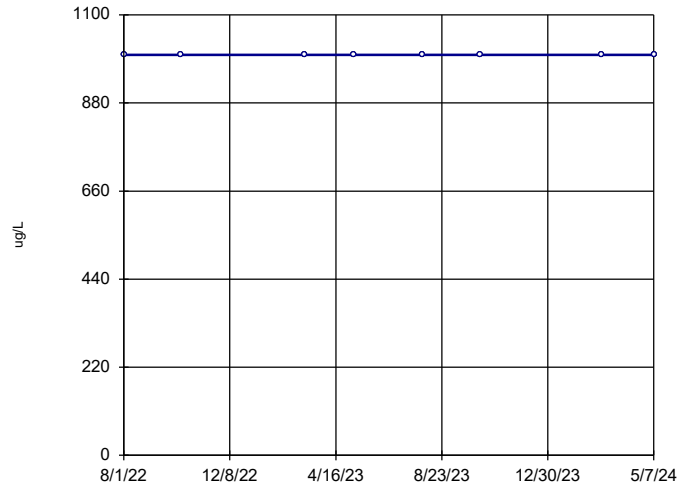
Fluoride MW-53



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

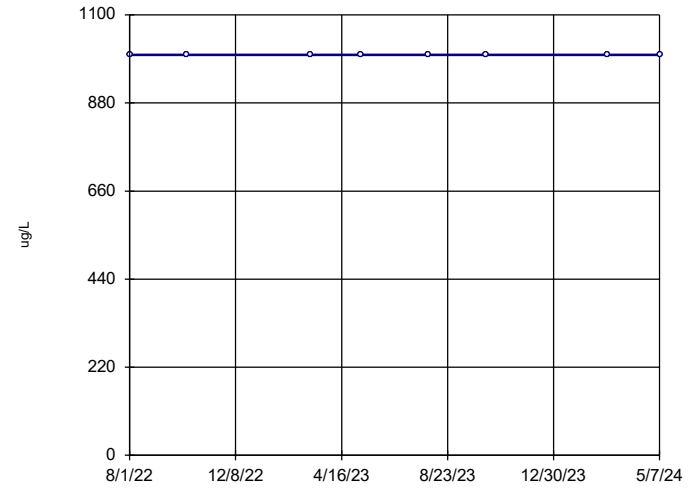
Fluoride MW-53R



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

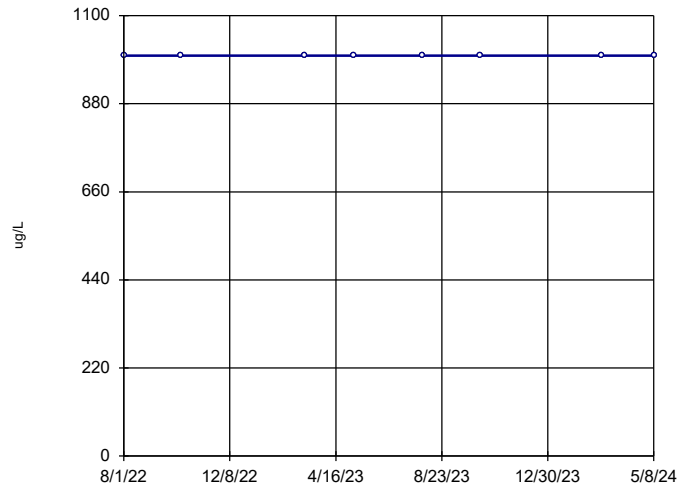
Fluoride MW-54R



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

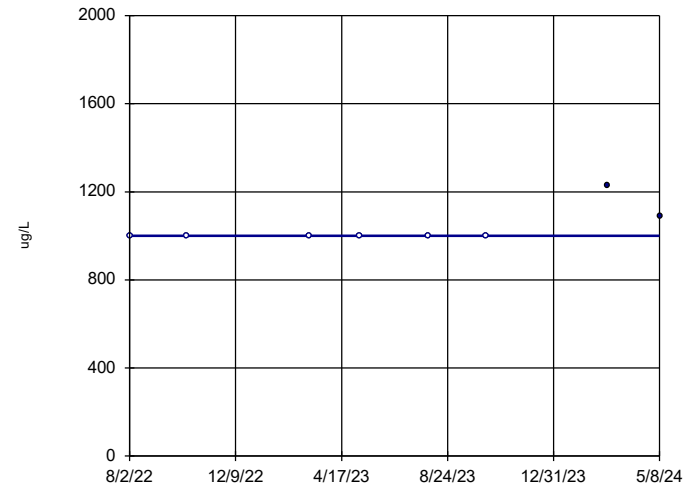
Fluoride MW-55



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

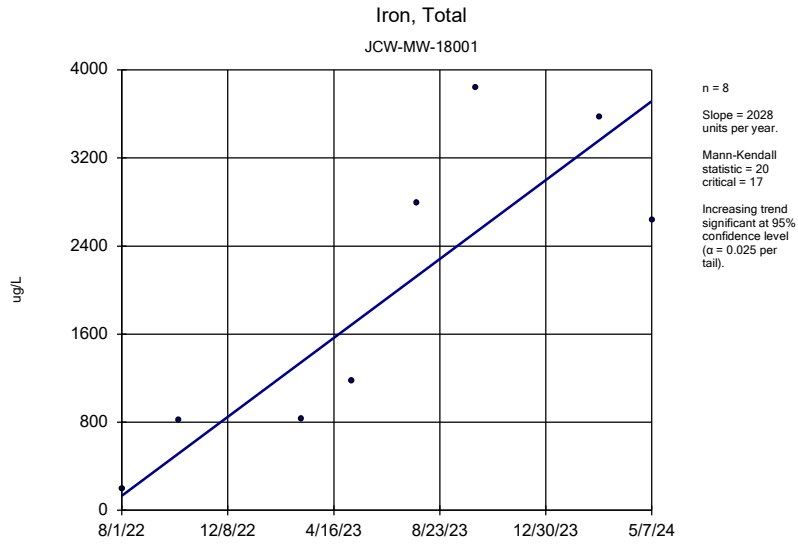
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Fluoride OW-57ROUT

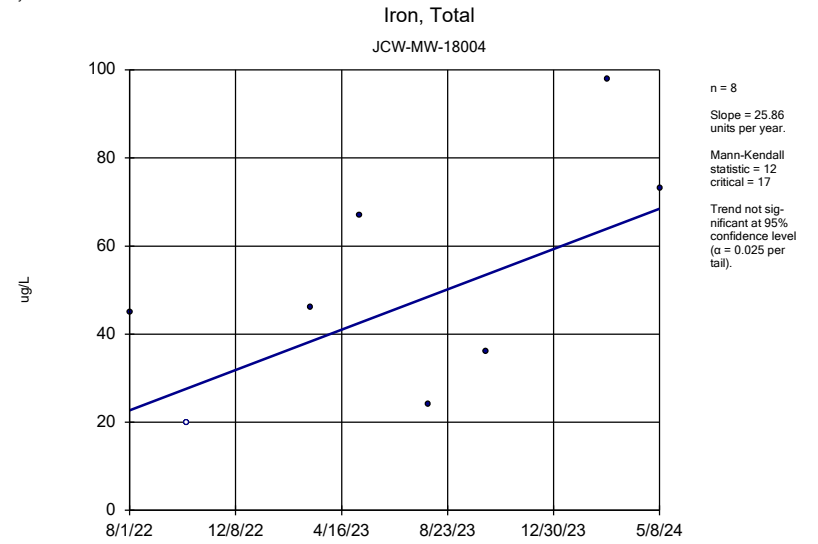


n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 11
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

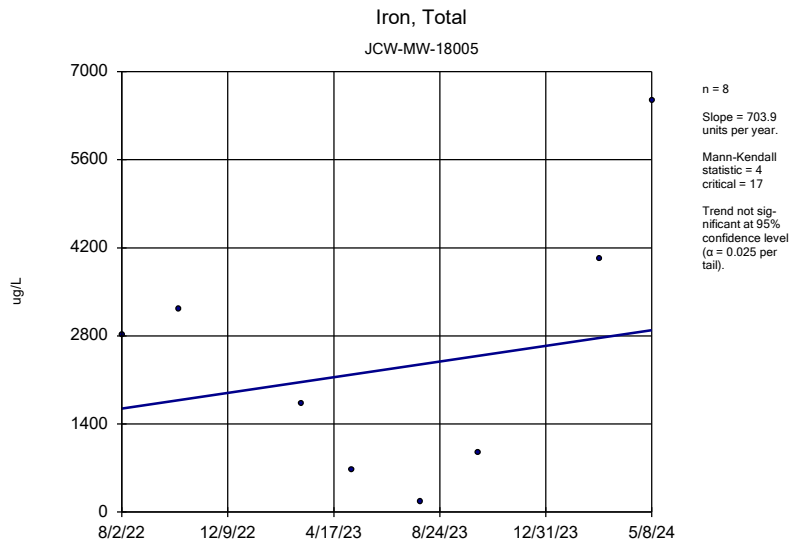
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



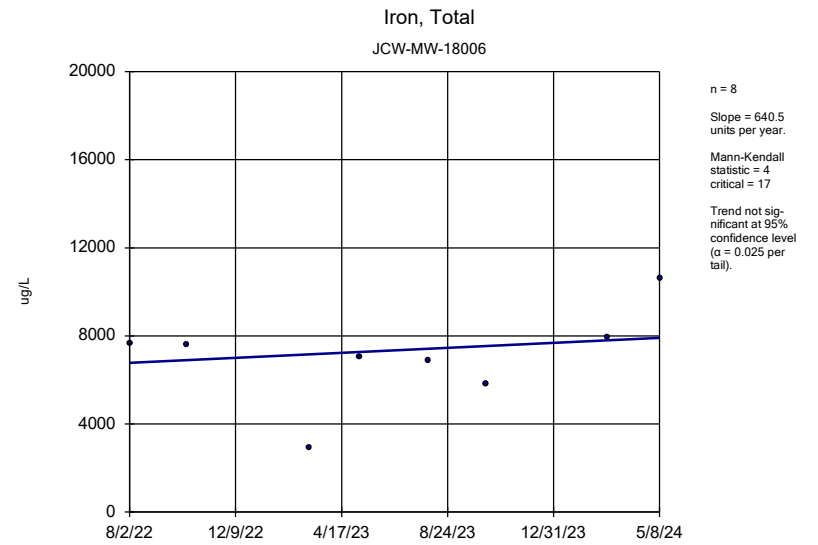
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

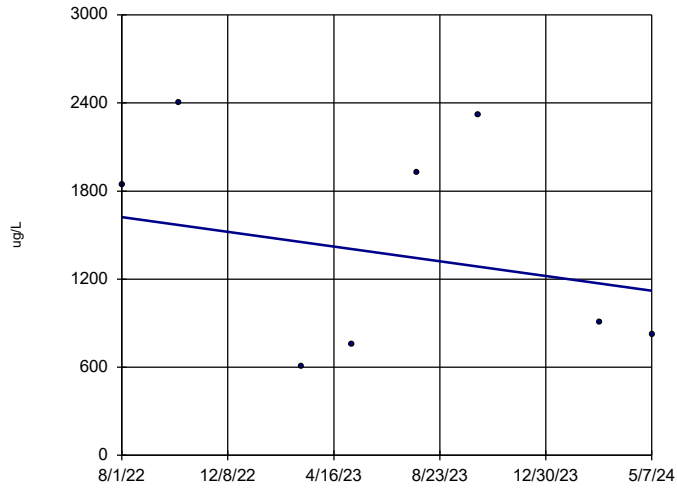


Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

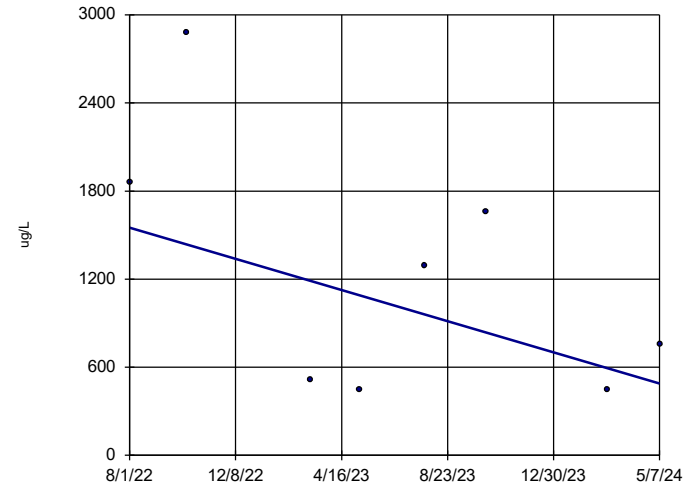
Iron, Total MW-50



n = 8
 Slope = -283.4
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

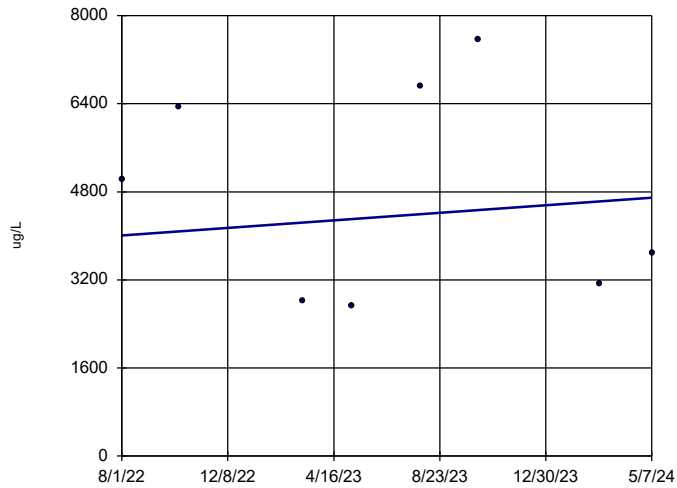
Iron, Total MW-51



n = 8
 Slope = -601
 units per year.
 Mann-Kendall
 statistic = -10
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

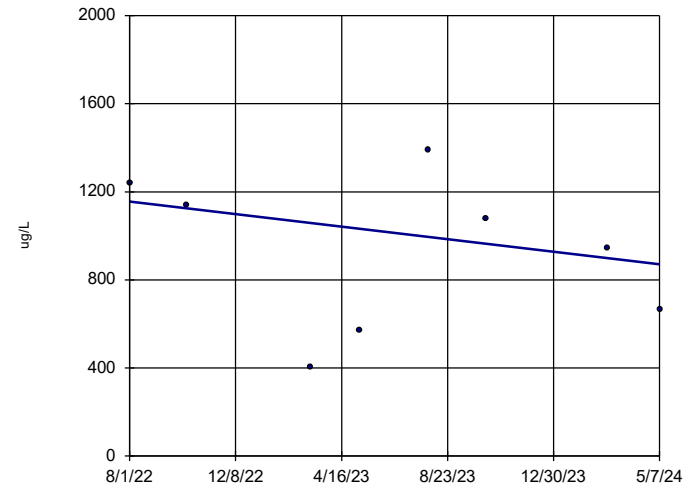
Iron, Total MW-52



n = 8
 Slope = 387.1
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

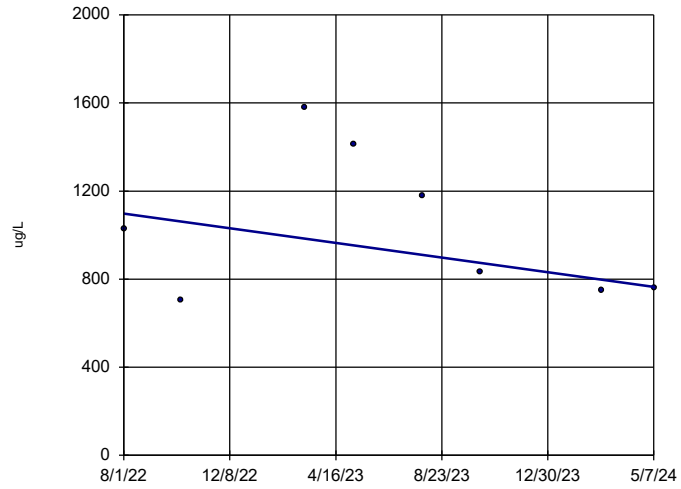
Iron, Total MW-53



n = 8
 Slope = -160.7
 units per year.
 Mann-Kendall
 statistic = -6
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 (α = 0.025 per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

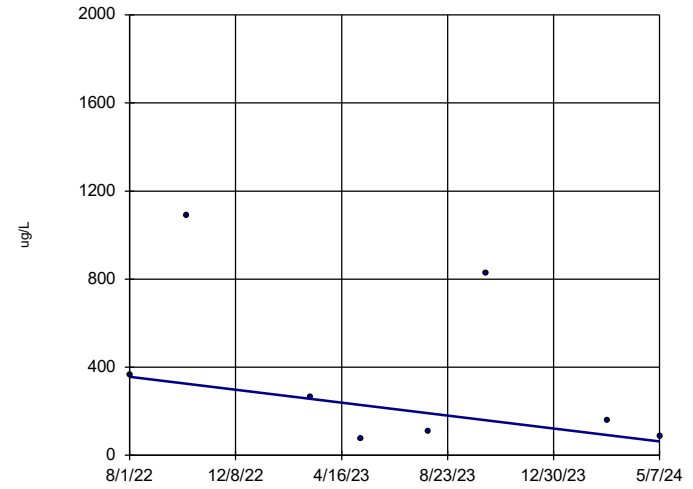
Iron, Total MW-53R



n = 8
 Slope = -188.3
 units per year.
 Mann-Kendall
 statistic = -8
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

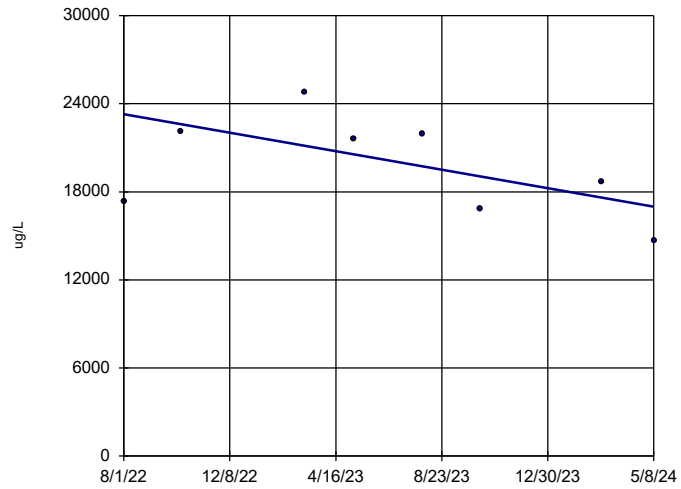
Iron, Total MW-54R



n = 8
 Slope = -166.3
 units per year.
 Mann-Kendall
 statistic = -10
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

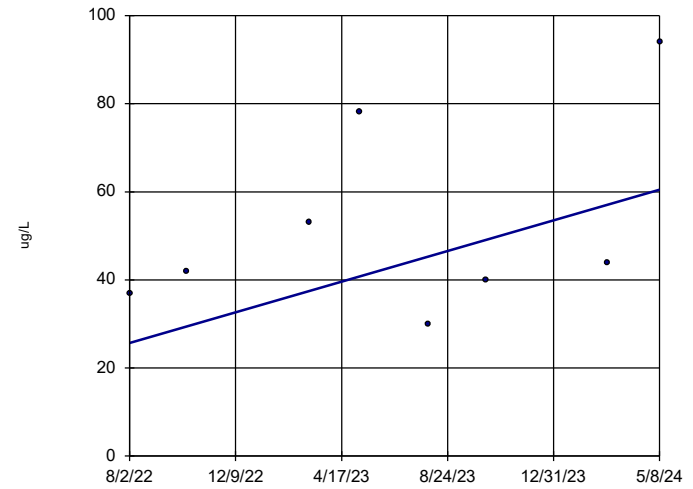
Iron, Total MW-55



n = 8
 Slope = -3566
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Iron, Total OW-57ROUT

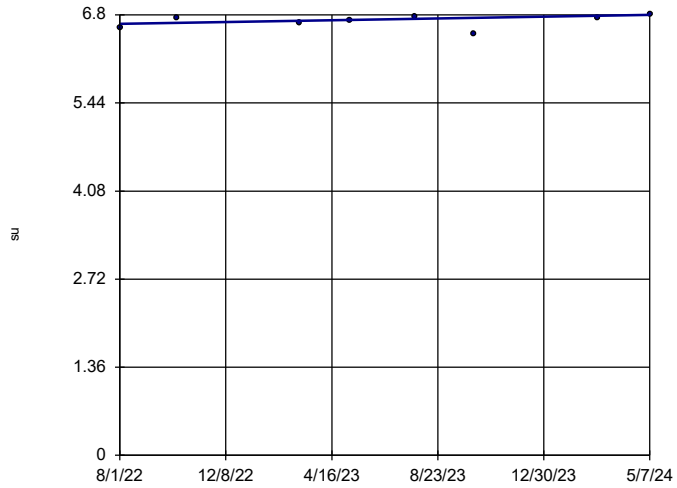


n = 8
 Slope = 19.67
 units per year.
 Mann-Kendall
 statistic = 10
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

pH, Field

JCW-MW-18001

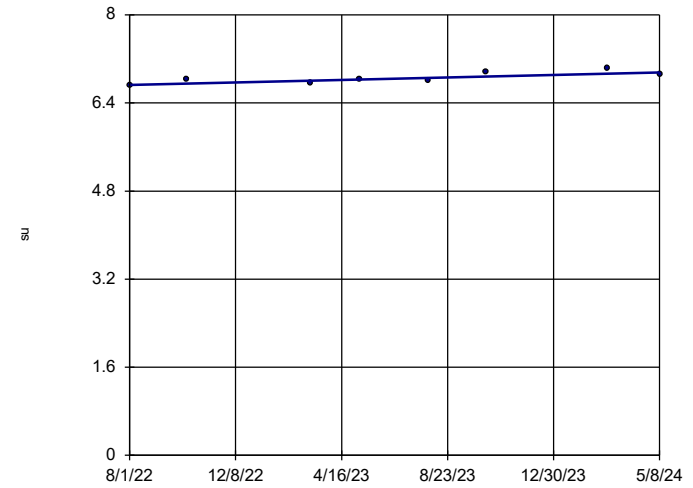


n = 8
 Slope = 0.08019 units per year.
 Mann-Kendall statistic = 11
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

pH, Field

JCW-MW-18004

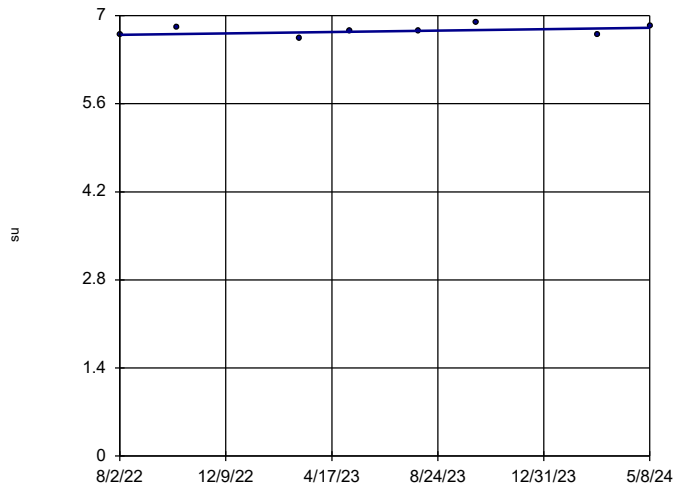


n = 8
 Slope = 0.1299 units per year.
 Mann-Kendall statistic = 17
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

pH, Field

JCW-MW-18005

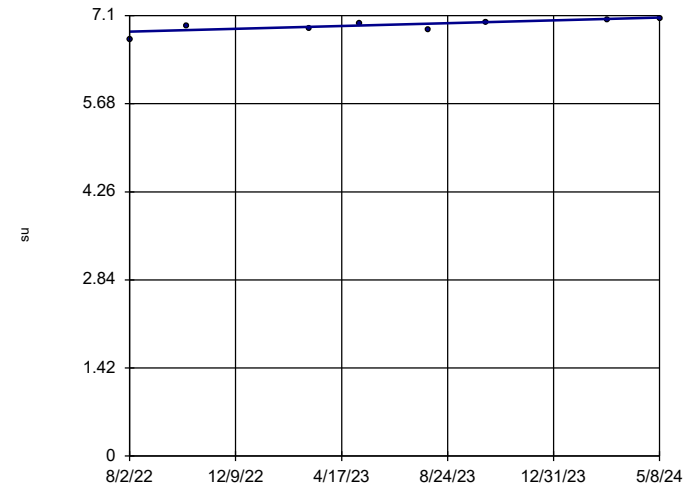


n = 8
 Slope = 0.06275 units per year.
 Mann-Kendall statistic = 8
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

pH, Field

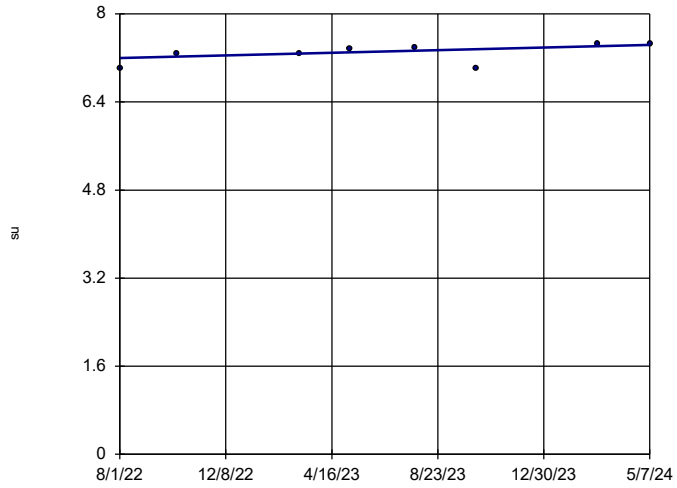
JCW-MW-18006



n = 8
 Slope = 0.1298 units per year.
 Mann-Kendall statistic = 20
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

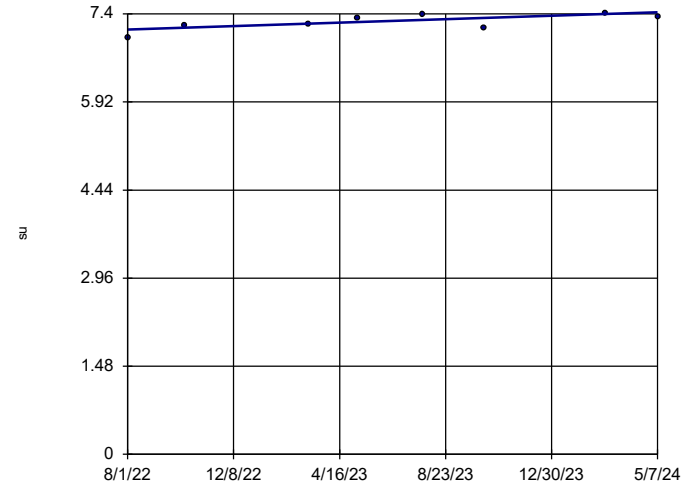
pH, Field
MW-50



n = 8
 Slope = 0.1336 units per year.
 Mann-Kendall statistic = 17
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

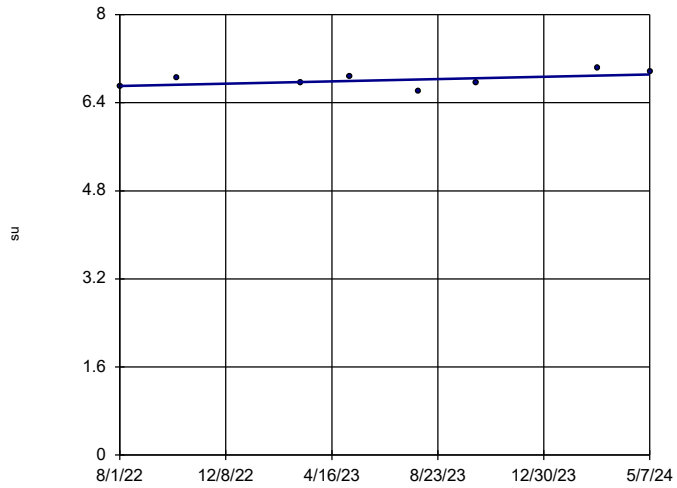
pH, Field
MW-51



n = 8
 Slope = 0.1656 units per year.
 Mann-Kendall statistic = 16
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

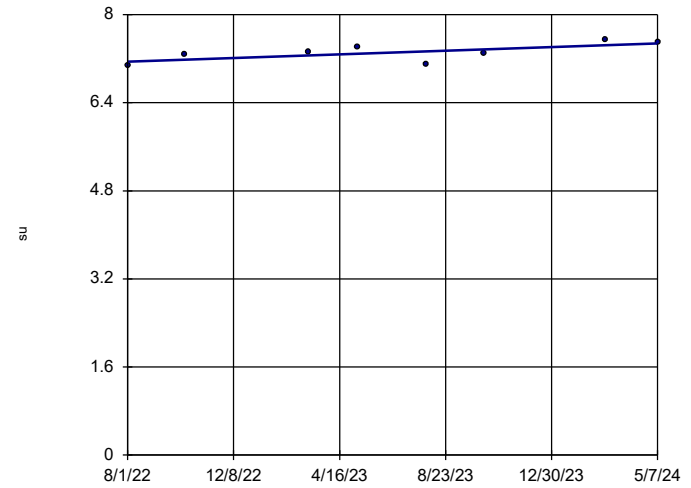
pH, Field
MW-52



n = 8
 Slope = 0.1187 units per year.
 Mann-Kendall statistic = 11
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

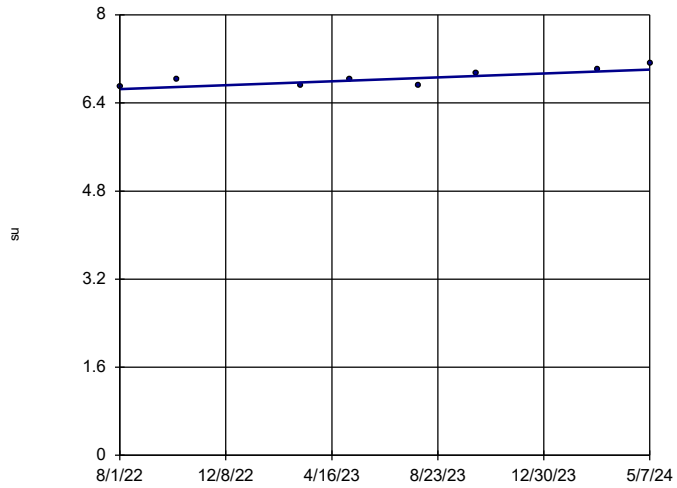
pH, Field
MW-53



n = 8
 Slope = 0.1888 units per year.
 Mann-Kendall statistic = 16
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

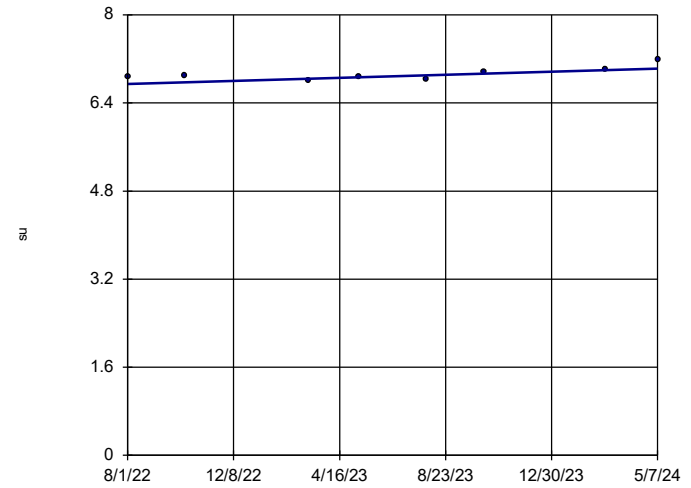
pH, Field MW-53R



n = 8
 Slope = 0.2018
 units per year.
 Mann-Kendall
 statistic = 21
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

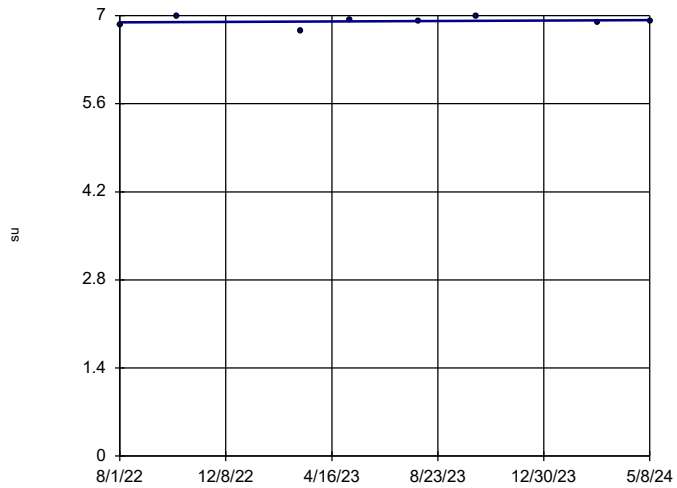
pH, Field MW-54R



n = 8
 Slope = 0.157
 units per year.
 Mann-Kendall
 statistic = 15
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

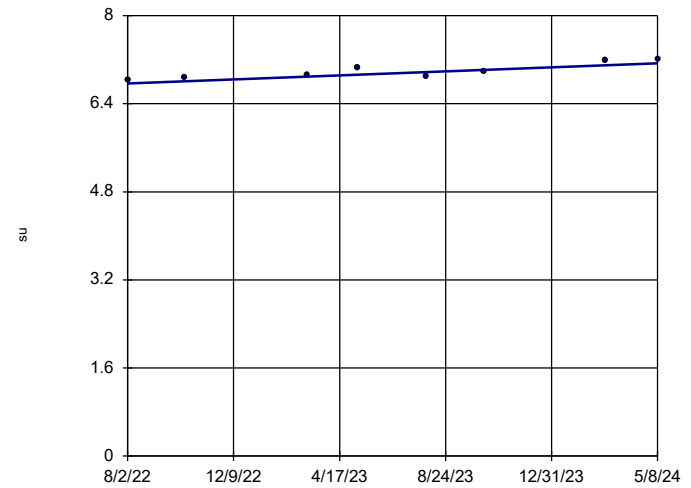
pH, Field MW-55



n = 8
 Slope = 0.02069
 units per year.
 Mann-Kendall
 statistic = 3
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

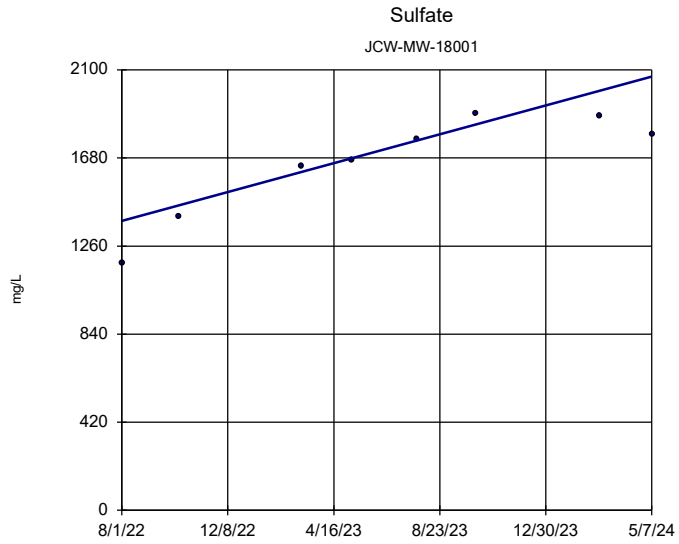
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

pH, Field OW-57ROUT

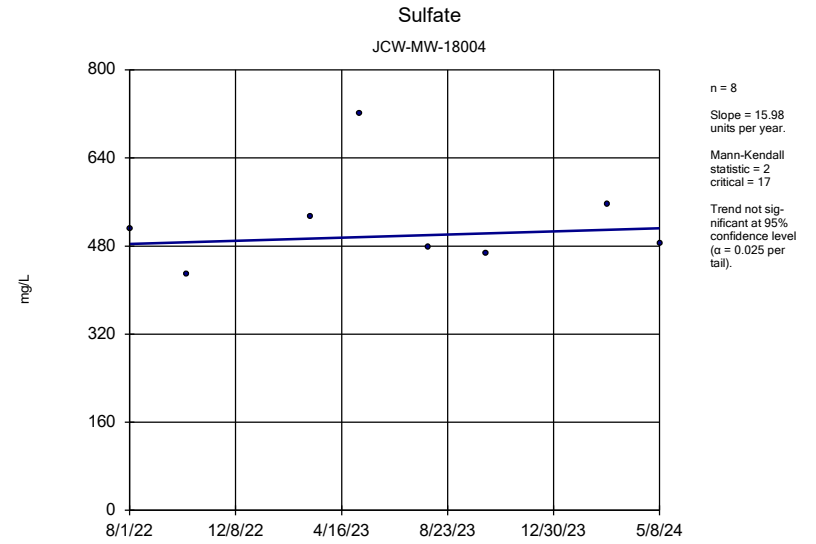


n = 8
 Slope = 0.2091
 units per year.
 Mann-Kendall
 statistic = 22
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

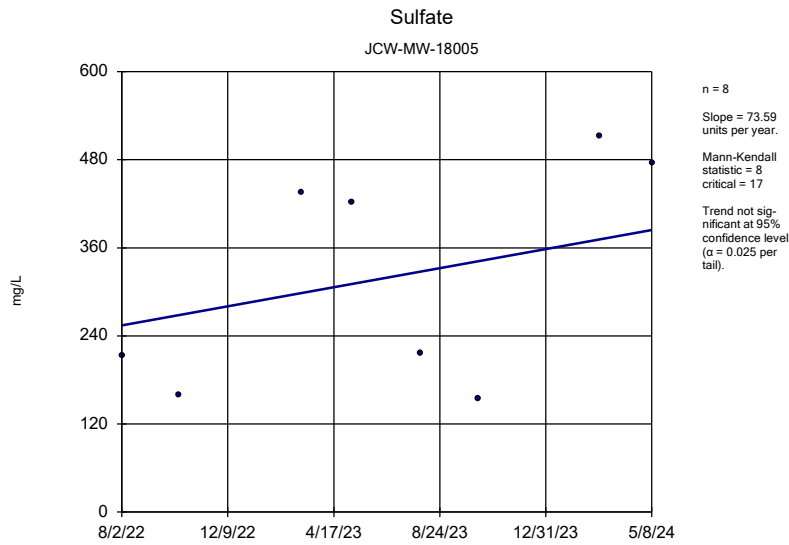
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



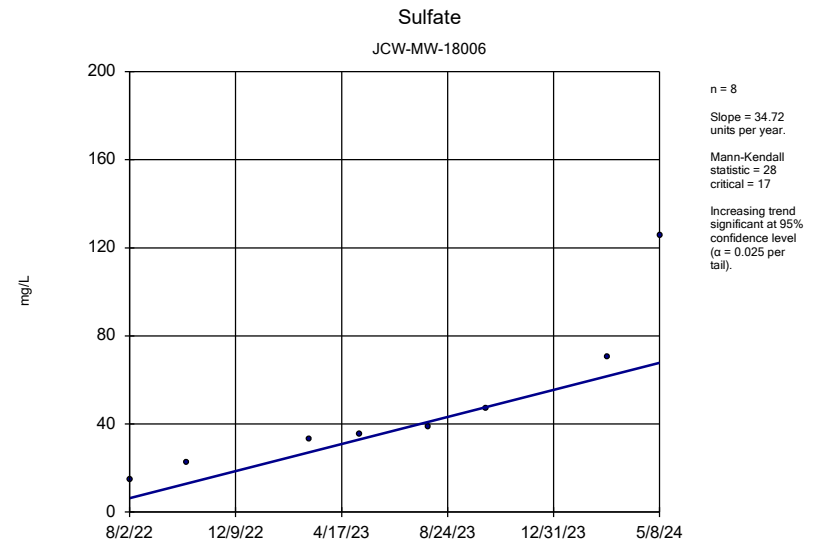
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



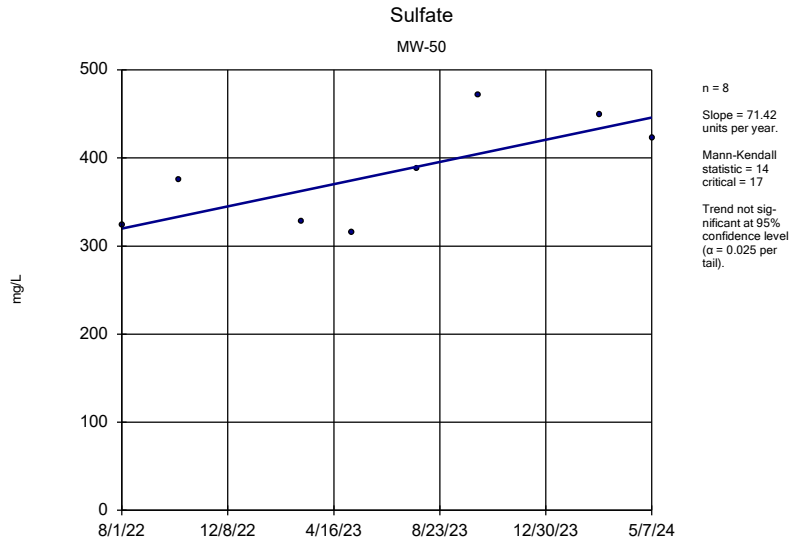
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



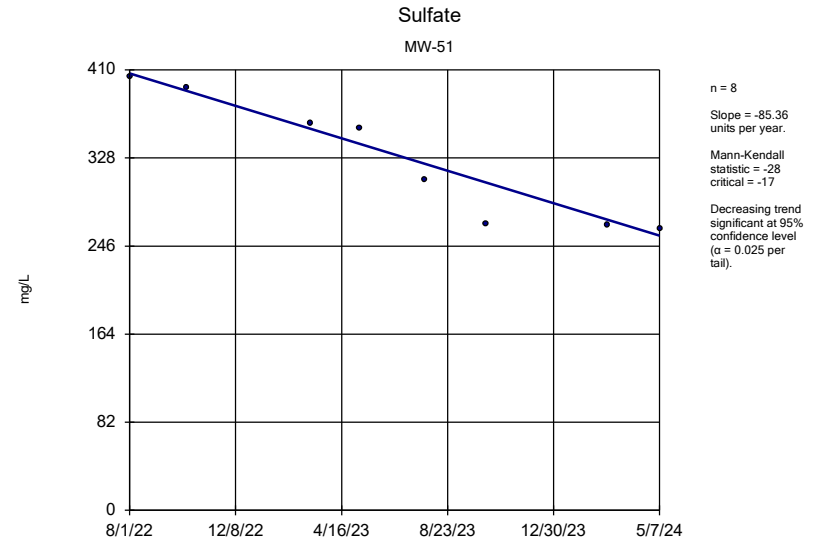
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



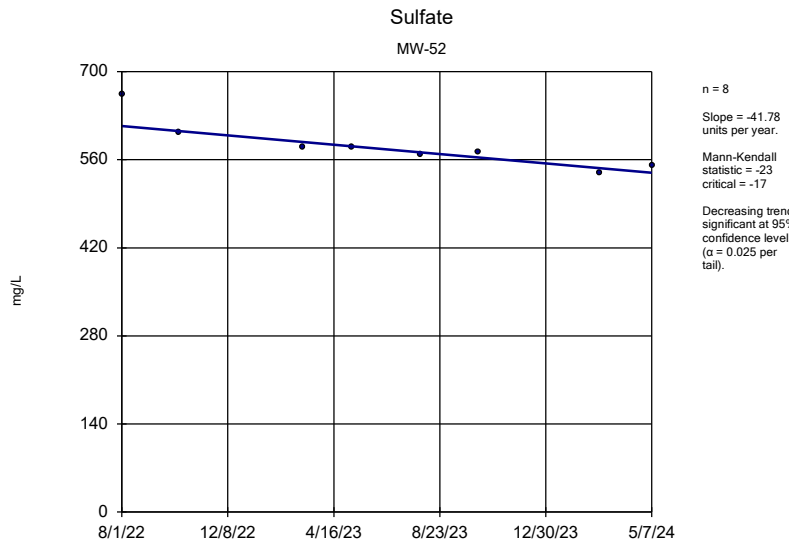
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



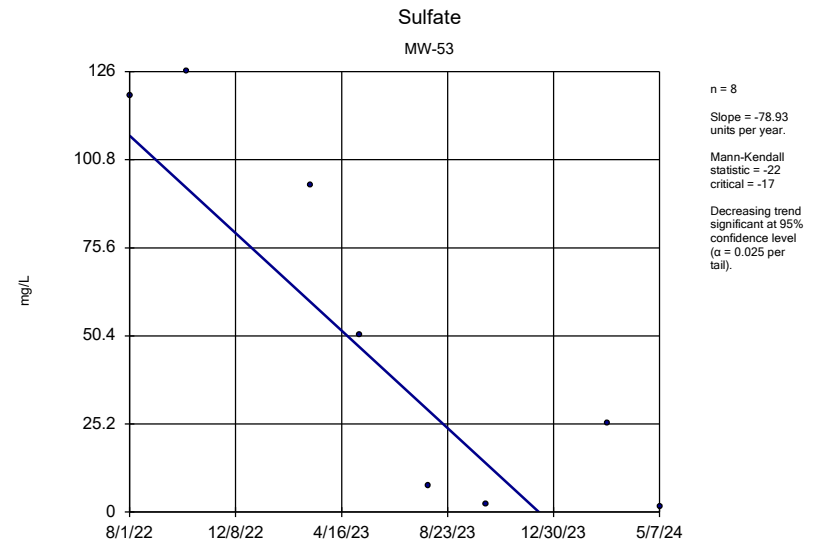
Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

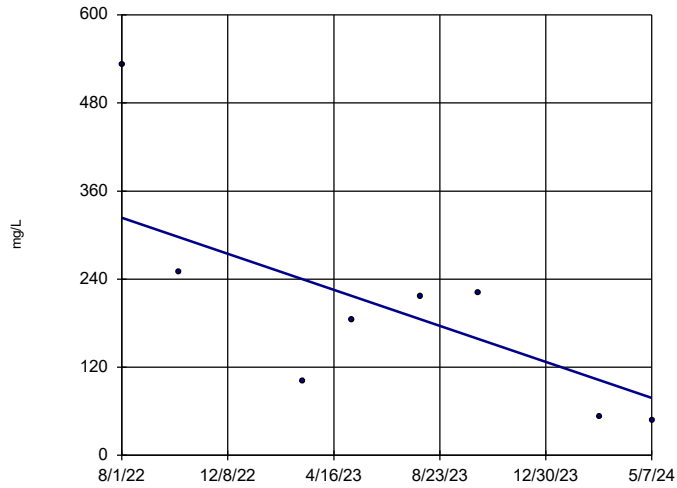


Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2



Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

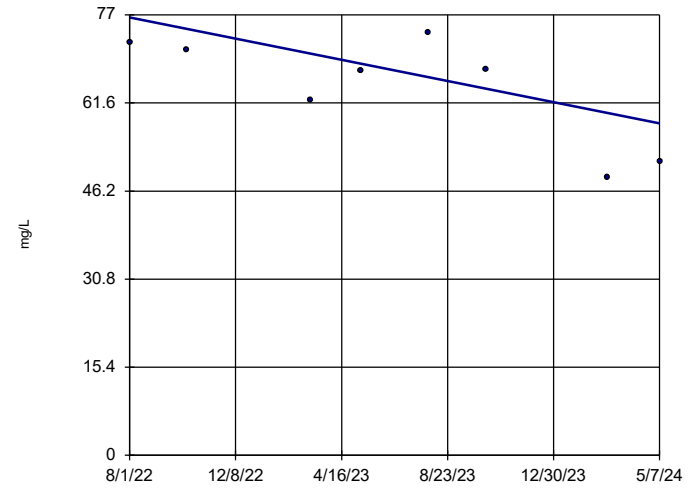
Sulfate MW-53R



n = 8
 Slope = -138.8
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

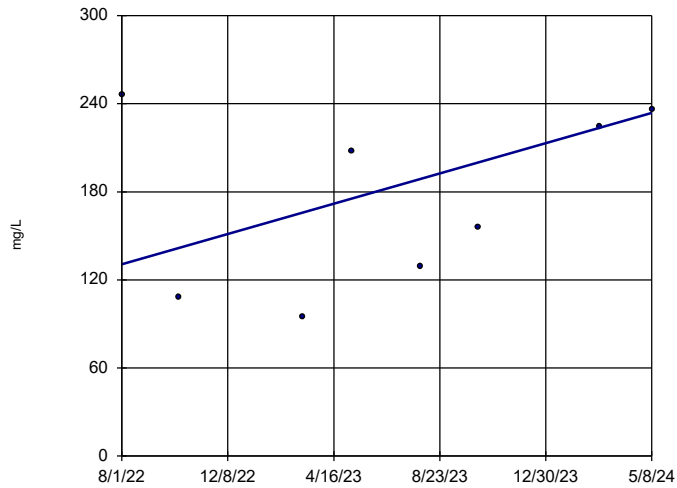
Sulfate MW-54R



n = 8
 Slope = -10.48
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

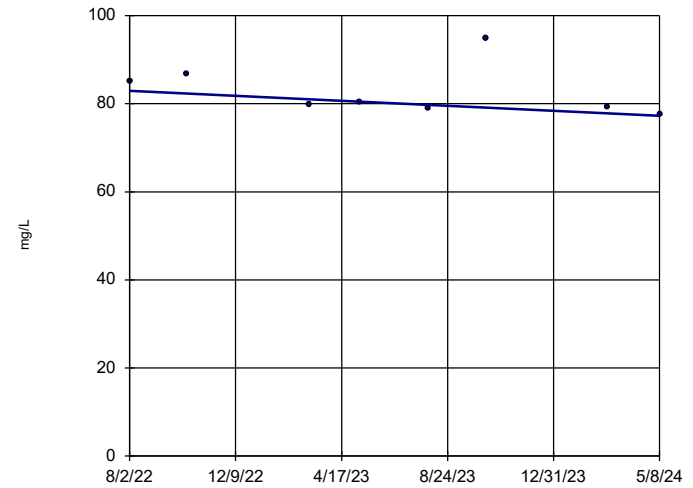
Sulfate MW-55



n = 8
 Slope = 58.28
 units per year.
 Mann-Kendall
 statistic = 8
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Sulfate OW-57ROUT

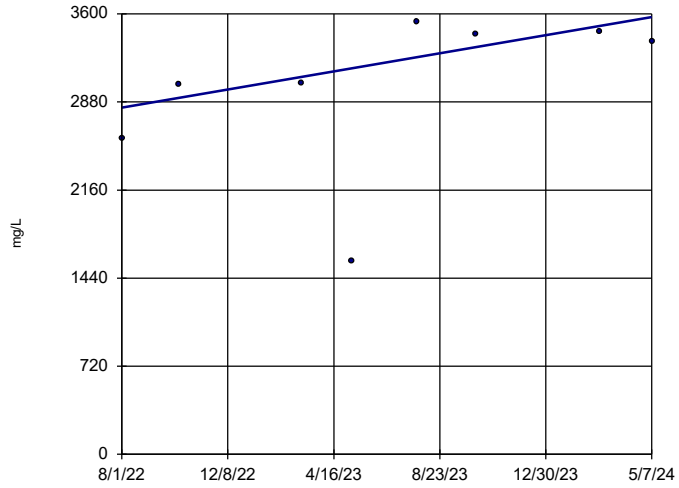


n = 8
 Slope = -3.237
 units per year.
 Mann-Kendall
 statistic = -12
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

JCW-MW-18001

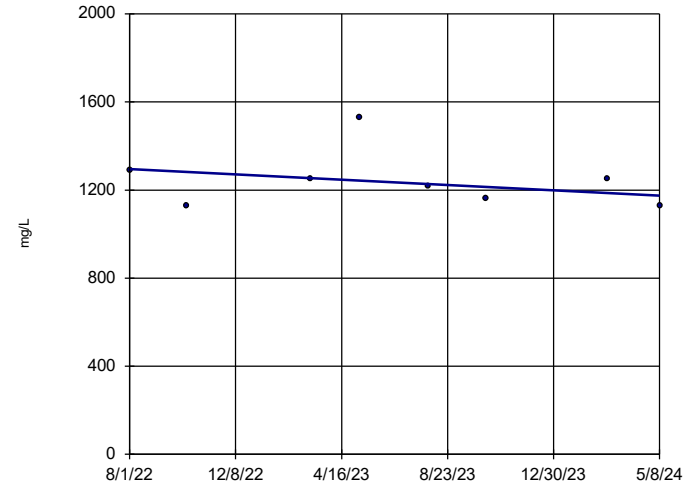


n = 8
 Slope = 419 units per year.
 Mann-Kendall statistic = 12
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

JCW-MW-18004

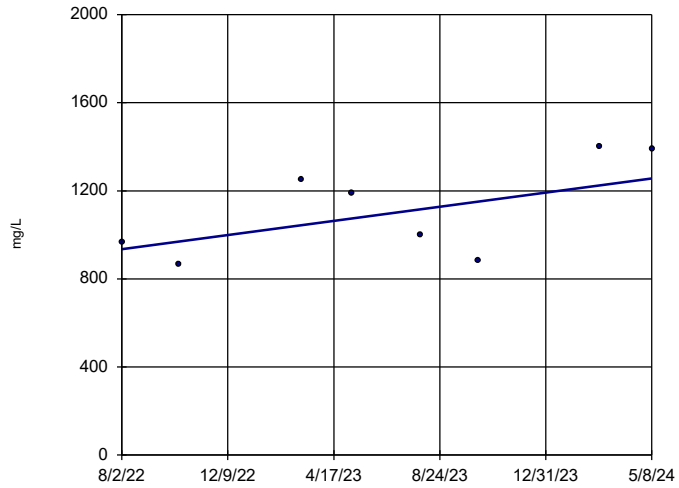


n = 8
 Slope = -68.28 units per year.
 Mann-Kendall statistic = -8
 critical = -17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

JCW-MW-18005

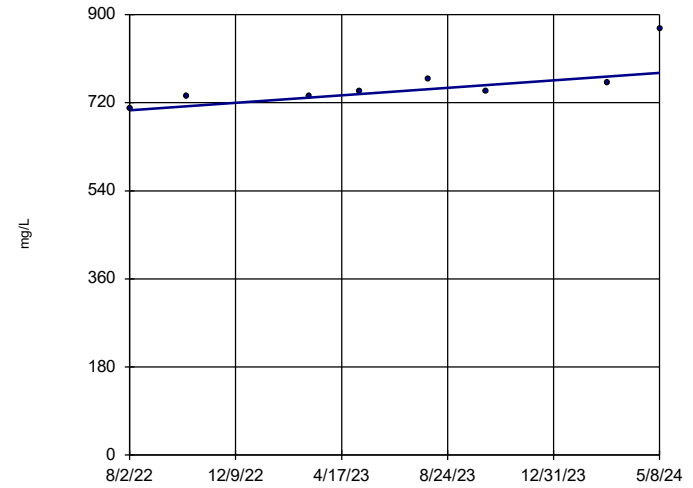


n = 8
 Slope = 182.2 units per year.
 Mann-Kendall statistic = 10
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

JCW-MW-18006

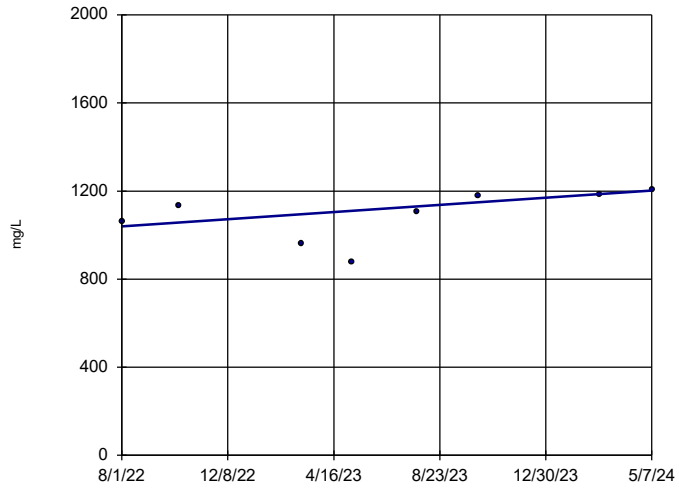


n = 8
 Slope = 43.32 units per year.
 Mann-Kendall statistic = 24
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

MW-50

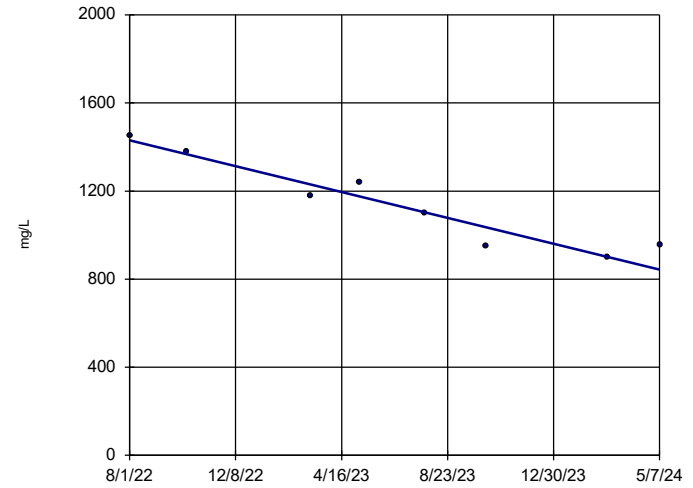


n = 8
 Slope = 91.49
 units per year.
 Mann-Kendall
 statistic = 16
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:51 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

MW-51

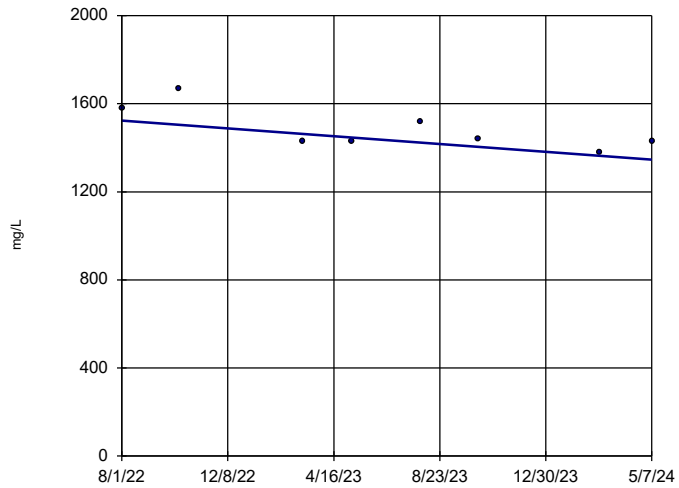


n = 8
 Slope = -332.4
 units per year.
 Mann-Kendall
 statistic = -22
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

MW-52

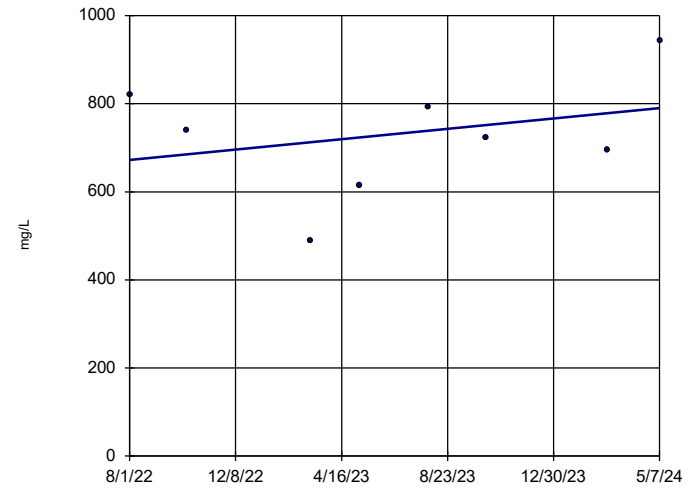


n = 8
 Slope = -100.9
 units per year.
 Mann-Kendall
 statistic = -13
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids

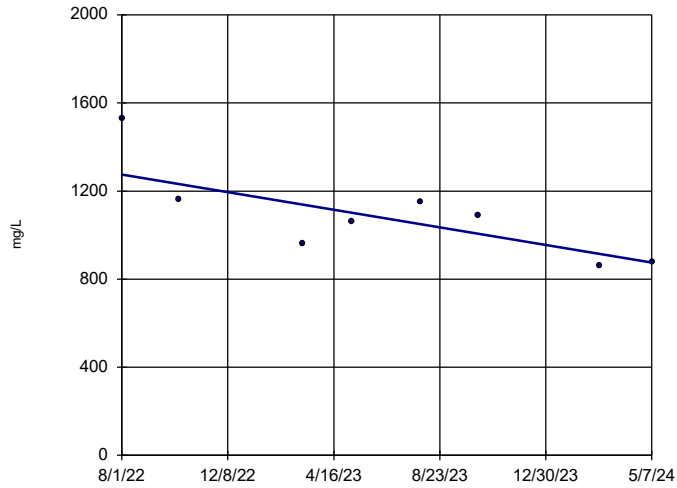
MW-53



n = 8
 Slope = 66.8
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

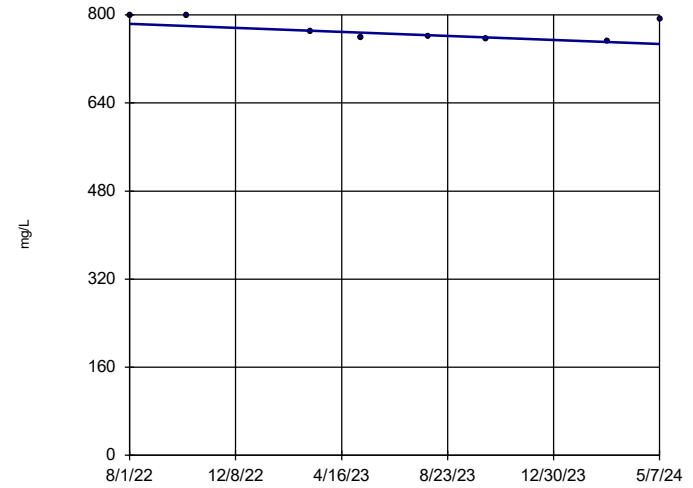
Total Dissolved Solids MW-53R



n = 8
 Slope = -225.9
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

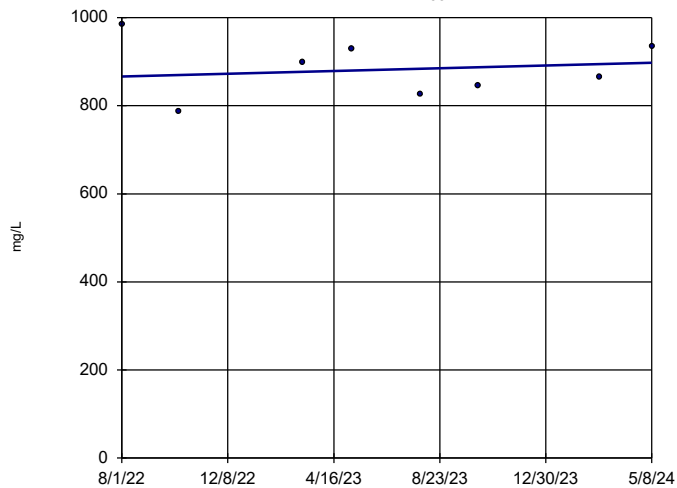
Total Dissolved Solids MW-54R



n = 8
 Slope = -20.48
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

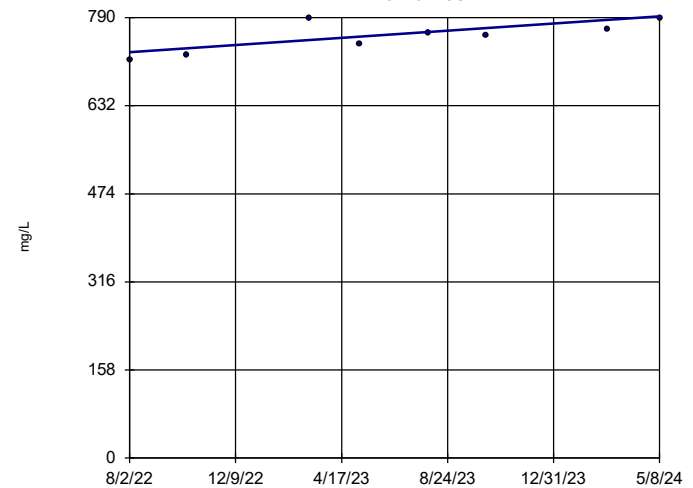
Total Dissolved Solids MW-55



n = 8
 Slope = 17.92
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Total Dissolved Solids OW-57ROUT



n = 8
 Slope = 36.37
 units per year.
 Mann-Kendall
 statistic = 17
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 6/3/2024 10:52 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Appendix D

Assessment Monitoring and GSI Statistical Evaluation

Technical Memorandum

Date: July 30, 2024

To: J.R. Register, Consumers Energy

From: Kristin Lowery, TRC
Rebecca Paalanen, TRC

Project No.: 553828.0000 Phase 002, Task 002

Subject: Assessment Monitoring and GSI Statistical Evaluation of the Second Quarter 2024 Sampling Event
JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018) for the JC Weadock Power Plant Landfill, arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standards (GWPSs). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019.

Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule¹ at the JC Weadock Power Plant Landfill and quarterly groundwater monitoring in accordance with the February 2021 Weadock Landfill Hydrogeological Monitoring Plan (HMP). The second quarter 2024 monitoring event was conducted on May 7-8, 2024. In accordance with §257.95 and the HMP, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix III and Appendix IV constituents, and additional Michigan Part 115 (as amended by PA 640) Section 11511a(3) and Section 11519b(2) constituents, are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h) and Part 115, as detailed in the April 23, 2021 Groundwater Protection Standards technical memorandum, which was also included in the First Quarter 2021 Hydrogeological Monitoring Report². In accordance with the HMP, groundwater monitoring data from the designated groundwater-surface water (GSI) monitoring wells must be also compared to the GSI criteria to determine whether or not the GSI monitoring constituents are detected at statistically significant levels above the GSI criteria.

The evaluation of the initial semiannual assessment monitoring event data (April and May 2018) indicated that arsenic was present at statistically significant levels above the GWPS at one of the three former downgradient wells. The three downgradient wells were located within a vent (e.g., opening) of the perimeter soil/bentonite slurry wall to assess the quality of groundwater passing the waste

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

² TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.

Technical Memorandum

boundary. As discussed in detail in the HMP, in July 2018, the vent in the perimeter soil/bentonite slurry wall was closed and the slurry wall is now continuous along the entire perimeter of the Weadock Landfill. As a result, the groundwater monitoring system was revised, as documented in the HMP. The monitoring well network now consists of twelve (12) downgradient monitoring wells and eight (8) GSI monitoring wells.

The statistical evaluation of the second quarter 2024 assessment monitoring event data indicates that the following constituents are present at statistically significant levels above the GWPSs in downgradient monitoring wells at the Weadock Landfill:

Constituent	GWPS	#Downgradient Wells Exceeded
Boron	560 µg/L	10 of 12
Calcium	280 mg/L	1 of 12
Sulfate	780 mg/L	1 of 12

Corrective action has been triggered as a result of data collected during the initial assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria.

Statistical Evaluation Procedures

Following each quarterly sampling event, compliance well data for the Weadock Landfill are evaluated in accordance with the Assessment Monitoring Statistical Data Evaluation and GSI Data Evaluation procedures in the HMP. The assessment monitoring and GSI monitoring programs were developed to evaluate concentrations of constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs or GSI criteria). To evaluate whether or not a criterion exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given monitoring event compared to the applicable criterion must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance³, the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the criterion. If the confidence interval straddles the criterion (i.e., the lower confidence level is below the criterion, but the upper confidence level is above), the statistical test result indicates that there is insufficient confidence that the measured concentrations are different from the criterion and thus no compelling

³ USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

Technical Memorandum

evidence that the measured concentration is a result of a release from the CCR unit versus the inherent variability of the sample data. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule and Part 115 and numerous other federal rules are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected constituent, the concentrations for each well were first compared directly to the GWPS, as shown on Table 1, or the GSI criteria, as shown on Table 2. Parameter-well combinations that included a direct exceedance of the criteria within the most recent two years of sampling events (eight quarterly sampling events, August 2022 through May 2024) were retained for further analysis.

Groundwater data were evaluated utilizing Sanitas™ statistical software. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas™ statistical program, confidence limits were used to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each parameter with a direct exceedance using a per test⁴ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas™ output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well-constituent pair;
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the assessment and GSI monitoring programs. Initially, the results were observed visually for potential outliers. No outliers were identified in the data set.

The Sanitas™ software was then used to test compliance at the downgradient monitoring wells using the confidence interval method for the most recent eight sampling events. The tests were run with a per-test significance of $\alpha = 0.01$. Non-detect data was handled in accordance with the HMP for the purposes of calculating the confidence intervals.

⁴ Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes data transformations, as appropriate.

Assessment Monitoring Statistical Evaluation

The assessment monitoring statistical evaluation is performed on the downgradient monitoring wells in accordance with the HMP. The downgradient monitoring wells include:

- JCW-MW-18001 ■ JCW-MW-18004 ■ JCW-MW-18005 ■ JCW-MW-18006
- MW-50 ■ MW-51 ■ MW-52 ■ MW-53
- MW-53R ■ MW-54R ■ MW-55 ■ OW-57R Out

The concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Constituent-well combinations that included a direct exceedance of the GWPS within the past eight monitoring events were retained for further analysis (Attachment 1). Direct comparison GWPS exceedances include the following constituent well combinations:

- Boron in MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006;
- Calcium in JCW-MW-18001 and JCW-MW-18005;
- Sulfate in JCW-MW-18001;
- Arsenic in MW-55 and JCW-MW-18006; and
- Molybdenum in MW-55.

The purpose of assessment monitoring is to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (i.e. GWPS). As detailed in the *Alternate Source Demonstration* (TRC, December 2019), the arsenic and molybdenum concentrations at MW-55 are not the result of a release from the unit; therefore, comparison of these concentrations to the GWPS is not appropriate and assessment monitoring confidence intervals were not calculated.

The software outputs for the assessment monitoring data evaluation are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 1. Visual trends were apparent in multiple wells for arsenic, boron, calcium, and sulfate. These data sets were tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend tests show that the trends for boron at MW-51 and sulfate at JCW-MW-18001 are statistically significant (Attachment 1). The trends are causing the confidence intervals to widen. Calculating a confidence interval around a trending data set incorporates not only variability present naturally in the underlying dataset, but also incorporates variability due to the trend itself. Based on the observed trends, confidence bands were selected as a more appropriate assessment for boron at MW-51 and sulfate at JCW-MW-18001. Confidence bands are selected by the Unified Guidance as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval.

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normal	Boron at JCW-MW-18001, JCW-MW-18006, MW-50, MW-52, MW-53, MW-54R, MW-55, and OW-57R OUT Calcium at JCW-MW-18005 and JCW-MW-18001 Arsenic at JCW-MW-18006
Normalized by power transformation	Boron at MW-53R (4)
Not normal (non-parametric test used)	Boron at JCW-MW-18005
Not Applicable – confidence bands used	Boron at MW-51 Sulfate at JCW-MW-18001

The confidence bands and interval tests compare the lower confidence limit to the GWPS. Arsenic concentrations at JCW-MW-18006 were previously considered statistically significant; however, the lower confidence limit has been at or below the GWPS since the second quarter 2021. Calcium concentrations at MW-51 were previously considered statistically significant; however, calcium concentrations are generally decreasing, the lower confidence limit has been below the GWPS since the first quarter 2022, and concentrations have been below the GWPS by direct comparison since first quarter 2022. Concentration trends will continue to be monitored. Statistically significant exceedances of the GWPS were noted for boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001. Boron concentrations have been consistently above the GWPS since monitoring under the Weadock Landfill HMP began in first quarter 2021. Calcium at JCW-MW-18001 was a confirmed GWPS exceedance in first quarter 2023 resulting from increases in calcium concentration from first quarter 2021 through first quarter 2024. No trend in calcium concentrations was observed at JCW-MW-18001 as of second quarter 2024. Sulfate at JCW-MW-18001 was a confirmed GWPS exceedance in second quarter 2023 resulting from increases in sulfate concentrations. As noted in the Alternate Source Demonstration (Second Quarter 2023 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024), multiple lines of evidence indicate that the increase in sulfate concentration is not a result of a change in flux from the landfill and is instead the result of changing groundwater conditions outside the slurry wall. Corrective action has been triggered for the site as a result of data collected during the initial May 2018 assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

Technical Memorandum

GSI Statistical Evaluation

Eight monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the GSI monitoring program to meet the requirements of Part 31:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

The concentrations from each well were first compared directly to the GSI criteria, as shown on Table 2. Constituent-well combinations that included a direct exceedance of the GSI criteria within the past eight monitoring events were retained for further analysis (Attachment 2). Direct comparison GSI criteria exceedances include the following constituent well combinations:

- Arsenic in MW-55

The purpose of the GSI statistical evaluation is to assess compliance with the GSI pathway. Although the *Alternate Source Demonstration* supports that the arsenic concentrations at MW-55 are not the result of a release from the unit, these concentrations still affect compliance with the GSI pathway. Therefore, it is appropriate to calculate confidence limits for arsenic at MW-55 for comparison to the GSI criteria.

The software outputs for the assessment monitoring data evaluation are included in Attachment 2 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 2.

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normal	Arsenic at MW-55

The confidence interval tests compare the lower confidence limit to the GSI. The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria. Arsenic concentrations at MW-55 were previously considered statistically significant; however, the arsenic concentrations decreased in 2022 and 2023. The lower confidence limits for arsenic continued to be below the GWPS in second quarter 2024.

Attachments

- Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
- Table 2 Comparison of Groundwater Sampling Results to GSI

- Attachment 1 Assessment Monitoring Sanitas™ Output Files
- Attachment 2 GSI Evaluation Sanitas™ Output Files

Tables

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-50															
Sample Date:			8/1/2022	8/1/2022	10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024
Constituent	Unit	GWPS																
Appendix III⁽¹⁾				Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup
Boron	ug/L	560	1,290	1,290	1,730	1,670	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020
Calcium	mg/L	280	161	164	186	181	152	--	142	144	188	187	205	206	199	196	184	191
Chloride	mg/L	2,300	54.2	54.9	47.7	47.6	35.9	36.7	31.5	31.9	37.4	39.1	37.6	37	40.1	38.6	37.1	38.1
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	324	325	376	376	341	315	314	316	392	385	470	472	449	448	425	421
Total Dissolved Solids	mg/L	4,700	1,080	1,040	1,120	1,150	939	984	878	880	1,100	1,110	1,170	1,190	1,180	1,190	1,250	1,160
pH, Field	SU	6.5 - 8.5	7.0	--	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--
Appendix IV⁽¹⁾																		
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	2	2	3	3	2	2	2	2	3	3	3	3	3	3	3	3
Barium	ug/L	2,000	90	94	106	108	89	92	114	87	114	113	135	136	187	179	176	180
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	64	61	62	62	65	65	55	54	58	59	59	59	69	68	61	62
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	6	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5
Radium-226	pCi/L	NA	--	--	0.158	0.343	--	--	0.155	0.144	--	--	0.291	0.320	--	--	0.27	0.349
Radium-228	pCi/L	NA	--	--	1.14	1.37	--	--	0.686	< 0.606	--	--	1.15	1.46	--	--	1.47	1.38
Radium-226/228	pCi/L	5.0	--	--	1.30	1.72	--	--	0.841	0.633	--	--	1.44	1.78	--	--	1.2	1.03
Selenium	ug/L	50	2	2	2	2	1	1	1	2	1	1	< 1	2	3	3	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																		
Iron	ug/L	28,000	1,830	1,850	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817
Copper	ug/L	1,000	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1	2	2	1	1	1	1	2	2
Nickel	ug/L	100	6	7	4	7	< 2	< 2	3	< 2	2	< 2	< 2	2	8	8	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-51							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,270	1,490	1,320	1,230	1,180	1,170	935	798
Calcium	mg/L	280	211	211	169	166	162	132	132	128
Chloride	mg/L	2,300	102	101	98.4	99.9	97	91.6	78.3	79.9
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	404	394	360	356	308	267	266	262
Total Dissolved Solids	mg/L	4,700	1,450	1,380	1,180	1,240	1,100	952	902	958
pH, Field	SU	6.5 - 8.5	7.0	7.2	7.2	7.3	7.4	7.2	7.4	7.4
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	15	18	10	8	10	18	10	13
Barium	ug/L	2,000	169	188	178	180	141	141	127	117
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	2	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	53	50	46	40	40	34	31	28
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.397	--	0.143	--	0.285	--	0.181
Radium-228	pCi/L	NA	--	2.19	--	1.01	--	1.23	--	0.863
Radium-226/228	pCi/L	5.0	--	2.51	--	1.15	--	1.52	--	0.681
Selenium	ug/L	50	2	1	2	1	< 1	< 1	1	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,860	2,880	514	450	1,290	1,660	446	760
Copper	ug/L	1,000	< 1	1	< 1	1	3	2	1	1
Nickel	ug/L	100	6	4	< 2	3	4	< 2	< 2	3
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-52							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,070	1,330	1,040	993	1,030	1,140	945	895
Calcium	mg/L	280	222	224	228	217	247	234	237	236
Chloride	mg/L	2,300	45.1	40.4	36.3	32.4	31.5	30.2	33.8	33.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	663	603	581	581	569	572	540	550
Total Dissolved Solids	mg/L	4,700	1,580	1,670	1,430	1,430	1,520	1,440	1,380	1,430
pH, Field	SU	6.5 - 8.5	6.7	6.9	6.8	6.9	6.6	6.8	7.0	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	118	122	102	95	99	108	94	91
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	29	26	27	23	27	27	27	29
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.205	--	< 0.128	--	0.444	--	0.162
Radium-228	pCi/L	NA	--	< 0.694	--	< 0.594	--	1.64	--	1.19
Radium-226/228	pCi/L	5.0	--	0.805	--	< 0.594	--	2.08	--	1.03
Selenium	ug/L	50	2	2	1	< 1	< 1	< 1	2	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	5,020	6,340	2,820	2,720	6,720	7,560	3,120	3,680
Copper	ug/L	1,000	2	2	1	1	2	1	2	2
Nickel	ug/L	100	5	3	< 2	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	4,300	4,140	2,150	2,620	4,370	5,530	5,740	6,110
Calcium	mg/L	280	116	108	82.5	104	146	136	134	134
Chloride	mg/L	2,300	66.5	53	24.8	56.5	80.3	77.4	77.4	89.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	119	126	93.6	50.8	7.39	2.28	25.4	1.53
Total Dissolved Solids	mg/L	4,700	820	740	489	613	792	722	694	942
pH, Field	SU	6.5 - 8.5	7.1	7.3	7.3	7.4	7.1	7.3	7.5	7.5
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	1	2	< 1	< 1	1	1	1	1
Barium	ug/L	2,000	313	285	202	272	692	719	654	582
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	42	38	33	34	44	42	50	50
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	7	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.269	--	0.198	--	0.679	--	0.561
Radium-228	pCi/L	NA	--	1.15	--	< 0.518	--	1.72	--	1.81
Radium-226/228	pCi/L	5.0	--	1.42	--	0.700	--	2.40	--	1.25
Selenium	ug/L	50	3	1	1	2	2	2	3	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,240	1,140	403	569	1,390	1,080	947	665
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	< 1	< 1	1	2
Nickel	ug/L	100	4	2	< 2	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from

downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53R							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,560	2,340	2,330	2,140	2,190	2,420	2,300	2,200
Calcium	mg/L	280	219	203	195	202	220	206	173	166
Chloride	mg/L	2,300	50.4	39.2	27.2	30	34.6	35.5	34.7	32.5
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	533	250	101	185	217	221	53.2	47.6
Total Dissolved Solids	mg/L	4,700	1,530	1,160	960	1,060	1,150	1,090	862	880
pH, Field	SU	6.5 - 8.5	6.7	6.8	6.7	6.8	6.7	7.0	7.0	7.1
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	17	20	17	14	17	16	9	10
Barium	ug/L	2,000	97	118	179	174	144	110	165	164
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
Lithium	ug/L	180	70	63	59	56	62	61	56	53
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.239	--	0.275	--	0.174	--	0.155
Radium-228	pCi/L	NA	--	0.967	--	0.490	--	0.968	--	0.674
Radium-226/228	pCi/L	5.0	--	1.21	--	0.765	--	1.14	--	0.567
Selenium	ug/L	50	2	2	1	1	2	1	2	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,030	702	1,580	1,410	1,180	834	752	761
Copper	ug/L	1,000	2	1	1	1	1	1	2	1
Nickel	ug/L	100	5	3	< 2	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-54R							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	4,970	5,310	5,660	5,240	6,170	5,520	5,940	5,580
Calcium	mg/L	280	158	160	168	163	162	165	170	161
Chloride	mg/L	2,300	43.9	47.4	49.6	46.5	48.5	45	61.7	56.9
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	72.1	70.9	62	67.2	73.8	67.4	48.6	51.3
Total Dissolved Solids	mg/L	4,700	800	799	770	759	761	756	752	792
pH, Field	SU	6.5 - 8.5	6.9	6.9	6.8	6.9	6.8	7.0	7.0	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	2	2	1	< 1	< 1	1	1	1
Barium	ug/L	2,000	109	123	126	98	106	113	97	83
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	74	74	71	65	75	70	76	73
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	10	12	15	13	15	17	15	18
Radium-226	pCi/L	NA	--	0.208	--	< 0.141	--	0.160	--	0.18
Radium-228	pCi/L	NA	--	1.31	--	< 0.836	--	1.38	--	0.829
Radium-226/228	pCi/L	5.0	--	1.52	--	< 0.836	--	1.54	--	0.829
Selenium	ug/L	50	1	2	1	1	1	1	3	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	367	1,090	262	74	111	829	159	87
Copper	ug/L	1,000	1	1	2	1	6	2	2	3
Nickel	ug/L	100	2	< 2	< 2	< 2	< 2	2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-55								
Sample Date:			8/1/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024
Constituent	Unit	GWPS									
Appendix III⁽¹⁾				Field Dup							
Boron	ug/L	560	709	687	976	1,110	1,140	1,290	1,200	825	729
Calcium	mg/L	280	159	165	141	162	165	150	163	166	161
Chloride	mg/L	2,300	11.8	11.8	12.5	24.2	16.9	18.5	16.7	18.3	17.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	248	245	108	94.6	208	129	156	224	236
Total Dissolved Solids	mg/L	4,700	930	1,040	786	898	929	827	846	866	934
pH, Field	SU	6.5 - 8.5	6.9	--	7.0	6.8	6.9	6.9	7.0	6.9	6.9
Appendix IV⁽¹⁾											
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	80	78	126	68	44	75	75	46	39
Barium	ug/L	2,000	232	231	223	287	267	240	248	260	235
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	29	28	30	27	24	27	26	26	26
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	80	78	91	50	30	33	56	27	25
Radium-226	pCi/L	NA	--	--	0.365	--	0.276	--	0.406	--	0.137
Radium-228	pCi/L	NA	--	--	0.966	--	< 0.916	--	1.26	--	1.11
Radium-226/228	pCi/L	5.0	--	--	1.33	--	< 0.916	--	1.67	--	0.971
Selenium	ug/L	50	3	4	< 1	3	< 1	1	1	1	4
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾											
Iron	ug/L	28,000	18,000	16,600	22,100	24,800	21,600	21,900	16,800	18,700	14,700
Copper	ug/L	1,000	< 1	1	1	< 1	< 1	< 1	< 1	1	1
Nickel	ug/L	100	6	6	4	4	5	22	3	< 2	6
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			OW-57R OUT							
Sample Date:			8/2/2022	10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,570	1,830	1,860	1,740	1,750	1,790	1,810	1,700
Calcium	mg/L	280	113	114	116	117	124	120	123	119
Chloride	mg/L	2,300	52.0	47.6	59	64.2	53.7	50.6	68.1	72.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090
Sulfate	mg/L	780	85.0	86.8	79.7	80.5	79	94.8	79.3	77.6
Total Dissolved Solids	mg/L	4,700	714	722	790	743	762	758	770	790
pH, Field	SU	6.5 - 8.5	6.8	6.9	6.9	7.1	6.9	7.0	7.2	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	1	1
Barium	ug/L	2,000	67	75	75	72	72	77	81	75
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	1	< 1	4	< 1	< 1	< 1	2	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	23	22	26	23	24	23	28	26
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	7	8	6	6	6	7	6	6
Radium-226	pCi/L	NA	--	0.199	--	0.149	--	< 0.155	--	0.115
Radium-228	pCi/L	NA	--	< 0.711	--	< 0.663	--	0.586	--	0.845
Radium-226/228	pCi/L	5.0	--	0.870	--	< 0.663	--	0.680	--	0.731
Selenium	ug/L	50	1	2	2	2	1	< 1	< 1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	37	42	53	78	30	40	44	94
Copper	ug/L	1,000	1	2	1	1	1	2	2	2
Nickel	ug/L	100	17	16	15	15	13	15	12	15
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18001							
Sample Date:			8/1/2022	10/10/2022	3/8/2023	5/8/2023	7/26/2023	10/5/2023	3/5/2024	5/7/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,470	1,790	1,440	1,380	1,470	1,620	1,420	1,330
Calcium	mg/L	280	389	465	486	496	555	562	557	537
Chloride	mg/L	2,300	64.6	63.6	54.2	51.1	58.9	51.1	44.7	44.5
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	1,180	1,400	1,640	1,670	1,770	1,890	1,880	1,790
Total Dissolved Solids	mg/L	4,700	2,580	3,020	3,030	1,580	3,530	3,430	3,450	3,370
pH, Field	SU	6.5 - 8.5	6.6	6.8	6.7	6.7	6.8	6.5	6.8	6.8
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	1	< 1	2
Barium	ug/L	2,000	61	66	47	50	49	48	49	46
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	95	97	91	83	102	110	106	102
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.142	--	< 0.122	--	< 0.139	--	0.124
Radium-228	pCi/L	NA	--	0.852	--	< 0.547	--	0.783	--	0.525
Radium-226/228	pCi/L	5.0	--	0.893	--	< 0.547	--	0.886	--	0.506
Selenium	ug/L	50	3	1	2	2	2	1	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	196	818	830	1,180	2,790	3,840	3,570	2,630
Copper	ug/L	1,000	2	3	2	3	2	2	3	4
Nickel	ug/L	100	14	15	< 2	< 2	41	3	14	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	2	< 2	3	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18004							
Sample Date:			8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	313	343	180	227	310	319	192	206
Calcium	mg/L	280	215	193	221	265	229	218	238	213
Chloride	mg/L	2,300	12.5	11.4	12.7	16.8	14.2	15.8	16.9	14.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	512	428	533	722	478	466	557	484
Total Dissolved Solids	mg/L	4,700	1,290	1,130	1,250	1,530	1,220	1,160	1,250	1,130
pH, Field	SU	6.5 - 8.5	6.7	6.8	6.8	6.8	6.8	7.0	7.0	6.9
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	31	37	24	28	30	34	26	26
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	51	46	39	42	50	49	43	43
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.135	--	< 0.131	--	< 0.155	--	0.102
Radium-228	pCi/L	NA	--	< 0.742	--	< 0.600	--	1.24	--	0.672
Radium-226/228	pCi/L	5.0	--	< 0.742	--	< 0.600	--	1.30	--	0.67
Selenium	ug/L	50	1	1	11	2	2	< 1	4	4
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	45	< 20	46	67	24	36	98	73
Copper	ug/L	1,000	2	2	1	2	2	2	2	2
Nickel	ug/L	100	2	5	< 2	< 2	< 2	< 2	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18005							
Sample Date:			8/2/2022	10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	981	1,290	930	992	1,170	1,470	1,000	960
Calcium	mg/L	280	165	150	262	258	202	159	335	302
Chloride	mg/L	2,300	50.9	53.9	25.4	22.3	44.1	48.1	23.3	22.1
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	213	160	435	422	216	154	512	475
Total Dissolved Solids	mg/L	4,700	967	868	1,250	1,190	1,000	884	1,400	1390
pH, Field	SU	6.5 - 8.5	6.7	6.8	6.6	6.8	6.8	6.9	6.7	6.8
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	4	5	4	2	< 1	1	3	4
Barium	ug/L	2,000	71	80	115	105	76	74	136	127
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	32	32	36	33	33	32	43	41
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	5	6	5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.193	--	0.134	--	0.221	--	0.165
Radium-228	pCi/L	NA	--	< 0.800	--	< 0.573	--	1.17	--	1.23
Radium-226/228	pCi/L	5.0	--	< 0.800	--	< 0.573	--	1.39	--	1.07
Selenium	ug/L	50	< 1	2	3	2	2	1	2	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	2,810	3,220	1,720	676	171	948	4,020	6,550
Copper	ug/L	1,000	< 1	< 1	1	< 1	2	1	7	2
Nickel	ug/L	100	9	11	< 2	9	8	9	< 2	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18006														
Sample Date:			8/2/2022	10/11/2022	10/11/2022	3/9/2023	3/9/2023	5/9/2023	5/9/2023	7/31/2023	7/31/2023	10/9/2023	10/9/2023	3/6/2024	3/6/2024	5/8/2024	5/8/2024
Constituent	Unit	GWPS			Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																	
Boron	ug/L	560	2,260	2,720	2,650	1,730	1,760	2,450	2,480	2,100	2,140	2,280	2,470	2,650	2,700	2,740	2,830
Calcium	mg/L	280	109	118	119	121	121	118	120	126	126	117	119	137	136	148	150
Chloride	mg/L	2,300	79.0	74.2	74.7	79.9	82.8	73.6	76.6	73	75.9	72.3	71.1	61.3	64.7	49.2	52
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	14.9	21.6	23.0	32.5	33.9	34.2	36.1	39.4	37.9	46.9	47.6	69.7	71.6	122	129
Total Dissolved Solids	mg/L	4,700	709	720	746	715	753	734	751	765	770	738	748	748	776	864	878
pH, Field	SU	6.5 - 8.5	6.7	6.9	--	6.9	--	7.0	--	6.9	--	7.0	--	7.0	--	7.1	--
Appendix IV⁽¹⁾																	
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	21	25	25	5	5	23	23	18	19	17	18	22	23	29	29
Barium	ug/L	2,000	452	480	499	232	238	464	465	354	346	342	381	445	464	390	387
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	52	52	52	21	23	45	47	36	36	37	39	52	54	59	61
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.516	0.259	--	--	0.337	< 0.192	--	--	0.506	0.431	--	--	0.218	0.280
Radium-228	pCi/L	NA	--	< 0.609	0.869	--	--	0.746	< 0.816	--	--	0.783	1.39	--	--	0.919	0.528
Radium-226/228	pCi/L	5.0	--	0.999	1.13	--	--	1.08	< 0.816	--	--	1.29	1.82	--	--	0.919	0.528
Selenium	ug/L	50	< 1	1	1	2	2	1	2	2	2	< 1	1	3	3	< 1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																	
Iron	ug/L	28,000	7,670	7,620	7,630	2,930	2,910	6,890	7,210	6,910	6,860	5,660	5,930	7,970	7,890	10,400	10,800
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	2	2	1	1
Nickel	ug/L	100	5	5	6	< 2	< 2	4	< 2	< 2	< 2	< 2	3	5	9	6	6
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	3	3	4	< 2	2	2	3	3	3	2	2	4	4	3	3
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-50															
Sample Date:						8/1/2022	8/1/2022	10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024
Constituent	Unit	Generic GSI ^A	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																					
Boron	ug/L	4,000	44,000	69,000	44,000	1,290	1,290	1,730	1,670	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	324	325	376	376	341	315	314	316	392	385	470	472	449	448	425	421
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	--	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--
Appendix IV⁽¹⁾																					
Arsenic	ug/L	10	100	680	100	2	2	3	3	2	2	2	2	3	3	3	3	3	3	3	3
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	64	61	62	62	65	65	55	54	58	59	59	59	69	68	61	62
Molybdenum	ug/L	120	NC	NC	120	6	6	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5	5
Selenium	ug/L	5.0	55	120	55	2	2	2	2	1	1	1	2	1	1	< 1	2	3	3	1	2
MI Part 115 Parameters⁽²⁾																					
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,830	1,850	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 NC - no criteria.
 -- - not analyzed.
^A - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).
^{*} - Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.
^{**} - GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.
^F - Criterion is the Final Acute Value (FAV).
^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).
^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).
Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
Comparison of Groundwater Sampling Results to GSI
JC Weadock Landfill – Hydrogeological Monitoring Program
Essexville, Michigan

Sample Location:						MW-51							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,270	1,490	1,320	1,230	1,180	1,170	935	798
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	404	394	360	356	308	267	266	262
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	7.2	7.2	7.3	7.4	7.2	7.4	7.4
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	15	18	10	8	10	18	10	13
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	2	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	53	50	46	40	40	34	31	28
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	1	2	1	< 1	< 1	1	< 1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,860	2,880	514	450	1,290	1,660	446	760
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-52							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,070	1,330	1,040	993	1,030	1,140	945	895
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	663	603	581	581	569	572	540	550
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.7	6.9	6.8	6.9	6.6	6.8	7.0	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	29	26	27	23	27	27	27	29
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	2	1	< 1	< 1	< 1	2	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	5,020	6,340	2,820	2,720	6,720	7,560	3,120	3,680
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
Comparison of Groundwater Sampling Results to GSI
JC Weadock Landfill – Hydrogeological Monitoring Program
Essexville, Michigan

Sample Location:						MW-53							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	4,300	4,140	2,150	2,620	4,370	5,530	5,740	6,110
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	119	126	93.6	50.8	7.39	2.28	25.4	1.53
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.1	7.3	7.3	7.4	7.1	7.3	7.5	7.5
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	1	2	< 1	< 1	1	1	1	1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	42	38	33	34	44	42	50	50
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	7	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	3	1	1	2	2	2	3	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,240	1,140	403	569	1,390	1,080	947	665
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53R							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,560	2,340	2,330	2,140	2,190	2,420	2,300	2,200
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	533	250	101	185	217	221	53.2	47.6
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.7	6.8	6.7	6.8	6.7	7.0	7.0	7.1
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	17	20	17	14	17	16	9	10
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	70	63	59	56	62	61	56	53
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	2	1	1	2	1	2	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,030	702	1,580	1,410	1,180	834	752	761
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-54R							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	4,970	5,310	5,660	5,240	6,170	5,520	5,940	5,580
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	72.1	70.9	62	67.2	73.8	67.4	48.6	51.3
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.9	6.9	6.8	6.9	6.8	7.0	7.0	7.2
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	2	2	1	< 1	< 1	1	1	1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	74	74	71	65	75	70	76	73
Molybdenum	ug/L	120	NC	NC	120	10	12	15	13	15	17	15	18
Selenium	ug/L	5.0	55	120	55	1	2	1	1	1	1	3	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	367	1,090	262	74	111	829	159	87
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-55								
Sample Date:						8/1/2022	8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**		Field Dup							
Appendix III⁽¹⁾														
Boron	ug/L	4,000	44,000	69,000	44,000	709	687	976	1,110	1,140	1,290	1,200	825	729
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	248	245	108	94.6	208	129	156	224	236
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.9	--	7.0	6.8	6.9	6.9	7.0	6.9	6.9
Appendix IV⁽¹⁾														
Arsenic	ug/L	10	100	680	100	80	78	126	68	44	75	75	46	39
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	29	28	30	27	24	27	26	26	26
Molybdenum	ug/L	120	NC	NC	120	80	78	91	50	30	33	56	27	25
Selenium	ug/L	5.0	55	120	55	3	4	< 1	3	< 1	1	1	1	4
MI Part 115 Parameters⁽²⁾														
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	18,000	16,600	22,100	24,800	21,600	21,900	16,800	18,700	14,700
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						JCW-MW-18004							
Sample Date:						8/1/2022	10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	313	343	180	227	310	319	192	206
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	512	428	533	722	478	466	557	484
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.7	6.8	6.8	6.8	6.8	7.0	7.0	6.9
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	51	46	39	42	50	49	43	43
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	1	11	2	2	< 1	4	4
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	45	< 20	46	67	24	36	98	73
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

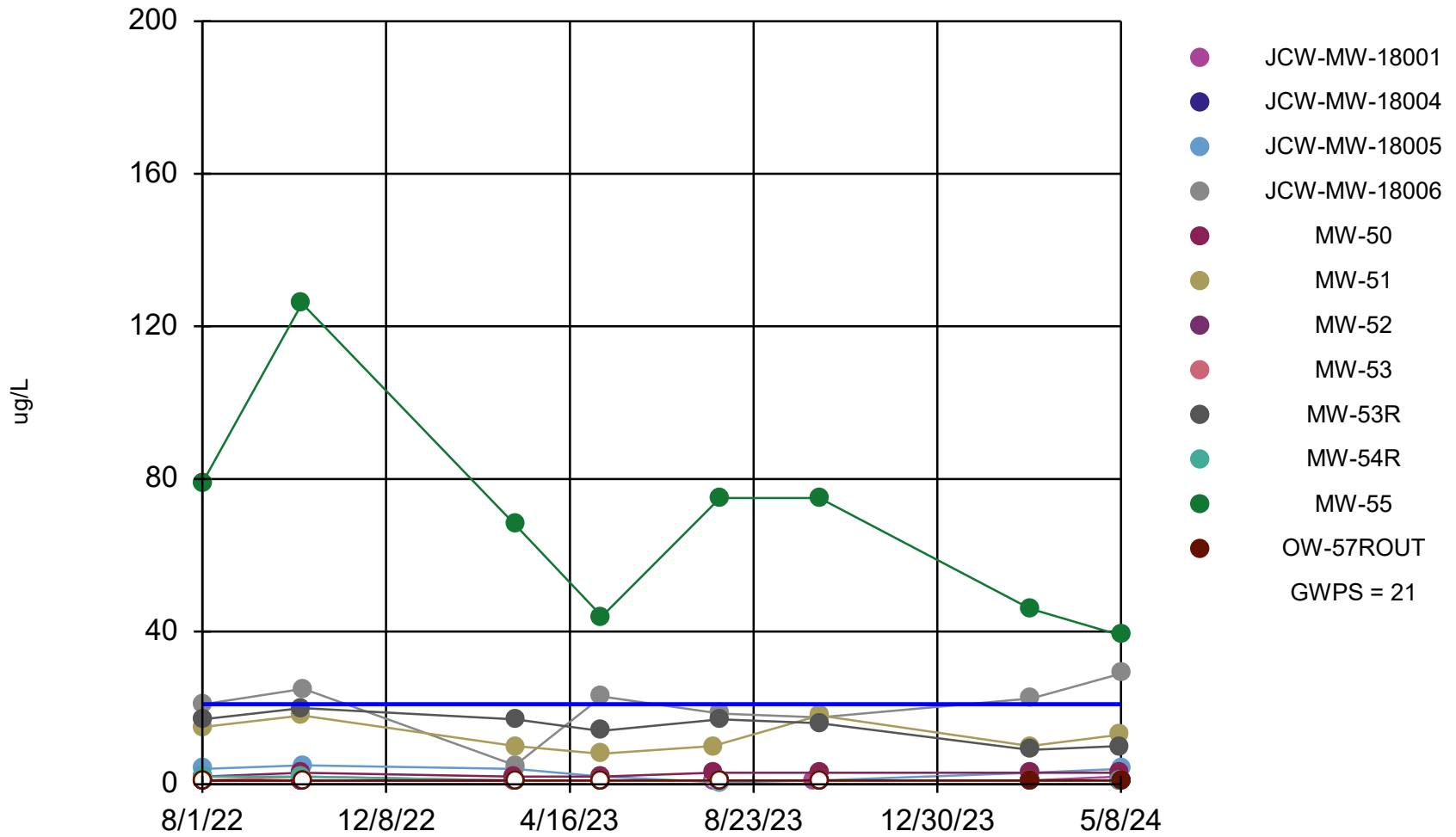
All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

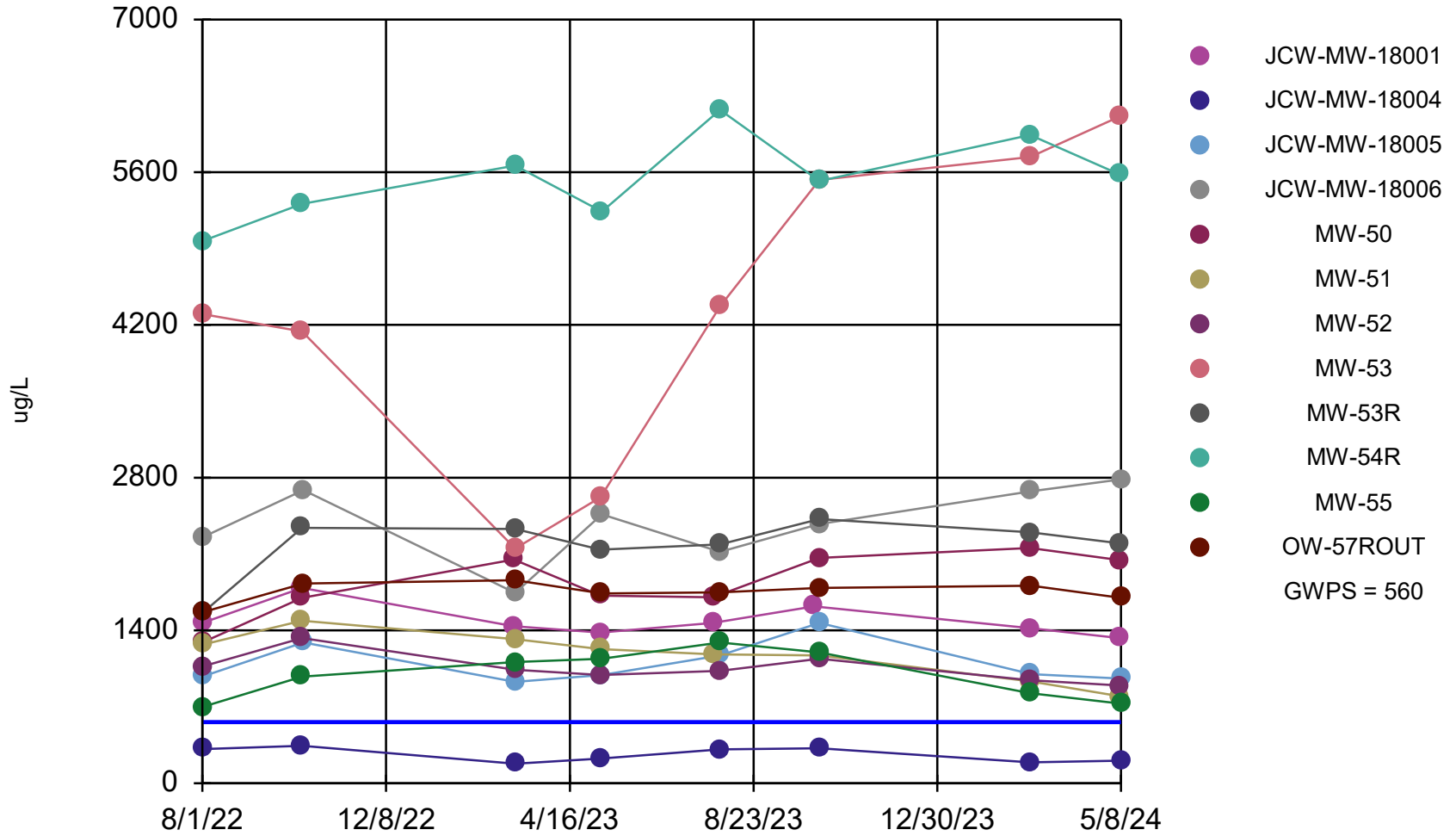
Attachment 1
Assessment Monitoring Sanitas™ Output Files

Arsenic Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

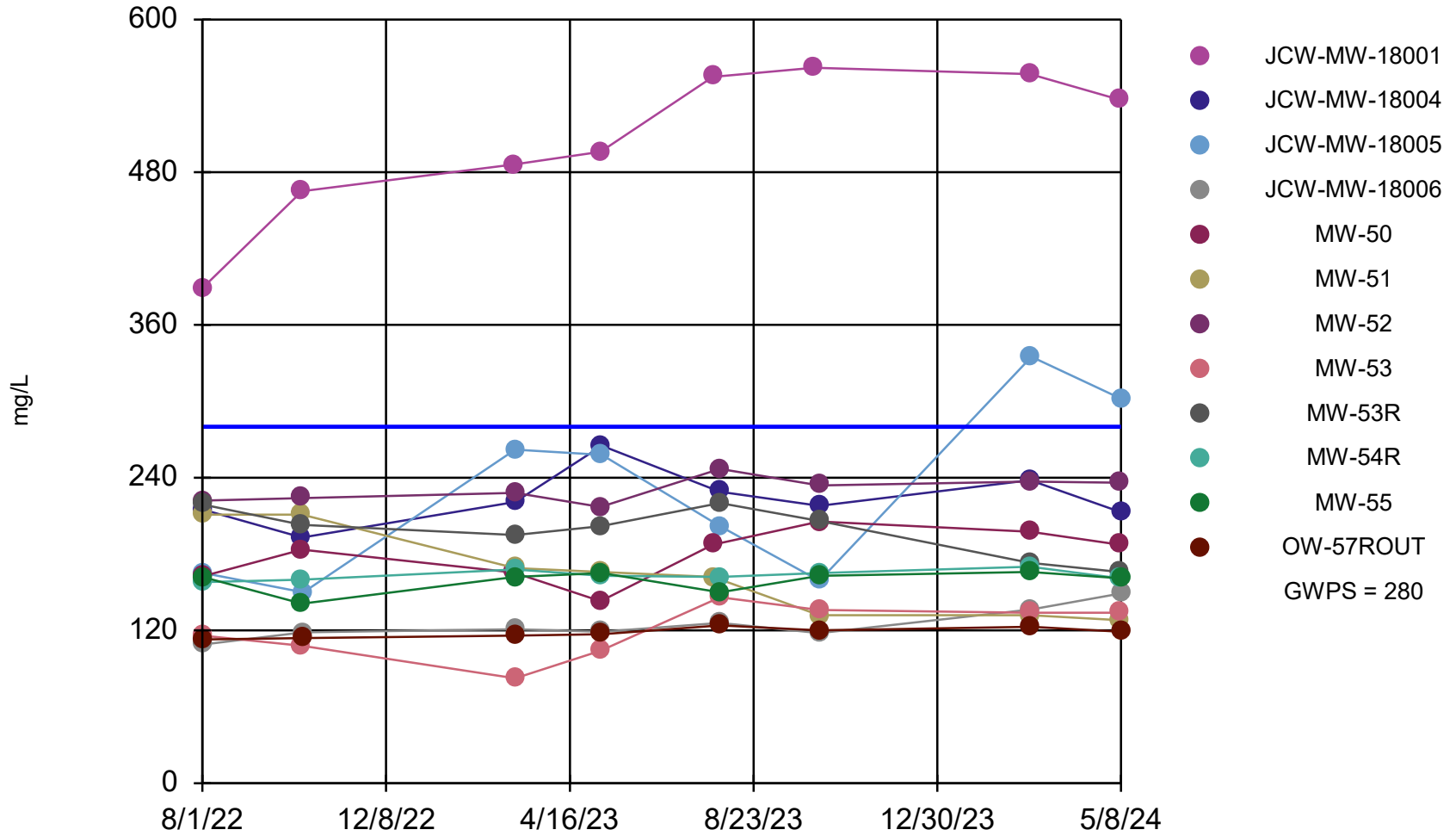
Boron Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:20 PM

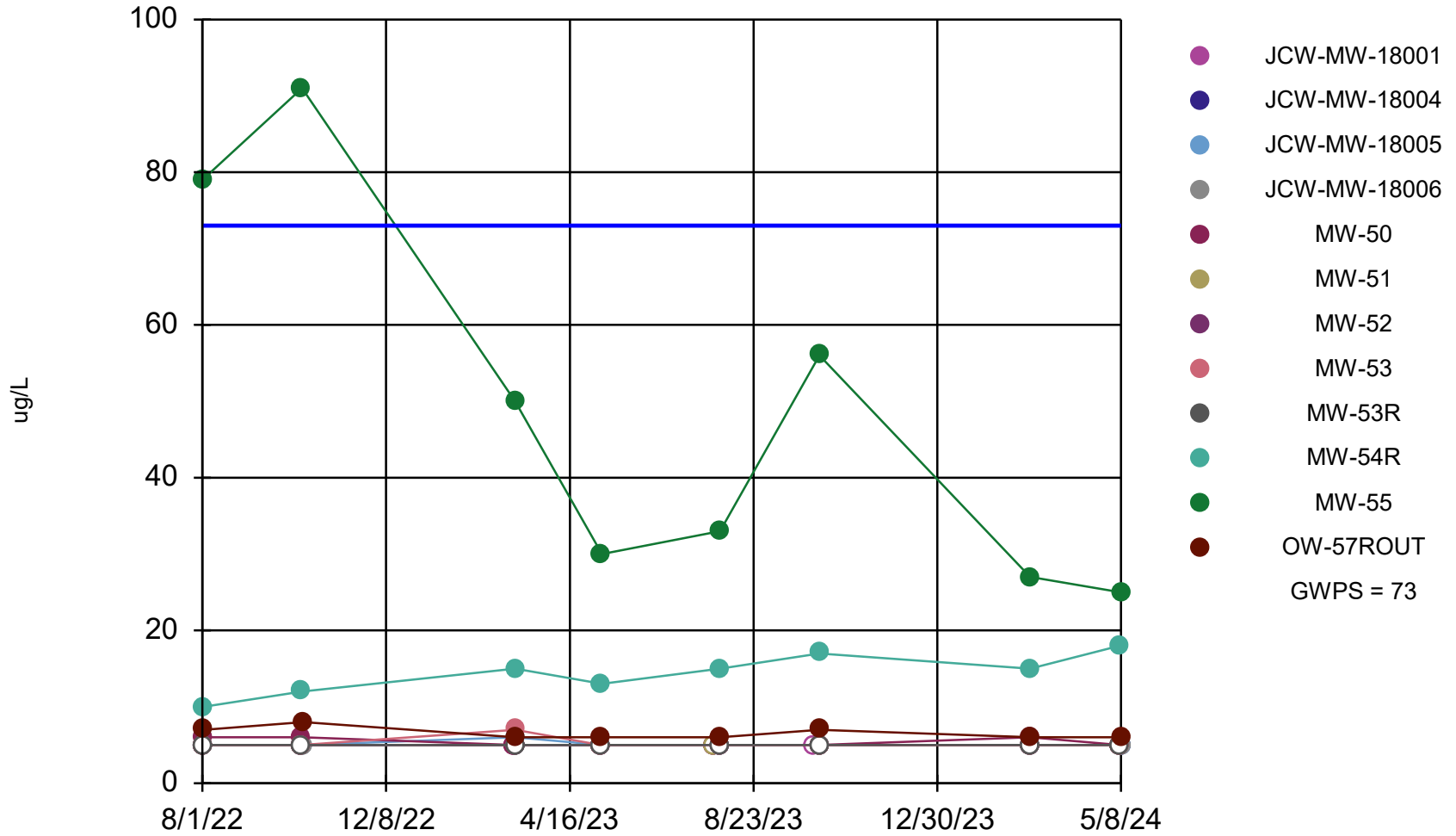
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:22 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

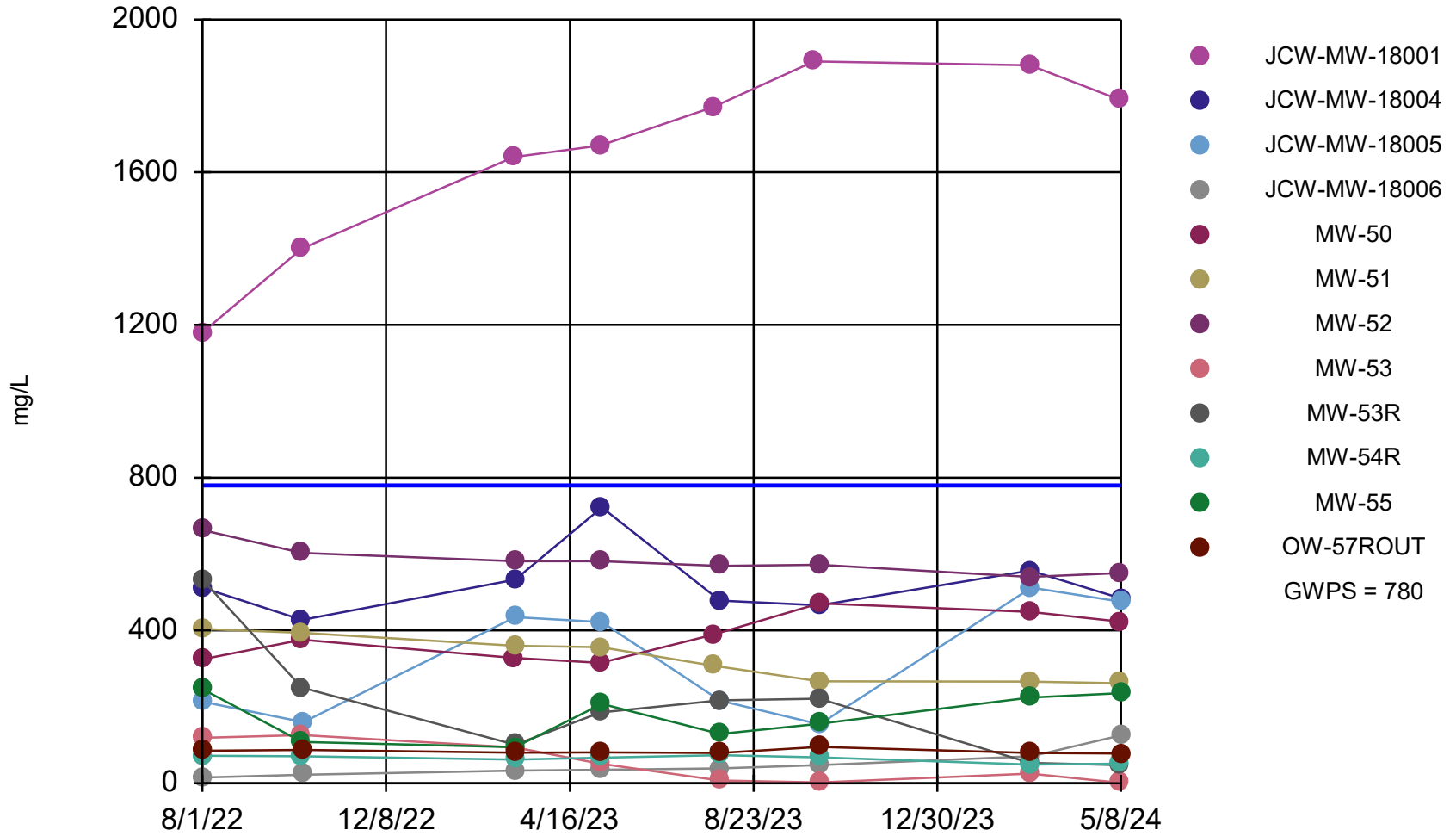
Molybdenum Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:23 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Sulfate Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:25 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Summary Report

Constituent: Arsenic, Total Analysis Run 6/13/2024 3:27 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 96
 NDs = 34%
 Wells = 12
 Minimum Value = 0.5
 Maximum Value = 126
 Mean Value = 10.75
 Median Value = 2
 Standard Deviation = 20.42
 Coefficient of Variation = 1.899
 Skewness = 3.276

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	75%	1	2	1.125	1	0.3536	0.3143	2.268
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
JCW-MW-18005	8	12%	0.5	5	2.938	3.5	1.613	0.5492	-0.3713
JCW-MW-18006	8	0%	5	29	20.19	21.75	7.126	0.353	-1.138
MW-50	8	0%	2	3	2.625	3	0.5175	0.1972	-0.5164
MW-51	8	0%	8	18	12.75	11.5	3.882	0.3045	0.3426
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	25%	1	2	1.125	1	0.3536	0.3143	2.268
MW-53R	8	0%	9	20	15	16.5	3.78	0.252	-0.5431
MW-54R	8	25%	1	2	1.25	1	0.4629	0.3703	1.155
MW-55	8	0%	39	126	69	71.5	27.97	0.4054	0.9202
OW-57ROUT	8	75%	1	1	1	1	0	0	NaN

Summary Report

Constituent: Boron, Total Analysis Run 6/13/2024 3:27 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 180
 Maximum Value = 6170
 Mean Value = 2014
 Median Value = 1565
 Standard Deviation = 1521
 Coefficient of Variation = 0.7554
 Skewness = 1.473

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1330	1790	1490	1455	147.7	0.09916	1.103
JCW-MW-18004	8	0%	180	343	261.3	268.5	66.22	0.2535	-0.04413
JCW-MW-18005	8	0%	930	1470	1099	996	193.5	0.1761	0.9888
JCW-MW-18006	8	0%	1745	2785	2389	2420	345.6	0.1447	-0.6521
MW-50	8	0%	1290	2155	1841	1883	290.5	0.1578	-0.7165
MW-51	8	0%	798	1490	1174	1205	217.8	0.1855	-0.4613
MW-52	8	0%	895	1330	1055	1035	133.9	0.1269	0.9921
MW-53	8	0%	2150	6110	4370	4335	1429	0.3271	-0.3616
MW-53R	8	0%	1560	2420	2185	2250	269	0.1231	-1.75
MW-54R	8	0%	4970	6170	5549	5550	385.5	0.06948	0.171
MW-55	8	0%	698	1290	996	1043	224.1	0.225	-0.1647
OW-57ROUT	8	0%	1570	1860	1756	1770	91.33	0.052	-0.9887

Summary Report

Constituent: Calcium, Total Analysis Run 6/13/2024 3:27 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 82.5
 Maximum Value = 562
 Mean Value = 201.3
 Median Value = 166
 Standard Deviation = 104.5
 Coefficient of Variation = 0.5191
 Skewness = 2.185

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	389	562	505.9	516.5	59.72	0.1181	-0.8706
JCW-MW-18004	8	0%	193	265	224	219.5	21.08	0.0941	0.6474
JCW-MW-18005	8	0%	150	335	229.1	230	70.16	0.3062	0.2253
JCW-MW-18006	8	0%	109	149	124.6	120	12.58	0.1009	0.8902
MW-50	8	0%	143	205.5	179.1	185.5	20.56	0.1148	-0.4901
MW-51	8	0%	128	211	163.9	164	33.37	0.2036	0.4048
MW-52	8	0%	217	247	230.6	231	9.709	0.0421	0.2276
MW-53	8	0%	82.5	146	120.1	125	21.2	0.1766	-0.5137
MW-53R	8	0%	166	220	198	202.5	19.6	0.09897	-0.5644
MW-54R	8	0%	158	170	163.4	162.5	4.069	0.0249	0.4177
MW-55	8	0%	141	166	158.8	162	8.681	0.05468	-1.279
OW-57ROUT	8	0%	113	124	118.3	118	3.991	0.03375	0.164

Summary Report

Constituent: Molybdenum, Total Analysis Run 6/13/2024 3:27 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 96
 NDs = 66%
 Wells = 12
 Minimum Value = 5
 Maximum Value = 91
 Mean Value = 9.625
 Median Value = 5
 Standard Deviation = 13.96
 Coefficient of Variation = 1.451
 Skewness = 4.132

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18004	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18005	8	62%	5	6	5.125	5	0.3536	0.06899	2.268
JCW-MW-18006	8	100%	5	5	5	5	0	0	NaN
MW-50	8	50%	5	6	5.375	5	0.5175	0.09629	0.5164
MW-51	8	100%	5	5	5	5	0	0	NaN
MW-52	8	100%	5	5	5	5	0	0	NaN
MW-53	8	87%	5	7	5.25	5	0.7071	0.1347	2.268
MW-53R	8	100%	5	5	5	5	0	0	NaN
MW-54R	8	0%	10	18	14.38	15	2.615	0.1819	-0.2842
MW-55	8	0%	25	91	48.88	41.5	25.05	0.5124	0.6577
OW-57ROUT	8	0%	6	8	6.5	6	0.7559	0.1163	1.061

Summary Report

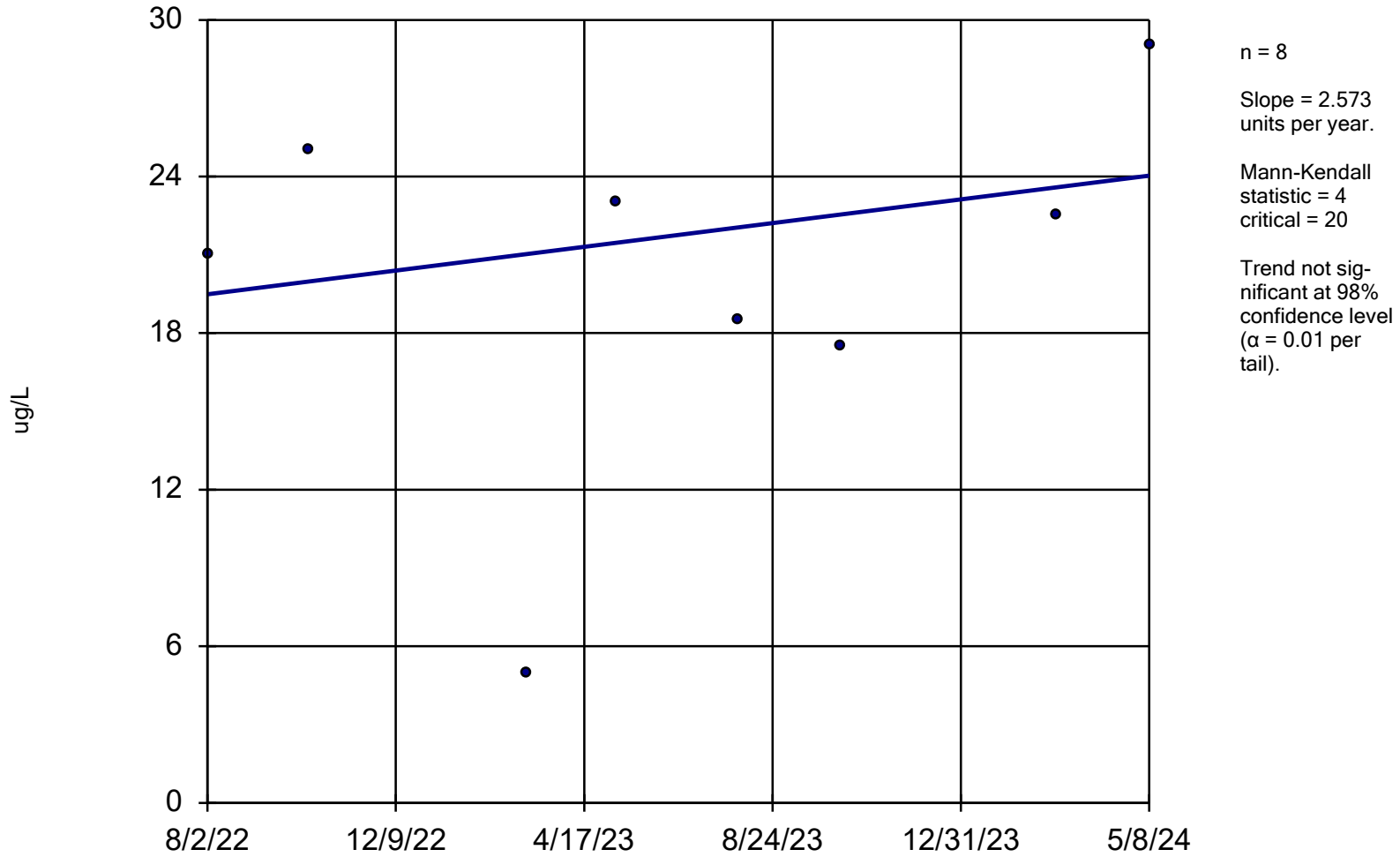
Constituent: Sulfate Analysis Run 6/13/2024 3:27 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 1.53
 Maximum Value = 1890
 Mean Value = 368.1
 Median Value = 230
 Standard Deviation = 438.1
 Coefficient of Variation = 1.19
 Skewness = 2.204

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1180	1890	1653	1720	247.4	0.1497	-0.9301
JCW-MW-18004	8	0%	428	722	522.5	498	90.08	0.1724	1.423
JCW-MW-18005	8	0%	154	512	323.4	319	151.1	0.4673	0.03297
JCW-MW-18006	8	0%	14.9	125.5	48.45	36.9	35.35	0.7296	1.404
MW-50	8	0%	315	471	384.3	382.3	59.49	0.1548	0.1797
MW-51	8	0%	262	404	327.1	332	58.86	0.1799	0.06294
MW-52	8	0%	540	663	582.4	576.5	37.91	0.06509	1.175
MW-53	8	0%	1.53	126	53.25	38.1	52.65	0.9887	0.3623
MW-53R	8	0%	47.6	533	201	201	155.3	0.7729	1.177
MW-54R	8	0%	48.6	73.8	64.16	67.3	9.512	0.1482	-0.7355
MW-55	8	0%	94.6	246.5	175.3	182	60.65	0.3461	-0.1361
OW-57ROUT	8	0%	77.6	94.8	82.84	80.1	5.775	0.06972	1.186

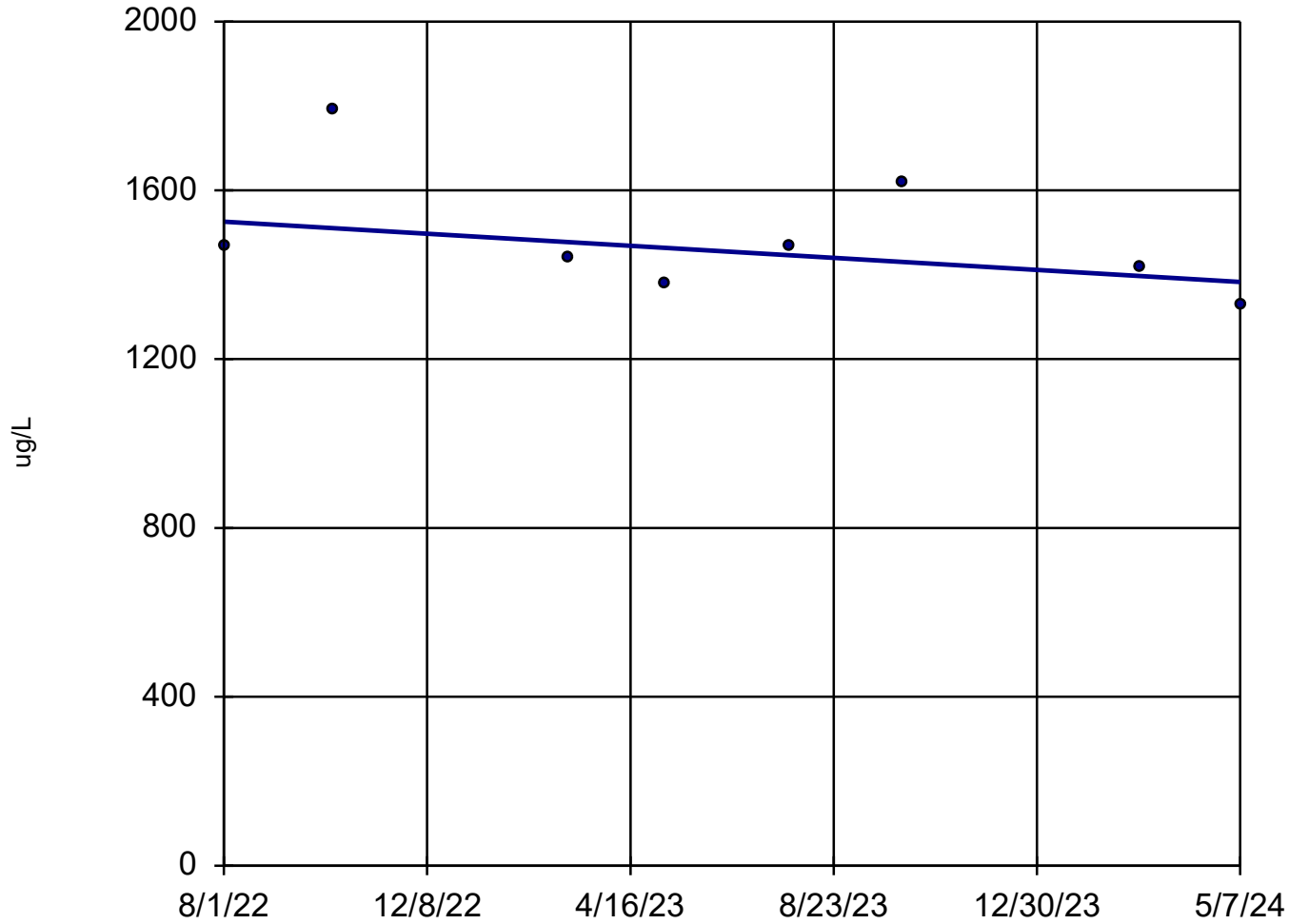
Arsenic, Total JCW-MW-18006



Sen's Slope Estimator Analysis Run 6/13/2024 3:40 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

JCW-MW-18001

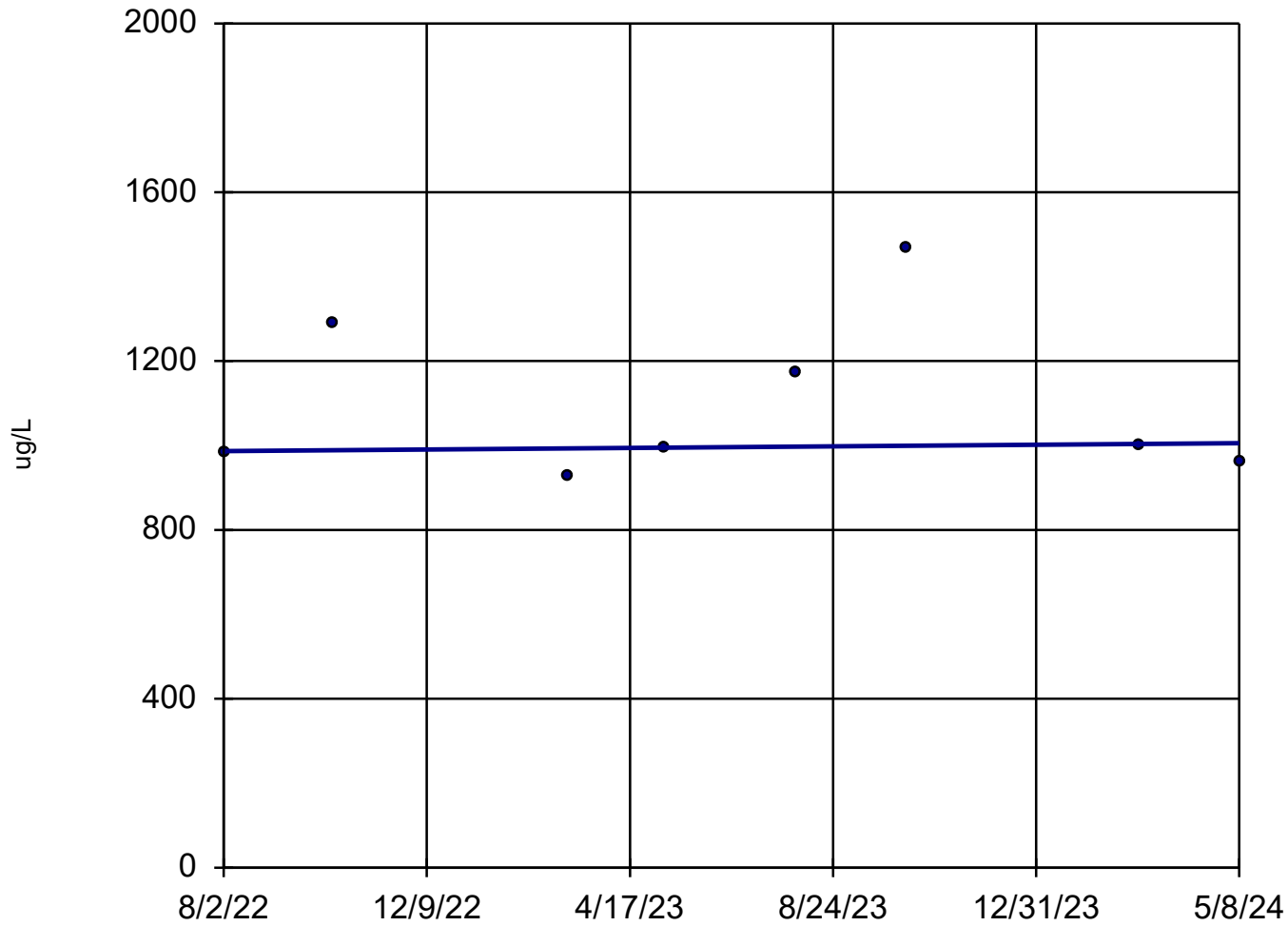


n = 8
Slope = -80.53
units per year.
Mann-Kendall
statistic = -11
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

JCW-MW-18005

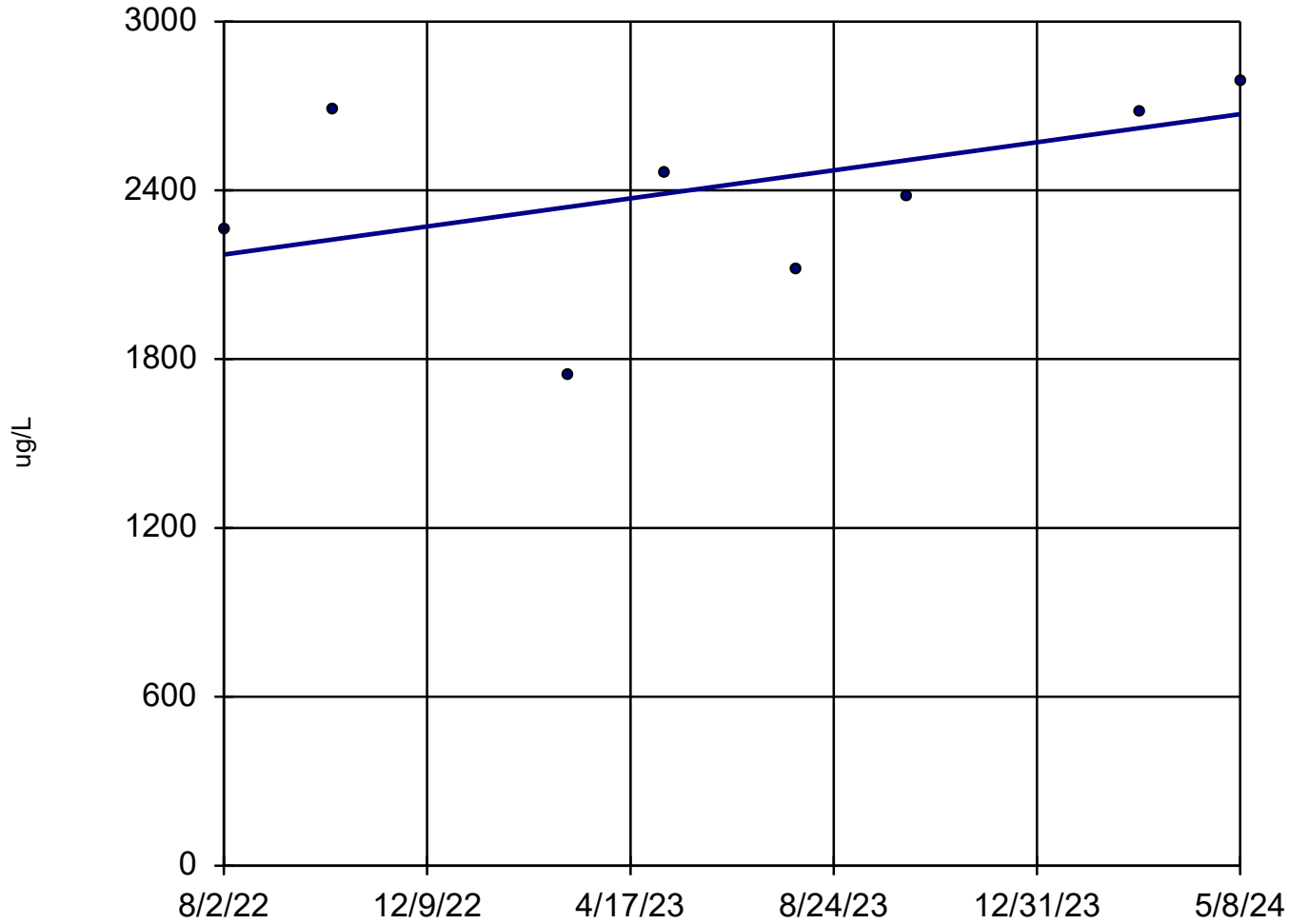


n = 8
Slope = 10.79
units per year.
Mann-Kendall
statistic = 2
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

JCW-MW-18006

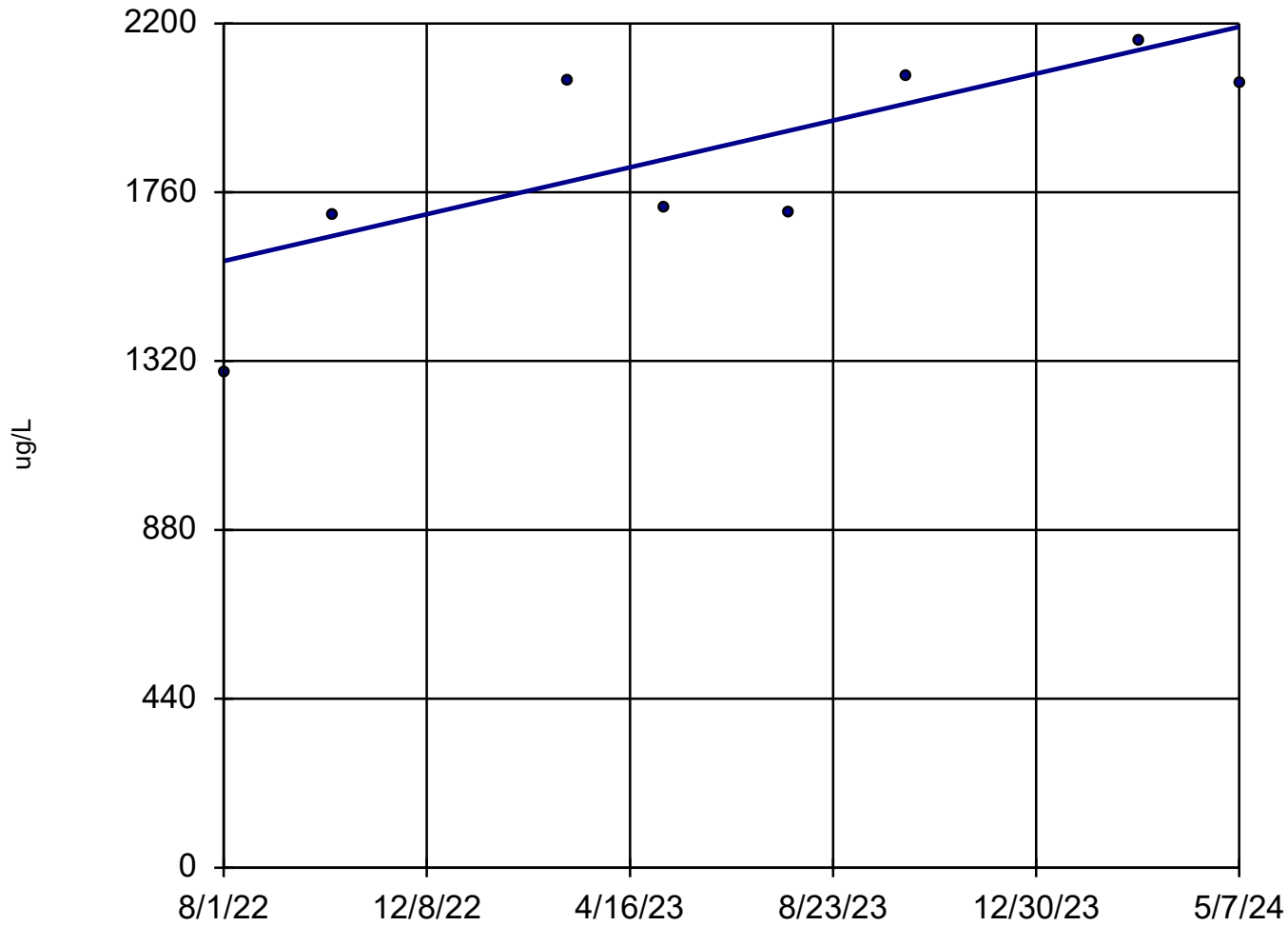


n = 8
Slope = 282.2
units per year.
Mann-Kendall
statistic = 10
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-50

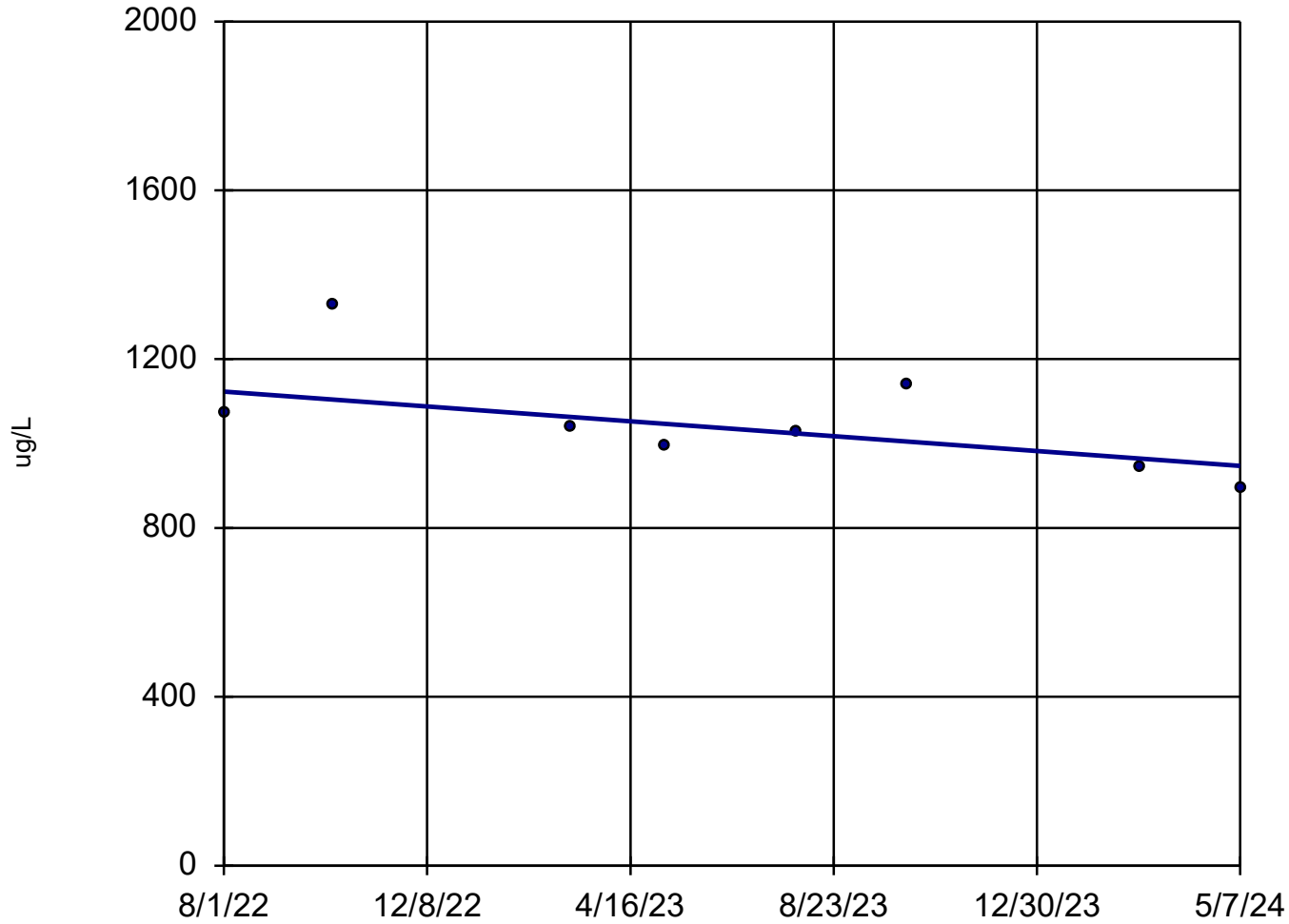


n = 8
Slope = 345.5
units per year.
Mann-Kendall
statistic = 16
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-52

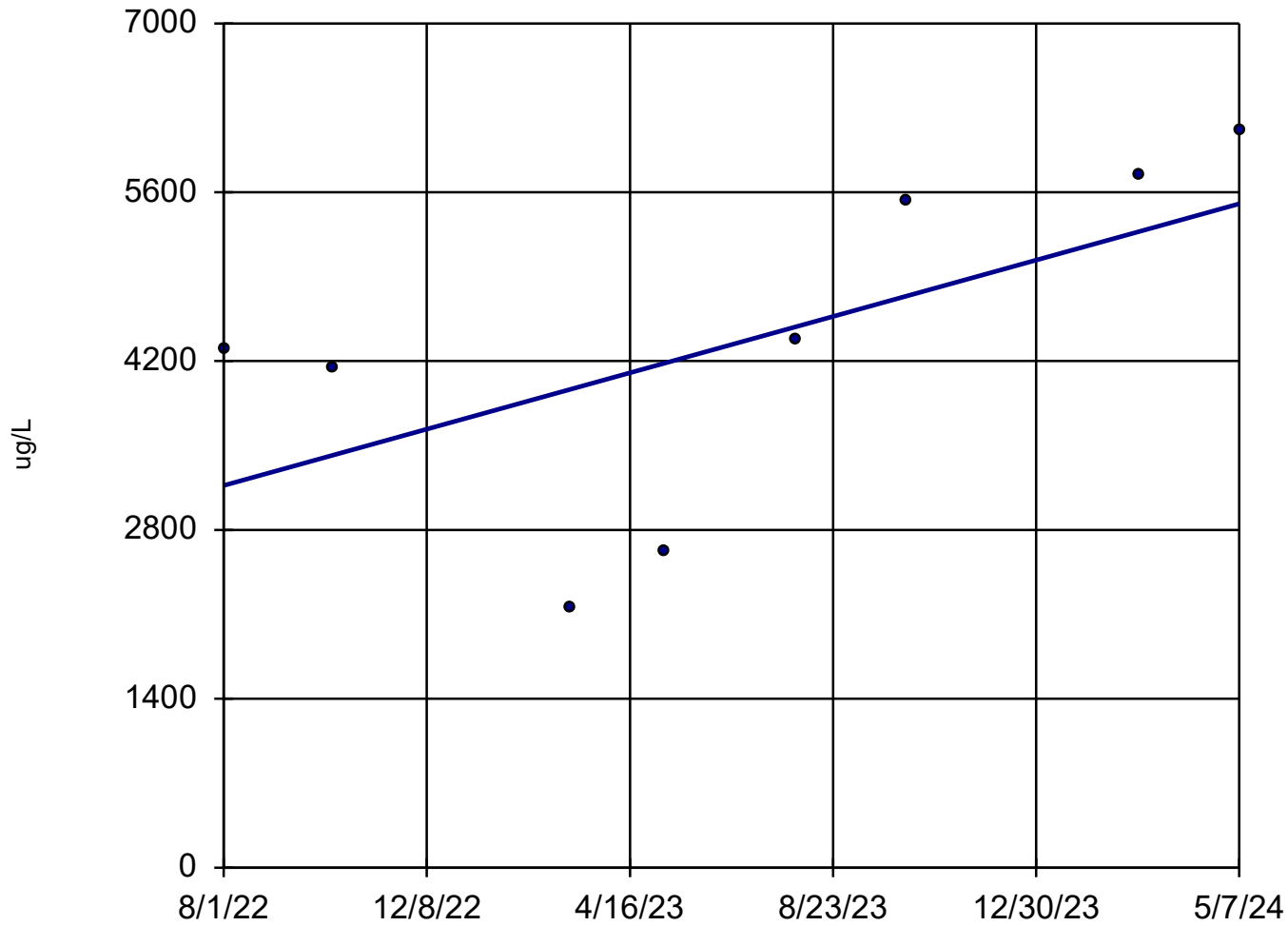


n = 8
Slope = -99.7
units per year.
Mann-Kendall
statistic = -16
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-53

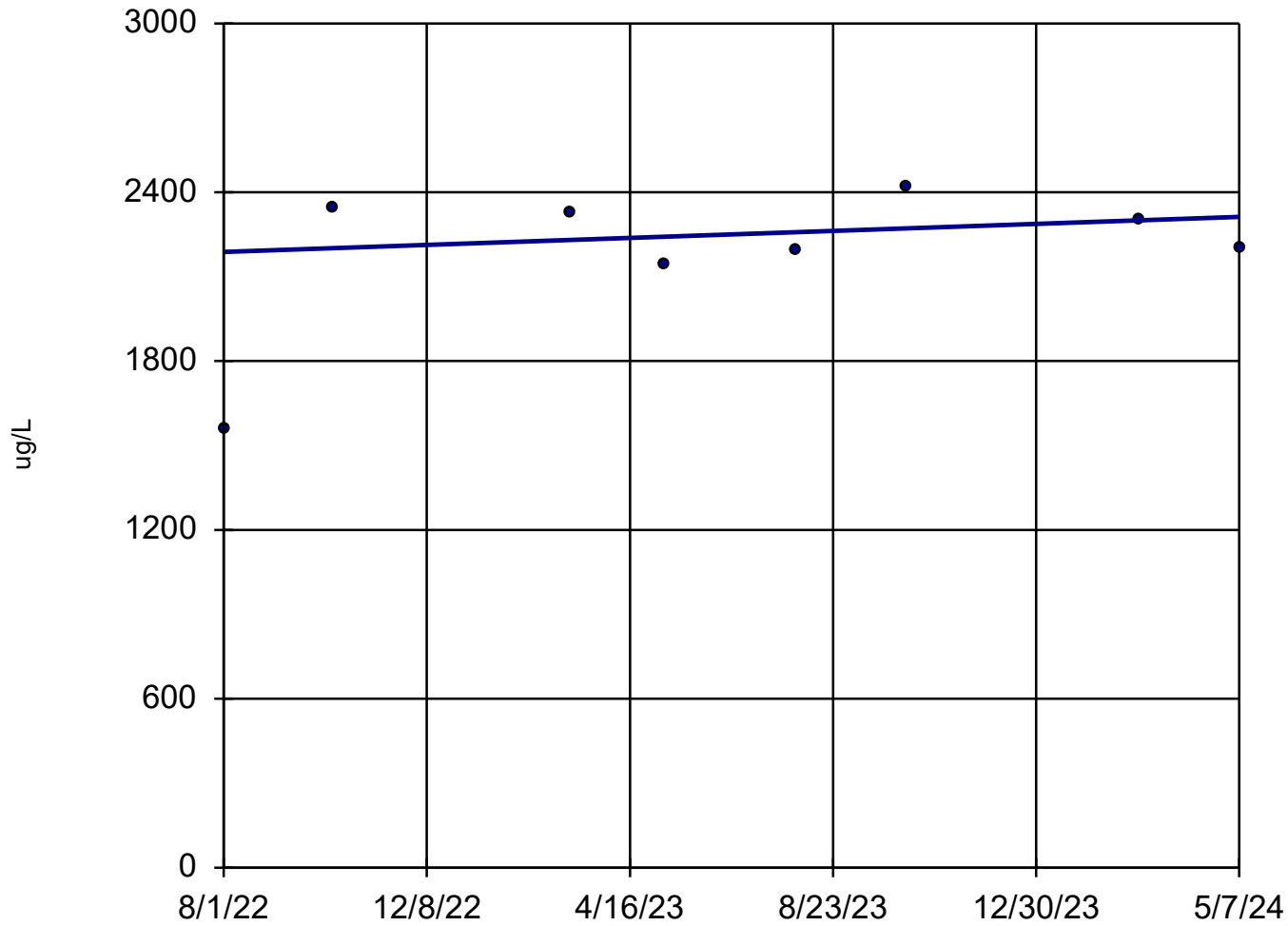


n = 8
Slope = 1322
units per year.
Mann-Kendall
statistic = 18
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-53R

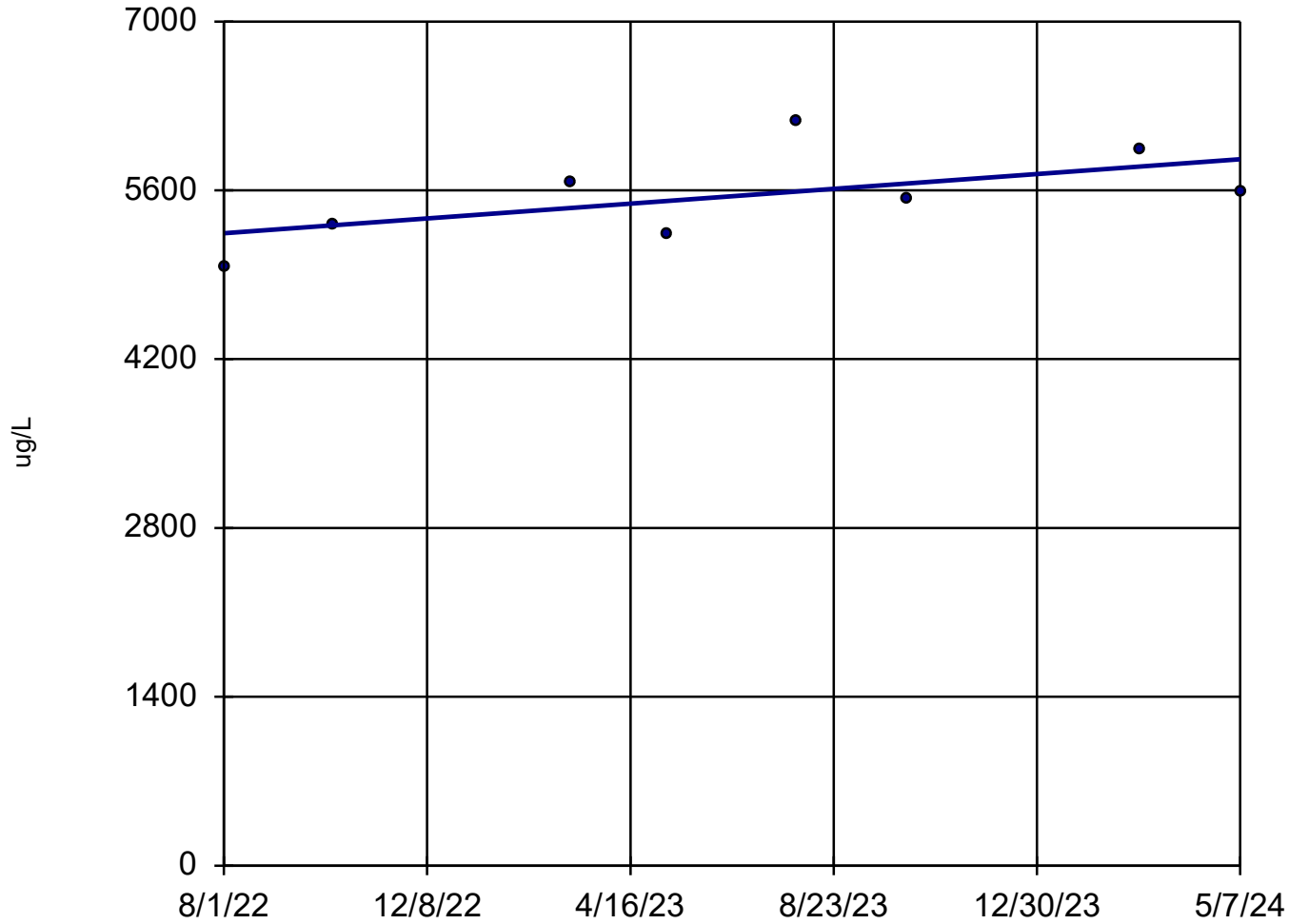


n = 8
Slope = 70.11
units per year.
Mann-Kendall
statistic = 4
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-54R

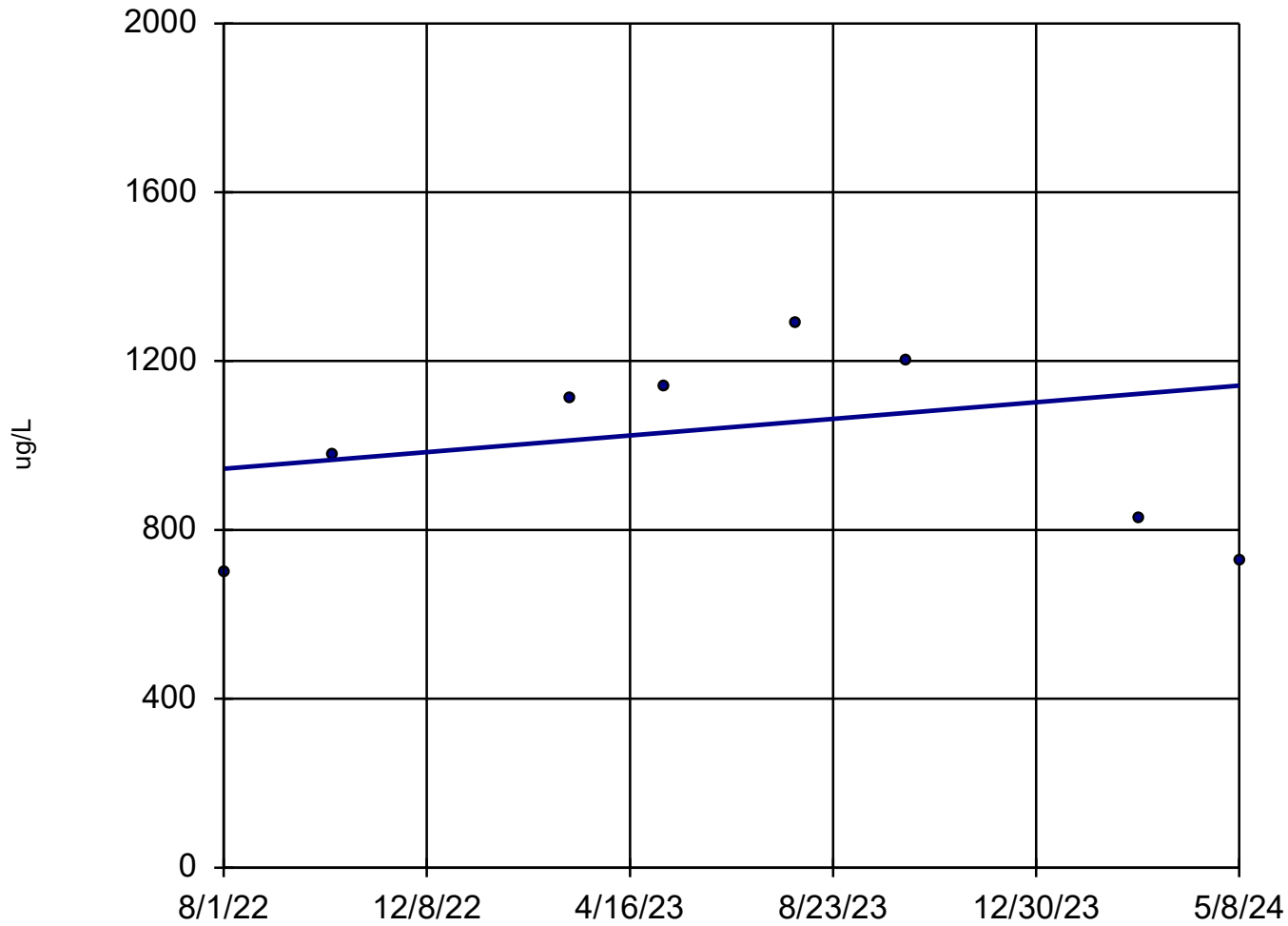


n = 8
Slope = 348
units per year.
Mann-Kendall
statistic = 12
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

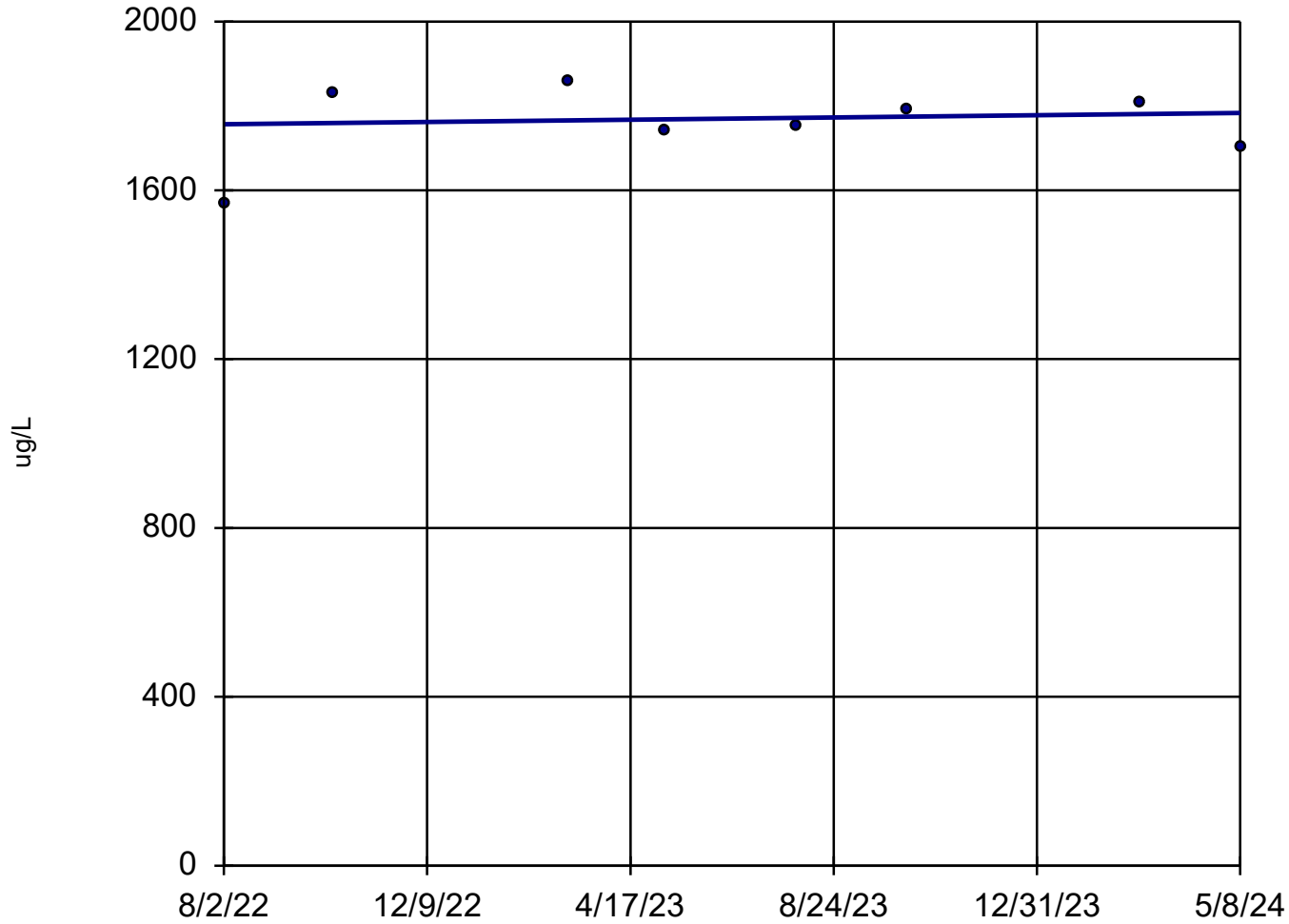
MW-55



n = 8
Slope = 111.4
units per year.
Mann-Kendall
statistic = 4
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

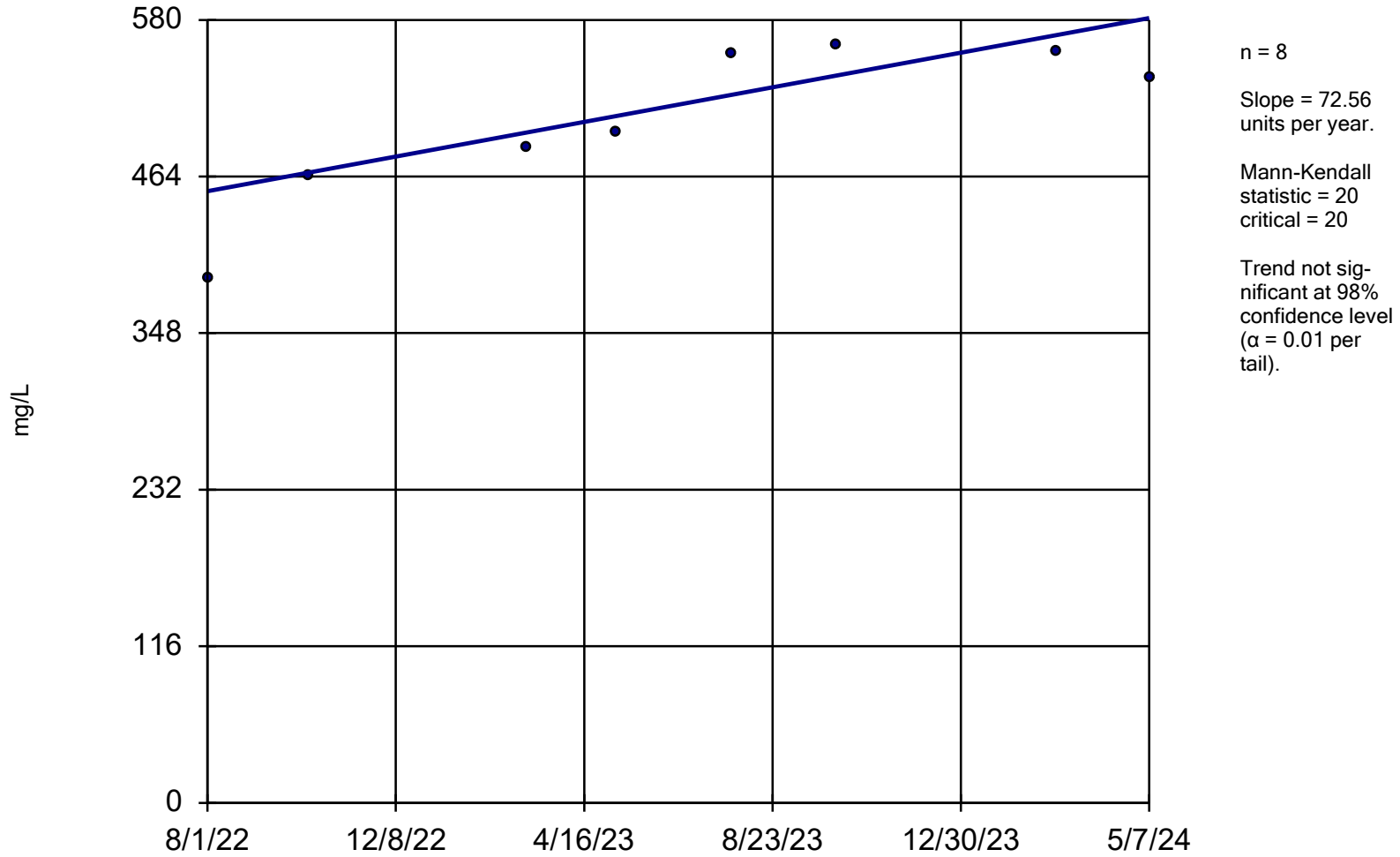
Boron, Total OW-57ROUT



n = 8
Slope = 14.86
units per year.
Mann-Kendall
statistic = 0
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total JCW-MW-18001

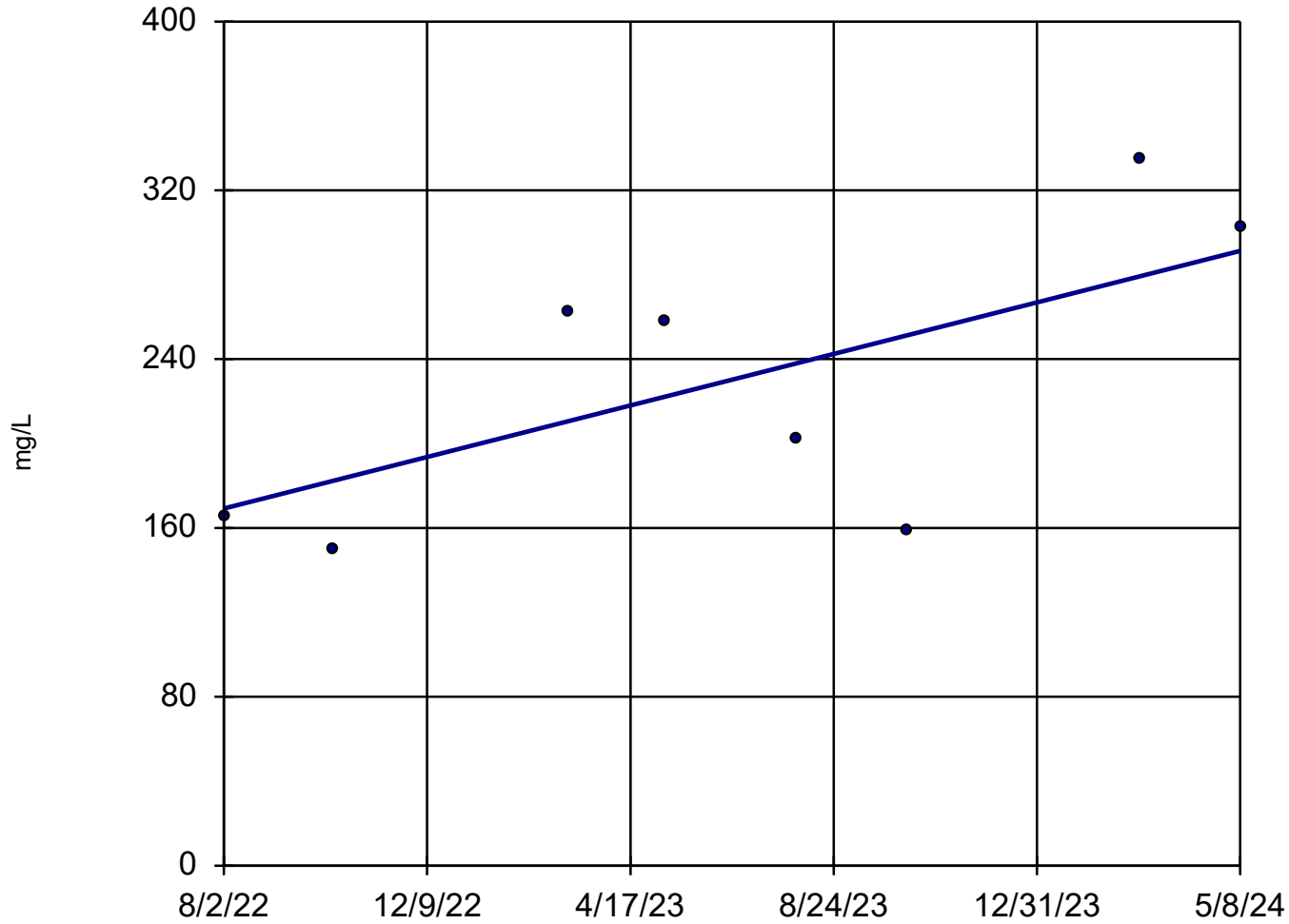


Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 12:19 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Calcium, Total

JCW-MW-18005

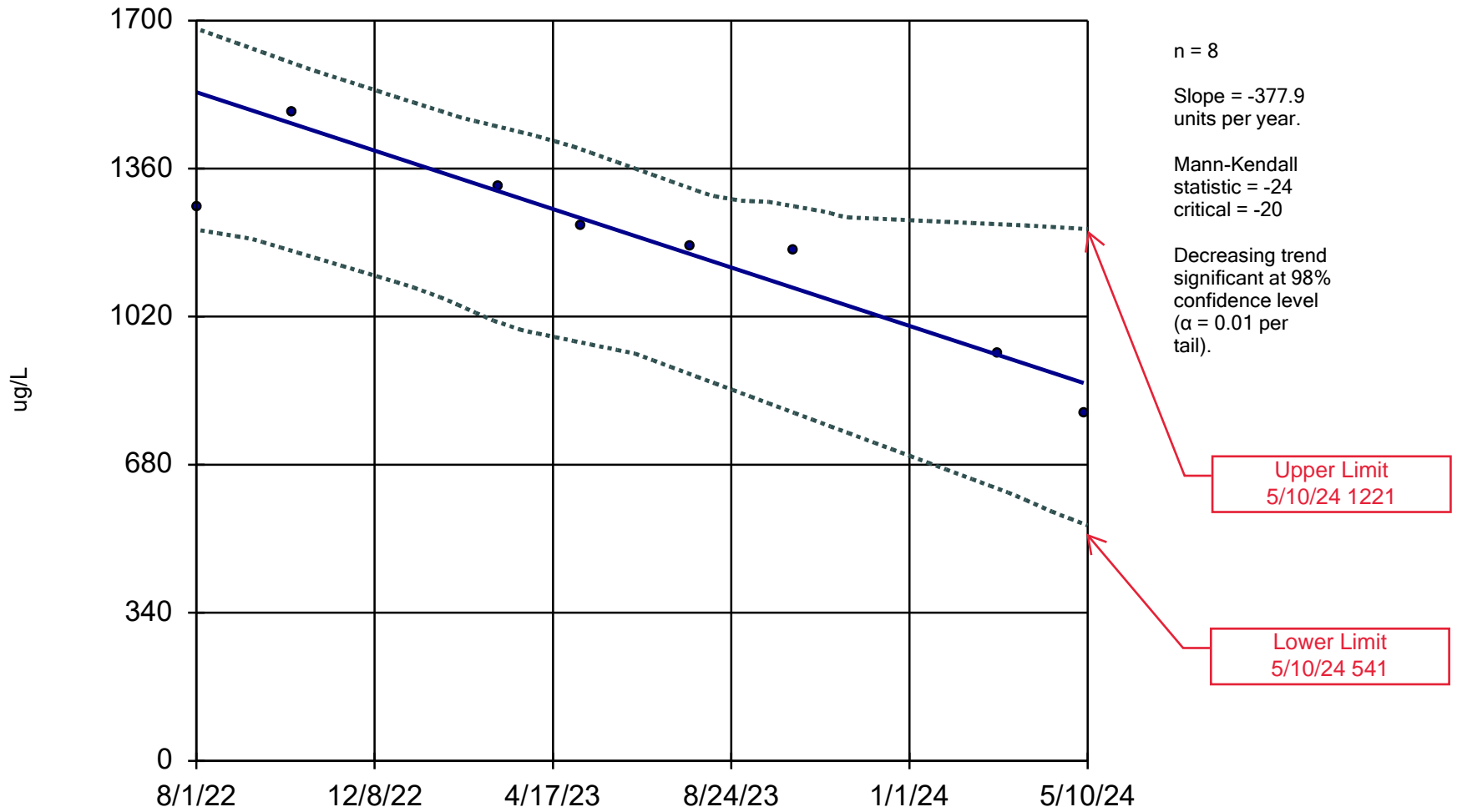


n = 8
Slope = 69.09
units per year.
Mann-Kendall
statistic = 10
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 12:19 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Boron, Total

MW-51

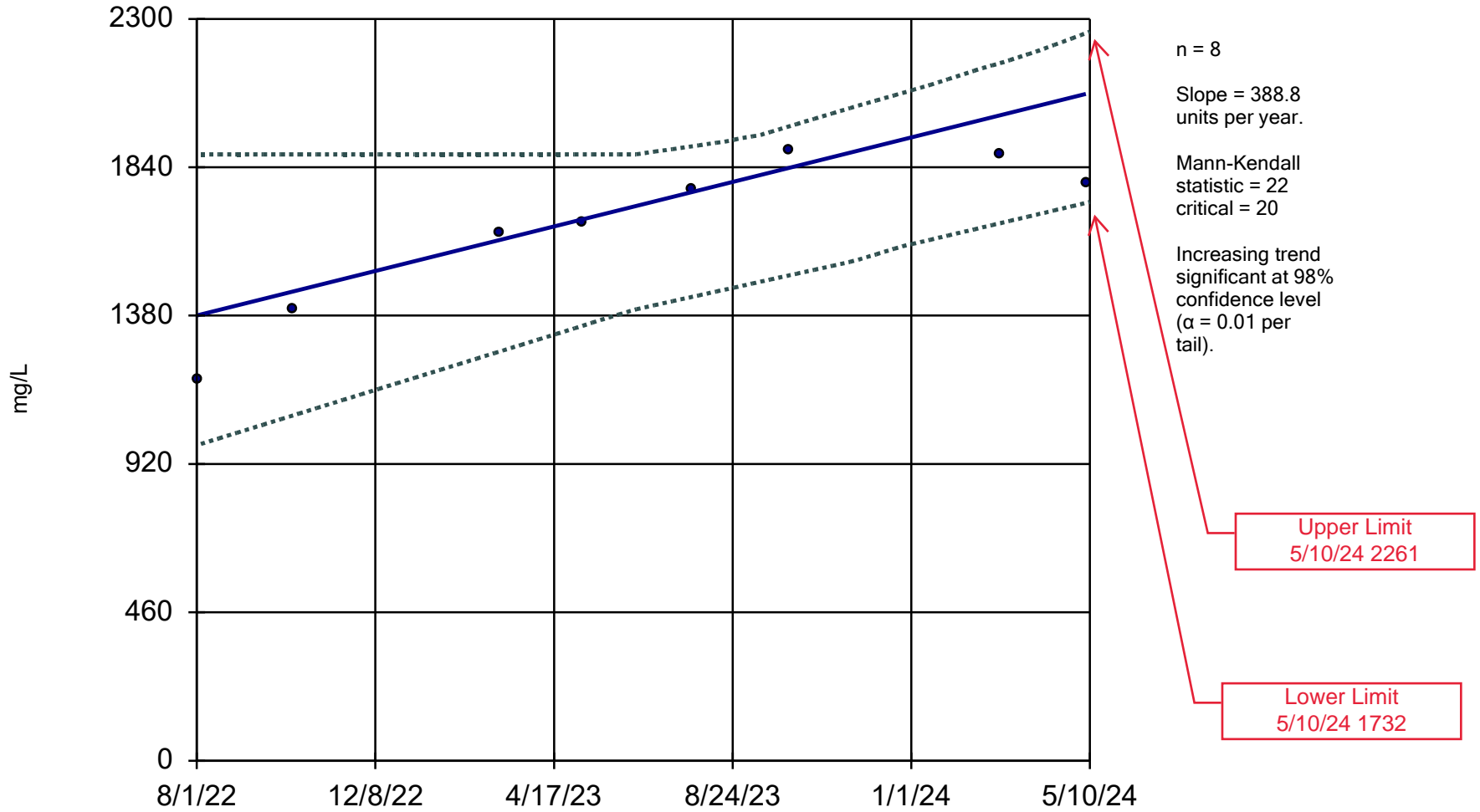


Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 11:49 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Sulfate

JCW-MW-18001

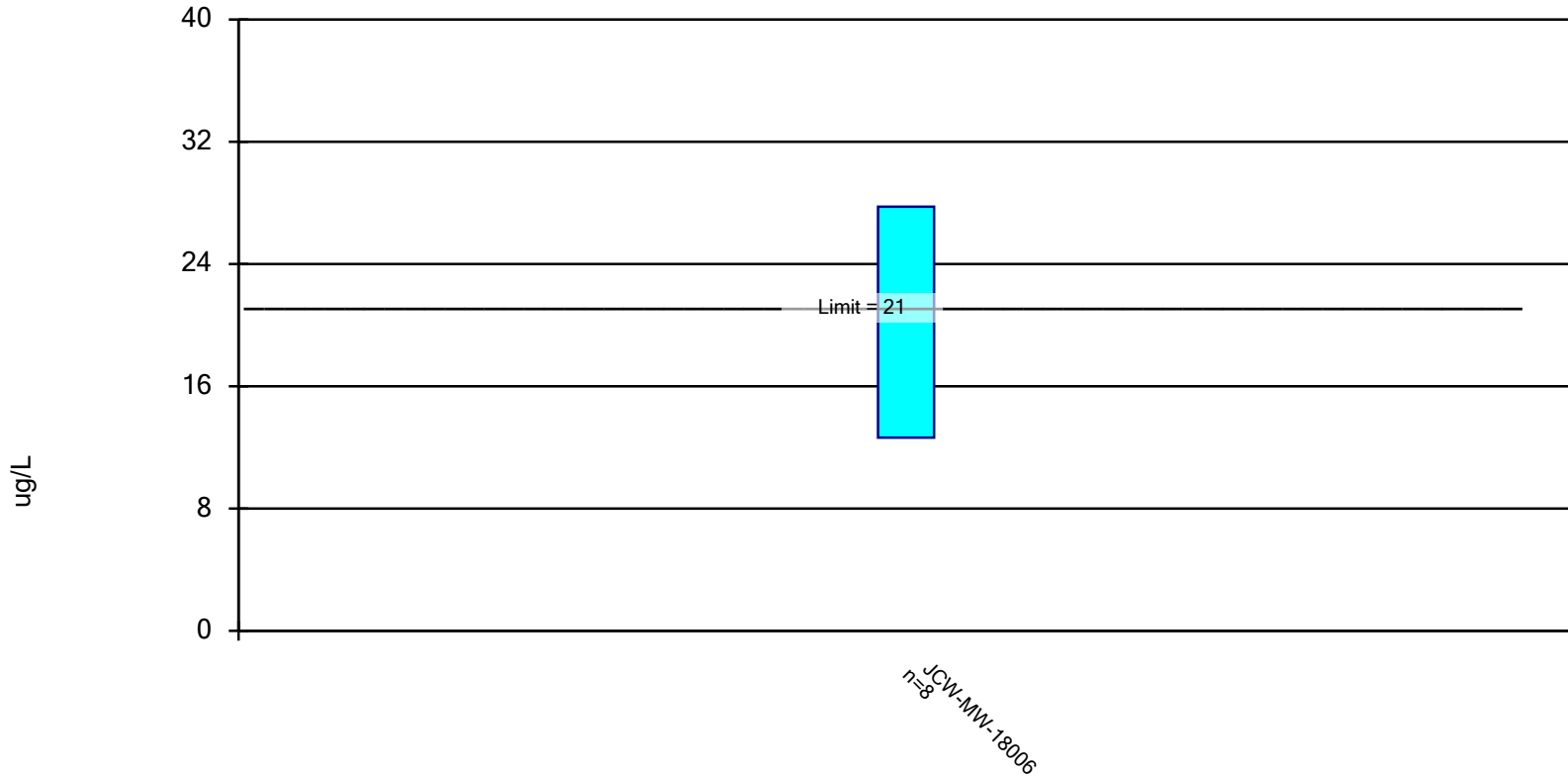


Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 12:21 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 6/14/2024 1:05 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 6/14/2024 1:05 PM

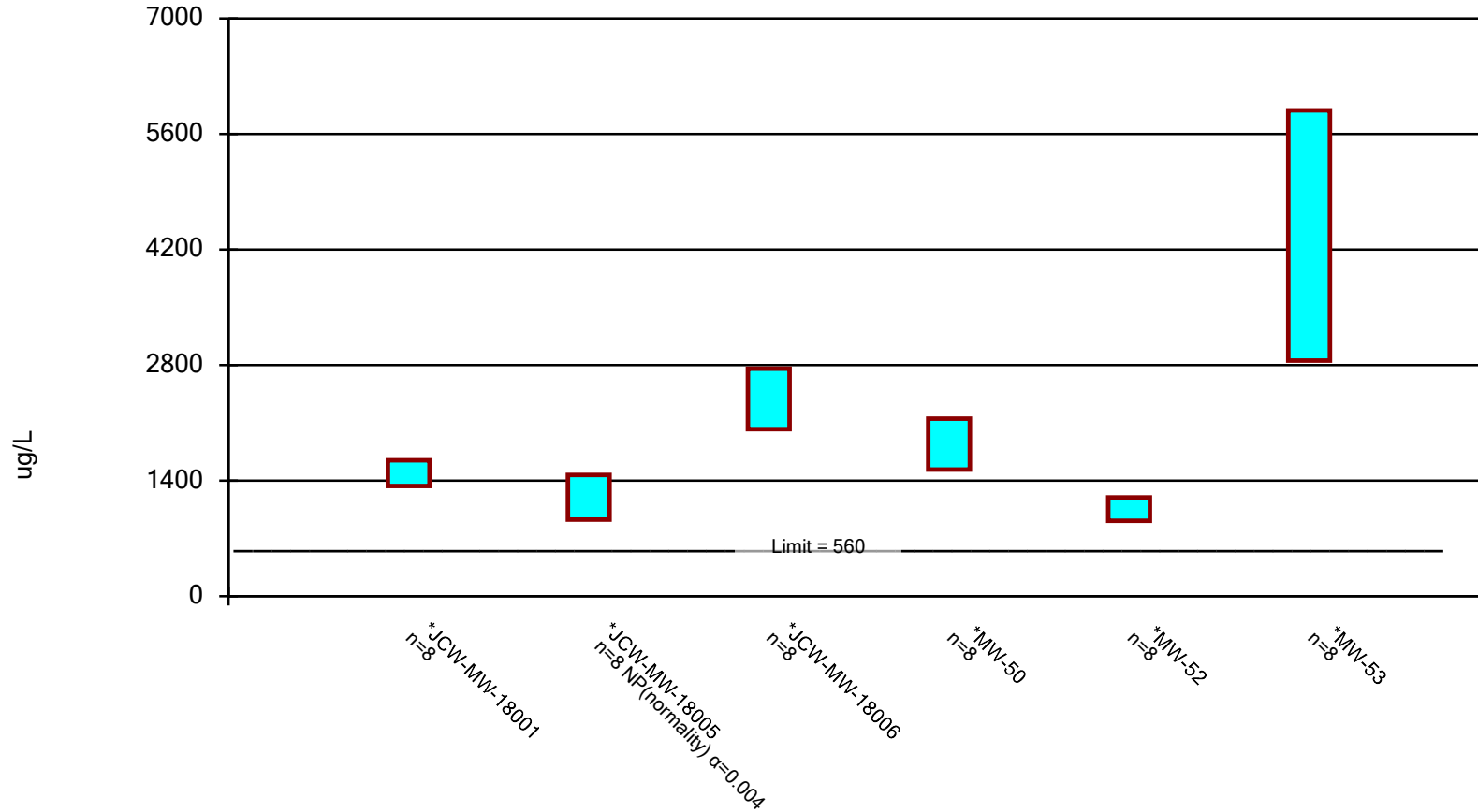
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

JCW-MW-18006

8/2/2022	21 (D)
10/11/2022	25 (D)
3/9/2023	5 (D)
5/9/2023	23 (D)
7/31/2023	18.5 (D)
10/9/2023	17.5 (D)
3/6/2024	22.5 (D)
5/8/2024	29 (D)
Mean	20.19
Std. Dev.	7.126
Upper Lim.	27.74
Lower Lim.	12.63

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 6/14/2024 1:03 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Confidence Interval

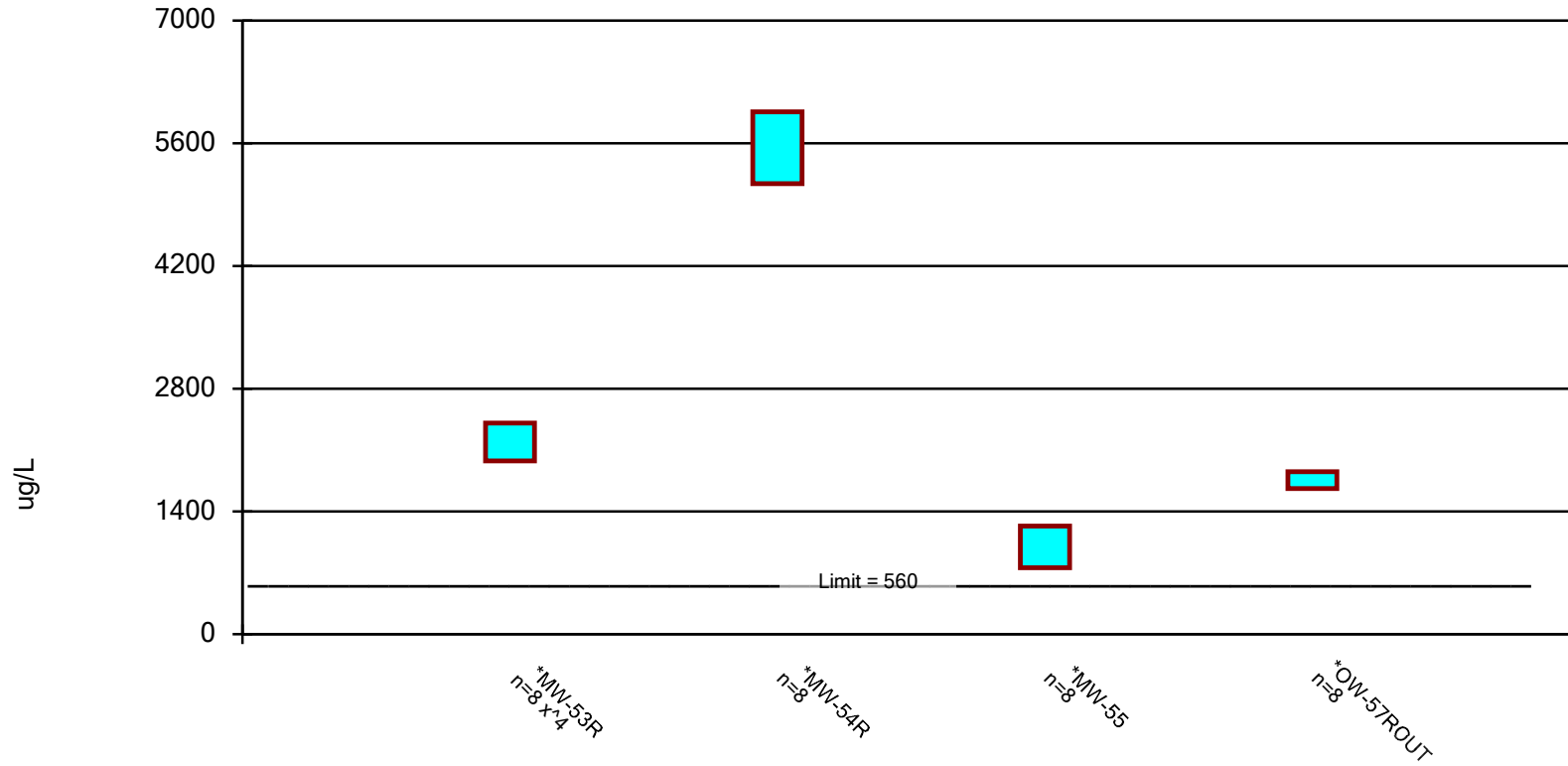
Constituent: Boron, Total (ug/L) Analysis Run 6/14/2024 1:04 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

	JCW-MW-18001	JCW-MW-18005	JCW-MW-18006	MW-50	MW-52	MW-53
8/1/2022	1470 (D)			1290 (D)	1070 (D)	4300 (D)
8/2/2022		981 (D)	2260 (D)			
10/10/2022	1790 (D)			1700 (D)	1330 (D)	4140 (D)
10/11/2022		1290 (D)	2685 (D)			
3/8/2023	1440 (D)			2050 (D)		
3/9/2023		930 (D)	1745 (D)		1040 (D)	2150 (D)
5/8/2023	1380 (D)			1720 (D)	993 (D)	2620 (D)
5/9/2023		992 (D)	2465 (D)			
7/26/2023	1470 (D)			1705 (D)		
7/31/2023		1170 (D)	2120 (D)		1030 (D)	4370 (D)
10/5/2023	1620 (D)					
10/9/2023		1470 (D)	2375 (D)	2065 (D)	1140 (D)	5530 (D)
3/5/2024	1420 (D)			2155 (D)	945 (D)	5740 (D)
3/6/2024		1000 (D)	2675 (D)			
5/7/2024	1330 (D)			2045 (D)	895 (D)	6110 (D)
5/8/2024		960 (D)	2785 (D)			
Mean	1490	1099	2389	1841	1055	4370
Std. Dev.	147.7	193.5	345.6	290.5	133.9	1429
Upper Lim.	1647	1470	2755	2149	1197	5885
Lower Lim.	1333	930	2022	1533	913.5	2855

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 6/14/2024 1:03 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Confidence Interval

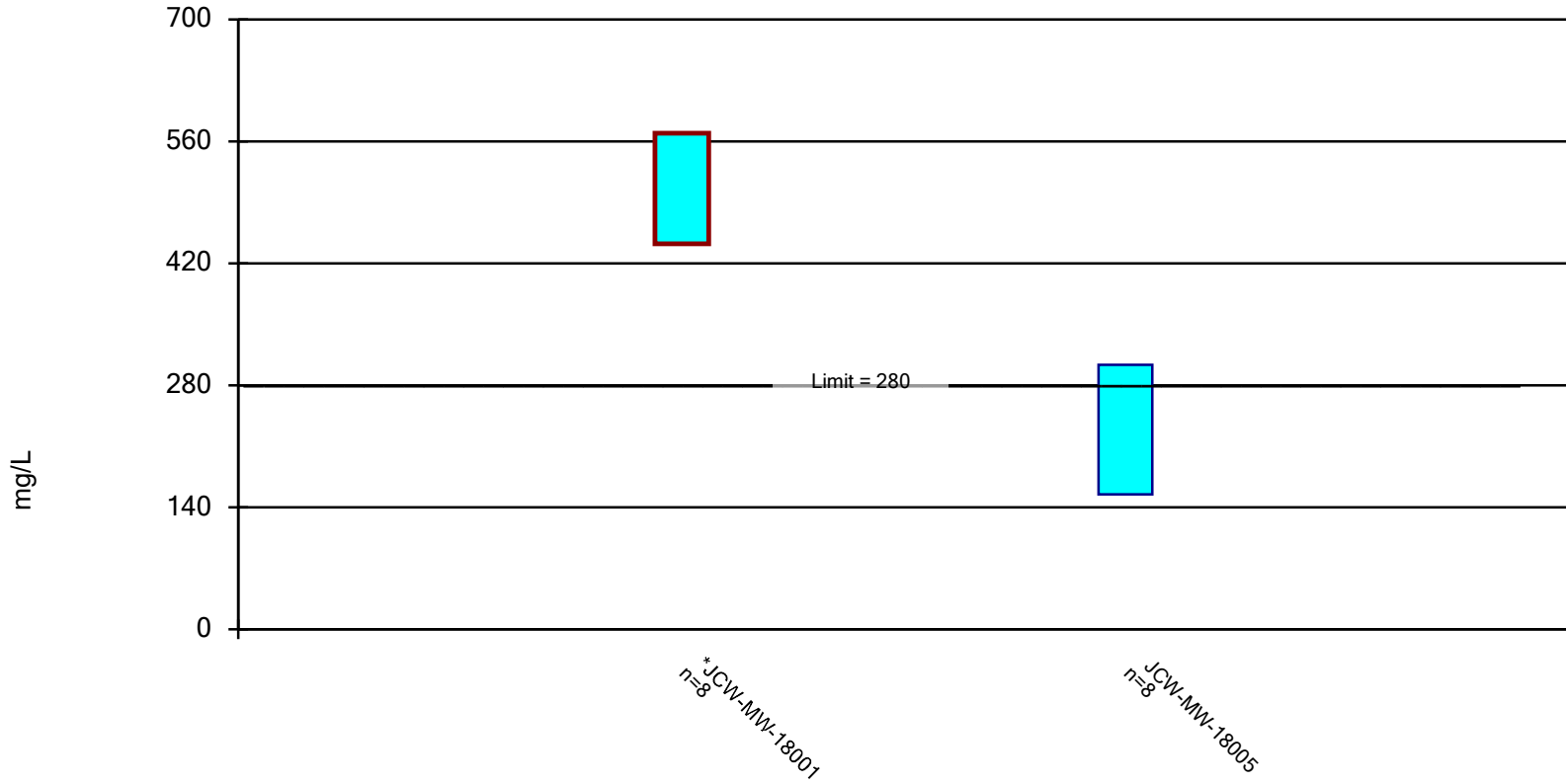
Constituent: Boron, Total (ug/L) Analysis Run 6/14/2024 1:04 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

	MW-53R	MW-54R	MW-55	OW-57ROUT
8/1/2022	1560 (D)	4970 (D)	698 (D)	
8/2/2022				1570 (D)
10/10/2022	2340 (D)	5310 (D)	976 (D)	
10/11/2022				1830 (D)
3/9/2023	2330 (D)	5660 (D)	1110 (D)	1860 (D)
5/8/2023	2140 (D)			
5/9/2023		5240 (D)	1140 (D)	1740 (D)
7/31/2023	2190 (D)	6170 (D)	1290 (D)	1750 (D)
10/9/2023	2420 (D)	5520 (D)	1200 (D)	1790 (D)
3/5/2024	2300 (D)	5940 (D)	825 (D)	
3/6/2024				1810 (D)
5/7/2024	2200 (D)	5580 (D)		
5/8/2024			729 (D)	1700 (D)
Mean	2185	5549	996	1756
Std. Dev.	269	385.5	224.1	91.33
Upper Lim.	2407	5957	1234	1853
Lower Lim.	1975	5140	758.5	1659

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium, Total Analysis Run 6/14/2024 1:02 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Confidence Interval

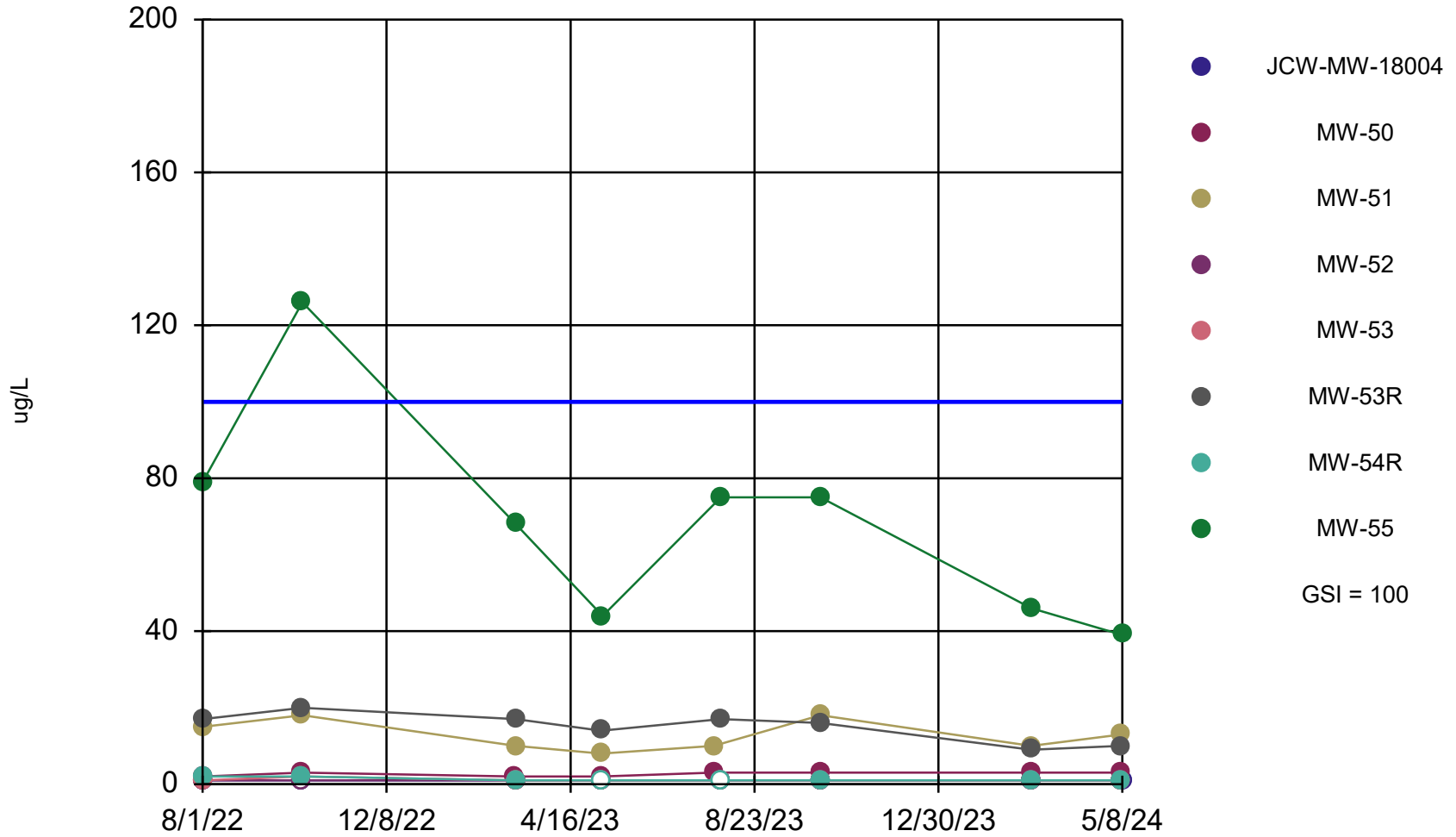
Constituent: Calcium, Total (mg/L) Analysis Run 6/14/2024 1:02 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

	JCW-MW-18001	JCW-MW-18005
8/1/2022	389 (D)	
8/2/2022		165 (D)
10/10/2022	465 (D)	
10/11/2022		150 (D)
3/8/2023	486 (D)	
3/9/2023		262 (D)
5/8/2023	496 (D)	
5/9/2023		258 (D)
7/26/2023	555 (D)	
7/31/2023		202 (D)
10/5/2023	562 (D)	
10/9/2023		159 (D)
3/5/2024	557 (D)	
3/6/2024		335 (D)
5/7/2024	537 (D)	
5/8/2024		302 (D)
Mean	505.9	229.1
Std. Dev.	59.72	70.16
Upper Lim.	569.2	303.5
Lower Lim.	442.6	154.8

Attachment 2
GSI Evaluation Sanitas™ Output Files

Arsenic Comparison to GSI



Time Series Analysis Run 6/19/2024 2:02 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Summary Report

Constituent: Arsenic, Total Analysis Run 6/19/2024 2:04 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

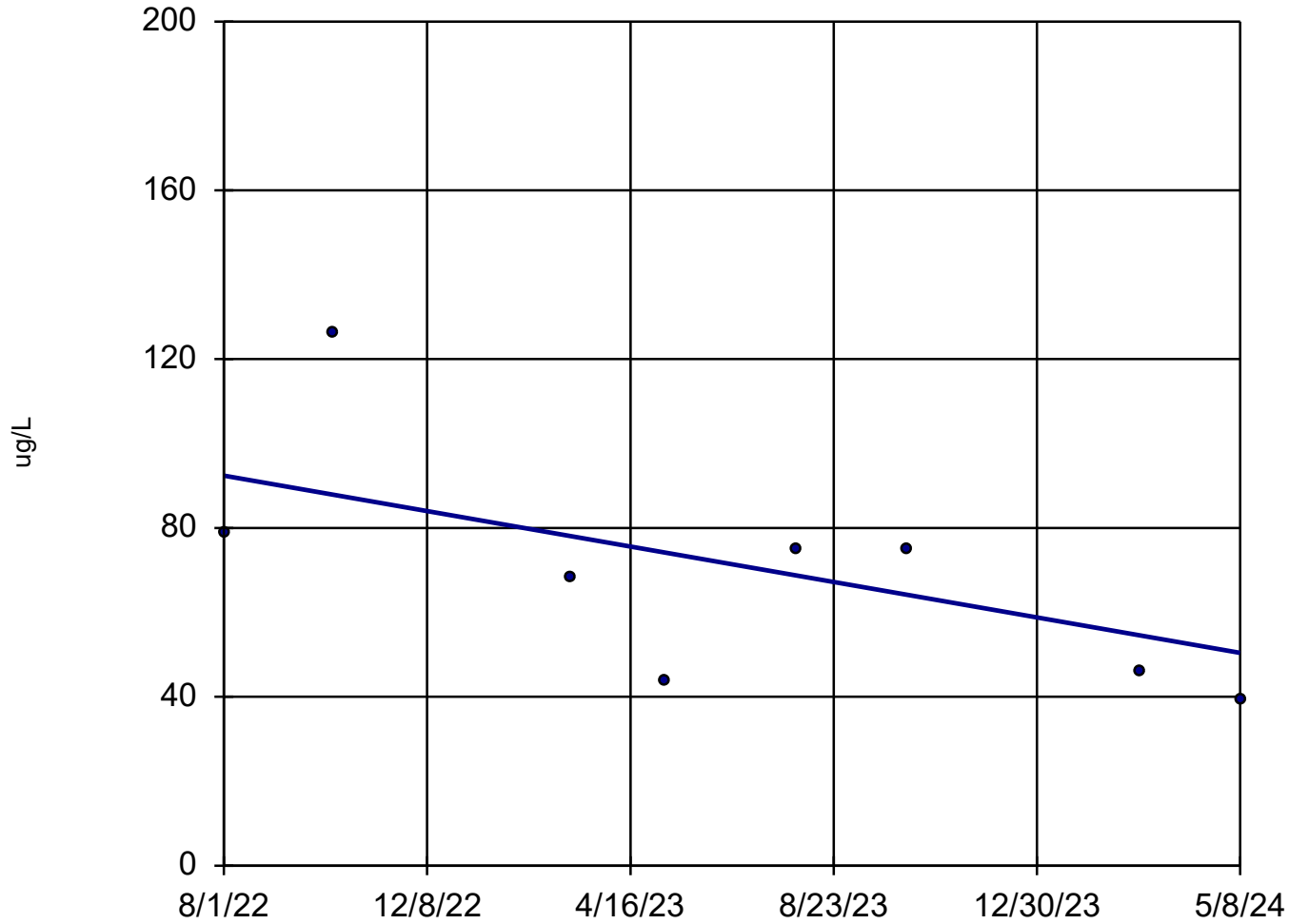
For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

Observations = 64
 NDs = 31%
 Wells = 8
 Minimum Value = 1
 Maximum Value = 126
 Mean Value = 12.97
 Median Value = 2
 Standard Deviation = 23.97
 Coefficient of Variation = 1.848
 Skewness = 2.784

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
MW-50	8	0%	2	3	2.625	3	0.5175	0.1972	-0.5164
MW-51	8	0%	8	18	12.75	11.5	3.882	0.3045	0.3426
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	25%	1	2	1.125	1	0.3536	0.3143	2.268
MW-53R	8	0%	9	20	15	16.5	3.78	0.252	-0.5431
MW-54R	8	25%	1	2	1.25	1	0.4629	0.3703	1.155
MW-55	8	0%	39	126	69	71.5	27.97	0.4054	0.9202

Arsenic, Total

MW-55



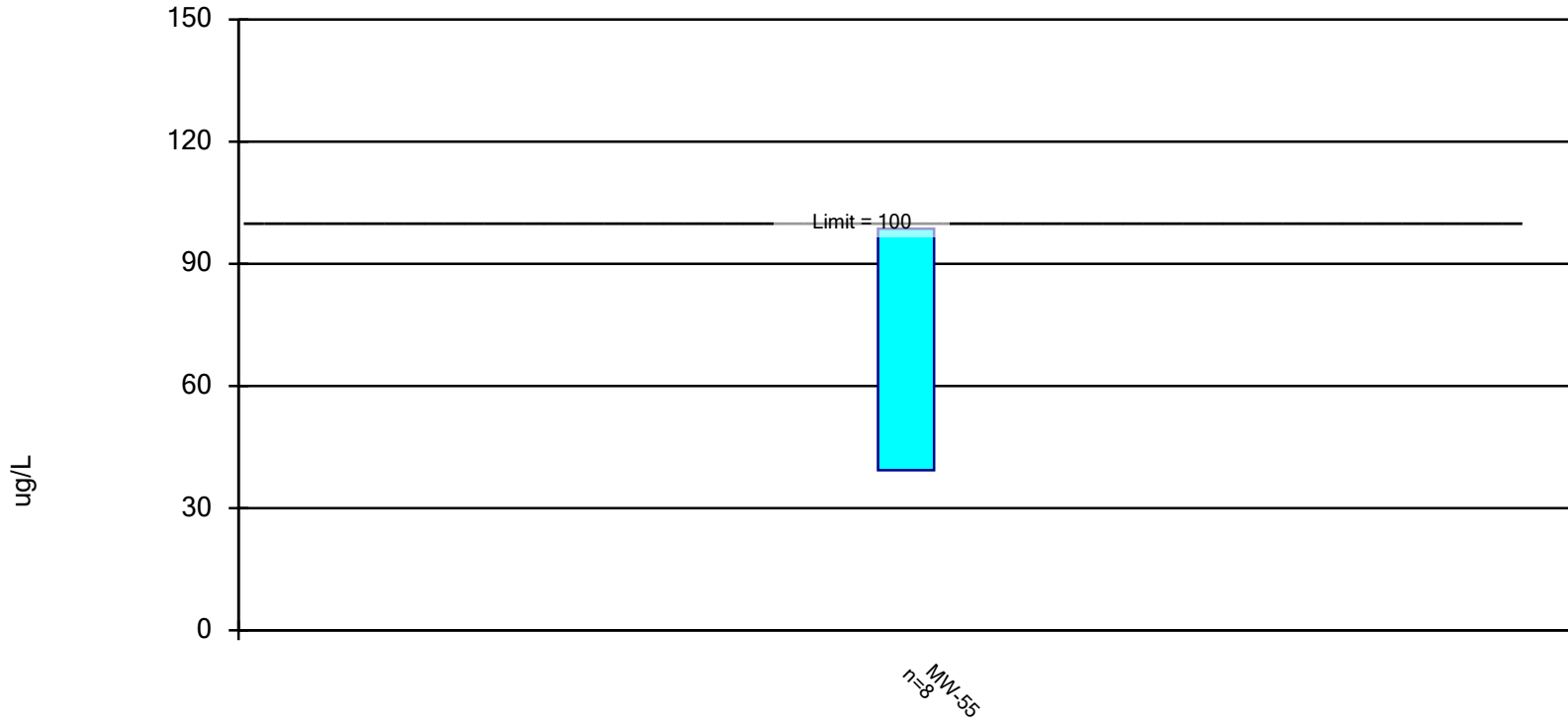
n = 8
Slope = -23.72
units per year.
Mann-Kendall
statistic = -15
critical = -20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 6/19/2024 2:04 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 6/19/2024 2:07 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 6/19/2024 2:07 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q2

	MW-55
8/1/2022	79 (D)
10/10/2022	126 (D)
3/9/2023	68 (D)
5/9/2023	44 (D)
7/31/2023	75 (D)
10/9/2023	75 (D)
3/5/2024	46 (D)
5/8/2024	39 (D)
Mean	69
Std. Dev.	27.97
Upper Lim.	98.65
Lower Lim.	39.35

Appendix E

Laboratory Analytical Report

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q2

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0343

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 05/06/2024 for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/10/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q2-2024 DEK-JCW Background Wells
Date Received: 5/10/2024
Chemistry Project: 24-0343

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0343-01	MW-15002	Groundwater	05/08/2024 14:51	DEK JCW Background
24-0343-02	MW-15008	Groundwater	05/08/2024 13:15	DEK JCW Background
24-0343-03	MW-15016	Groundwater	05/08/2024 14:47	DEK JCW Background
24-0343-04	MW-15019	Groundwater	05/08/2024 14:13	DEK JCW Background
24-0343-05	DUP-Background	Groundwater	05/08/2024 00:00	DEK JCW Background
24-0343-06	FB- Background	Water	05/08/2024 16:05	DEK JCW Background

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15002**
 Lab Sample ID: 24-0343-01
 Matrix: Groundwater

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 02:51 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	43		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	21		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	55900		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	2		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	526		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	6360		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	2		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	243		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	51500		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-01-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0343-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	28300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	7530		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0343-01-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	358		mg/L	10.0	05/10/2024	AB24-0510-10

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15008**
 Lab Sample ID: 24-0343-02
 Matrix: Groundwater

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 01:15 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	3		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	93		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	142		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	121000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	1		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	16900		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	22		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	19300		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	4		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	3180		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	221000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	9		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-02-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0343-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	395000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	2570		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0343-02-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1280		mg/L	10.0	05/10/2024	AB24-0510-10

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15016**
 Lab Sample ID: 24-0343-03
 Matrix: Groundwater

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 02:47 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	17		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	157		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	398		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	243000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	2		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	21900		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	68		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	39200		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	10		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	9050		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	96000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	2		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-03-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0343-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	175000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	194000		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0343-03-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1190		mg/L	10.0	05/10/2024	AB24-0510-10

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15019**
 Lab Sample ID: 24-0343-04
 Matrix: Groundwater

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 02:13 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-04-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	2		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	364		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	241		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	173000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	23100		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	14		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	40900		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	5		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	815		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	221000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	3		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-04-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0343-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	374000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	93800		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0343-04-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1340		mg/L	10.0	05/10/2024	AB24-0510-10

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **DUP-Background**
 Lab Sample ID: 24-0343-05
 Matrix: Groundwater

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-05-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	3		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	92		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	140		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	124000		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	17300		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	22		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	19400		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	4		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	3970		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	223000		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	8		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-05-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0343-05-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	395000		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	2520		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0343-05-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1210		mg/L	10.0	05/10/2024	AB24-0510-10

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **FB- Background**
 Lab Sample ID: 24-0343-06
 Matrix: Water

Laboratory Project: **24-0343**
 Collect Date: 05/08/2024
 Collect Time: 04:05 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0343-06-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Arsenic	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Barium	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Boron	ND		ug/L	20.0	05/14/2024	AB24-0515-01
Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Calcium	ND		ug/L	1000.0	05/14/2024	AB24-0515-01
Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	ND		ug/L	20.0	05/14/2024	AB24-0515-01
Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Magnesium	ND		ug/L	1000.0	05/14/2024	AB24-0515-01
Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Nickel	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Potassium	ND		ug/L	100.0	05/14/2024	AB24-0515-01
Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Sodium	ND		ug/L	1000.0	05/14/2024	AB24-0515-01
Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Vanadium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0343-06-C01-A02

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05



Analytical Report

Report Date: 05/23/24

Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0343

Inspection Date: 5/10/24 Inspection By: CIE

Sample Origin/Project Name: JCW-DEK Background

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx _____ UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) TRC

Tracking Number: _____ Shipping Form Attached: Yes _____ No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.4-2.4°C Samples Received on Ice: Yes No _____

M&TE # and Expiration 015402

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>11</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
2500 250 mL (plastic)	<u>5</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

FSP pit 0-14
13-640-508
lot: 205822
exp: 2-15-25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q2-2024 JCW-DEK Background Wells			PROJECT NUMBER: 24-0343			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____	
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____													
SEND REPORT TO: Joseph Firlit		email:		phone:								REMARKS				
COPY TO: Harold Register		MATRIX CODES:		CONTAINERS												
TRC		GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		PRESERVATIVE						Total Metals	Anions	TDS				
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH				HCl	MeOH	Other	
DATE	TIME															
24-0343-01	5/8/24	1451	GW	MW-15002	3	2	1						x	x	x	
-02	3/8/24	1315	GW	MW-15008	3	2	1						x	x	x	
-03	5/8/24	1447	GW	MW-15016	3	2	1						x	x	x	
-04	5/8/24	1413	GW	MW-15019	3	2	1						x	x	x	
-05	5/8/24	—	GW	DUP-Background	3	2	1						x	x	x	
-06	5/8/24	1605	W	FB- Background	1								x			

RELINQUISHED BY:		DATE/TIME: 5/10/24 0740		RECEIVED BY:		COMMENTS:					
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>0.4-2.4</u> °C Cal. Due Date: <u>5-23-24</u>					



ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz
TRC Environmental Corporation.
1540 Eisenhower Place
Ann Arbor, Michigan 48108-7080

Generated 6/14/2024 11:02:48 AM

JOB DESCRIPTION

Karn/Weadock CCR Background Well

JOB NUMBER

240-204358-1

Eurofins Cleveland

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
6/14/2024 11:02:48 AM

Authorized for release by
Kris Brooks, Project Manager II
Kris.Brooks@et.eurofinsus.com
(330)966-9790



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	14
QC Sample Results	15
QC Association Summary	16
Lab Chronicle	17
Certification Summary	19
Chain of Custody	20
Receipt Checklists	25

Definitions/Glossary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Case Narrative

Client: TRC Environmental Corporation.
Project: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Job ID: 240-204358-1

Eurofins Cleveland

Job Narrative 240-204358-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The samples were received on 5/11/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.7°C, 3.4°C and 3.9°C.

Receipt Exceptions

The number of containers listed on the COC pages do not match what was received for the following: MW-15016 (240-204358-3) and EQ-BACKGROUND (240-204358-6). There is sufficient volume for the requested analyses.

Gas Flow Proportional Counter

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

Rad

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

Eurofins Cleveland

Method Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204358-1	MW-15002	Water	05/08/24 14:51	05/11/24 08:00
240-204358-2	MW-15008	Water	05/08/24 13:15	05/11/24 08:00
240-204358-3	MW-15016	Water	05/08/24 14:57	05/11/24 08:00
240-204358-4	MW-15019	Water	05/08/24 14:13	05/11/24 08:00
240-204358-5	DUP-BACKGROUND	Water	05/08/24 00:00	05/11/24 08:00
240-204358-6	EQ-BACKGROUND	Water	05/08/24 16:05	05/11/24 08:00

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

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: MW-15002

Lab Sample ID: 240-204358-1

Date Collected: 05/08/24 14:51

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0657	U	0.0534	0.0537	1.00	0.0742	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0468	U	0.277	0.277	1.00	0.512	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	82.2		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.113	U	0.282	0.282	5.00	0.512	pCi/L		06/13/24 11:50	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: MW-15008

Lab Sample ID: 240-204358-2

Date Collected: 05/08/24 13:15

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.589		0.166	0.175	1.00	0.123	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.438	U	0.514	0.516	1.00	0.847	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	81.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.03		0.540	0.545	5.00	0.847	pCi/L		06/13/24 11:50	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: MW-15016

Lab Sample ID: 240-204358-3

Date Collected: 05/08/24 14:57

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.143	U	0.104	0.105	1.00	0.149	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.229	U	0.413	0.414	1.00	0.715	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.3		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	81.5		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.372	U	0.426	0.427	5.00	0.715	pCi/L		06/13/24 11:50	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: MW-15019

Lab Sample ID: 240-204358-4

Date Collected: 05/08/24 14:13

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.332		0.116	0.120	1.00	0.0982	pCi/L	05/16/24 09:22	06/12/24 10:00	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					05/16/24 09:22	06/12/24 10:00	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.490	U	0.409	0.412	1.00	0.638	pCi/L	05/16/24 09:27	05/22/24 16:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					05/16/24 09:27	05/22/24 16:22	1
Y Carrier	87.1		30 - 110					05/16/24 09:27	05/22/24 16:22	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.822		0.425	0.429	5.00	0.638	pCi/L		06/13/24 11:50	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-204358-5

Date Collected: 05/08/24 00:00

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.443		0.146	0.151	1.00	0.151	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:22	06/12/24 10:06	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.29		0.568	0.580	1.00	0.751	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	83.4		30 - 110					05/16/24 09:27	05/22/24 16:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.73		0.586	0.599	5.00	0.751	pCi/L		06/13/24 11:50	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: EQ-BACKGROUND

Lab Sample ID: 240-204358-6

Date Collected: 05/08/24 16:05

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0109	U	0.0568	0.0568	1.00	0.111	pCi/L	05/16/24 09:22	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.6		30 - 110					05/16/24 09:22	06/12/24 10:06	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0753	U	0.394	0.394	1.00	0.712	pCi/L	05/16/24 09:27	05/22/24 16:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	75.6		30 - 110					05/16/24 09:27	05/22/24 16:39	1
Y Carrier	83.0		30 - 110					05/16/24 09:27	05/22/24 16:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.0862	U	0.398	0.398	5.00	0.712	pCi/L		06/13/24 11:50	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (30-110)
240-204358-1	MW-15002	85.1
240-204358-2	MW-15008	73.6
240-204358-3	MW-15016	83.3
240-204358-4	MW-15019	92.8
240-204358-5	DUP-BACKGROUND	85.1
240-204358-6	EQ-BACKGROUND	75.6
LCS 160-662015/2-A	Lab Control Sample	89.6
MB 160-662015/1-A	Method Blank	94.3

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
240-204358-1	MW-15002	85.1	82.2
240-204358-2	MW-15008	73.6	81.1
240-204358-3	MW-15016	83.3	81.5
240-204358-4	MW-15019	92.8	87.1
240-204358-5	DUP-BACKGROUND	85.1	83.4
240-204358-6	EQ-BACKGROUND	75.6	83.0
LCS 160-662016/2-A	Lab Control Sample	89.6	81.5
MB 160-662016/1-A	Method Blank	94.3	81.9

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

QC Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-662015/1-A
Matrix: Water
Analysis Batch: 665824

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 662015

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.03763	U	0.0464	0.0466	1.00	0.0761	pCi/L	05/16/24 09:22	06/12/24 09:56	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	94.3		30 - 110		05/16/24 09:22	06/12/24 09:56	1			

Lab Sample ID: LCS 160-662015/2-A
Matrix: Water
Analysis Batch: 665824

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 662015

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	11.29		1.15	1.00	0.0974	pCi/L	100	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	89.6		30 - 110						

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662016/1-A
Matrix: Water
Analysis Batch: 662959

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 662016

Analyte	MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	-0.02553	U	0.303	0.303	1.00	0.568	pCi/L	05/16/24 09:27	05/22/24 16:21	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	94.3		30 - 110		05/16/24 09:27	05/22/24 16:21	1			
Y Carrier	81.9		30 - 110		05/16/24 09:27	05/22/24 16:21	1			

Lab Sample ID: LCS 160-662016/2-A
Matrix: Water
Analysis Batch: 662959

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 662016

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.92	10.45		1.39	1.00	0.473	pCi/L	117	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	89.6		30 - 110						
Y Carrier	81.5		30 - 110						

QC Association Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Rad

Prep Batch: 662015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204358-1	MW-15002	Total/NA	Water	PrecSep STD	
240-204358-2	MW-15008	Total/NA	Water	PrecSep STD	
240-204358-3	MW-15016	Total/NA	Water	PrecSep STD	
240-204358-4	MW-15019	Total/NA	Water	PrecSep STD	
240-204358-5	DUP-BACKGROUND	Total/NA	Water	PrecSep STD	
240-204358-6	EQ-BACKGROUND	Total/NA	Water	PrecSep STD	
MB 160-662015/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-662015/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 662016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204358-1	MW-15002	Total/NA	Water	PrecSep_0	
240-204358-2	MW-15008	Total/NA	Water	PrecSep_0	
240-204358-3	MW-15016	Total/NA	Water	PrecSep_0	
240-204358-4	MW-15019	Total/NA	Water	PrecSep_0	
240-204358-5	DUP-BACKGROUND	Total/NA	Water	PrecSep_0	
240-204358-6	EQ-BACKGROUND	Total/NA	Water	PrecSep_0	
MB 160-662016/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-662016/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: MW-15002

Lab Sample ID: 240-204358-1

Date Collected: 05/08/24 14:51

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: MW-15008

Lab Sample ID: 240-204358-2

Date Collected: 05/08/24 13:15

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: MW-15016

Lab Sample ID: 240-204358-3

Date Collected: 05/08/24 14:57

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: MW-15019

Lab Sample ID: 240-204358-4

Date Collected: 05/08/24 14:13

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665824	SWS	EET SL	06/12/24 10:00
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662959	SCB	EET SL	05/22/24 16:22
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-204358-5

Date Collected: 05/08/24 00:00

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:39
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Client Sample ID: EQ-BACKGROUND

Lab Sample ID: 240-204358-6

Date Collected: 05/08/24 16:05

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662015	MLT	EET SL	05/16/24 09:22
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662016	MLT	EET SL	05/16/24 09:27
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:39
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:50

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Well

Job ID: 240-204358-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-24
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-24
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	10-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

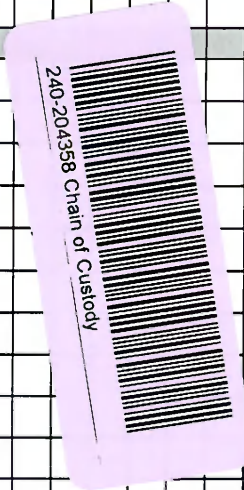
Eurofins Cleveland

180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record



Client Information		Sampler: SAUER JASSE		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-120140-33282.1			
Client Contact: Jacob Krenz		Phone: 734 904 3310		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 1 of 1			
Company: TRC Environmental Corporation.		PWSID:		Analysis Requested						Job #:	
Address: 1540 Eisenhower Place		Due Date Requested:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 903.0 - Ra226Ra228_GFPFC 904.0 - Standard Target List Total Number of containers						Preservation Codes: D - HNO3	
City: Ann Arbor		TAT Requested (days):								Other:	
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #:									
Email: JKrenz@trccompanies.com		WO #:									
Project Name: Karn/Weadock CCR Background Well		Project #:		Special Instructions/Note:							
Site:		SSOW#:									
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT= tissue, A=Air)	Preservation Code:					
MW-15002	5/8/24	1451	C	Water	N	T	J				
MW-15008	5/8/24	1315	C	Water	N	T	T				
MW-15016	5/8/24	1457	C	Water	N	T	T				
MW-15019	5/8/24	1413	C	Water	N	T	T				
DUP-Background	5/8/24	-	C	Water	N	T	J				
EQ-Background	5/8/24	1405	C	Water	N	T	J				
				Water							
Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)							
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological				<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)				Special Instructions/QC Requirements:							
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:					
Relinquished by:		Date/Time: 5/10/24 0815		Company: FE		Received by:		Date/Time: 5/10/24			
Relinquished by:		Date/Time: 5/10/24 0815		Company: EETA		Received by: JESSE MOROSKO		Date/Time: 05/11/24 0802			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:			
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: _____							
<input type="checkbox"/> Yes <input type="checkbox"/> No											



Eurofins - Cleveland Sample Receipt Form/Narrative
 Eurofins Facility
 Client TPC Site Name _____
 Login # : _____

Cooler Received on 05/11/24 Opened on 05/11/24 Cooler unpacked by JESSE MOROSKO
 FedEx 1st Grd Exp UPS FAS W/point Client Drop Off Eurofins Courier Other _____

Receipt After-hours Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # FC Foam Box Client Cooler Box Other _____
 Packing material used Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT Wet Ice Blue Ice Dry Ice Water None

1 Cooler temperature upon receipt _____ °C
 IR GUN # 18 (CF 110 °C) Observed Cooler Temp. _____ °C
 See Multiple Cooler Form

2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes No NA

3 Shippers' packing slip attached to the cooler(s)? Yes No
 4 Did custody papers accompany the sample(s)? Yes No
 5 Were the custody papers relinquished & signed in the appropriate place? Yes No
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
 7 Did all bottles arrive in good condition (Unbroken)? Yes No
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
 9 For each sample, does the COC specify preservative (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

10 Were correct bottle(s) used for the test(s) indicated? Yes No
 11 Sufficient quantity received to perform indicated analyses? Yes No
 12. Are these work share samples and all listed on the COC? Yes No

13 Were all preserved sample(s) at the correct pH upon receipt? Yes No
 14. Were VOAs on the COC? Yes No
 15 Were air bubbles >6 mm in any VOA vials? Larger than this Yes No NA
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No NA
 17 Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19 SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20 SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory
 Time preserved _____ Preservative(s) added/Lot number(s) _____

VOA Sample Preservation Date/Time VOAs Frozen. _____

Login # _____

Eurofins - Cleveland Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: 18	1.7	1.7	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 18	3.4	3.4	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: 18	3.9	3.9	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

See Temperature Excursion Form



5/11/2024

Login Container Summary Report

240-204358

6/14/2024

Temperature readings

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Container Temp</u>	<u>Preservation Added</u>	<u>Preservation Lot Number</u>
MW-15002	240-204358 A-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15002	240-204358-B-1	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15008	240-204358-A-2	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15008	240-204358-B-2	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15016	240-204358 A-3	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15016	240-204358-B-3	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15019	240-204358-A-4	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
MW-15019	240-204358-B-4	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
DUP-BACKGROUND	240-204358-A-5	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
DUP-BACKGROUND	240-204358-B-5	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
EQ-BACKGROUND	240-204358-A-6	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____
EQ-BACKGROUND	240-204358-B-6	Plastic 1 liter - Nitric Acid	<2	_____	_____	_____

Chain of Custody Record



Client Information (Sub Contract Lab)		Sampler:	Lab PM	Carrier Tracking No(s):	COC No:							
Client Contact		Phone:	Brooks, Kris M	State of Origin:	240-184582.1							
Company		E-Mail: Kris.Brooks@et.eurofinsus.com		Michigan	Page 1 of 1							
TestAmerica Laboratories, Inc.		Accreditations Required (See note):		Job #	240-204358-1							
Address		Due Date Requested:	Preservation Codes:									
13715 Rider Trail North,		6/12/2024										
City:		TAT Requested (days):	Analysis Requested									
Earth City												
State, Zip:												
MO, 63045												
Phone:		PO #										
314-298-8566(Tel) 314-298-8757(Fax)												
Email:		WO #										
Project Name		Project #										
Karm/Weadock CCR Background Well		24024154										
Site:		SSOW#										
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Oil, Sludge, Tissue, Ash)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	90.0/PreSep STD Standard Target List	90.4/PreSep STD Standard Target List	Ra26Ra228 GFC	Total Number of Containers	Special Instructions/Note:
MW-15002 (240-204358-1)	5/8/24	14:51 Eastern	Water	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-15008 (240-204358-2)	5/8/24	13:15 Eastern	Water	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-15016 (240-204358-3)	5/8/24	14:57 Eastern	Water	Water		X	X	X	X		1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-15019 (240-204358-4)	5/8/24	14:13 Eastern	Water	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
DUP-BACKGROUND (240-204358-5)	5/8/24	16:05 Eastern	Water	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
EQ-BACKGROUND (240-204358-6)	5/8/24		Water	Water		X	X	X	X		1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
<p>Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.</p>												
<p>Possible Hazard Identification Unconfirmed <input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For <input type="checkbox"/> Months Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2 Empty Kit Relinquished by: _____ Date: _____ Time: _____ Method of Shipment: _____ Relinquished by: MÁLISSÁ LOAR Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Relinquished by: _____ Date/Time: _____ Company: _____ Custody Seals Intact: _____ Custody Seal No.: _____ Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks:</p>												

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358

List Number: 2

Creator: Thornley, Richard W

List Source: Eurofins St. Louis

List Creation: 05/14/24 05:18 PM

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



Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358

List Number: 3

Creator: Thornley, Richard W

List Source: Eurofins St. Louis

List Creation: 05/15/24 08:08 AM

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



To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 29, 2024

Subject: HMP GROUNDWATER MONITORING – JCW POREWATER – 2024 Q2

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0344R

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 05/06/2024 for the 2nd Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/10/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q2-2024 Weadock Porewater Wells
Date Received: 5/10/2024
Chemistry Project: 24-0344

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0344-01	JCW-MW-18001	Groundwater	05/07/2024 06:20	JCW Solid Waste Disposal Area, Porewater
24-0344-02	JCW-MW-18004	Groundwater	05/08/2024 08:08	JCW Solid Waste Disposal Area, Porewater
24-0344-03	JCW-MW-18005	Groundwater	05/08/2024 09:02	JCW Solid Waste Disposal Area, Porewater
24-0344-04	JCW-MW-18006	Groundwater	05/08/2024 10:55	JCW Solid Waste Disposal Area, Porewater
24-0344-05	MW-50	Groundwater	05/07/2024 08:07	JCW Solid Waste Disposal Area, Porewater
24-0344-06	MW-51	Groundwater	05/07/2024 09:20	JCW Solid Waste Disposal Area, Porewater
24-0344-07	MW-52	Groundwater	05/07/2024 10:21	JCW Solid Waste Disposal Area, Porewater
24-0344-08	MW-53	Groundwater	05/07/2024 11:30	JCW Solid Waste Disposal Area, Porewater
24-0344-09	MW-53R	Groundwater	05/07/2024 12:27	JCW Solid Waste Disposal Area, Porewater
24-0344-10	MW-54R	Groundwater	05/07/2024 13:25	JCW Solid Waste Disposal Area, Porewater
24-0344-11	MW-55	Groundwater	05/08/2024 07:12	JCW Solid Waste Disposal Area, Porewater
24-0344-12	OW-57ROUT	Groundwater	05/08/2024 09:47	JCW Solid Waste Disposal Area, Porewater
24-0344-13	MW-58	Groundwater	05/08/2024 11:51	JCW Solid Waste Disposal Area, Porewater
24-0344-14	DUP-JCW-LF-01	Groundwater	05/07/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0344-15	DUP-JCW-LF-02	Groundwater	05/08/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0344-16	JCW-MW-18001 MS	Groundwater	05/07/2024 06:20	JCW Solid Waste Disposal Area, Porewater
24-0344-17	JCW-MW-18001 MSD	Groundwater	05/07/2024 06:20	JCW Solid Waste Disposal Area, Porewater
24-0344-18	FB-01	Water	05/08/2024 12:15	JCW Solid Waste Disposal Area, Porewater
24-0344-19	EB-01	Water	05/07/2024 12:20	JCW Solid Waste Disposal Area, Porewater

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001**
 Lab Sample ID: 24-0344-01
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 06:20 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-01-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	2		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	46		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	1330		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	537000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	4		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	2630		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	102		ug/L	10.0	05/16/2024	AB24-0516-03
Magnesium	133000		ug/L	1000.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	4		ug/L	2.0	05/16/2024	AB24-0516-03
Potassium	16100		ug/L	100.0	05/16/2024	AB24-0516-03
Selenium	2		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	238000		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	2		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-01-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	44500		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	1790000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-01-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	3370		mg/L	10.0	05/10/2024	AB24-0510-09



Analytical Report

Report Date: 05/29/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
Field Sample ID: **JCW-MW-18001**
Lab Sample ID: 24-0344-01
Matrix: Groundwater

Laboratory Project: **24-0344**
Collect Date: 05/07/2024
Collect Time: 06:20 AM

Alkalinity by SM 2320B

Aliquot #: 24-0344-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	723000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	723000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18004**
 Lab Sample ID: 24-0344-02
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 08:08 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-02-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	26		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	206		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	213000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	73		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	43		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	4		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	22400		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-02-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-02-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	14300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	484000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-02-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1130		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18005**
 Lab Sample ID: 24-0344-03
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 09:02 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-03-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	4		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	127		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	960		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	302000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	6550		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	41		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	14300		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-03-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	22100		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	475000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-03-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1390		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18006**
 Lab Sample ID: 24-0344-04
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 10:55 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-04-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	29		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	390		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	2740		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	148000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	10400		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	59		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	6		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	84000		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	3		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-04-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	49200		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	122000		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-04-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	864		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-50**
 Lab Sample ID: 24-0344-05
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 08:07 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-05-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	3		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	176		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	2070		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	184000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	834		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	61		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	5		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	1		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	56500		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-05-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-05-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	37100		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	425000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-05-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1250		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-51**
 Lab Sample ID: 24-0344-06
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 09:20 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-06-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	13		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	117		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	798		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	128000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	760		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	28		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	3		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	99700		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	2		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-06-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-06-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	79900		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	262000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-06-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	958		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-52**
 Lab Sample ID: 24-0344-07
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 10:21 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-07-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	91		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	895		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	236000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	3680		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	29		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	1		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	51200		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-07-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-07-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	33300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	550000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-07-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1430		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53**
 Lab Sample ID: 24-0344-08
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 11:30 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-08-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	1		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	582		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	6110		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	134000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	665		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	50		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	2		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	63300		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-08-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-08-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	89300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	1530		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-08-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	942		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53R**
 Lab Sample ID: 24-0344-09
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 12:27 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-09-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	10		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	164		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	2200		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	166000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	761		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	1		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	53		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	1		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	53700		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-09-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-09-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	32500		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	47600		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-09-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	880		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-54R**
 Lab Sample ID: 24-0344-10
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 01:25 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-10-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	1		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	83		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	5580		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	161000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	3		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	87		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	73		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	18		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	2		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	29900		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-10-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-10-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	56900		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	51300		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-10-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	792		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-55**
 Lab Sample ID: 24-0344-11
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 07:12 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-11-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	39		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	235		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	729		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	161000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	14700		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	26		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	25		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	6		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	4		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	82300		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-11-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-11-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	17300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	236000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-11-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	934		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **OW-57ROUT**
 Lab Sample ID: 24-0344-12
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 09:47 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-12-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	1		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	75		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	1700		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	119000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	94		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	26		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	6		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	15		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	1		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	59900		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-12-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-12-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	72300		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	1090		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	77600		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-12-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	790		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-58**
 Lab Sample ID: 24-0344-13
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 11:51 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-13-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	156		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	114		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	115000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	16800		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	23		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	5		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	355000		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	9		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-13-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-13-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	638000		ug/L	1000.0	05/20/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	10900		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-13-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1540		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-01**
 Lab Sample ID: 24-0344-14
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-14-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	3		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	180		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	2020		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	191000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	817		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	62		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	5		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	2		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	57700		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-14-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-14-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	38100		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	421000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-14-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1160		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-02**
 Lab Sample ID: 24-0344-15
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-15-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	29		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	387		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	2830		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	150000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	1		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	10800		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	61		ug/L	10.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	6		ug/L	2.0	05/16/2024	AB24-0516-03
Selenium	1		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	85400		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	3		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-15-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-15-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	52000		ug/L	1000.0	05/15/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Sulfate	129000		ug/L	1000.0	05/15/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0344-15-C03-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	878		mg/L	10.0	05/10/2024	AB24-0510-09

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MS**
 Lab Sample ID: 24-0344-16
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 06:20 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-16-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	106		%	1.0	05/16/2024	AB24-0516-03
Arsenic	107		%	1.0	05/16/2024	AB24-0516-03
Barium	103		%	5.0	05/16/2024	AB24-0516-03
Beryllium	91		%	1.0	05/16/2024	AB24-0516-03
Boron	110		%	20.0	05/16/2024	AB24-0516-03
Cadmium	103		%	0.2	05/16/2024	AB24-0516-03
Calcium	115		%	1000.0	05/16/2024	AB24-0516-03
Chromium	104		%	1.0	05/16/2024	AB24-0516-03
Cobalt	100		%	6.0	05/16/2024	AB24-0516-03
Copper	92		%	1.0	05/16/2024	AB24-0516-03
Iron	116		%	20.0	05/16/2024	AB24-0516-03
Lead	97		%	1.0	05/16/2024	AB24-0516-03
Lithium	91		%	10.0	05/16/2024	AB24-0516-03
Magnesium	108		%	1000.0	05/16/2024	AB24-0516-03
Molybdenum	113		%	5.0	05/16/2024	AB24-0516-03
Nickel	98		%	2.0	05/16/2024	AB24-0516-03
Potassium	106		%	100.0	05/16/2024	AB24-0516-03
Selenium	109		%	1.0	05/16/2024	AB24-0516-03
Silver	98.0		%	0.2	05/16/2024	AB24-0516-03
Sodium	114		%	1000.0	05/16/2024	AB24-0516-03
Thallium	97		%	2.0	05/16/2024	AB24-0516-03
Vanadium	109		%	2.0	05/16/2024	AB24-0516-03
Zinc	97		%	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-16-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	97.0		%	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-16-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	105		%	1000.0	05/16/2024	AB24-0514-08
Fluoride	95		%	1000.0	05/16/2024	AB24-0514-08
Sulfate	112		%	1000.0	05/16/2024	AB24-0514-08

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MSD**
 Lab Sample ID: 24-0344-17
 Matrix: Groundwater

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 06:20 AM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-17-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	105		%	1.0	05/16/2024	AB24-0516-03
Arsenic	107		%	1.0	05/16/2024	AB24-0516-03
Barium	102		%	5.0	05/16/2024	AB24-0516-03
Beryllium	90		%	1.0	05/16/2024	AB24-0516-03
Boron	111		%	20.0	05/16/2024	AB24-0516-03
Cadmium	102		%	0.2	05/16/2024	AB24-0516-03
Calcium	110		%	1000.0	05/16/2024	AB24-0516-03
Chromium	106		%	1.0	05/16/2024	AB24-0516-03
Cobalt	102		%	6.0	05/16/2024	AB24-0516-03
Copper	93		%	1.0	05/16/2024	AB24-0516-03
Iron	111		%	20.0	05/16/2024	AB24-0516-03
Lead	96		%	1.0	05/16/2024	AB24-0516-03
Lithium	90		%	10.0	05/16/2024	AB24-0516-03
Magnesium	106		%	1000.0	05/16/2024	AB24-0516-03
Molybdenum	113		%	5.0	05/16/2024	AB24-0516-03
Nickel	99		%	2.0	05/16/2024	AB24-0516-03
Potassium	104		%	100.0	05/16/2024	AB24-0516-03
Selenium	108		%	1.0	05/16/2024	AB24-0516-03
Silver	96.2		%	0.2	05/16/2024	AB24-0516-03
Sodium	113		%	1000.0	05/16/2024	AB24-0516-03
Thallium	97		%	2.0	05/16/2024	AB24-0516-03
Vanadium	110		%	2.0	05/16/2024	AB24-0516-03
Zinc	97		%	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-17-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	96.0		%	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-17-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	102		%	1000.0	05/16/2024	AB24-0514-08
Fluoride	95		%	1000.0	05/16/2024	AB24-0514-08
Sulfate	114		%	1000.0	05/16/2024	AB24-0514-08

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **FB-01**
 Lab Sample ID: 24-0344-18
 Matrix: Water

Laboratory Project: **24-0344**
 Collect Date: 05/08/2024
 Collect Time: 12:15 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-18-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	ND		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	ND		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	ND		ug/L	10.0	05/16/2024	AB24-0516-03
Magnesium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Potassium	ND		ug/L	100.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-18-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-18-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/16/2024	AB24-0514-08
Sulfate	ND		ug/L	1000.0	05/16/2024	AB24-0514-08

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **EB-01**
 Lab Sample ID: 24-0344-19
 Matrix: Water

Laboratory Project: **24-0344**
 Collect Date: 05/07/2024
 Collect Time: 12:20 PM

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0344-19-C01-A01

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	ND		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	3		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	ND		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	ND		ug/L	10.0	05/16/2024	AB24-0516-03
Magnesium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Molybdenum	ND		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Potassium	ND		ug/L	100.0	05/16/2024	AB24-0516-03
Selenium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	ND		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0344-19-C01-A03

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0344-19-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/16/2024	AB24-0514-08
Sulfate	ND		ug/L	1000.0	05/16/2024	AB24-0514-08



Count on Us®

Laboratory Services

A CENTURY OF EXCELLENCE

Analytical Report

Report Date: 05/29/24

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0344

Inspection Date: 05/10/24 Inspection By: CLE

Sample Origin/Project Name: JCW porewater

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx _____ UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) TRC

Tracking Number: _____ Shipping Form Attached: Yes _____ No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 2.1-4.2°C Samples Received on Ice: Yes No _____

M&TE # and Expiration 015402
5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

FSP
PH 0-14
13.640-508
Lot: 205522
EXP: 2.16.25

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>38</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
<u>250</u> 500 mL (plastic)	<u>15</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 2

SAMPLING SITE / CUSTOMER: Q2-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0344			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			SEND REPORT TO: Joseph Firlit email: _____ phone: _____												
COPY TO: Harold Register		MATRIX CODES:		CONTAINERS														
TRC		GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste																
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #	PRESERVATIVE						Total Metals	Anions	TDS	Alkalinity	REMARKS
	DATE	TIME						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH						Other
24-0344-01	5/7/24	0620	GW	JCW-MW-18001			5	4	1					x	x	x	x	
-02	5/8/24	0608	GW	JCW-MW-18004			3	2	1					x	x	x		
-03	5/8/24	0902	GW	JCW-MW-18005			3	2	1					x	x	x		
-04	5/8/24	0515	GW	JCW-MW-18006			3	2	1					x	x	x		
-05	5/7/24	0807	GW	MW-50			3	2	1					x	x	x		
-06	5/7/24	0920	GW	MW-51			3	2	1					x	x	x		
-07	5/7/24	1021	GW	MW-52			3	2	1					x	x	x		
-08	5/7/24	1130	GW	MW-53			3	2	1					x	x	x		
-09	5/7/24	1227	GW	MW-53R			3	2	1					x	x	x		
-10	5/7/24	1321	GW	MW-54R			3	2	1					x	x	x		
-11	5/8/24	0712	GW	MW-55			3	2	1					x	x	x		
-12	5/8/24	0947	GW	OW-57ROUT			3	2	1					x	x	x		
RELINQUISHED BY:			DATE/TIME: 5/10/24 0700			RECEIVED BY:			COMMENTS:									
RELINQUISHED BY:			DATE/TIME:			RECEIVED BY:			Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>015402</u> Temperature: <u>21-4.2</u> °C Cal. Due Date: <u>5-23-24</u>									

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q2-2024 JC Weadock Porewater Wells		PROJECT NUMBER: 24-0344		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____													
SAMPLING TEAM:		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____				MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS PRESERVATIVE		Total Metals Anions TDS Alkalinity													
SEND REPORT TO: Caleb Batts		email:		phone:																			
COPY TO: Harold Register		TRC		FIELD SAMPLE ID / LOCATION										TOTAL #		None		HNO ₃		H ₂ SO ₄		NaOH		HCl		MeOH		Other
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX																			
		DATE		TIME																			
24-0344-13		5/8/24		1151		GW		MW-58		3		2		1									
-14		5/7/24		—		GW		DUP-JCW-LF-01		3		2		1									
-15		5/8/24		—		GW		DUP-JCW-LF-02		3		2		1									
-16		5/7/24		0622		GW		JCW-MW-18001 MS		2		1		1									
-17		5/7/24		0622		GW		JCW-MW-18001 MSD		2		1		1									
-18		5/8/24		1215		W		FB-01		2		1		1									
-19		5/8/24		1220		W		EB-01		2		1		1									

RELINQUISHED BY:		DATE/TIME: 5/10/24 0700		RECEIVED BY:		COMMENTS:					
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		M&TE #: 015402			
						Temperature: 2.1-4.2°C		Cal. Due Date: 5-25-24			

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: May 23, 2024

Subject: HMP GROUNDWATER MONITORING – JCWEADOCK ASD – 2024 Q2

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0345

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 05/06/2024 for the 2nd Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The sample was received for analysis by the Chemistry department of Laboratory Services on 05/10/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q2-2024 Weadock ASD
Date Received: 5/10/2024
Chemistry Project: 24-0345

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0345-01	JCW-OW-18001	Groundwater	05/07/2024 07:20	JC Weadock ASD

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18001**
 Lab Sample ID: 24-0345-01
 Matrix: Groundwater

Laboratory Project: **24-0345**
 Collect Date: 05/07/2024
 Collect Time: 07:20 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0345-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0345-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	166		ug/L	1.0	05/16/2024	AB24-0516-03
Barium	79		ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Boron	1550		ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	230000		ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND		ug/L	6.0	05/16/2024	AB24-0516-03
Copper	2		ug/L	1.0	05/16/2024	AB24-0516-03
Iron	11800		ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND		ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	59		ug/L	10.0	05/16/2024	AB24-0516-03
Magnesium	50700		ug/L	1000.0	05/16/2024	AB24-0516-03
Molybdenum	6		ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	4		ug/L	2.0	05/16/2024	AB24-0516-03
Potassium	10900		ug/L	100.0	05/16/2024	AB24-0516-03
Selenium	2		ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND		ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	63500		ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND		ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND		ug/L	10.0	05/16/2024	AB24-0516-03

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0345-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	60200		ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND		ug/L	1000.0	05/16/2024	AB24-0514-08
Sulfate	524000		ug/L	1000.0	05/16/2024	AB24-0514-08

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0345-01-C03-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1370		mg/L	10.0	05/10/2024	AB24-0510-10



Analytical Report

Report Date: 05/23/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18001**
Lab Sample ID: 24-0345-01
Matrix: Groundwater

Laboratory Project: **24-0345**
Collect Date: 05/07/2024
Collect Time: 07:20 AM

Alkalinity by SM 2320B

Aliquot #: 24-0345-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	384000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Bicarbonate	384000		ug/L	10000.0	05/15/2024	AB24-0515-04
Alkalinity Carbonate	ND		ug/L	10000.0	05/15/2024	AB24-0515-04



Analytical Report

Report Date: 05/23/24

Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24-0345

Inspection Date: 5/10/24 Inspection By: CIE

Sample Origin/Project Name: JCW ASD

Shipment Delivered By: Enter the type of shipment carrier.

Pony _____ FedEx _____ UPS _____ USPS _____ Airborne _____

Other/Hand Carry (whom) TRC

Tracking Number: _____ Shipping Form Attached: Yes _____ No _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 2.3°C Samples Received on Ice: Yes No _____

M&TE # and Expiration 015402

5.23.24

Number and Type of Containers: Enter the total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g/p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>2</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
^{25p} 500 mL (plastic)	<u>1</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

FSP 0-14
#13-640-508
lot: 205522
exp: 2-15-25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock ASD			PROJECT NUMBER: 24-0345		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____														
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____										REMARKS												
SEND REPORT TO: Joseph Firlit		email:		phone:																					
COPY TO: Harold Register		TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS PRESERVATIVE																			
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION				TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS	Alkalinity						
	DATE	TIME																							
24-0345-01	5/7/24	0730	GW	JCW-OW-18001				5	4	1															

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	COMMENTS:
	5/10/24 0702		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: 015402
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	Temperature: 2.3 °C Cal. Due Date: 5-23-24



ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz
TRC Environmental Corporation.
1540 Eisenhower Place
Ann Arbor, Michigan 48108-7080

Generated 6/14/2024 11:08:52 AM

JOB DESCRIPTION

Karn/Weadock CCR JCW Landfill

JOB NUMBER

240-204359-1

Eurofins Cleveland

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
6/14/2024 11:08:52 AM

Authorized for release by
Kris Brooks, Project Manager II
Kris.Brooks@et.eurofinsus.com
(330)966-9790



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	23
QC Sample Results	24
QC Association Summary	26
Lab Chronicle	27
Certification Summary	31
Chain of Custody	32
Receipt Checklists	39

Definitions/Glossary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Case Narrative

Client: TRC Environmental Corporation.
Project: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Job ID: 240-204359-1

Eurofins Cleveland

Job Narrative 240-204359-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The samples were received on 5/11/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.7°C, 3.4°C and 3.9°C.

Receipt Exceptions

The number of containers listed on the COC pages do not match what was received for the following: JCW-MW-18001 (240-204359-1), JCW-MW-18006 (240-204359-4), MW-50 (240-204359-5), MW-51 (240-204359-6), MW-52 (240-204359-7), DUP-02 (240-204359-15) and MW-58 (240-204359-16). There is sufficient volume for the requested analyses.

Gas Flow Proportional Counter

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

Rad

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

Eurofins Cleveland

Method Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204359-1	JCW-MW-18001	Water	05/07/24 06:00	05/11/24 08:00
240-204359-2	JCW-MW-18004	Water	05/08/24 06:08	05/11/24 08:00
240-204359-3	JCW-MW-18005	Water	05/08/24 09:02	05/11/24 08:00
240-204359-5	MW-50	Water	05/07/24 08:07	05/11/24 08:00
240-204359-6	MW-51	Water	05/07/24 09:20	05/11/24 08:00
240-204359-7	MW-52	Water	05/07/24 10:21	05/11/24 08:00
240-204359-8	MW-53	Water	05/07/24 11:20	05/11/24 08:00
240-204359-9	MW-53R	Water	05/07/24 12:27	05/11/24 08:00
240-204359-10	MW-54R	Water	05/07/24 12:25	05/11/24 08:00
240-204359-11	MW-55	Water	05/08/24 07:12	05/11/24 08:00
240-204359-12	OW-57ROUT	Water	05/08/24 09:47	05/11/24 08:00
240-204359-13	DUP-01	Water	05/07/24 00:00	05/11/24 08:00
240-204359-14	EB-1	Water	05/08/24 12:20	05/11/24 08:00
240-204359-15	DUP-02	Water	05/08/24 00:00	05/11/24 08:00
240-204359-16	MW-58	Water	05/08/24 11:51	05/11/24 08:00



Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: JCW-MW-18001

Lab Sample ID: 240-204359-1

Date Collected: 05/07/24 06:00

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.124		0.0697	0.0706	1.00	0.0883	pCi/L	05/16/24 09:14	06/12/24 07:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		30 - 110					05/16/24 09:14	06/12/24 07:48	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.400	U	0.326	0.328	1.00	0.506	pCi/L	05/16/24 09:20	05/22/24 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		30 - 110					05/16/24 09:20	05/22/24 16:45	1
Y Carrier	81.9		30 - 110					05/16/24 09:20	05/22/24 16:45	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.525		0.333	0.336	5.00	0.506	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: JCW-MW-18004

Lab Sample ID: 240-204359-2

Date Collected: 05/08/24 06:08

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0313	U	0.0576	0.0576	1.00	0.102	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.402	U	0.415	0.417	1.00	0.672	pCi/L	05/16/24 09:20	05/22/24 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	85.1		30 - 110					05/16/24 09:20	05/22/24 16:45	1
Y Carrier	78.1		30 - 110					05/16/24 09:20	05/22/24 16:45	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.434	U	0.419	0.421	5.00	0.672	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: JCW-MW-18005

Lab Sample ID: 240-204359-3

Date Collected: 05/08/24 09:02

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.165		0.0869	0.0881	1.00	0.106	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.4		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.07		0.487	0.497	1.00	0.643	pCi/L	05/16/24 09:20	05/22/24 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	76.4		30 - 110					05/16/24 09:20	05/22/24 16:45	1
Y Carrier	77.4		30 - 110					05/16/24 09:20	05/22/24 16:45	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.23		0.495	0.505	5.00	0.643	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-50

Lab Sample ID: 240-204359-5

Date Collected: 05/07/24 08:07

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.270		0.0980	0.101	1.00	0.102	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.20		0.429	0.443	1.00	0.512	pCi/L	05/16/24 09:20	05/22/24 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		30 - 110					05/16/24 09:20	05/22/24 16:45	1
Y Carrier	81.5		30 - 110					05/16/24 09:20	05/22/24 16:45	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.47		0.440	0.454	5.00	0.512	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-51
Date Collected: 05/07/24 09:20
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-6
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.181		0.0812	0.0828	1.00	0.0916	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.681		0.366	0.371	1.00	0.509	pCi/L	05/16/24 09:20	05/22/24 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.8		30 - 110					05/16/24 09:20	05/22/24 16:46	1
Y Carrier	81.5		30 - 110					05/16/24 09:20	05/22/24 16:46	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.863		0.375	0.380	5.00	0.509	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-52

Lab Sample ID: 240-204359-7

Date Collected: 05/07/24 10:21

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.162		0.0853	0.0866	1.00	0.110	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.03		0.462	0.471	1.00	0.631	pCi/L	05/16/24 09:20	05/22/24 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					05/16/24 09:20	05/22/24 16:46	1
Y Carrier	82.6		30 - 110					05/16/24 09:20	05/22/24 16:46	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.19		0.470	0.479	5.00	0.631	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-53
Date Collected: 05/07/24 11:20
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-8
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.561		0.131	0.140	1.00	0.0930	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.25		0.447	0.461	1.00	0.543	pCi/L	05/16/24 09:20	05/22/24 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					05/16/24 09:20	05/22/24 16:46	1
Y Carrier	83.7		30 - 110					05/16/24 09:20	05/22/24 16:46	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.81		0.466	0.482	5.00	0.543	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-53R

Lab Sample ID: 240-204359-9

Date Collected: 05/07/24 12:27

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.155		0.0763	0.0775	1.00	0.0852	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.518	U	0.375	0.378	1.00	0.567	pCi/L	05/16/24 09:20	05/22/24 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.8		30 - 110					05/16/24 09:20	05/22/24 16:46	1
Y Carrier	81.1		30 - 110					05/16/24 09:20	05/22/24 16:46	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.674		0.383	0.386	5.00	0.567	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-54R

Lab Sample ID: 240-204359-10

Date Collected: 05/07/24 12:25

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.180		0.0842	0.0858	1.00	0.0916	pCi/L	05/16/24 09:14	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.9		30 - 110					05/16/24 09:14	06/12/24 10:06	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.184	U	0.476	0.476	1.00	0.829	pCi/L	05/16/24 09:20	05/22/24 16:46	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	77.9		30 - 110					05/16/24 09:20	05/22/24 16:46	1
Y Carrier	81.1		30 - 110					05/16/24 09:20	05/22/24 16:46	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.364	U	0.483	0.484	5.00	0.829	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-55
Date Collected: 05/08/24 07:12
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-11
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.137		0.0722	0.0733	1.00	0.0875	pCi/L	05/16/24 09:14	06/12/24 10:06	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					05/16/24 09:14	06/12/24 10:06	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.971		0.419	0.428	1.00	0.550	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.3		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	80.0		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.11		0.425	0.434	5.00	0.550	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: OW-57ROUT

Lab Sample ID: 240-204359-12

Date Collected: 05/08/24 09:47

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.115		0.0784	0.0791	1.00	0.109	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.731		0.434	0.439	1.00	0.636	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	77.8		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.845		0.441	0.446	5.00	0.636	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: DUP-01
Date Collected: 05/07/24 00:00
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-13
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.349		0.102	0.107	1.00	0.0800	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.8		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.03		0.410	0.421	1.00	0.527	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.8		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	84.9		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.38		0.422	0.434	5.00	0.527	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: EB-1

Lab Sample ID: 240-204359-14

Date Collected: 05/08/24 12:20

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0331	U	0.0591	0.0592	1.00	0.129	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0161	U	0.289	0.289	1.00	0.539	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.6		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	83.0		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0170	U	0.295	0.295	5.00	0.539	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: DUP-02
Date Collected: 05/08/24 00:00
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-15
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.280		0.106	0.109	1.00	0.118	pCi/L	05/16/24 09:14	06/12/24 10:05	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.0		30 - 110					05/16/24 09:14	06/12/24 10:05	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0881	U	0.294	0.295	1.00	0.528	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.0		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	83.4		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.368	U	0.313	0.314	5.00	0.528	pCi/L		06/13/24 11:27	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-58
Date Collected: 05/08/24 11:51
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-16
Matrix: Water

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.591		0.137	0.147	1.00	0.109	pCi/L	05/16/24 09:14	06/12/24 09:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		30 - 110					05/16/24 09:14	06/12/24 09:57	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.777		0.452	0.458	1.00	0.658	pCi/L	05/16/24 09:20	05/22/24 16:43	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	81.8		30 - 110					05/16/24 09:20	05/22/24 16:43	1
Y Carrier	80.4		30 - 110					05/16/24 09:20	05/22/24 16:43	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.37		0.472	0.481	5.00	0.658	pCi/L		06/13/24 11:27	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (30-110)	
240-204359-1	JCW-MW-18001	96.8	
240-204359-2	JCW-MW-18004	85.1	
240-204359-3	JCW-MW-18005	76.4	
240-204359-5	MW-50	93.3	
240-204359-6	MW-51	95.8	
240-204359-7	MW-52	90.3	
240-204359-8	MW-53	88.1	
240-204359-9	MW-53R	86.8	
240-204359-10	MW-54R	77.9	
240-204359-10 DU	MW-54R	91.3	
240-204359-11	MW-55	90.3	
240-204359-12	OW-57ROUT	88.1	
240-204359-13	DUP-01	91.8	
240-204359-14	EB-1	88.6	
240-204359-15	DUP-02	93.0	
240-204359-16	MW-58	81.8	
LCS 160-662013/2-A	Lab Control Sample	93.8	
MB 160-662013/1-A	Method Blank	90.0	

Tracer/Carrier Legend
 Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Ba (30-110)	Y (30-110)
240-204359-1	JCW-MW-18001	96.8	81.9
240-204359-2	JCW-MW-18004	85.1	78.1
240-204359-3	JCW-MW-18005	76.4	77.4
240-204359-5	MW-50	93.3	81.5
240-204359-6	MW-51	95.8	81.5
240-204359-7	MW-52	90.3	82.6
240-204359-8	MW-53	88.1	83.7
240-204359-9	MW-53R	86.8	81.1
240-204359-10	MW-54R	77.9	81.1
240-204359-10 DU	MW-54R	91.3	83.0
240-204359-11	MW-55	90.3	80.0
240-204359-12	OW-57ROUT	88.1	77.8
240-204359-13	DUP-01	91.8	84.9
240-204359-14	EB-1	88.6	83.0
240-204359-15	DUP-02	93.0	83.4
240-204359-16	MW-58	81.8	80.4
LCS 160-662014/2-A	Lab Control Sample	93.8	80.7
MB 160-662014/1-A	Method Blank	90.0	80.7

Tracer/Carrier Legend
 Ba = Ba Carrier
 Y = Y Carrier

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-662013/1-A
Matrix: Water
Analysis Batch: 665830

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 662013

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.04940	U	0.0715	0.0717	1.00	0.122	pCi/L	05/16/24 09:14	06/12/24 07:58	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	90.0		30 - 110			05/16/24 09:14	06/12/24 07:58	1		

Lab Sample ID: LCS 160-662013/2-A
Matrix: Water
Analysis Batch: 665832

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 662013

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	10.77		1.10	1.00	0.0949	pCi/L	95	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits			Prepared	Analyzed	Dil Fac	
Ba Carrier	93.8		30 - 110						

Lab Sample ID: 240-204359-10 DU
Matrix: Water
Analysis Batch: 665830

Client Sample ID: MW-54R
Prep Type: Total/NA
Prep Batch: 662013

Analyte	Sample Sample		DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.180		0.1486		0.0848	1.00	0.108	pCi/L	0.19	1
Carrier	DU %Yield	DU Qualifier	Limits			Prepared	Analyzed	Dil Fac		
Ba Carrier	91.3		30 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662014/1-A
Matrix: Water
Analysis Batch: 662961

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 662014

Analyte	MB MB		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.4879	U	0.348	0.351	1.00	0.522	pCi/L	05/16/24 09:20	05/22/24 16:45	1
Carrier	MB MB		Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	90.0		30 - 110			05/16/24 09:20	05/22/24 16:45	1		
Y Carrier	80.7		30 - 110			05/16/24 09:20	05/22/24 16:45	1		

Eurofins Cleveland

QC Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-662014/2-A
Matrix: Water
Analysis Batch: 662961

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 662014

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits	
Radium-228	8.92	10.33		1.37	1.00	0.468	pCi/L	116	75 - 125	
LCS LCS										
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	93.8		30 - 110							
Y Carrier	80.7		30 - 110							

Lab Sample ID: 240-204359-10 DU
Matrix: Water
Analysis Batch: 662960

Client Sample ID: MW-54R
Prep Type: Total/NA
Prep Batch: 662014

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
										1
Radium-228	0.184	U	0.3497	U	0.348	1.00	0.558	pCi/L	0.20	1
DU DU										
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	91.3		30 - 110							
Y Carrier	83.0		30 - 110							

QC Association Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Rad

Prep Batch: 662013

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204359-1	JCW-MW-18001	Total/NA	Water	PrecSep STD	
240-204359-2	JCW-MW-18004	Total/NA	Water	PrecSep STD	
240-204359-3	JCW-MW-18005	Total/NA	Water	PrecSep STD	
240-204359-5	MW-50	Total/NA	Water	PrecSep STD	
240-204359-6	MW-51	Total/NA	Water	PrecSep STD	
240-204359-7	MW-52	Total/NA	Water	PrecSep STD	
240-204359-8	MW-53	Total/NA	Water	PrecSep STD	
240-204359-9	MW-53R	Total/NA	Water	PrecSep STD	
240-204359-10	MW-54R	Total/NA	Water	PrecSep STD	
240-204359-11	MW-55	Total/NA	Water	PrecSep STD	
240-204359-12	OW-57ROUT	Total/NA	Water	PrecSep STD	
240-204359-13	DUP-01	Total/NA	Water	PrecSep STD	
240-204359-14	EB-1	Total/NA	Water	PrecSep STD	
240-204359-15	DUP-02	Total/NA	Water	PrecSep STD	
240-204359-16	MW-58	Total/NA	Water	PrecSep STD	
MB 160-662013/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-662013/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-204359-10 DU	MW-54R	Total/NA	Water	PrecSep STD	

Prep Batch: 662014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204359-1	JCW-MW-18001	Total/NA	Water	PrecSep_0	
240-204359-2	JCW-MW-18004	Total/NA	Water	PrecSep_0	
240-204359-3	JCW-MW-18005	Total/NA	Water	PrecSep_0	
240-204359-5	MW-50	Total/NA	Water	PrecSep_0	
240-204359-6	MW-51	Total/NA	Water	PrecSep_0	
240-204359-7	MW-52	Total/NA	Water	PrecSep_0	
240-204359-8	MW-53	Total/NA	Water	PrecSep_0	
240-204359-9	MW-53R	Total/NA	Water	PrecSep_0	
240-204359-10	MW-54R	Total/NA	Water	PrecSep_0	
240-204359-11	MW-55	Total/NA	Water	PrecSep_0	
240-204359-12	OW-57ROUT	Total/NA	Water	PrecSep_0	
240-204359-13	DUP-01	Total/NA	Water	PrecSep_0	
240-204359-14	EB-1	Total/NA	Water	PrecSep_0	
240-204359-15	DUP-02	Total/NA	Water	PrecSep_0	
240-204359-16	MW-58	Total/NA	Water	PrecSep_0	
MB 160-662014/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-662014/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-204359-10 DU	MW-54R	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: JCW-MW-18001

Lab Sample ID: 240-204359-1

Date Collected: 05/07/24 06:00

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 07:48
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:45
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: JCW-MW-18004

Lab Sample ID: 240-204359-2

Date Collected: 05/08/24 06:08

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:45
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: JCW-MW-18005

Lab Sample ID: 240-204359-3

Date Collected: 05/08/24 09:02

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:45
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-50

Lab Sample ID: 240-204359-5

Date Collected: 05/07/24 08:07

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:45
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-51

Date Collected: 05/07/24 09:20

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:46
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-52

Date Collected: 05/07/24 10:21

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:46
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-53

Date Collected: 05/07/24 11:20

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:46
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-53R

Date Collected: 05/07/24 12:27

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:46
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: MW-54R
Date Collected: 05/07/24 12:25
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-10
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662961	SCB	EET SL	05/22/24 16:46
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-55
Date Collected: 05/08/24 07:12
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-11
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:06
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: OW-57ROUT
Date Collected: 05/08/24 09:47
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-12
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: DUP-01
Date Collected: 05/07/24 00:00
Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-13
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Client Sample ID: EB-1

Lab Sample ID: 240-204359-14

Date Collected: 05/08/24 12:20

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: DUP-02

Lab Sample ID: 240-204359-15

Date Collected: 05/08/24 00:00

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665830	SWS	EET SL	06/12/24 10:05
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Client Sample ID: MW-58

Lab Sample ID: 240-204359-16

Date Collected: 05/08/24 11:51

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			662013	MLT	EET SL	05/16/24 09:14
Total/NA	Analysis	903.0		1	665832	SWS	EET SL	06/12/24 09:57
Total/NA	Prep	PrecSep_0			662014	MLT	EET SL	05/16/24 09:20
Total/NA	Analysis	904.0		1	662960	SCB	EET SL	05/22/24 16:43
Total/NA	Analysis	Ra226_Ra228		1	666196	FLC	EET SL	06/13/24 11:27

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-24
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-24
HI - RadChem Recognition	State	n/a	06-30-24
Illinois	NELAP	200023	11-30-24
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Massachusetts	State	M-MO054	06-30-24
MI - RadChem Recognition	State	9005	06-30-24
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-24
North Dakota	State	R-207	06-30-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-24
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	10-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Cleveland

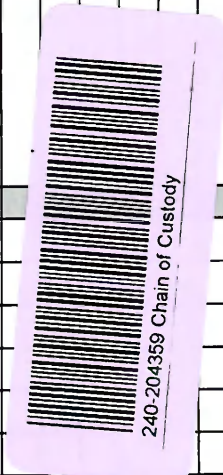
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

**MICHIGAN
190**

eurofins | Environment Testing

Client Information		Sample: <u>JACOB KRENZ</u>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-120141-29048.1	
Client Contact: Jacob Krenz		Phone: <u>334 904 3310</u>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 1 of 2	
Company: TRC Environmental Corporation.				PWSID:		Analysis Requested			
Address: 1540 Eisenhower Place		Due Date Requested:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 904.0, Ra226Ra228_GFPIC 903.0 - Standard Target List		Total Number of containers		Preservation Codes: D - HNO3	
City: Ann Arbor		TAT Requested (days):						Other:	
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No							
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #: TBD							
Email: JKrenz@trccompanies.com		WO #: 5533828.0000							
Project Name: Kam/Weadock CCR JCW Lanfill		Project #: 24024154							
Site:		SSOW#:							
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	904.0, Ra226Ra228_GFPIC	903.0 - Standard Target List
				Preservation Code:		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	D	D
JCW-MW-18001		5/7/24	0600	G	Water	N	Y	T	F
JCW-MW-18004		5/8/24	0608	G	Water	N	Y	T	F
JCW-MW-18005		5/8/24	0902	G	Water	N	Y	T	F
JCW-MW-18006		5/8/24	1055	G	Water				
MW-50		5/7/24	0807	G	Water	N	Y	T	F
MW-51		5/7/24	0920	G	Water	N	Y	T	F
MW-52		5/7/24	1021	G	Water	N	Y	T	F
MW-53		5/7/24	1130	G	Water	N	Y	T	F
MW-53R		5/7/24	1227	G	Water	N	Y	T	F
MW-54R		5/7/24	1325	G	Water	N	Y	T	F
MW-55		5/8/24	0717	G	Water	N	Y	T	F
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological					<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)					Special Instructions/QC Requirements:				
Empty Kit Relinquished by:			Date:		Time:		Method of Shipment:		
Relinquished by: <u>[Signature]</u>		Date/Time: <u>5/10/24 0905</u>		Company: <u>EA</u>		Received by: <u>[Signature]</u>		Date/Time: <u>5/10/24</u>	
Relinquished by: <u>[Signature]</u>		Date/Time: <u>5/10/24 0815</u>		Company: <u>EA</u>		Received by: <u>JESSE MOROSKO</u>		Date/Time: <u>05/11/24 0800</u>	
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:	
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Page 32 of 39		Cooler Temperature(s) °C and Other Remarks:		6/14/2024	



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

Eurofins Cleveland

180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record



Environment Testing

Client Information		Sampler: <u>Sauter JASJC</u>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-120141-29048.2					
Client Contact: Jacob Krenz		Phone: <u>734 904 3310</u>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 2 of 2					
Company: TRC Environmental Corporation.		FWSID:		Analysis Requested						Job #:			
Address: 1540 Eisenhower Place		Due Date Requested:		Field Filtered Sample (Yes or No) | Perform MS/MSD (Yes or No) | 904.0, Re226Ra228, GFPC | 903.0 - Standard Target List | Total Number of containers						Preservation Codes: D - HNO3			
City: Ann Arbor		TAT Requested (days):								Other:			
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No											
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #:											
Email: JKrenz@trccompanies.com		WO #:											
Project Name: Karn/Weadock CCR JCW Lanfill		Project #:											
Site:		SSOW#:											
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AnAir)		Preservation Code:		Special Instructions/Note:	
OW-57ROUT		5/8/24		0947		G		Water		MS/MSD			
DUP-01		5/10/24		—		G		Water		MS/MSD			
EB-1		5/8/24		1220		G		Water		MS/MSD			
DUP-02		5/8/24		—		G		Water		MS/MSD			
MW-38		5/8/24		1151		G		Water		MS/MSD			
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)									
Deliverable Requested: I, II, III, IV, Other (specify)				<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months									
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:							
Relinquished by: <u>[Signature]</u>		Date/Time: <u>5/10/24 0811</u>		Company: <u>[Signature]</u>		Received by: <u>[Signature]</u>		Date/Time: <u>5/10/24</u>		Company: <u>EENTA</u>			
Relinquished by: <u>[Signature]</u>		Date/Time: <u>5/10/24 0915</u>		Company: <u>EENTA</u>		Received by: <u>JESSE MOROSKO</u>		Date/Time: <u>05/11/24 0800</u>		Company: <u>[Signature]</u>			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:									



Eurofins - Cleveland Sample Receipt Form/Narrative
 Baberton Facility
 Login # _____

Client TRC Site Name _____
 Cooler Received on 05/11/24 Opened on 05/11/24
 FedEx: 1st Grd Exp UPS FAS W/Point Client Drop Off Eurofins Courier Other _____

Receipt After-hours Drop-off Date/Time _____ Storage Location _____
 Eurofins Cooler # FC Foam Box Client Cooler Box Other _____
 Packing material used. Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT* Wet Ice Blue Ice Dry Ice Water None _____

1 Cooler temperature upon receipt _____ °C
 IR GUN # 16 (CF 110 °C) Observed Cooler Temp. _____ °C
 See Multiple Cooler Form

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1
 Were the seals on the outside of the cooler(s) signed & dated? Yes Yes No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LIHg/MeHg)? Yes Yes No NA
 -Were tamper/custody seals intact and uncompromised? Yes Yes No NA
 3 Shippers' packing slip attached to the cooler(s)? Yes Yes No NA
 4. Did custody papers accompany the sample(s)? Yes Yes No NA
 5 Were the custody papers relinquished & signed in the appropriate place? Yes Yes No NA
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes Yes No NA
 7 Did all bottles arrive in good condition (Unbroken)? Yes Yes No NA
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes Yes No NA
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes Yes No NA
 10 Were correct bottle(s) used for the test(s) indicated? Yes Yes No NA
 11 Sufficient quantity received to perform indicated analyses? Yes Yes No NA
 12 Are these work share samples and all listed on the COC? Yes Yes No NA
 13 Were all preserved sample(s) at the correct pH upon receipt? Yes Yes No NA pH Strip Lot# HC439975
 14. Were VOAs on the COC? Yes Yes No NA
 15 Were air bubbles >6 mm in any VOA vials? Yes Yes No NA Larger than this.
 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes Yes No NA
 17 Was a LL, Hg or Me Hg trip blank present? Yes Yes No NA

Tests that are not checked for pH by Receiving VOAs Oil and Grease TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18 CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19 SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20 SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory
 Time preserved _____ Preservative(s) added/Lot number(s) _____
 VOA Sample Preservation Date/Time VOAs Frozen _____

Login # . _____

Eurofins - Cleveland Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: <u>18</u>	<u>137</u>		Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: <u>18</u>	<u>3.4</u>		Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: <u>18</u>	<u>3.9</u>	<u>3.4</u>	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wet Ice Blue Ice Dry Ice Water None

See Temperature Excursion Form



Temperature readings

Client Sample ID	Lab ID	Container Type	Container pH	Preservation Temp	Preservation Added	Preservation Lot Number
JCW-MW 18001	240-204359-A-1	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18001	240 204359-B 1	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18004	240-204359-A-2	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18004	240-204359-B-2	Plastic 1 liter - Nitric Acid	<2			
JCW-MW 18005	240-204359-A-3	Plastic 1 liter - Nitric Acid	<2			
JCW MW-18005	240-204359-B-3	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18006	240-204359-A-4	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18006	240-204359-B-4	Plastic 1 liter - Nitric Acid	<2			
MW-50	240-204359-A-5	Plastic 1 liter - Nitric Acid	<2			
MW-50	240-204359-B-5	Plastic 1 liter - Nitric Acid	<2			
MW-51	240-204359-A-6	Plastic 1 liter - Nitric Acid	<2			
MW 51	240-204359-B-6	Plastic 1 liter - Nitric Acid	<2			
MW-52	240-204359-A-7	Plastic 1 liter - Nitric Acid	<2			
MW-52	240-204359 B-7	Plastic 1 liter - Nitric Acid	<2			
MW-53	240 204359-A-8	Plastic 1 liter - Nitric Acid	<2			
MW-53	240-204359-B-8	Plastic 1 liter - Nitric Acid	<2			
MW-53R	240-204359-A-9	Plastic 1 liter - Nitric Acid	<2			
MW-53R	240-204359-B-9	Plastic 1 liter - Nitric Acid	<2			
MW-54R	240-204359-A-10	Plastic 1 liter - Nitric Acid	<2			
MW-54R	240-204359-B-10	Plastic 1 liter - Nitric Acid	<2			
MW-55	240-204359-A-11	Plastic 1 liter - Nitric Acid	<2			
MW-55	240-204359-B-11	Plastic 1 liter - Nitric Acid	<2			
OW-57ROUT	240-204359 A-12	Plastic 1 liter - Nitric Acid	<2			
OW-57ROUT	240-204359-B-12	Plastic 1 liter - Nitric Acid	<2			
DUP-0	240-204359-A 13	Plastic 1 liter - Nitric Acid	<2			
DUP-0	240-204359-B-13	Plastic 1 liter - Nitric Acid	<2			
EB-1	240-204359-A-14	Plastic 1 liter - Nitric Acid	<2			
EB-1	240-204359-B-14	Plastic 1 liter - Nitric Acid	<2			
DUP-02	240-204359-A-15	Plastic 1 liter - Nitric Acid	<2			
DUP-02	240-204359-B 15	Plastic 1 liter - Nitric Acid	<2			
MW-58	240-204359-A-16	Plastic 1 liter - Nitric Acid	<2			
MW-58	240-204359-B-16	Plastic 1 liter Nitric Acid	<2			

Chain of Custody Record



Environment Testing



Client Information (Sub Contract Lab)		Lab PM Brooks, Kris M	Carrier Tracking No(s)	COC No. 240-184582.1
Client Contact Shipping/Receiving		E-Mail Kris.Brooks@et.eurofins.com	State of Origin Michigan	Page Page 1 of 2
Company Tes/America Laboratories, Inc.		Accreditations Required (See note):		
Address 13715 Rider Trail North,		Preservation Codes:		
City Earth City		Analysis Requested		
State, Zip MO, 63045		Total Number of Containers		
Phone 314-298-6566(Tel) 314-298-8757(Fax)		Other:		
Email		Special Instructions/Note:		
Project Name Karn/Weadock CCR JCW Landfill		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
Site		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
Due Date Requested: 6/12/2024		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
TAT Requested (days):		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
PO #		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
WO #		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
Project # 24024154		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
SSOW#		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
Sample Identification - Client ID (Lab ID)		TVA protocol - Ra-226+228 action limit at 5.0 pCi/L		
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, On-water, Air)	Preservation Code
5/7/24	06:00 Eastern	Water	Water	903/PreSep_STD Standard Target List
5/8/24	06:08 Eastern	Water	Water	904/PreSep_0 Standard Target List
5/8/24	09:02 Eastern	Water	Water	
5/7/24	08:07 Eastern	Water	Water	
5/7/24	11:20 Eastern	Water	Water	
5/7/24	12:27 Eastern	Water	Water	
5/7/24	12:25 Eastern	Water	Water	
5/8/24	07:12 Eastern	Water	Water	
5/8/24	09:47 Eastern	Water	Water	
Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.				
Possible Hazard Identification				
Unconfirmed				
Deliverable Requested: I, II, III, IV, Other (specify)				
Primary Deliverable Rank: 2				
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Special Instructions/QC Requirements:				
Empty Kit Relinquished by: MALISSA LOAR				
Date: _____				
Relinquished by: _____				
Date/Time: _____				
Relinquished by: _____				
Date/Time: _____				
Relinquished by: _____				
Date/Time: _____				
Custody Seal No.: _____				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No				
Cooler Temperature(s) °C and Other Remarks:				
Received by: AMA Pinette Date: MAY 14 2024 Company: _____ Received by: _____ Date/Time: _____ Company: _____				
Method of Shipment: _____				

Chain of Custody Record

Client Information (Sub Contract Lab)		Lab PM Brooks, Kris M	Carrier Tracking No(s)	COC No: 240-184582.2																																																												
Client Contact Shipping/Receiving		E-Mail Kris.Brooks@et.eurofins.com	State of Origin Michigan	Page Page 2 of 2																																																												
Company TestAmerica Laboratories, Inc.		Accreditations Required (See note): 240-204359-1																																																														
Address 13715 Rider Trail North,		Preservation Codes:																																																														
City: Earth City	Due Date Requested: 6/12/2024	Analysis Requested																																																														
State, Zip MO, 63045	TAT Requested (days):																																																															
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Sample Identification - Client ID (Lab ID)</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=wastewater, BT=BIAS, A=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>903.0/PreSep STD Standard Target List</th> <th>904.0/PreSep STD Standard Target List</th> <th>Ra226Ra228_GFPc</th> <th>Total Number of Containers</th> <th>Special Instructions/Note:</th> </tr> <tr> <td>DUP-01 (240-204359-13)</td> <td>5/7/24</td> <td>Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td>TVA protocol - Ra-226+228 action limit at 5.0 pCi/L</td> </tr> <tr> <td>EB-1 (240-204359-14)</td> <td>5/8/24</td> <td>12:20 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>2</td> <td>TVA protocol - Ra-226+228 action limit at 5.0 pCi/L</td> </tr> <tr> <td>DUP-02 (240-204359-15)</td> <td>5/8/24</td> <td>Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td>TVA protocol - Ra-226+228 action limit at 5.0 pCi/L</td> </tr> <tr> <td>MW-58 (240-204359-16)</td> <td>5/8/24</td> <td>11:51 Eastern</td> <td>Water</td> <td>Water</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>X</td> <td>1</td> <td>TVA protocol - Ra-226+228 action limit at 5.0 pCi/L</td> </tr> </table>			Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=BIAS, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0/PreSep STD Standard Target List	904.0/PreSep STD Standard Target List	Ra226Ra228_GFPc	Total Number of Containers	Special Instructions/Note:	DUP-01 (240-204359-13)	5/7/24	Eastern	Water	Water	X	X	X	X	X	2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	EB-1 (240-204359-14)	5/8/24	12:20 Eastern	Water	Water	X	X	X	X	X	2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	DUP-02 (240-204359-15)	5/8/24	Eastern	Water	Water	X	X	X	X	X	1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	MW-58 (240-204359-16)	5/8/24	11:51 Eastern	Water	Water	X	X	X	X	X	1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
Sample Identification - Client ID (Lab ID)	Sample Date				Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BT=BIAS, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0/PreSep STD Standard Target List	904.0/PreSep STD Standard Target List	Ra226Ra228_GFPc	Total Number of Containers	Special Instructions/Note:																																																		
DUP-01 (240-204359-13)	5/7/24	Eastern	Water	Water	X	X	X	X	X	2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L																																																					
EB-1 (240-204359-14)	5/8/24	12:20 Eastern	Water	Water	X	X	X	X	X	2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L																																																					
DUP-02 (240-204359-15)	5/8/24	Eastern	Water	Water	X	X	X	X	X	1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L																																																					
MW-58 (240-204359-16)	5/8/24	11:51 Eastern	Water	Water	X	X	X	X	X	1	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L																																																					
Project Name: Karm/Weadock CCR JCW Landfill	Project #: 24024154																																																															
Site:	SSOW#																																																															
Other:																																																																

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Received by: M. Pinette Date/Time: MAY 14 2024 0800 Company: _____
 Received by: _____ Date/Time: _____ Company: _____
 Received by: _____ Date/Time: _____ Company: _____

Primary Deliverable Rank: 2
 Date: _____ Time: _____ Method of Shipment: _____

Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: MALISSA LOAR Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No Cooler Temperature(s) °C and Other Remarks: _____

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204359-1

Login Number: 204359

List Number: 2

Creator: Thornley, Richard W

List Source: Eurofins St. Louis

List Creation: 05/15/24 08:08 AM

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





ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz
TRC Environmental Corporation.
1540 Eisenhower Place
Ann Arbor, Michigan 48108-7080

Generated 7/16/2024 8:57:24 PM

JOB DESCRIPTION

Karn/Weadock CCR JCW Landfill

JOB NUMBER

240-204359-2

Eurofins Cleveland

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
7/16/2024 8:57:24 PM

Authorized for release by
Kris Brooks, Project Manager II
Kris.Brooks@et.eurofinsus.com
(330)966-9790



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	9
QC Sample Results	10
QC Association Summary	12
Lab Chronicle	13
Certification Summary	14
Receipt Checklists	15

Definitions/Glossary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

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

Case Narrative

Client: TRC Environmental Corporation.
Project: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Job ID: 240-204359-2

Eurofins Cleveland

Job Narrative 240-204359-2

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The samples were received on 5/11/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 1.7°C, 3.4°C and 3.9°C.

Receipt Exceptions

The number of containers listed on the COC pages do not match what was received for the following: JCW-MW-18001 (240-204359-1), JCW-MW-18006 (240-204359-4), MW-50 (240-204359-5), MW-51 (240-204359-6), MW-52 (240-204359-7), DUP-02 (240-204359-15) and MW-58 (240-204359-16). There is sufficient volume for the requested analyses.

Gas Flow Proportional Counter

Method 903.0: Radium-226 prep batch 160-667247:

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL JCW-MW-18006 (240-204359-4), (LCS 160-667247/2-A), (MB 160-667247/1-A) and (240-204359-B-4-A DU)

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

Rad

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

Eurofins Cleveland

Method Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

<u>Lab Sample ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Collected</u>	<u>Received</u>
240-204359-4	JCW-MW-18006	Water	05/08/24 10:55	05/11/24 08:00

1

2

3

4

5

6

7

8

9

10

11

12

13

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Client Sample ID: JCW-MW-18006

Lab Sample ID: 240-204359-4

Date Collected: 05/08/24 10:55

Matrix: Water

Date Received: 05/11/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.218		0.0826	0.0849	1.00	0.0772	pCi/L	06/20/24 08:11	07/10/24 16:09	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.0		30 - 110					06/20/24 08:11	07/10/24 16:09	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.229	U	0.527	0.527	1.00	0.919	pCi/L	06/20/24 08:13	06/27/24 16:45	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.0		30 - 110					06/20/24 08:13	06/27/24 16:45	1
Y Carrier	83.0		30 - 110					06/20/24 08:13	06/27/24 16:45	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.447	U	0.533	0.534	5.00	0.919	pCi/L		07/15/24 17:20	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (30-110)							
240-204359-4	JCW-MW-18006	96.0							
240-204359-4 DU	JCW-MW-18006	96.5							
LCS 160-667247/2-A	Lab Control Sample	97.0							
MB 160-667247/1-A	Method Blank	98.3							

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)						
240-204359-4	JCW-MW-18006	96.0	83.0						
240-204359-4 DU	JCW-MW-18006	96.5	80.7						
LCS 160-667248/2-A	Lab Control Sample	97.0	82.2						
MB 160-667248/1-A	Method Blank	98.3	81.1						

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-667247/1-A
Matrix: Water
Analysis Batch: 669953

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667247

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01667	U	0.0420	0.0421	1.00	0.0794	pCi/L	06/20/24 08:11	07/10/24 16:08	1
Carrier	MB	MB	Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	98.3		30 - 110			06/20/24 08:11	07/10/24 16:08	1		

Lab Sample ID: LCS 160-667247/2-A
Matrix: Water
Analysis Batch: 669953

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667247

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	11.3	10.65		1.09	1.00	0.0838	pCi/L	94	75 - 125
Carrier	LCS	LCS	Limits			Prepared	Analyzed	Dil Fac	
	%Yield	Qualifier							
Ba Carrier	97.0		30 - 110						

Lab Sample ID: 240-204359-4 DU
Matrix: Water
Analysis Batch: 669953

Client Sample ID: JCW-MW-18006
Prep Type: Total/NA
Prep Batch: 667247

Analyte	Sample	Sample	DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.218		0.2281		0.0910	1.00	0.0923	pCi/L	0.06	1
Carrier	DU	DU	Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	96.5		30 - 110							

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-667248/1-A
Matrix: Water
Analysis Batch: 668352

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 667248

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.2344	U	0.418	0.418	1.00	0.724	pCi/L	06/20/24 08:13	06/27/24 16:45	1
Carrier	MB	MB	Limits			Prepared	Analyzed	Dil Fac		
	%Yield	Qualifier								
Ba Carrier	98.3		30 - 110			06/20/24 08:13	06/27/24 16:45	1		
Y Carrier	81.1		30 - 110			06/20/24 08:13	06/27/24 16:45	1		

QC Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-667248/2-A
Matrix: Water
Analysis Batch: 668352

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 667248

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec Limits
Radium-228	8.81	8.518		1.42	1.00	0.848	pCi/L	97	75 - 125
LCS LCS									
Carrier	%Yield	Qualifier	Limits						
Ba Carrier	97.0		30 - 110						
Y Carrier	82.2		30 - 110						

Lab Sample ID: 240-204359-4 DU
Matrix: Water
Analysis Batch: 668352

Client Sample ID: JCW-MW-18006
Prep Type: Total/NA
Prep Batch: 667248

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Radium-228	0.229	U	0.01773	U	0.446	1.00	0.835	pCi/L	0.22	1
DU DU										
Carrier	%Yield	Qualifier	Limits							
Ba Carrier	96.5		30 - 110							
Y Carrier	80.7		30 - 110							

QC Association Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Rad

Prep Batch: 667247

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204359-4	JCW-MW-18006	Total/NA	Water	PrecSep STD	
MB 160-667247/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-667247/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-204359-4 DU	JCW-MW-18006	Total/NA	Water	PrecSep STD	

Prep Batch: 667248

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-204359-4	JCW-MW-18006	Total/NA	Water	PrecSep_0	
MB 160-667248/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-667248/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-204359-4 DU	JCW-MW-18006	Total/NA	Water	PrecSep_0	



Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Client Sample ID: JCW-MW-18006

Lab Sample ID: 240-204359-4

Date Collected: 05/08/24 10:55

Matrix: Water

Date Received: 05/11/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			667247	BMW	EET SL	06/20/24 08:11
Total/NA	Analysis	903.0		1	669953	SCB	EET SL	07/10/24 16:09
Total/NA	Prep	PrecSep_0			667248	BMW	EET SL	06/20/24 08:13
Total/NA	Analysis	904.0		1	668352	SCB	EET SL	06/27/24 16:45
Total/NA	Analysis	Ra226_Ra228		1	670775	SCB	EET SL	07/15/24 17:20

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Accreditation/Certification Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
Connecticut	State	PH-0241	03-31-25
Illinois	NELAP	200023	11-30-24
Iowa	State	373	12-01-24
Kansas	NELAP	E-10236	10-31-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-25
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-24
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-24
New Jersey	NELAP	MO002	06-30-25
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-24
Oklahoma	NELAP	9997	08-31-24
Oregon	NELAP	4157	09-01-24
Pennsylvania	NELAP	68-00540	02-28-25
Texas	NELAP	T104704193	07-31-24
US Fish & Wildlife	US Federal Programs	058448	07-31-24
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-24
Virginia	NELAP	460230	06-14-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	10-31-24

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-204359-2

Login Number: 204359

List Number: 2

Creator: Thornley, Richard W

List Source: Eurofins St. Louis

List Creation: 05/15/24 08:08 AM

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



Appendix F

Field Records



PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance
PROJECT NUMBER:	553828.0000.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	5/6/2024 TO 5/18/24
PURPOSE OF FIELDWORK:	Second Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	Javier Jasso

[Signature] 5/13/24
SIGNED DATE

[Signature] 5-13-24
CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: <u>5/7/24</u>	TIME ARRIVED: <u>0532</u>
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK <u>(JK)</u>	TIME LEFT: <u>1400</u>

WEATHER		
TEMPERATURE: <u>39</u> °F	WIND: <u>15</u> MPH	VISIBILITY: <u>overcast</u>
WORK / SAMPLING PERFORMED		
<u>wells sampled = jaw-mw-18001, msfms17, jaw-02-18001</u>		
<u>mw-50, Dup#01, mw 51, mw 52, MW 53, mw-53R</u>		
<u>mw 54R</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

 5/13/24 5-13-24
 SIGNED _____ DATE _____ CHECKED BY _____ DATE _____



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: <u>5/8/24</u>	TIME ARRIVED: <u>0531</u>
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK <u>(JJ)</u>	TIME LEFT: <u>0230</u>

WEATHER		
TEMPERATURE: <u>51</u> °F	WIND: <u>15</u> MPH	VISIBILITY: <u>overcast</u>
WORK / SAMPLING PERFORMED		
<u>Jcw mu-18004, MW 59, Jcw-mu-18005, AW-572021</u>		
<u>Jcw mu-18006, Dup #02, MW 58, F.B.#1 EB#1</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED [Signature] 5/13/24 DATE

CHECKED BY [Signature] 5-13-24 DATE



EQUIPMENT SUMMARY

PROJECT NAME: CEC Weadock LF: 2024 GW Co	SAMPLER NAME: J. Jasso,
PROJECT NO.: 553828.0000.0000	

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

PURGE WATER DISPOSAL METHOD

GROUND
 DRUM
 POTW
 POLYTANK
 OTHER _____

DECONTAMINATION AND FIELD BLANK WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
SIGNED	CHECKED BY
5/13/24	5-13-24
DATE	DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance	MODEL:	<u>PRO DSS</u>	SAMPLER:	JJ
PROJECT NO.:	553828.0000.0000	SERIAL #:	<u>AN</u>	DATE:	<u>5/8/24</u>

PH CALIBRATION CHECK

pH 7 (LOT #): <u>365010</u> (EXP. DATE): <u>10/25</u>	pH 4 / 10 (LOT #): <u>365010</u> (EXP. DATE): <u>10/25</u>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>700 / 700</u>	<u>400 / 400</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL READING (LOT #): <u>3650103</u> (EXP. DATE): <u>10/24</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>1300 / 1300</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): <u>33610006</u> (EXP. DATE): <u>7/20</u>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<u>223 / 223</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<u>8.35 / 8.35</u>	<u>23</u>	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <u>A307</u> (EXP. DATE): <u>4/25</u>	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<u>0 / 0</u>	/	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
<u>100 / 100</u>	/	<input checked="" type="checkbox"/> WITHIN RANGE	<u>0500</u>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	
	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED [Signature] DATE 5/13/24

CHECKED BY [Signature] DATE 5-13-24



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance	MODEL:	DSS	SAMPLER:	JJ
PROJECT NO.:	553828.0000.0000	SERIAL #:	AM	DATE:	5/12/21

PH CALIBRATION CHECK

pH 7 (LOT #): 365918 (EXP. DATE): 10/15	pH 4 / 10 (LOT #): 3650800 (EXP. DATE): 10/15	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
700 / 700	400 / 400	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): 3650183 (EXP. DATE): 10/24	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1700 / 1700	23	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): 236100008 (EXP. DATE): 7/20	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
223 / 223	22.0	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.51 / 8.91	22	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): A3097 (EXP. DATE): 4/15	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
0 / 10	/	<input checked="" type="checkbox"/> WITHIN RANGE	0500
100 / 100	/	<input type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED [Signature] DATE 5/13/24

CHECKED BY [Signature] DATE 5-13-24



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 5/16/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	0629	TOC	17.00	23.75	NA	NM
JCW-MW-18004	0710	TOC	12.30	14.71	NA	NM
JCW-MW-18005	0739	TOC	8.50	14.33	NA	NM
JCW-MW-18006	0800	TOC	12.40	23.70	NA	NM
JCW-OW-18001	0630	TOC	6.54	20.28	NA	NM
JCW-OW-18002	0634	TOC	10.40	19.80	NA	NM
JCW-OW-18003	0647	TOC	6.24	18.42	NA	NM
JCW-OW-18004	0713	TOC	6.22	14.84	NA	NM
JCW-OW-18006	0801	TOC	6.53	23.45	NA	NM
LH-103R	0733	TOC	20.69	33.48	NA	NM
LH-104	0719	TOC	8.00	14.05	NA	NM
OW -MW-20	0741	TOC	6.35	14.00	NA	NM
MW-50	0634	TOC	13.65	19.42	NA	NM
MW-51	0640	TOC	14.45	20.00	NA	NM
MW-52	0646	TOC	19.10	19.90	NA	NM
MW-53	0652	TOC	13.85	18.18	NA	NM
MW-53R	0700	TOC	14.50	18.82	NA	NM
MW-54R	0705	TOC	13.92	17.22	NA	NM
MW-55	0726	TOC	14.10	16.40	NA	NM
MW-58	0820	TOC	5.25	18.25	NA	NM
OW-51	0641	TOC	9.10	17.27	NA	NM
OW-53	0655	TOC	7.40	18.00	NA	NM
OW-54	0707	TOC	7.19	14.50	NA	NM
OW-55	0827	TOC	6.26	18.82	NA	NM
OW-56	0745	TOC	5.65	19.21	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED J 5/13/24 DATE

CHECKED Jl Jy DATE 5-13-24



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 5/16/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-56R	0744	TOC	5.68	20.22	NA	NM
OW-57 IN	0755	TOC	5.05	19.60	NA	NM
OW-57R IN	0754	TOC	5.24	20.14	NA	NM
OW-57 OUT	0750	TOC	8.89	19.48	NA	NM
OW-57R OUT	0757	TOC	8.21	20.22	NA	NM
JCW-MW-15007	0816	TOC	3.25	8.90	NA	NM
JCW-MW-15009	0810	TOC	8.85	13.00	NA	NM
JCW-MW-15010	0817	TOC	17.38	19.55	NA	NM
JCW-MW-15028	0812	TOC	7.30	25.10	NA	NM
MW-15002	0840	TOC	6.65	16.89	NA	NM
MW-15008	0821	TOC	4.25	17.42	NA	NM
MW-15016	0841	TOC	3.45	7.75	NA	NM
MW-15019	0834	TOC	5.23	16.87	NA	NM
JCW-MW-15003	0812		8.41	DUM		
OW-61	0824		6.40	26.20		
JCW-MW-15023	0848		15.70	DUM		
JCW-MW-15026	0705		13.10	DUM		
MW-116R	0704		14.20	41.15		
JCW-MW-15021	0716		14.78	DUM		
OW-54	0745		5.65	19.25		
MW-19	0805		8.42	20.85		
MW-106A	0813		7.60	41.16		
MW-15020	0823		4.95	17.25		
MW-116B	0828		4.50	32.80		
MW-15024	0830		5.74	17.15		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED J 5/13/24 DATE

CHECKED JL Jasso DATE 5-13-24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ	DATE: 5/13/24	BY: JK	DATE: 5-13-24
SAMPLE ID: mw-15002		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1431	DATE: 5/8/24	SAMPLE	TIME: 1451	DATE: 5/8/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.68	SU	CONDUCTIVITY: 495	umhos/cm
		ORP: -111.5	mV	DO: 1.25	mg/L
DEPTH TO WATER: 6.64 T/ PVC		TURBIDITY: 8.5 NTU			
DEPTH TO BOTTOM: 16.89 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 12.7		°C FERROUS Fe _____ mg/L	
VOLUME REMOVED: 4 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: clear		ODOR: none	
COLOR: Orange		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1431	200	7.70	824	-103.5	8.3	113.0	15.2	6.66	INITIAL
1436		7.74	521	-111.0	1.50	8.6	12.8	6.85	1
1441		7.69	511	-111.1	1.23	8.5	12.8	6.85	2
1446		7.68	500	-111.3	1.25	8.5	12.8	6.85	3
1451		7.68	495	-111.5	1.25	8.5	12.7	6.85	4

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: _____	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ	DATE: 5/13/24	BY: JK	DATE: 5-13-24
SAMPLE ID: MW-1500E		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VV <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1245	DATE: 5/18/24	SAMPLE	TIME: 1315	DATE: 5/18/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 6.95 SU		CONDUCTIVITY: 1760 umhos/cm	
		ORP: -125.5 mV		DO: 0.70 mg/L	
DEPTH TO WATER: 4.25 T/ PVC		TURBIDITY: 9.95 NTU			
DEPTH TO BOTTOM: 17.42 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 11.5 °C		FERROUS Fe: mg/L	
VOLUME REMOVED: 6 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Brownish		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- Background		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1245	200	6.90	2014	223	8.37	215	17.7	4.25	INITIAL
1250		6.96	2341	-107.5	1.26	9.5	11.9	4.37	4.37
1255		6.90	2113	-107.0	0.94	10.8	11.7	4.55	2
1300		6.95	1855	-114.5	0.81	10.0	11.5	4.35	3
1305		6.95	1757	-123.0	0.77	10.0	11.5	4.35	4
1310		6.95	1755	-125.3	0.71	10.0	11.5	4.35	5
1315		6.95	1760	-125.5	0.70	9.95	11.5	4.35	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	4	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 5/18/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: Mw-15016	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1512	DATE: 5/13/24	SAMPLE	TIME: 1547	DATE: 5/13/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.10	SU	CONDUCTIVITY: 1762	umhos/cm	
	ORP: -117.5	mV	DO: 0.69	mg/L	
DEPTH TO WATER: 3.40	T/ PVC		TURBIDITY: 9.9	NTU	
DEPTH TO BOTTOM: 7.75	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 12.1	°C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: 7	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear	ODOR: none		
COLOR: Brown	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1512	200	7.01	1722	-90.1	8.5	260	15.5	3.40	INITIAL
1517		7.00	1814	-93.6	1.85	83	12.8	3.70	1
1522		7.08	1723	-107.5	1.00	35	12.9	3.70	2
1527		7.10	1765	-110.5	0.85	23	12.7	3.70	3
1532		7.10	1736	-114.8	0.78	17	12.6	3.70	4
1537		7.10	1748	-117.5	0.73	10	12.6	3.70	5
1542		7.10	1757	-117.5	0.70	10	12.5	3.80	6
1547		7.10	1762	-117.5	0.69	9.9	12.5	3.85	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553814.0001.0000		BY: AW, JK, JJ	DATE: 5/17/24	BY: JK	DATE: 5-13-24
SAMPLE ID: <u>mw-15019</u> <u>mw-15009</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>1346</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>1413</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: <u>6.95</u> SU		CONDUCTIVITY: <u>2044</u> umhos/cm	
		ORP: <u>-104.5</u> mV		DO: <u>0.77</u> mg/L	
DEPTH TO WATER: <u>5.30</u> T/ PVC		TURBIDITY: <u>5.8</u> NTU			
DEPTH TO BOTTOM: <u>16.87</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>10.0</u> °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clear</u>		ODOR: <u>non</u>	
COLOR: <u>clear</u> ODOR: <u>non</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1346	200	7.07	2037	-106.0	0.8	1.0	16.0	5.30	INITIAL
1353		6.96	2039	-94.5	1.40	5.8	11.5	5.35	1
1358		6.95	2041	-97.5	0.98	5.8	11.4	5.35	2
1403		6.95	2046	-104.0	0.86	5.8	10.0	5.35	3
1408		6.95	2046	-104.3	0.80	5.9	10.0	5.35	4
1413		6.95	2044	-104.5	0.77	5.8	10.6	9.35	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553814.0001.0000	BY: AW, JK, JJ DATE: <u>5/13/24</u>	BY: <u>JK</u> DATE: <u>5-13-24</u>

SAMPLE ID: FB#01 <u>CEB#01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>1605</u>	DATE: <u>5/8/26</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: _____ T/ PVC	TURBIDITY: <u>NA</u> NTU	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	TEMPERATURE: _____ °C	FERROUS Fe _____ mg/L	
DEPTH TO BOTTOM: _____ T/ PVC	COLOR: _____	ODOR: _____	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>EQ - Background</u>			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<u>2</u>	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
<u>1</u>	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: xcw-mw 18001 WELL DIAMETER: 2" 4" 6" OTHER _____

WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER _____

SAMPLE TYPE: GW WW SW DI LEACHATE OTHER _____

PURGING	TIME: <u>0545</u>	DATE: <u>5/17/24</u>	SAMPLE	TIME: <u>0620</u>	DATE: <u>5/17/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.80</u> SU	CONDUCTIVITY: <u>3457</u> umhos/cm	ORP: <u>-1310</u> mV	DO: <u>0.76</u> mg/L	
DEPTH TO WATER: <u>17.11</u> T/ PVC	TURBIDITY: <u>5.4</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>23.75</u> T/ PVC	TEMPERATURE: <u>10.3</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>7</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>cloudy</u>	ODOR: <u>none</u>			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP	COMMENTS: _____			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0545	200	4.00	1726	223	8.51	5.5	11.0	17.11	INITIAL
0550		6.68	3334	-87.5	1.32	6.2	10.3	17.10	1
0555		6.70	3336	-96.0	1.0	6.7	10.3	17.18	2
0600		6.75	3370	-107	0.92	5.8	10.3	17.18	3
0605		6.75	3395	-125.0	0.86	5.7	10.3	17.18	4
0610		6.80	3430	-130.5	0.80	5.6	10.3	17.18	5
0615		6.80	3446	-130.8	0.77	5.5	10.3	17.18	6
0620		6.80	3457	-131.0	0.76	5.4	10.3	17.18	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off DATE SHIPPED: 5-10-24 AIRBILL NUMBER: _____

COC NUMBER: _____ SIGNATURE: [Signature] DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 5/7/24
	BY: JK	DATE: 5-17-24

SAMPLE ID: JCU-DW-18001	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0650	DATE: 5/7/24	SAMPLE	TIME: 0720	DATE: 5/7/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 6.85 SU	CONDUCTIVITY: 1595 umhos/cm	
			ORP: -122.5 mV	DO: 0.79 mg/L	
DEPTH TO WATER: 6.55 T/ PVC			TURBIDITY: 2.9 NTU		
DEPTH TO BOTTOM: 20.28 T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: 10.1 °C		
VOLUME REMOVED: 3 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			FERROUS Fe: _____ mg/L		
COLOR: Clear			ODOR: none		
ODOR: none			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0650	100	7.55	823	-78.0	9.1	11.0	9.3	6.51	INITIAL
0655		6.87	1623	-100	2.0	9.4	9.8	6.70	1
0700		6.85	1618	-104	1.3	8.6	9.9	6.70	1
0705		6.85	1617	-117.0	1.2	8.3	9.9	6.70	1.1
0710		6.85	1608	-122.0	0.89	8.8	10.0	6.70	2
0715		6.85	1601	-122.3	0.83	7.9	10.1	6.70	2.5
0720		6.85	1595	-122.5	0.79	7.9	10.1	6.70	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 5/13/24	BY: JK	DATE: 5-17-24
SAMPLE ID: <u>mw 50</u>			WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER		
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>0737</u>	DATE: <u>5/17/24</u>	SAMPLE	TIME: <u>0807</u>	DATE: <u>5/17/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: <u>7.49</u> SU		CONDUCTIVITY: <u>1455</u> umhos/cm	
		ORP: <u>-142.5</u> mV		DO: <u>07.1</u> mg/L	
DEPTH TO WATER: <u>13.70</u> T/ PVC		TURBIDITY: <u>5.4</u> NTU			
DEPTH TO BOTTOM: <u>19.42</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>10.0</u> °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: <u>6</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clear</u>		ODOR: <u>none</u>	
COLOR: <u>clear</u> ODOR: <u>none</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP-#01		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0737	200	7.41	1429	-64.5	9.1	21.0	9.9	1370	INITIAL
0743		7.44	1449	-93.6	1.7	8.0	9.9	1380	1
0747		7.45	1458	-107	1.1	6.0	10.0	1380	2
0753		7.50	1461	-123.6	0.89	5.8	10.0	1380	3
0757		7.48	1458	-142.0	0.80	5.5	10.0	1380	4
0802		7.48	1456	-142.3	0.77	5.5	10.0	1380	5
0807		7.49	1455	-142.5	0.75	5.4	10.0	1380	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	4	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: MW 51	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0845	DATE: 5/17/24	SAMPLE	TIME: 0920	DATE: 5/17/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.35	SU	CONDUCTIVITY: 1269	umhos/cm	
	ORP: -141.0	mV	DO: 0.83	mg/L	
DEPTH TO WATER: 14.50 T/ PVC	TURBIDITY: 6.9	NTU			
DEPTH TO BOTTOM: 20.00 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 9.5	°C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: 7 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear		ODOR: none		
COLOR: Clear	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0845	200	7.98	1243	-91.1	9.9	24	10.4	1450	INITIAL
0850		7.55	1245	-121.0	2.30	8.8	9.1	1455	1
0855		7.40	1256	-125.5	1.4	8.4	9.5	1455	2
0900		7.40	1258	-130.5	1.2	8.4	9.4	1455	3
0905		7.39	1260	-137.5	1.0	8.0	9.5	1455	4
0910		7.35	1262	-140.8	0.93	7.0	9.5	1455	5
0915		7.35	1267	-140.8	0.87	6.9	9.5	1455	6
0920		7.35	1269	-141.0	0.83	6.9	9.5	1455	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: MW 53	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0946	DATE: 5/17/24	SAMPLE	TIME: 1021	DATE: 5/17/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.99 SU	CONDUCTIVITY: 170 umhos/cm	ORP: -119.5 mV	DO: 0.79 mg/L	
DEPTH TO WATER: 19.15 T/ PVC	TURBIDITY: 5.2 NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: 19.90 T/ PVC	TEMPERATURE: 16.6 °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear	ODOR: NOW			
VOLUME REMOVED: 7 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
COLOR: clear	ODOR: NOW				
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0946	200	7.40	1680	-93.5	0.86	18	12	19.15	INITIAL
0951		7.00	1703	-110.0	1.5	6.9	10.4	1930	1
0956		6.99	1707	-109.8	1.1	6.7	10.4	1930	2
1001		6.97	1712	-113.5	0.91	6.0	10.5	1930	3
1006		6.97	1713	-114.0	0.88	5.0	10.5	1930	4
1011		6.96	1716	-119.0	0.83	5.3	10.6	1930	5
1016		6.96	1715	-119.3	0.81	5.2	10.6	1930	6
1021		6.96	1717	-119.5	0.79	5.2	10.6	1930	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/12/24	BY: JK DATE: 5-13-24

SAMPLE ID: MW-53	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 10:55	DATE: 5/12/24	SAMPLE	TIME: 11:30	DATE: 5/12/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.50 SU	CONDUCTIVITY: 1176 umhos/cm	ORP: -173.5 mV	DO: 0.79 mg/L	
DEPTH TO WATER: 13.90 T/ PVC	TURBIDITY: 7.9 NTU				
DEPTH TO BOTTOM: 18.18 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 10.8 °C	FERROUS Fe			
VOLUME REMOVED: 7 LITERS <input type="checkbox"/> GALLONS	COLOR: clear	ODOR: none			
COLOR: cloudy	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR:	FILTRATE ODOR:			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
10:55	200	7.87	529	-107.5	8.3	45	15.2	13.90	INITIAL
11:00		7.71	1179	-161.0	2.20	28	11.1	14.00	1
11:05		7.40	1179	-152.0	1.2	16.6	10.9	14.00	2
11:10		7.55	1183	-160.0	0.8	12.7	11.0	14.00	3
11:15		7.55	1181	-170.0	0.10	10.8	10.9	14.00	4
11:20		7.50	1179	-173.6	0.03	8.0	10.9	14.00	5
11:25		7.50	1177	-173.3	0.80	8.0	10.8	14.00	6
11:30		7.50	1176	-173.5	0.79	7.9	10.8	14.00	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 5/13/24	BY: JK	DATE: 5-13-24

SAMPLE ID: MW 5312	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1157	DATE: 5/13/24	SAMPLE	TIME: 1227	DATE: 5/13/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.15	SU	CONDUCTIVITY: 1264	umhos/cm	
	ORP: -149.0	mV	DO: 089	mg/L	
DEPTH TO WATER: 1450	T/ PVC		TURBIDITY: 6.9	NTU	
DEPTH TO BOTTOM: 18.82	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 11.0	°C FERROUS Fe _____ mg/L		
VOLUME REMOVED: 4	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none		
COLOR: Brownish	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____	FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1157	200	7.46	1255	-142.5	8.90	500	15.3	1450	INITIAL
1202		7.35	1289	-145.0	3.5	25	11.6	1470	1
1207		7.10	1285	-146.0	1.10	12.5	10.9	1470	2
1212		7.10	1281	-144.1	1.0	11.9	11.2	1470	3
1217		7.12	1273	-148.8	0.91	7.0	11.5	1470	4
1222		7.12	1267	-148.5	0.80	6.9	11.4	1470	5
1227		7.12	1266	-149.0	0.89	6.9	11.4	1470	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: _____	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: JIL DATE: 5-13-24

SAMPLE ID: MW 5412	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1250	DATE: 5/13/24	SAMPLE	TIME: 1325	DATE: 5/13/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.19 SU	CONDUCTIVITY: 1127 umhos/cm	ORP: -105.3 mV	DO: 2.95 mg/L	
DEPTH TO WATER: 1400 T/ PVC	TURBIDITY: 6.91 NTU	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: 17.22 T/ PVC	TEMPERATURE: 11.9 °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none			
VOLUME REMOVED: 7 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO				
COLOR: brownish	ODOR: none				
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1250	200	7.40	1130	-143.5	8.9	690	12.8	1400	INITIAL
1255		7.24	1135	-114.5	5.30	100	12.0	1410	1
1300		7.24	1129	-88.0	5.0	20	11.7	1410	2
1305		7.20	1130	-79.0	4.97	10	12.4	1410	3
1310		7.20	1126	-95	4.0	8	12.0	1410	4
1315		7.19	1129	-105.0	3.0	7	12.1	1410	5
1320		7.19	1125	-105.1	2.95	6.91	12.0	1410	6
1325		7.19	1127	-105.3	2.95	6.91	11.9	1410	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
(	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
)	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
(	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: <u>5/13/24</u>	BY: JK DATE: <u>5-13-24</u>

SAMPLE ID: <u>JCW-MW 18004</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>6:54</u>	DATE: <u>5/18/24</u>	SAMPLE	TIME: <u>6:00</u>	DATE: <u>5/18/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.91</u> SU	CONDUCTIVITY: <u>1390</u> umhos/cm	ORP: <u>20.0</u> mV	DO: <u>8.6</u> mg/L	
DEPTH TO WATER: <u>1235</u> T/ PVC	TURBIDITY: <u>6.0</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>1471</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>9.9</u> °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>2</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>cloudy</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>6:54</u>	<u>100</u>	<u>4.6</u>	<u>720</u>	<u>200</u>	<u>8.5</u>	<u>55</u>	<u>13.0</u>	<u>1235</u>	INITIAL
<u>6:53</u>		<u>6.73</u>	<u>1442</u>	<u>0.3</u>	<u>8.31</u>	<u>10</u>	<u>10.0</u>	<u>1260</u>	<u>1</u>
<u>6:58</u>		<u>6.90</u>	<u>1394</u>	<u>197</u>	<u>8.65</u>	<u>6.0</u>	<u>9.9</u>	<u>1280</u>	<u>1</u>
<u>6:03</u>		<u>6.91</u>	<u>1398</u>	<u>20.0</u>	<u>8.65</u>	<u>6.0</u>	<u>9.9</u>	<u>130</u>	<u>1.5</u>
<u>6:00</u>		<u>6.81</u>	<u>1398</u>	<u>20.0</u>	<u>8.65</u>	<u>6.0</u>	<u>9.9</u>	<u>13.0</u>	<u>2</u>
									<u>2.5</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y <input type="checkbox"/> N		
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y <input type="checkbox"/> N		
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y <input type="checkbox"/> N	<u>2</u>	<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N		

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/8/24	BY: JK DATE: 5-13-24

SAMPLE ID: MW 55	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING TIME: 0643 DATE: 5/8/24	SAMPLE TIME: 0712 DATE: 5/8/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 6.91 SU CONDUCTIVITY: 1236 umhos/cm
	ORP: -107.1 mV DO: 0.84 mg/L
DEPTH TO WATER: 14.20 T/ PVC	TURBIDITY: 8.0 NTU
DEPTH TO BOTTOM: 16.40 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 10.0 °C FERROUS Fe: mg/L
VOLUME REMOVED: 6 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: 100 ODOR: NONE
COLOR: orange ODOR: NONE	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: FILTRATE ODOR:
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-
COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0643	200	7.03	1220	-77.7	8.83	340	11.0	1430	INITIAL
0646		6.94	1225	-77.1	1.80	45	10.0	1430	1
0653		6.92	1231	-94	6.2	20	9.9	1430	2
0656		6.92	1233	-100	1.0	12.5	9.9	1430	3
0703		6.91	1234	-107.0	0.95	8.0	9.8	1430	4
0708		6.91	1236	-107.3	0.88	8.0	9.9	1430	5
6712		6.91	1236	-107.5	0.84	8.0	10.0	1430	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 5/13/24
	BY: JK	DATE: 5-17-24

SAMPLE ID: <u>3cu)mw 18005</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0742</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>2400</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.84</u> SU	CONDUCTIVITY: <u>1569</u> umhos/cm	ORP: <u>-103.8</u> mV	DO: <u>0.83</u> mg/L	
DEPTH TO WATER: <u>8.50</u> T/ PVC	TURBIDITY: <u>10</u> NTU				
DEPTH TO BOTTOM: <u>16.33</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>10.7</u> °C	FERROUS Fe _____ mg/L			
VOLUME REMOVED: <u>8</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>Brownish</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS:				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0742	100	7.09	1593	-50.1	9.7	130	11.6	8.50	INITIAL
0747		6.82	1605	-63.5	1.72	77	11.1	9.33	.5
0752		6.82	1605	-70.5	1.30	75	11.1	9.50	1
0757		6.83	1602	-75	1.20	69	11.2	9.65	1.5
0802		6.84	1588	-80	1.0	57	10.7	9.80	2
0807		6.84	1562	-85	0.97	33	10.7	9.85	2.5
0812		6.84	1548	-95	0.93	18	10.8	9.90	3
0817		6.85	1550	-92.5	0.91	15	10.8	9.95	3.5
0822		6.85	1549	-92.5	0.89	12	10.8	9.95	4
0827		6.84	1589	-95.9	0.86	16.00	10.7	9.95	4.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:
 pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
		A - NONE	B - HNO3	C - H2SO4	D - NaOH	E - HCL	F - _____		
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME: CEC Weadock LF: 2024 GW Co	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: STSK DATE: 5-13-24

SAMPLE ID: 206-MW-1800 S

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0832	100	6.84	1556	-98.0	085	200	10.8	10.0	5
0837		6.84	1549	-100	086	23	10.8	10.0	5.5
0842		6.84	1549	-101	085	18	10.8	10.0	6.0
0847		6.84	1552	-101	085	15	10.8	10.0	6.5
0852		6.84	1564	-103.3	084	10	10.8	10.0	7
0857		6.84	1567	-103.5	083	10	10.7	10.0	7.5
0902		6.84	1569	-103.8	083	10	10.7	10.0	8

SIGNATURE: [Signature] 5/13/24 DATE SIGNED: _____



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/10/24	BY: JK DATE: 5-13-24

SAMPLE ID: <u>GW-57R out</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0827</u>	DATE: <u>5/10/24</u>	SAMPLE	TIME: <u>0947</u>	DATE: <u>5/10/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.20</u> SU	CONDUCTIVITY: <u>1223</u> umhos/cm	ORP: <u>-950</u> mV	DO: <u>2.21</u> mg/L	
DEPTH TO WATER: <u>8.20</u> T/ PVC	TURBIDITY: <u>9.1</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>20.22</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>12.2</u> °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>2</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>clearly</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0827</u>	<u>100</u>	<u>7.40</u>	<u>1097</u>	<u>-73.0</u>	<u>8.2</u>	<u>60</u>	<u>15.2</u>	<u>8.20</u>	INITIAL
<u>0832</u>		<u>7.23</u>	<u>1225</u>	<u>-102.5</u>	<u>3.25</u>	<u>11.4</u>	<u>12.3</u>	<u>9.10</u>	<u>.1</u>
<u>0837</u>		<u>7.20</u>	<u>1224</u>	<u>-94.5</u>	<u>2.20</u>	<u>9.8</u>	<u>12.2</u>	<u>9.85</u>	<u>1</u>
<u>0842</u>		<u>7.20</u>	<u>1224</u>	<u>-94.5</u>	<u>2.27</u>	<u>9.5</u>	<u>12.2</u>	<u>10.30</u>	<u>1.9</u>
<u>0847</u>		<u>7.20</u>	<u>1223</u>	<u>-95.0</u>	<u>2.25</u>	<u>9.5</u>	<u>12.2</u>	<u>10.40</u>	<u>2</u>
<u>0852</u>									<u>2.5</u>
									<u>3</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y <input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y <input type="checkbox"/> N	<u>2</u>	<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/10/24	BY: JK DATE: 5-13-24

SAMPLE ID: Jew-mu 18002	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1020	DATE: 5/18/24	SAMPLE	TIME: 1055	DATE: 5/18/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.05	SU	CONDUCTIVITY: 1324	umhos/cm	
	ORP: -155.8	mV	DO: 0.75	mg/L	
DEPTH TO WATER: 12.6	T/ PVC		TURBIDITY: 9.9	NTU	
DEPTH TO BOTTOM: 23.70	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 13.20	°C		FERROUS Fe
VOLUME REMOVED: 7	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none		
COLOR: Brown	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- F03	COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1020	200	7.07	715	-140	0.70	250	15.0	12.60	INITIAL
1025		7.20	1173	-157.0	1.37	40.5	13.60	12.70	1
1030		7.17	1137	-155.5	1.0	17.0	13.60	12.70	2
1035		7.10	1190	-152.0	0.87	14.8	13.50	12.70	3
1040		7.10	1250	-153.5	0.81	15.0	13.70	12.70	4
1045		7.05	1293	-155.5	0.77	10	13.20	12.70	5
1050		7.05	1309	-155.8	0.75	10	13.70	12.70	6
1055		7.05	1324	-155.8	0.75	9.9	13.20	12.70	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	4	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 5-10-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 5/13/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 5/13/24	BY: JK DATE: 5-13-24

SAMPLE ID: <u>mw 58</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1124</u>	DATE: <u>5/8/24</u>	SAMPLE	TIME: <u>1151</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.15</u> SU		CONDUCTIVITY: <u>2530</u> umhos/cm		
	ORP: <u>-129.5</u> mV		DO: <u>0.80</u> mg/L		
DEPTH TO WATER: <u>5.25</u> T/ PVC	TURBIDITY: <u>5.0</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>18.25</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>11.3</u> °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>		ODOR: <u>none</u>		
COLOR: <u>clear</u>	ODOR: <u>none</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>1126</u>	<u>200</u>	<u>7.34</u>	<u>1435</u>	<u>-116.7</u>	<u>8.0</u>	<u>10</u>	<u>14.9</u>	<u>525</u>	INITIAL
<u>1131</u>		<u>7.16</u>	<u>2605</u>	<u>-120.5</u>	<u>1.44</u>	<u>5.1</u>	<u>11.6</u>	<u>525</u>	<u>1</u>
<u>1136</u>		<u>7.15</u>	<u>2599</u>	<u>-122</u>	<u>1.0</u>	<u>5.5</u>	<u>11.3</u>	<u>525</u>	<u>2</u>
<u>1141</u>		<u>7.15</u>	<u>2587</u>	<u>-125</u>	<u>0.91</u>	<u>5.0</u>	<u>11.2</u>	<u>525</u>	<u>3</u>
<u>1146</u>		<u>7.15</u>	<u>2534</u>	<u>-125.3</u>	<u>0.83</u>	<u>5.0</u>	<u>11.3</u>	<u>525</u>	<u>4</u>
<u>1151</u>		<u>7.15</u>	<u>2530</u>	<u>-125.5</u>	<u>0.80</u>	<u>5.0</u>	<u>11.3</u>	<u>525</u>	<u>5</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N	<u>2</u>	<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5/13/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 5/13/24
	BY: JK	DATE: 5-13-24

SAMPLE ID: <u>CB-50+FB-01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>1215</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	
			ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C	FERROUS Fe _____ mg/L	
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>	ODOR: <u>None</u>	
COLOR: _____	ODOR: _____		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>5/17/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: <u>5/13/24</u>	BY: JK	DATE: <u>5-13-24</u>

SAMPLE ID: <u>E.B.#01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING		TIME:	DATE:	SAMPLE		TIME: <u>1220</u>	DATE: <u>5/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP	<input type="checkbox"/> BAILER			PH: <u>NN</u>	SU	CONDUCTIVITY: <u>NN</u>	umhos/cm
				ORP: <u>NN</u>	mV	DO: <u>NN</u>	mg/L
DEPTH TO WATER: _____	T/ PVC			TURBIDITY: <u>NN</u>			NTU
DEPTH TO BOTTOM: _____	T/ PVC			<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> SLIGHT	<input type="checkbox"/> MODERATE	<input type="checkbox"/> VERY
WELL VOLUME: <u>NA</u>	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NN</u>	°C	FERROUS Fe	mg/L
VOLUME REMOVED: _____	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>		ODOR: <u>NOV</u>	
COLOR: _____	ODOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY				FILTRATE COLOR: _____		FILTRATE ODOR: _____	
<input type="checkbox"/> NONE	<input type="checkbox"/> SLIGHT	<input type="checkbox"/> MODERATE	<input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD	<input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES: A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N
	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>5-10-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>5/13/24</u>

CHAIN OF CUSTODY

Pg 32 of 38
27 of 31



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q2-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0344		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																														
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th colspan="7">CONTAINERS</th> </tr> <tr> <th colspan="7">PRESERVATIVE</th> </tr> <tr> <th>TOTAL #</th> <th>None</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </table>						Total Metals	Anions		TDS	Alkalinity	CONTAINERS							PRESERVATIVE							TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other						
Total Metals	Anions	TDS	Alkalinity	CONTAINERS																																							
				PRESERVATIVE																																							
TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																																				
SEND REPORT TO: Joseph Firlit	email:		phone:		MATRIX CODES: GW = Groundwater OX = Other _____ WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		COPY TO: Harold Register		TRC		LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION																											
DATE	TIME																																										
24-0344-01	5/7/24	0620	GW	JCW-MW-18001	5	4	1							x	x	x	x																										
-02	5/8/24	0608	GW	JCW-MW-18004	3	2	1							x	x	x																											
-03	5/8/24	0902	GW	JCW-MW-18005	3	2	1							x	x	x																											
-04	5/8/24	1055	GW	JCW-MW-18006	3	2	1							x	x	x																											
-05	5/7/24	0807	GW	MW-50	3	2	1							x	x	x																											
-06	5/7/24	0920	GW	MW-51	3	2	1							x	x	x																											
-07	5/7/24	1021	GW	MW-52	3	2	1							x	x	x																											
-08	5/7/24	1130	GW	MW-53	3	2	1							x	x	x																											
-09	5/7/24	1227	GW	MW-53R	3	2	1							x	x	x																											
-10	5/7/24	1321	GW	MW-54R	3	2	1							x	x	x																											
-11	5/8/24	0712	GW	MW-55	3	2	1							x	x	x																											
-12	5/8/24	0947	GW	OW-57ROUT	3	2	1							x	x	x																											

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	COMMENTS:
	5/10/24 0720		
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____ Temperature: _____ °C Cal. Due Date: _____

CHAIN OF CUSTODY

Pg ~~28 of 34~~
33 of 38



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q2-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0344		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)							QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____			
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____														
SEND REPORT TO:	Caleb Batts		email:		phone:												
COPY TO:	Harold Register		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS												
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION		TOTAL #	PRESERVATIVE						Total Metals	Anions	TDS	Alkalinity	REMARKS
	DATE	TIME					None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH						Other
24-0344-13	5/8/24	1151	GW	MW-58		3	2	1									
-14	5/7/24	—	GW	DUP-JCW-LF-01		3	2	1									
-15	5/8/24	—	GW	DUP-JCW-LF-02		3	2	1									
-16	5/7/24	662	GW	JCW-MW-18001 MS		2	1	1									
-17	5/7/24	062	GW	JCW-MW-18001 MSD		2	1	1									
-18	5/8/24	1215	W	FB-01		2	1	1									
-19	5/8/24	1220	W	EB-01		2	1	1									

RELINQUISHED BY:		DATE/TIME: 5/10/24 0700		RECEIVED BY:		COMMENTS:	
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____	
						Temperature: _____ °C Cal. Due Date: _____	

CHAIN OF CUSTODY

P₂ ~~29 of 31~~
34 of 38



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock ASD			PROJECT NUMBER: 24-0345		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)					QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																			
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____					<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">TOTAL #</td> <td colspan="7" style="text-align: center;">PRESERVATIVE</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Total Metals</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Anions</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">TDS</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">Alkalinity</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">None</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">HNO₃</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">H₂SO₄</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">NaOH</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">HCl</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">MeOH</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">Other</td> </tr> </table>					TOTAL #	PRESERVATIVE							Total Metals	Anions	TDS	Alkalinity	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other
TOTAL #	PRESERVATIVE													Total Metals	Anions	TDS	Alkalinity														
	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																								
SEND REPORT TO:	Joseph Firlit		email:		phone:		<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">LAB SAMPLE ID</td> <td colspan="2" style="text-align: center;">SAMPLE COLLECTION</td> <td rowspan="2" style="writing-mode: vertical-rl; transform: rotate(180deg);">MATRIX</td> <td colspan="2" style="text-align: center;">FIELD SAMPLE ID / LOCATION</td> </tr> <tr> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">DATE</td> <td style="writing-mode: vertical-rl; transform: rotate(180deg);">TIME</td> <td colspan="2"></td> </tr> </table>					LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION		DATE	TIME												
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION																											
	DATE	TIME																													
COPY TO:	Harold Register		MATRIX CODES:		CONTAINERS		<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> <td colspan="2"></td> </tr> </table>																								
	TRC		GW = Groundwater OX = Other _____ WW = Wastewater SL = Sludge _____ W = Water / Aqueous Liquid A = Air _____ S = Soil / General Solid WP = Wipe _____ O = Oil WT = General Waste _____																												
LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS	Alkalinity	REMARKS														
24-0345-01	5/7/24	0730	GW	JCW-OW-18001	5	4	1						x	x	x	x															

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	COMMENTS:
	5/7/24 0730		
RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:	
			Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____ Temperature: _____ °C Cal. Due Date: _____

Eurofins Cleveland

180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

**MICHIGAN
190**

Pg 30 of 31
eurofins 35 of 38
Environment Testing

Client Information		Samples: <i>Sauv JASSE</i>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-120141-29048.1			
Client Contact: Jacob Krenz		Phone: <i>334 904 3310</i>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 1 of 2			
Company: TRC Environmental Corporation.		PWSID:		Analysis Requested						Job #:	
Address: 1540 Eisenhower Place		Due Date Requested:								Preservation Codes: D - HNO3	
City: Ann Arbor		TAT Requested (days):		Field Filtered Sample (Yes or No) 904.0, Ra226Ra228, GFPC 903.0 - Standard Target List		Total Number of Containers		Other:			
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #: TBD									
Email: JKrenz@trccompanies.com		WO #: 5533828.0000									
Project Name: Karn/Weadock CCR JCW Lanfill		Project #: 24024154		Project #:		Project #:		Project #:			
Site:		SSOW#:		SSOW#:		SSOW#:		SSOW#:			
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)		Special Instructions/Note:	
JCW-MW-18001		5/7/24		0600		G		Water		M X T	
JCW-MW-18004		5/8/24		0608		G		Water		M X T	
JCW-MW-18005		5/8/24		0902		G		Water		M X T	
JCW-MW-18006		5/8/24		1055		G		Water		M X T	
MW-50		5/7/24		0807		G		Water		M X T	
MW-51		5/7/24		0920		G		Water		M X T	
MW-52		5/7/24		1021		G		Water		M X T	
MW-53		5/7/24		1130		G		Water		M X T	
MW-53R		5/7/24		1227		G		Water		M X T	
MW-54R		5/7/24		1325		G		Water		M X T	
MW-55		5/8/24		0712		G		Water		M X T	
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)					
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:					
Empty Kit Relinquished by:			Date:			Time:			Method of Shipment:		
Relinquished by: <i>[Signature]</i>			Date/Time: <i>5/10/24 0905</i>			Company: <i>TRC</i>			Received by: <i>[Signature]</i>		
Relinquished by:			Date/Time:			Company:			Received by:		
Relinquished by:			Date/Time:			Company:			Received by:		
Custody Seals Intact:			Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks:					

Eurofins Cleveland

180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

MICHIGAN
 190

pg 31 of 31
 eurofins | *pg 36 of 38*
 Environment Testing

Client Information		Sampler: <i>Jacob Jasse</i>	Lab PM: Brooks, Kris M	Carrier Tracking No(s):	COC No: 240-120141-29048.2	
Client Contact: Jacob Krenz		Phone: <i>734 904 3310</i>	E-Mail: Kris.Brooks@et.eurofinsus.com	State of Origin:	Page: Page 2 of 2	
Company: TRC Environmental Corporation.		PWSID:	Analysis Requested			
Address: 1540 Eisenhower Place		Due Date Requested:	Preservation Codes: D - HNO3 Other:			
City: Ann Arbor		TAT Requested (days):				
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No				
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #: TBD				
Email: JKrenz@trccompanies.com		WO #: 5533828.0000				
Project Name: Karn/Weadock CCR JCW Lanfill		Project #: 24024154				
Site:		SSOW#:	Total Number of Containers			
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Special Instructions/Note
OW-57ROUT	<i>5/8/24</i>	<i>0947</i>	<i>G</i>	Water	<i>MTH</i>	
DUP-01	<i>5/7/24</i>	<i>—</i>	<i>G</i>	Water	<i>MTH</i>	
EB--1	<i>5/8/24</i>	<i>1220</i>	<i>G</i>	<i>OT</i> Water	<i>MTH</i>	
<i>DUP-02</i>	<i>5/8/24</i>	<i>—</i>	<i>G</i>	Water	<i>MTH</i>	
<i>MW-30</i>	<i>5/8/24</i>	<i>1151</i>	<i>G</i>	Water	<i>MTH</i>	
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)			Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:		
Relinquished by: <i>[Signature]</i>		Date/Time: <i>5/10/24 0611</i>	Company: <i>[Signature]</i>	Received by: <i>[Signature]</i>	Date/Time:	Company: <i>EEN</i>
Relinquished by: <i>[Signature]</i>		Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:		Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

CHAIN OF CUSTODY

Page 37 of 38



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Page 1 of 1

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: 02-2024 JCW-DEK Background Wells				PROJECT NUMBER: 24-0343				SAP CC or WO#: REQUESTER: Harold Register				ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
SAMPLING TEAM:				TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																			
SEND REPORT TO: Joseph Firlit		email:			phone:			MATRIX CODES:		CONTAINERS													
COPY TO: Harold Register		TRC			GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		PRESERVATIVE																
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION				TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS			REMARKS	
DATE	TIME																						
24-0343-01	5/8/24	1451		GW	MW-15002			3	2	1							x	x	x				
-02	5/8/24	1315		GW	MW-15008			3	2	1							x	x	x				
-03	5/8/24	1447		GW	MW-15016			3	2	1							x	x	x				
-04	5/8/24	1413		GW	MW-15019			3	2	1							x	x	x				
-05	5/8/24	—		GW	DUP-Background			3	2	1							x	x	x				
-06	5/8/24	1605		W	FB- Background			1									x						

RELINQUISHED BY:	DATE/TIME: 5/10/24 0740	RECEIVED BY:	COMMENTS:
RELINQUISHED BY:	DATE/TIME: _____	RECEIVED BY: _____	Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____
			Temperature: _____ °C Cal. Due Date: _____

Eurofins Cleveland

180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

**MICHIGAN
190**

eurofins | Environment Testing

Page 38 of 38

Client Information		Sampler: <u>JAVIER JASSO</u>	Lab PM: Brooks, Kris M	Carrier Tracking No(s):	COC No: 240-120140-33282.1				
Client Contact: Jacob Krenz		Phone: <u>734 904 3310</u>	E-Mail: Kris.Brooks@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1				
Company: TRC Environmental Corporation.		PWSID:	Analysis Requested						
Address: 1540 Eisenhower Place		Due Date Requested:	Field Filtered Sample (Resor No) 903.0, Ra226Ra228_GFP 904.0 - Standard Target List Total Number of Containers						
City: Ann Arbor		TAT Requested (days):							
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No							
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #: TBD							
Email: JKrenz@trccompanies.com		WO #:							
Project Name: Karn/Wadock CCR Background Well		Project #: 24024154	Other:						
Site:		SSOW#:							
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Special Instructions/Note:		
MW-15002	5/8/24	1451	G	Water	NAH	D	0 0 0 0 0 0		
MW-15008	5/8/24	1315	G	Water	NAH	D			
MW-15016	5/8/24	1457	G	Water	NAH	D			
MW-15019	5/8/24	1413	G	Water	NAH	D			
DUP-Background	5/8/24	-	G	Water	NAH	D			
EQ-Background	5/8/24	1405	G	Water	NAH	D			
Possible Hazard Identification		<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
Deliverable Requested: I, II, III, IV, Other (specify)		<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:					
Relinquished by:		Date/Time: 5/10/24 0815	Company: TRC	Received by:		Date/Time: 5/10/24	Company: EENT		
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	Company:		
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	Company:		
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:					

Appendix G

Alternate Source Demonstration Supporting Information

A CMS Energy Company

Date: July 30, 2024

To: Operating Record



From: Harold D. Register, Jr., P.E.

RE: Alternate Source Demonstration Professional Engineer Certification, §257.94(e)2
JC Weadock Landfill CCR Unit

Professional Engineer Certification Statement [40 CFR 257.94(e)2]

I hereby certify that the alternative source demonstration presented within this Fourth Quarter 2023 Hydrogeological Monitoring Report for the JC Weadock Landfill CCR unit has been prepared to meet the requirements of Title 40 CFR §257.94(e)2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e)2.



Signature

July 30, 2024

Date of Certification

Harold D. Register, Jr., P.E.

Name

6201056266

Professional Engineer Certification Number





References

TRC (July 2024). 2024 Semiannual Groundwater Monitoring Report/Second Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Landfill Solid Waste Disposal Area, Essexville, Michigan

Figure G1: Time Series Plots for JCW-MW-18001 ASD

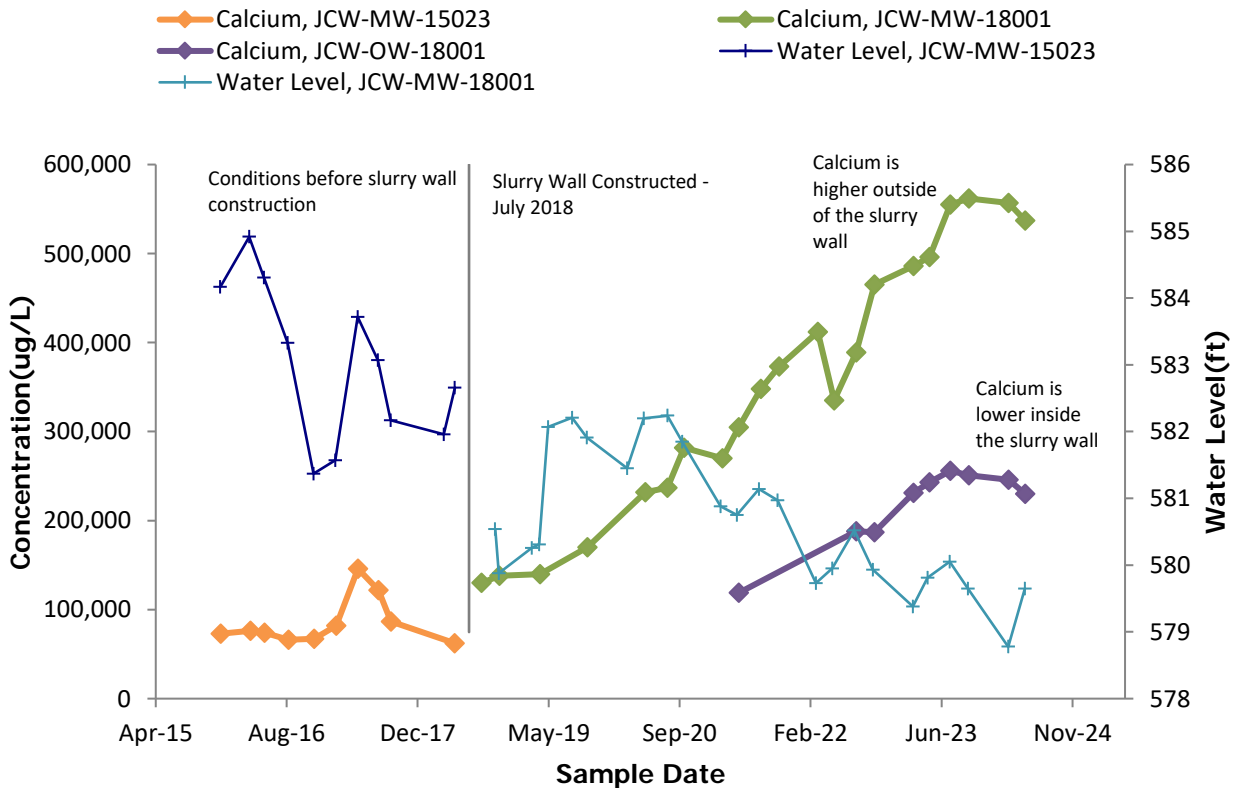
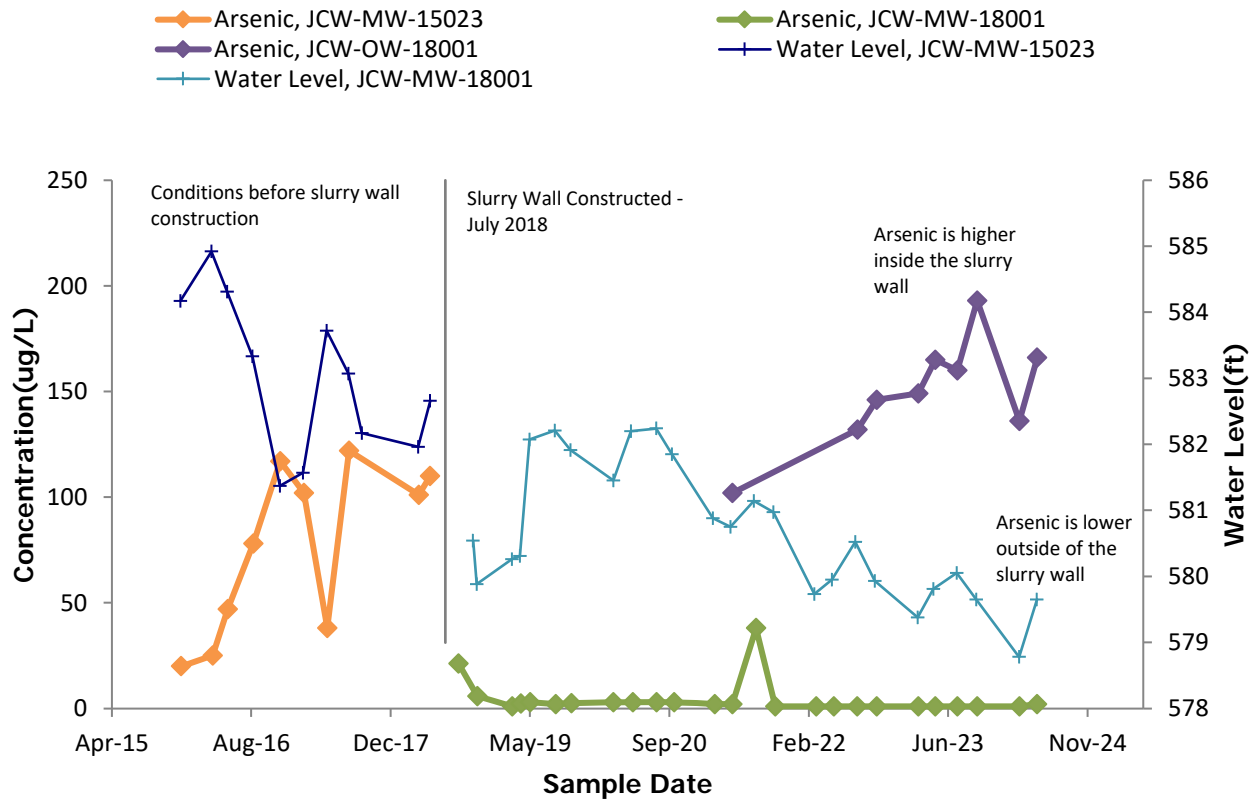


Figure G1: Time Series Plots for JCW-MW-18001 ASD

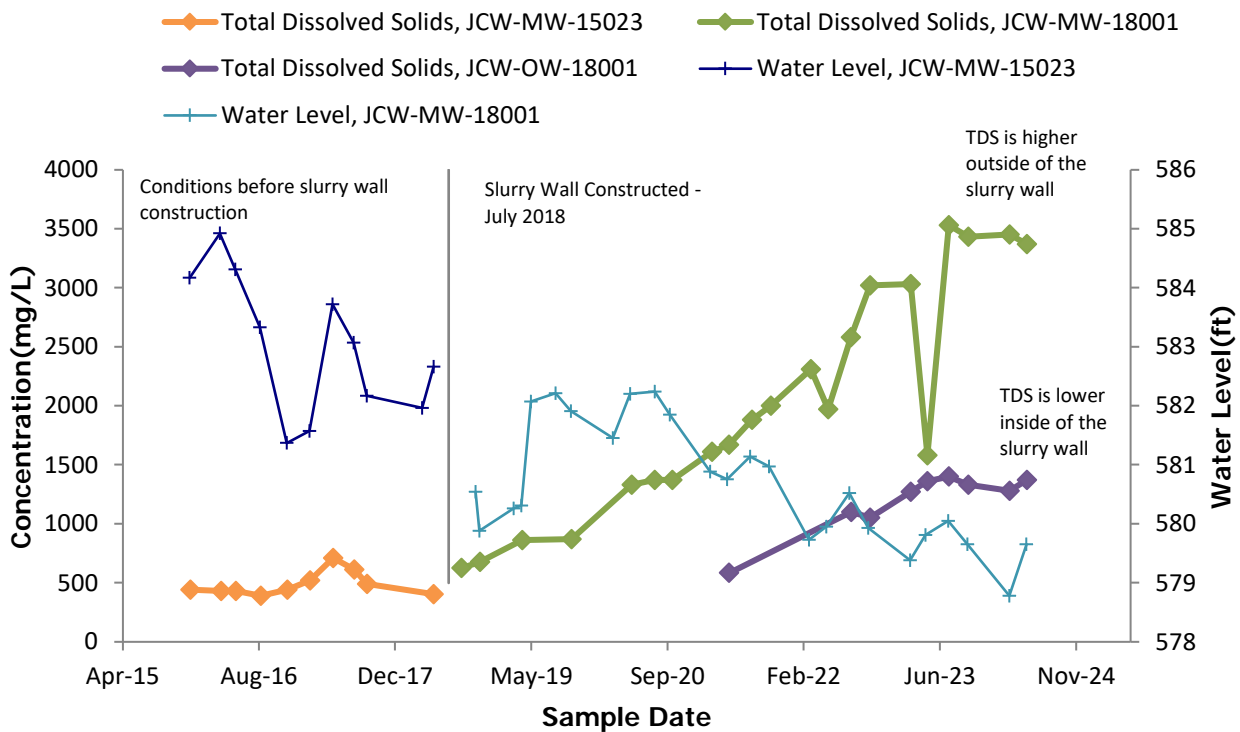
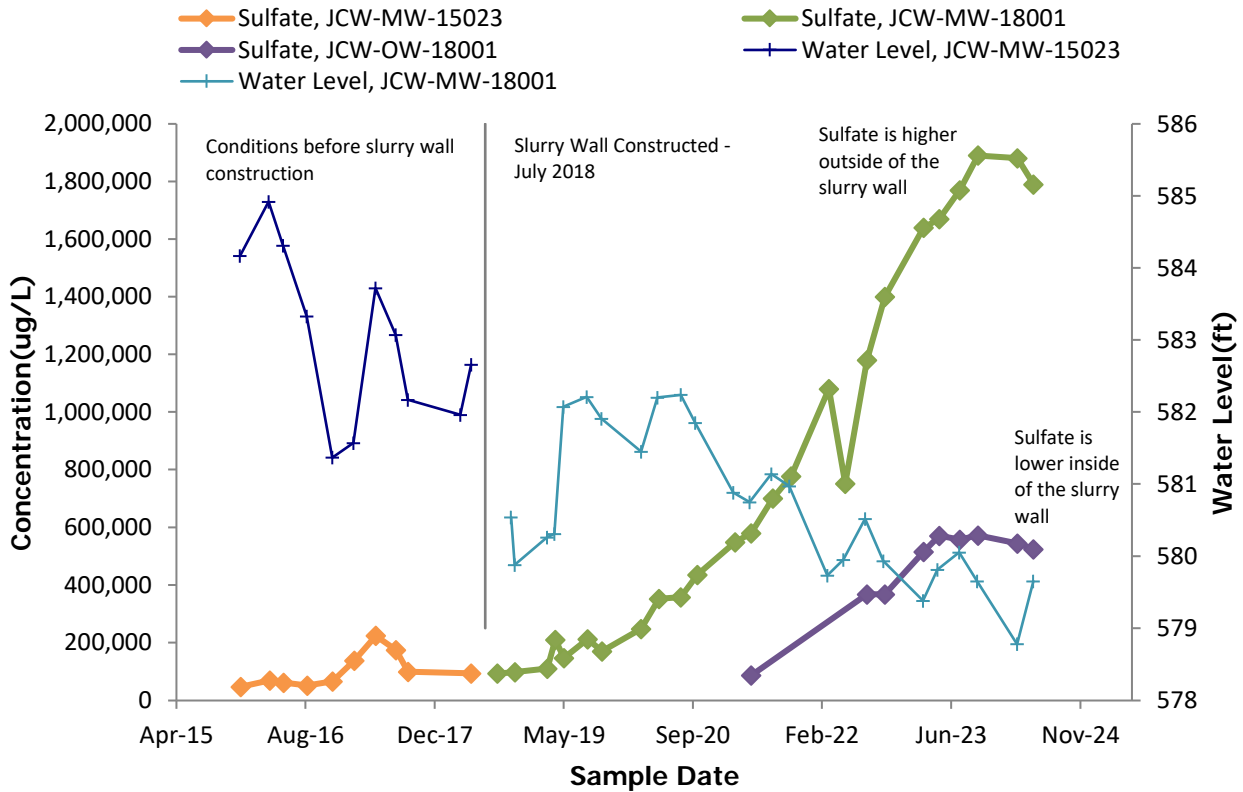


Figure G1: Time Series Plots for JCW-MW-18001 ASD

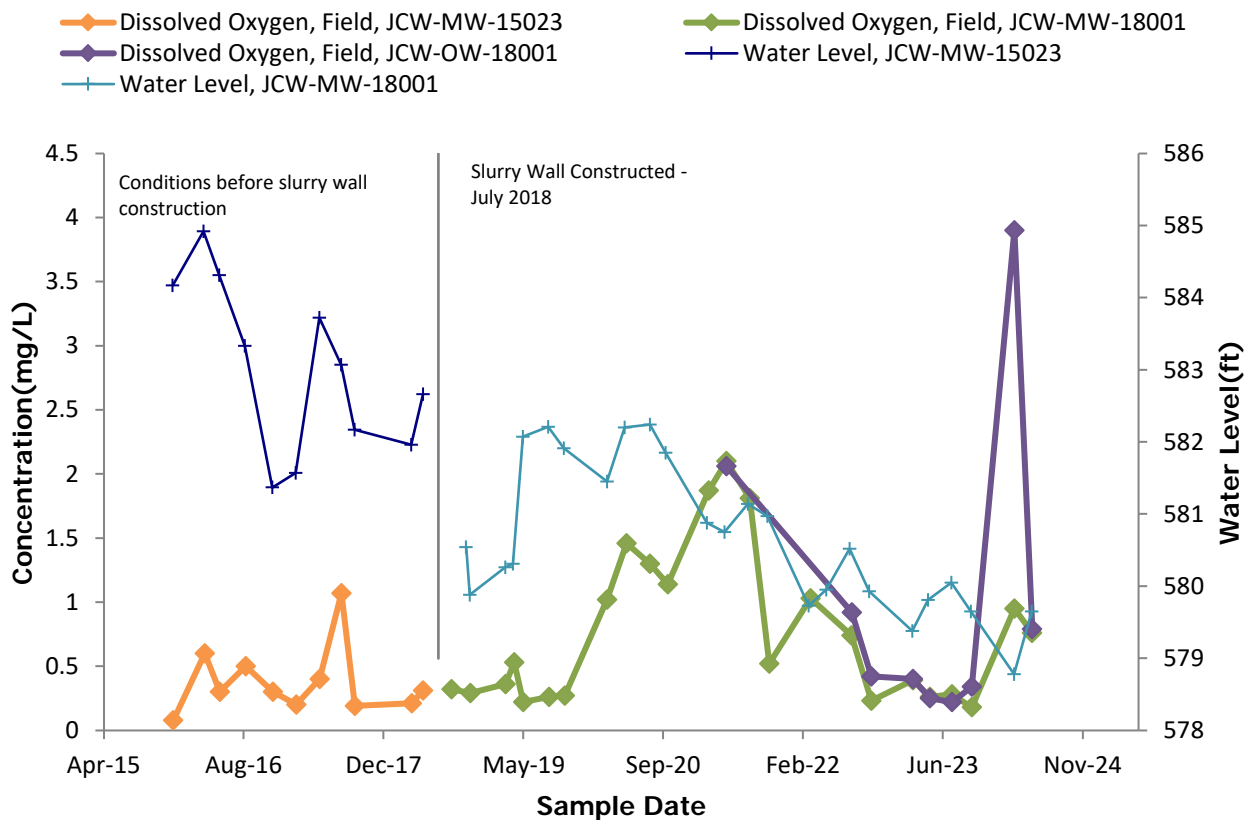
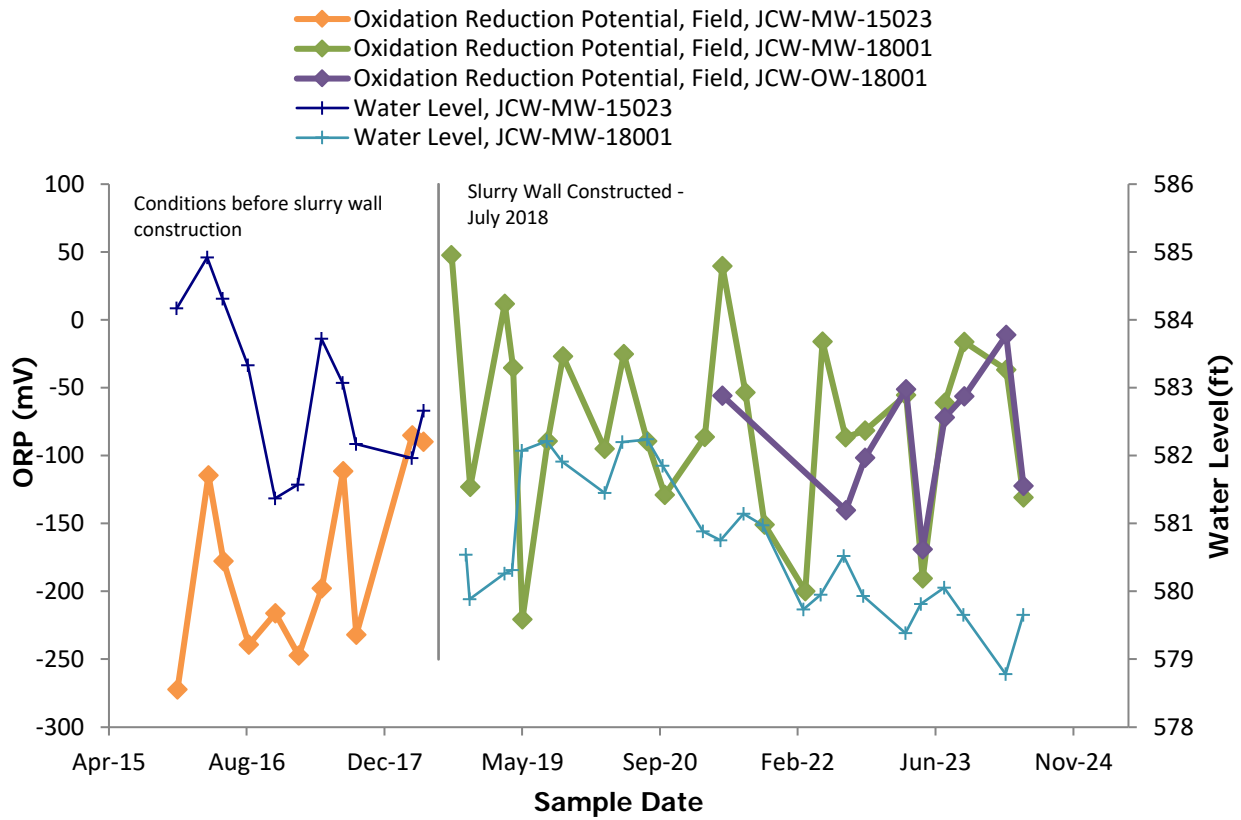
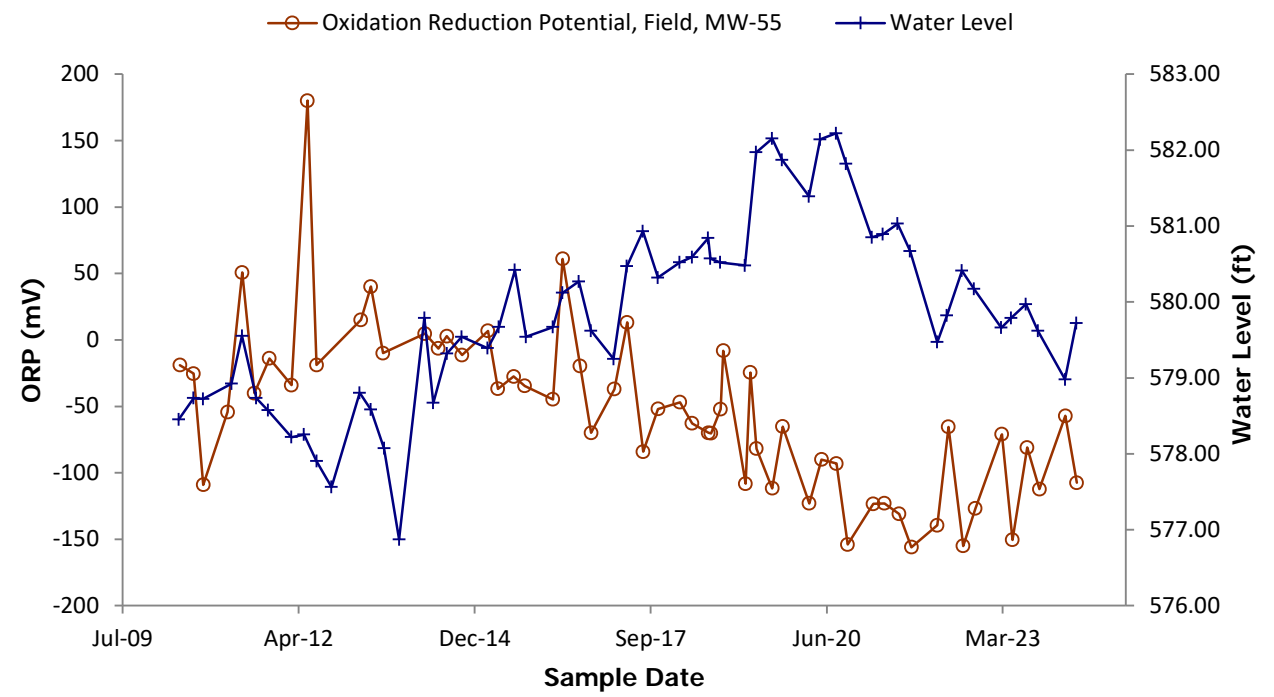
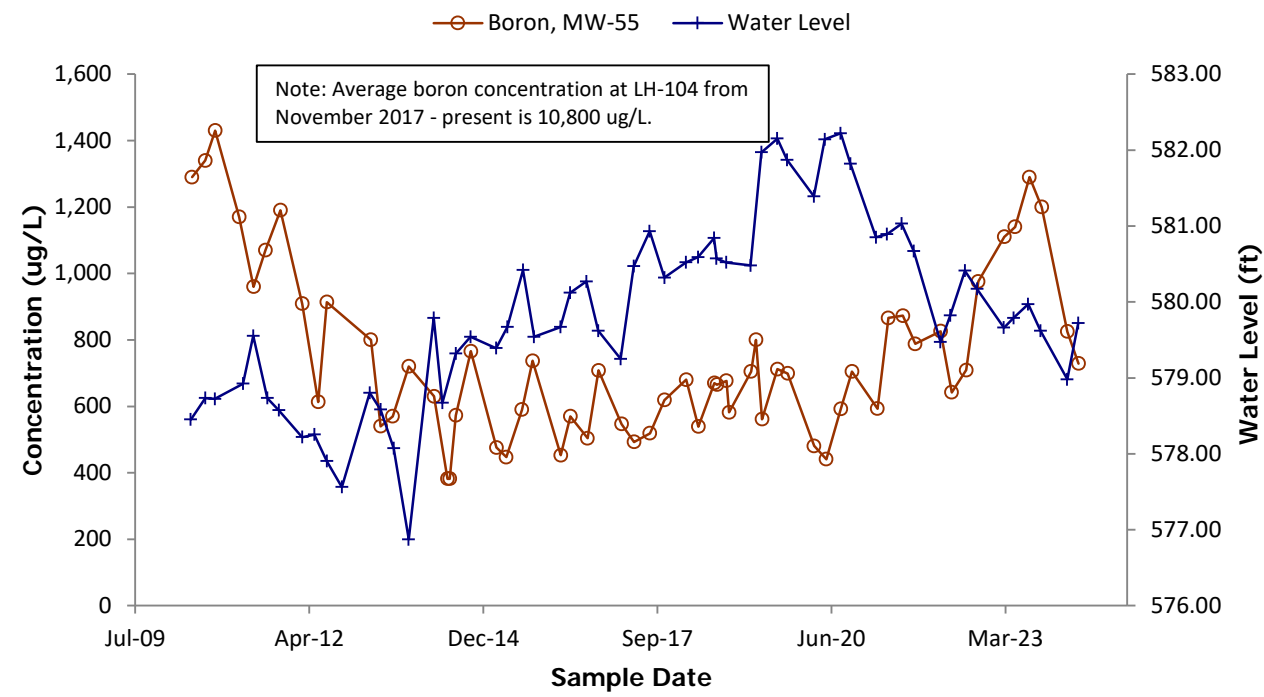
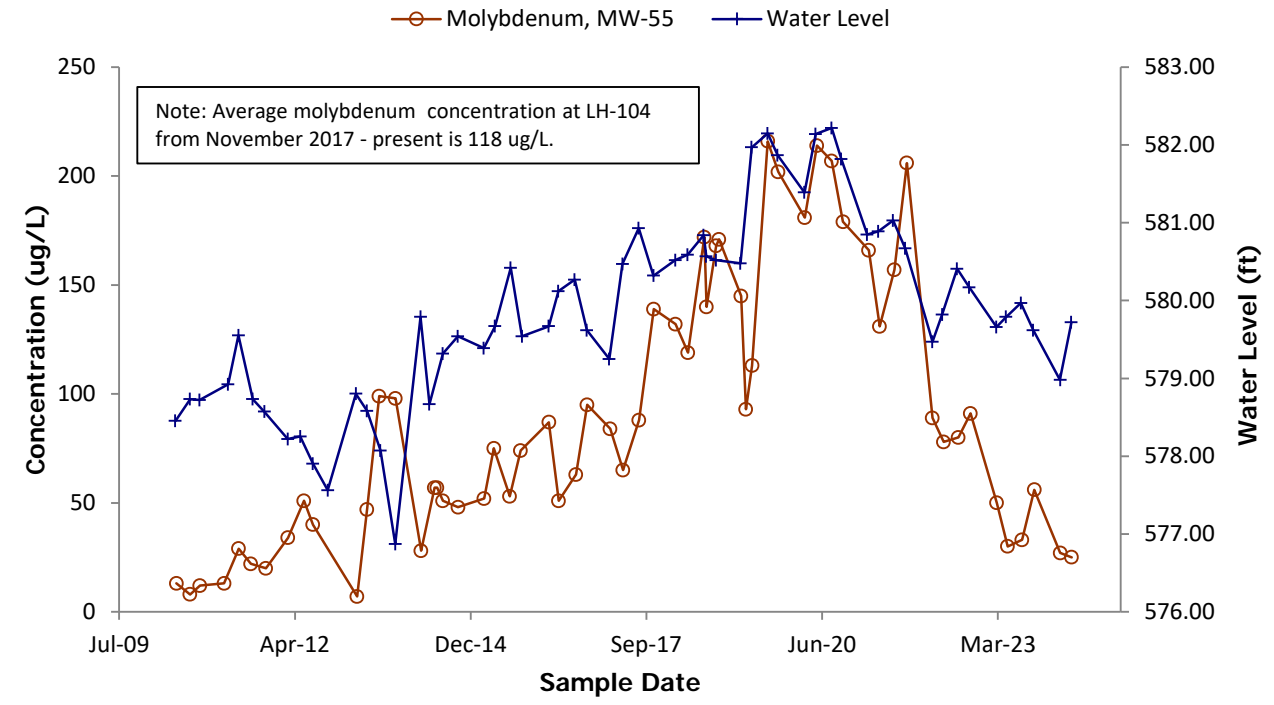
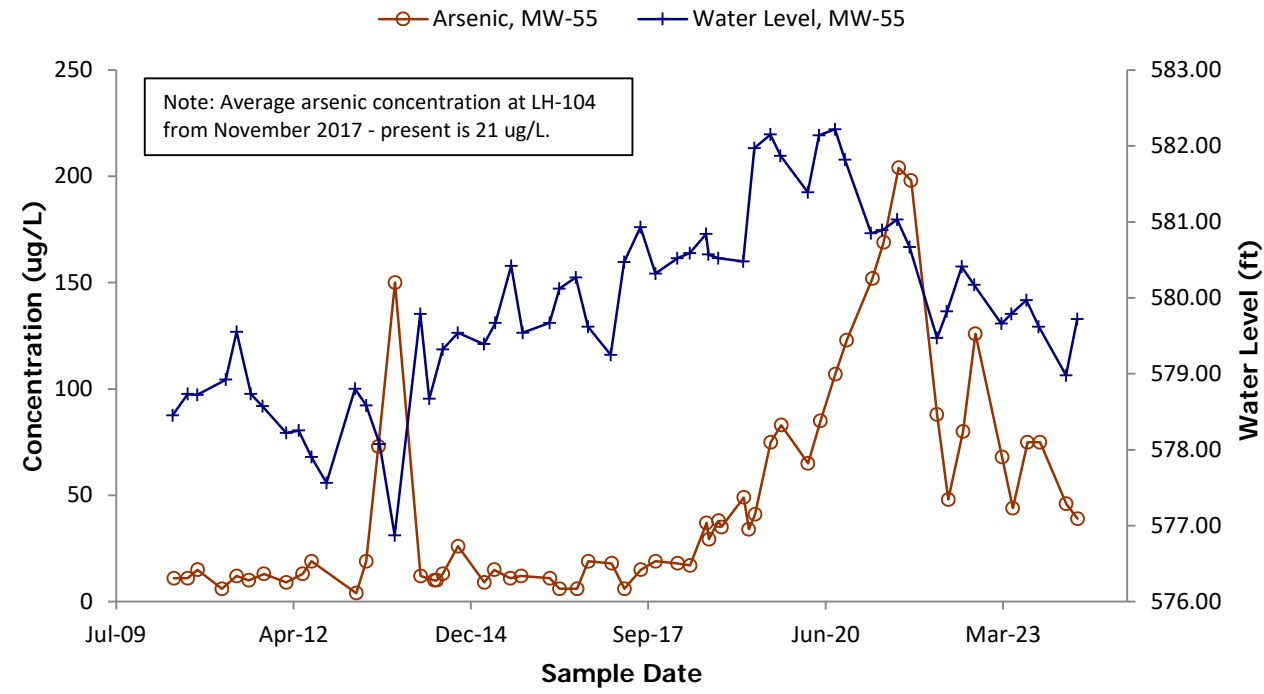


Figure G2: Time Series Plots for MW-55 ASD



Enclosure 4

**Third Quarter 2024 Hydrogeological Monitoring Report, JC
Weadock Solid Waste Disposal Area, Essexville, Michigan.
(TRC, October 30, 2024)**



Third Quarter 2024 Hydrogeological Monitoring Report

JC Weadock Solid Waste Disposal Area
Essexville, Michigan

October 2024

A handwritten signature in blue ink that reads "Darby Litz".

Darby Litz
Project Manager/Hydrogeologist

Prepared For:

Consumers Energy
1945 W. Parnall Road
Jackson, MI 49201

Prepared By:

TRC
1540 Eisenhower Place
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Kristin Lowery".

Kristin Lowery, P.E.
Project Engineer

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1
1.2	Program Summary	2
1.3	Site Overview	3
1.4	Geology/Hydrogeology.....	3
2.0	Leachate Monitoring	5
3.0	Groundwater Monitoring.....	6
3.1	Monitoring Well Network	6
3.2	July 2024 Monitoring Event.....	7
3.2.1	<i>Data Quality Review</i>	8
3.3	Groundwater Flow Rate and Direction	8
3.4	Groundwater Analytical Data and Relevant Screening Criteria	9
3.4.1	<i>Detection Monitoring</i>	9
3.4.2	<i>Assessment Monitoring Data Evaluation</i>	11
3.4.2.1	Establishing Groundwater Protection Standards.....	11
3.4.2.2	Data Comparison to Groundwater Protection Standards.....	11
3.4.3	<i>GSI Compliance Monitoring</i>	12
3.5	Alternate Source Demonstration	14
3.5.1	<i>Monitoring Well JCW-MW-18001: Calcium and Sulfate</i>	15
3.5.2	<i>Monitoring Well MW-55: Arsenic and Molybdenum</i>	15
4.0	Conclusions and Recommendations	17
5.0	References	18

TABLES

Table 1	Summary of Groundwater Elevation Data
Table 2	Summary of Field Parameters
Table 3	Summary of Groundwater Sampling Results (Analytical): DE Karn & JC Weadock Background
Table 4	Summary of Groundwater Sampling Results (Analytical): JC Weadock Solid Waste Disposal Area
Table 5	Summary of Confidence Interval Evaluation: July 2024
Table 6	EGLE Exceedance Summary Table

FIGURES

- Figure 1 Site Location Map
- Figure 2 Site Map
- Figure 3 Potentiometric Surface Map – July 2024

APPENDICES

- Appendix A Static Water Level Evaluation
- Appendix B Data Quality Review
- Appendix C Detection Monitoring Statistical Trend Tests
- Appendix D Assessment Monitoring and GSI Statistical Evaluation
- Appendix E Laboratory Analytical Report
- Appendix F Field Records
- Appendix G Alternate Source Demonstration Supporting Information

1.0 Introduction

Consumers Energy implemented a comprehensive compliance monitoring plan documented in the *Revised Hydrogeological Monitoring Plan* (Natural Resource Technology, 2010) for the JC Weadock Solid Waste Disposal Area as required by Special License Condition 20.b in Solid Waste Disposal Area Operating License No. 9233 issued on October 15, 2009. Since that time, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended) imposing groundwater monitoring and corrective action requirements that apply to the landfill (Weadock Landfill). Subsequently, Michigan amended Part 115 of the Natural Resources and Environmental Protection Act (NREPA) PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management) to provide a basis for establishing a groundwater monitoring system and initiating detection and assessment monitoring to conform requirements for any licensed coal ash impoundment or landfill after December 28, 2018, with Part 115 amendments and the CCR Rule.

On January 15, 2021, Consumers Energy submitted the *Landfill Hydrogeological Monitoring Plan, JC Weadock Power Plant, Essexville, Michigan* (Weadock Landfill HMP), which includes components for Detection Monitoring and Assessment Monitoring, as well as Groundwater Surface Water Interface (GSI) Compliance Monitoring, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115 and the CCR Rule. The Weadock Landfill HMP (TRC, February 2021) was revised per EGLE comments, submitted, and approved by EGLE on February 19, 2021, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Third Quarter 2024 JC Weadock Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring and reporting requirements during the active life of the coal ash landfill. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 *Format for Solid Waste Disposal Facility Monitoring Submittals*. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the Weadock Landfill HMP that was approved by the EGLE on February 19, 2021. The Weadock Landfill HMP is compliant with Public Act No. 640 of 2018 (PA 640) to amend the NREPA, also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the third quarter 2024 at the JC Weadock Solid Waste Disposal Area (*i.e.* the Weadock Landfill) located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). This JC Weadock Disposal Area is currently authorized under a permit (Groundwater Discharge Authorization GWE-0005) issued pursuant to Part 31 to discharge to the unusable aquifer directly underlying the solid waste that vents almost immediately to the Saginaw River and Saginaw Bay.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule. Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report JC Weadock Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming SSIs over background were as follows:

- Boron at JCW-MW-15011, JCW-MW-15012, JCW-MW-15023; and
- Field pH at JCW-MW-15023 (high).

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notice to the Department on January 14, 2019 that arsenic was detected at statistically significant levels above the federal groundwater protection standards (GWPS) established pursuant to §257.95(h) in one monitoring well at the Weadock Landfill (JCW-MW-15023), which was located downgradient of a 1,600 linear foot vent within the slurry wall enclosing the historical fly ash disposal area. The vent was designed to direct groundwater flow beneath the landfill to the discharge channel immediately upgradient from the National Pollutant Discharge Elimination System (NPDES) external outfall to prevent water from building up within the facility. In July 2018, this vent was closed (Golder, 2018) and the engineering improvement was approved by the Department (MDEQ, 2018). As a part of the vent closure, monitoring wells JCW-MW-15011, JCW-MW-15012, and JCW-MW-15023 were decommissioned by overdrilling, removing the well material, and sealing the borehole to allow for the slurry wall construction as discussed in the *2018 Annual Groundwater Monitoring Report for the JC Weadock Landfill CCR Unit* (TRC, 2019a). Consumers Energy installed an additional nine monitoring wells in August 2018 to supplement the preexisting Michigan Part 115 compliance groundwater well network and provide appropriate coverage for the collection of groundwater levels and water quality data along the perimeter of the Weadock Landfill, as discussed in the Weadock Landfill HMP. Closing the vent and completely encircling the Weadock Landfill with a soil-bentonite slurry wall has demonstrated reduced groundwater flux around the entire perimeter of the landfill.

In March 2019, Consumers Energy submitted a Response Action Plan (Consumers, 2019), which identified interim response activities taken or to be taken to control possible sources of contamination. Consumers Energy further evaluated arsenic in groundwater at the Weadock Landfill as part of the nature and extent analysis and outlined potential remedies in the *Assessment of Corrective Measures* (TRC, 2019b), which was initiated on April 14, 2019, and completed on September 11, 2019, and focused on materials management with an emphasis

on improving source control through the closure plan.

Compliance monitoring is being implemented under the Weadock Landfill HMP dated February 2021 and approved by the EGLE on February 19, 2021. Groundwater data collected in accordance with the Weadock Landfill HMP are used to:

- Assess background groundwater quality for the purposes of establishing and updating GWPS (HMP Section 7.1 Background Determination)
- Perform detection monitoring to assess whether a new release has occurred during operation of the landfill (*i.e.* statistically significant increase (SSI) over background) (HMP Section 7.2 Detection Monitoring)
- Perform assessment monitoring to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the GWPS) (HMP Section 7.3 Assessment Monitoring)
- Assess compliance with the GSI pathway (HMP Section 7.4)

Consumers Energy also continues to execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98 of the CCR Rule, which includes semiannual assessment monitoring in accordance with §257.95 during the second and fourth calendar quarters. Assessment monitoring data collected in accordance with the CCR Rule is used to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the Appendix IV GWPS).

1.3 Site Overview

The JC Weadock Solid Waste Disposal Area is located within the former JC Weadock Power Plant (Site), located south of the DE Karn Power Plant, east of the Saginaw River, west of Underwood Drain and Saginaw Bay, and north of Tacey Drain and agricultural land (Figure 1). In addition to the disposal area, the Site consists of the generating facility which retired eight coal-fired generating units and infrastructure and utilities that support electrical transmission. Units 1 to 6 commenced operation in 1940 and retired in 1980 and Units 7 and 8 were added in 1955 and 1958 continued to operate through April 15, 2016.

1.4 Geology/Hydrogeology

The majority of Weadock Landfill area is comprised of surficial CCR and sand fill, as described in the Weadock Landfill HMP. USGS topographic maps and aerial photographs dating back to 1950, in addition to field descriptions of subsurface soil at the Site, indicate that the Site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10-30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25-75 ft bgs. A sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs. In general, the alluvium soils (sands) are deeper along the

Saginaw River and there are shallower lacustrine deposits (clays, silts, and sands deposited in or on the shores of glacial lakes) at other areas. Along the perimeter of the landfill, there is a well-graded sand unit present at depths ranging from 10 to 20 ft bgs. The sand is variable in thickness, ranging from <1 to ~6.5 feet, and is discontinuous along the landfill perimeter, as evidenced by the soil boring logs and slurry wall construction documentation.

The alluvium soils pinch out and are not observed in soil borings located south and east of the Weadock Landfill, along the location of the historic shoreline. The non-water-bearing region south of these units extends for at least a mile south and southeast of the Site.

Beneath the surficial fill and sand unit (where present) is 70 to 80 feet of clay till. Along the southern perimeter of the landfill, some of the upper portion of the clay till is sand-rich (generally greater than 20 ft bgs). The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. The sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs.

The Weadock Landfill is bounded by several surface water features (Figures 1 and 2): the Saginaw River to the west, a discharge channel and Saginaw Bay (Lake Huron) to the north, Underwood Drain to the east, and Tacey Drain to the south. Groundwater flow in this water bearing zone is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay.

2.0 Leachate Monitoring

The leachate monitoring program consists of an annual laboratory leachate sampling program (Q1) and an annual field leachate sampling program (Q4) per the Weadock Landfill HMP. This program was instituted to maintain the facility under the applicable portions of Part 115, Rule 311 – Leaching tests to evaluate potential for groundwater contamination at unlined industrial waste landfills. Specifically, Subrule (3) states that waste that is disposed of in an industrial waste landfill shall be retested to evaluate potential for groundwater contamination annually or on a more frequent schedule as specified by the solid waste control agency. In addition to field leachate testing conducted annually to evaluate appropriateness of monitored constituents and changes to fate and transport properties, an annual laboratory leachate analysis program was included to better understand what, if any, changes to waste placement may be occurring at the Weadock Landfill based on the addition of air emissions controls and the commingling of air emissions controls residuals (Spray Dry Absorber – SDA) over time. The Weadock Landfill HMP includes the laboratory leachate testing program, consisting of four dry-handled Coal Combustion Residual (CCR) samples commingled with SDA materials collected from each of the disposal silos dedicated to DE Karn Electrical Generating Units 1 and 2. Karn Units 1 & 2 permanently ceased operation on May 31, 2023, so additional CCR and air emissions residuals are not being generated; therefore, there are no results to report for this waste stream. In order for the Weadock Landfill to achieve the final grades as approved in the Revised Final Closure Plan (Golder, March 2022), it is noteworthy that the landfill continues to receive materials in the form of uncontaminated soil from documented sources, and limited contaminated soil that has been authorized for placement in the Weadock Landfill under the Beneficial Use 4 designation as other materials designated for construction at a licensed solid waste disposal facility. These results are maintained with the closure certification documentation.

Additional support for evaluating the potential for groundwater contamination at the unlined industrial waste landfill includes the field leachate monitoring program conducted during the fourth quarter of each year. This program consists of an annual sampling collection from two (2) leachate headwells; LH-103R and LH-104. This program was implemented to determine constituents in the leachate as measured under actual conditions in the field and to assess which constituents have the potential to exceed applicable criteria at the compliance well locations.

There are no leachate data to report this quarter.

3.0 Groundwater Monitoring

3.1 Monitoring Well Network

The groundwater monitoring system presented in the Weadock Landfill HMP has been established in accordance with R 299.4906 and the CCR Rule §257.91 and consists of 27 monitoring wells (four background monitoring wells, 12 downgradient monitoring wells, and 11 additional wells used for static water level measurements only) that are screened in the uppermost aquifer. The monitoring well network has been designed to provide appropriate coverage for water level and water quality data collection along the perimeter of the landfill. The monitoring well locations are shown on Figure 2. Monitoring well specifications and purpose (i.e. static water level monitoring, groundwater quality monitoring, or GSI monitoring) are included in Table 1.

The Weadock Landfill HMP groundwater monitoring system consists of the following:

- **Background Groundwater Quality:** Four monitoring wells located southwest of the Weadock Landfill provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019) and are used to establish groundwater protection standards (GWPSs) for the landfill:
 - MW-15002 – MW-15008 – MW-15016 – MW-15019
- **Downgradient Groundwater Quality:** The twelve downgradient monitoring wells, located on the outside of the perimeter slurry wall include:
 - JCW-MW-18001 – JCW-MW-18004 – JCW-MW-18005 – JCW-MW-18006
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – OW-57R Out
- **Groundwater-Surface Water Interface (GSI) Monitoring:** Monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the monitoring program to meet the requirements of Part 31. Locations and alignments were established in the Phase II Groundwater Discharge Evaluation, Figure: Appendix K (Natural Resource Technology, 2005) as a baseline for monitoring future results. These monitoring wells are screened across the water table of the uppermost aquifer and serve as GSI monitoring wells to determine compliance with generic GSI criteria or site-specific mixing zone-based criteria as appropriate. The eight GSI compliance monitoring wells include:
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – JCW-MW-18004
- **Static Water Level Measurement Only:** Eleven additional monitoring wells, located on the inside of the perimeter slurry wall at paired locations with several of the downgradient monitoring wells, are used to evaluate the groundwater flux across the slurry wall:
 - JCW-OW-18001 – JCW-OW-18002 – JCW-MW-18003 – JCW-MW-18004
 - JCW-MW-18005 – JCW-MW-18006 – MW-20 – OW-51
 - OW-53 – OW-54 – OW-55 – OW-56R
 - OW-57R IN – OW-61 – OW-63

3.2 July 2024 Monitoring Event

In accordance with the Weadock Landfill HMP, TRC conducted the third quarter 2024 monitoring event for the Weadock Landfill by collecting water levels and groundwater samples on July 22 through 24, 2024. Samples that were collected during this event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan for analysis of total metals and inorganic parameters. Quarterly monitoring constituents include:

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents	
Boron	Antimony	Lithium
Calcium	Arsenic	Mercury
Chloride	Barium	Molybdenum
Fluoride	Beryllium	Nickel
Iron	Cadmium	Selenium
pH	Chromium, total	Silver
Sulfate	Cobalt	Thallium
Total Dissolved Solids (TDS)	Copper	Vanadium
	Fluoride	Zinc
	Lead	

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity. Analytical results from the monitoring event are included in the attached laboratory reports (Appendix E).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the Weadock Landfill HMP. Static water elevation data are included in the attached field records (Appendix F).

Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Groundwater samples were collected using a peristaltic pump. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Groundwater sample preparation and analyses were performed in accordance with SW-846 “Test Methods for Evaluation Solid Waste – Chemical / Physical Methods,” USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of two field blanks, one equipment blank, three field duplicates (MW-15008, OW-57R OUT, and MW-50), and one field matrix spike/matrix spike duplicate sample pair (JCW-MW-18001).

3.2.1 Data Quality Review

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The laboratory data were found to be complete and usable for the purposes of the Weadock Landfill HMP. The data quality reviews for the JC Weadock Disposal Area network wells are summarized in Appendix B.

3.3 Groundwater Flow Rate and Direction

Potentiometric monitoring in the unusable aquifer beneath the facility includes static water level data collected for development of water table contours and evaluation of the potential for discharge from the facility. The monitoring under this section will be conducted quarterly until closure, as approved by the Director, and semiannually during the 30-year post-closure period. Monitoring will continue until the end of post closure (30 years) or as otherwise approved by the Director.

The measurements for top of casing (TOC) and recorded depth to water (DTW) with corresponding calculated static water level (SWL) is tabulated and presented in Table 1. A potentiometric surface map is provided as Figure 3.

Groundwater elevations measured at the Site in July 2024 are generally within the range of 580 to 594 feet above mean sea level (ft NAVD88). Groundwater elevations in monitoring wells located adjacent to Saginaw Bay and adjoining surface water bodies are typically encountered at a similar or slightly higher elevation relative to surrounding surface water features measured by the NOAA gauging station. A time-series plot included in Appendix A compares the groundwater elevation of at the GSI monitoring wells (MW-50, MW-51, MW-52, MW-53, MW-54R, JCW-MW-18004, and MW-55) to the nearby NOAA staff gauge. Water levels in wells adjacent to surface water bodies (e.g. Saginaw Bay, Tacey Drain) closely mirror the surface water elevation. Such conditions would result in a minimal gradient to potentially a reverse gradient (i.e., toward the landfill) between the well and the drain which would result in minimal to zero mass flux to the drain (Appendix A: Table A1).

The groundwater monitoring system is structured such that there are eleven monitoring well pairs used to evaluate the hydraulic gradient and potential for water flux across the slurry wall. Static water level observations from the paired wells are shown on time series charts in Appendix A. The static water level elevations inside of the Weadock Landfill perimeter slurry wall are generally significantly different (>3 ft) than static water levels outside of the slurry wall, which demonstrates the presence of a low permeability feature between the well pairings inside and outside of the constructed slurry wall. As such, the water level elevations indicate that the slurry wall is performing as designed. The general flow direction observed within the confinement of the slurry wall is similar to that identified in previous monitoring rounds. Due to the potential for radial flow, the downgradient wells are appropriately positioned to detect the presence of detection or assessment parameters that could potentially migrate from the Weadock Landfill. As shown on Figure 3 and in Appendix A, the static water level outside of the slurry wall is lower than the static water level inside of the wall; therefore, the potential groundwater flux across the slurry wall was calculated and included in Table A2 of Appendix A.

3.4 Groundwater Analytical Data and Relevant Screening Criteria

Groundwater analytical data are evaluated in accordance with the Weadock Landfill HMP to determine the effectiveness of landfill structural and operational enhancement measures on the quality and quantity of groundwater flow beneath the footprint of the facility (Section 3.4.1 Detection Monitoring and Section 3.4.2 Assessment Monitoring). Additionally, analytical results are evaluated in support of GSI compliance. GSI criteria only apply to the designated compliance point as specified in Section 3.4.3 below; however, analytical results and data trends in groundwater collected from the perimeter dike wells are evaluated to identify potential GSI compliance issues. Data are evaluated by using a combination of screening against relevant criteria, as well as utilizing statistical analyses.

Analytical results from the third quarter 2024 monitoring event are included in the attached laboratory report (Appendix E). Groundwater analytical data from the third quarter 2024 monitoring event are summarized in Table 3 (background monitoring wells) and Table 4 (Weadock Landfill Monitoring Wells), as well as the associated Part 201 generic GSI and site-specific mixing-zone GSI criteria. Field data are summarized in Table 2.

Mixing-zone criteria for arsenic, boron, and selenium are provided for the Karn-Weadock complex in the mixing zone determination, dated December 23, 2015 (MDEQ, 2015). As such, arsenic, boron, and selenium are compared to site-specific mixing zone-based GSI criteria, and all other constituents are screened against generic GSI criteria. All data are screened against GSI criteria; however, compliance with GSI criteria is determined at select monitoring locations as noted in Section 3.4.3 below.

The mixing zone determination included both final acute values (FAV) and final chronic values (FCV). If a concentration of a constituent at a groundwater well exceeds the acute criteria, and the exceedances are upgradient of the GSI compliance monitoring wells, Consumers Energy must demonstrate that data from all of the compliance monitoring wells are, and will be, in compliance with acute mixing zone-based GSI criteria for those parameters. Averaging of groundwater data is not allowed for comparison to generic GSI or acute mixing zone-based GSI criteria. Acute mixing zoned-based or generic GSI criteria may not be exceeded in any individual GSI compliance monitoring well. If a concentration of a constituent at a well exceeds the chronic criterion, compliance can be demonstrated on a mass-flux basis. The facility can choose to demonstrate compliance by evaluating the total chronic loading based upon the contribution from each compliance well with respect to the total flux observed in the mixing zone.

Table 6 provides a summary of the exceedances over the most recent four quarters in accordance with the EGLE-prescribed format; only well/constituent pairs that exceed the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3) within the last four quarters are included.

3.4.1 Detection Monitoring

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of

potentiometric analysis and groundwater quality analysis. The potentiometric analysis, as discussed in Section 3.3, demonstrates that the slurry wall is performing as designed.

In addition to the comparison of analytical data to relevant screening criteria (Table 4), statistical trend analyses are used to evaluate groundwater quality each quarter. Consumers Energy manages and evaluates its groundwater data using Sanitas™ Statistical Software. Consumers Energy conducts intrawell trend analyses to examine data for a given well over time to determine if changes in water quality are occurring that may be associated with the landfill and to identify potential GSI compliance issues. Specifically, the Mann-Kendall test for trend was performed at a significance level (α) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant.

Appendix C includes a table summarizing the results of the trend tests as well as the Sanitas™ output summary statistics and graphs. Data are stable or declining for the majority of the well/constituent pairs, with the following exceptions:

- The new increasing trend for boron that was observed at MW-53 in Q2 2024 was confirmed this quarter.
- A new, unconfirmed increasing trend for chloride was observed at MW-53 in Q3 2024.
- New, unconfirmed increasing trends in pH were observed at monitoring wells MW-50 and MW-54R in Q3 2024. The new increasing trend for pH that was observed at MW-53R in Q2 2024 was confirmed this quarter.
- The confirmed increasing trend for sulfate at JCW-MW-18001 and JCW-MW-18006 continued in Q3 2024.
- The new increasing trend for total dissolved solids that was observed at JCW-MW-18006 in Q2 2024 was confirmed this quarter.

Although increasing trends for detection monitoring constituents were observed, individual constituent trends provide a *potential indication* that there may be a release coming from the monitored unit. When these indicator trends are evaluated with other co-monitored conditions and parameters at the Weadock Landfill, the increasing trends for detection monitoring constituents do not appear to be a result of a new release from operation of the landfill. The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill. Several of these recently observed trends, such as those observed for sulfate at JCW-MW-18001, and for sulfate and total dissolved solids at JCW-MW-18006 are likely a result of localized geochemical changes influenced by changes in water levels rather than a change in flux from the landfill and will continue to be evaluated. The increasing trend of sulfate in JCW-MW-18001 has resulted in a statistically significant GWPS exceedance, as noted in Section 3.4.2; however, an alternate source demonstration for this constituent is presented in Section 3.5. Additionally, sulfate concentrations in each of the GSI compliance monitoring wells remain below the relevant Part 115 compliance standard – the GSI pathway standard.

Consumers is further evaluating possible causes of the increasing boron concentrations at several porewater compliance monitoring wells. Previous studies (NRT, 2005) documented boron at significantly elevated concentrations at the Karn-Weadock Power Generating Complex. Boron was also identified as an SSI over background levels in the 2017 *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit* (TRC, 2018) and was one of the detection monitoring constituents that triggered the initiation of the assessment monitoring program. Statistical significance above the GWPS established for boron has been noted for these monitoring wells per the Part 115 groundwater monitoring program requirements, as discussed in Section 3.4.2.2. Continued monitoring and assessment for potential future actions is warranted at this time; however, observed concentrations of boron in each of the monitoring wells are less than the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3).

3.4.2 Assessment Monitoring Data Evaluation

Assessment monitoring is continuing at the Weadock Landfill in accordance with the Weadock Landfill HMP and §257.95. The assessment monitoring data were statistically evaluated in accordance with the procedures in the Weadock Landfill HMP. The statistical evaluation details are provided in Appendix D. A summary of the confidence interval evaluation is provided in Table 5.

3.4.2.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess constituent concentrations present in groundwater as a result of CCR unit operations by statistically comparing concentrations in the downgradient wells to each of the respective GWPSs for each detection and assessment monitoring constituent. The calculation of the GWPSs in accordance with the Weadock Landfill HMP is documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). The Federal CCR Rule requires establishment of GWPSs for assessment monitoring (Appendix IV) constituents only. Part 115 requires establishment of GWPSs for both detection and assessment monitoring constituents.

3.4.2.2 Data Comparison to Groundwater Protection Standards

Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009) and the Weadock Landfill HMP, the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient data exceeds the GWPS.

Detection Monitoring Constituents (Part 115): The third quarter 2024 statistical evaluation indicates that boron at MW-50, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001 were present at statistically significant levels above the GWPS. The GWPSs for boron, calcium, and sulfate were established based on background concentrations observed in wells unaffected by the Weadock Landfill or Weadock Bottom Ash Pond. Detection monitoring (i.e., Appendix III) constituents do not have associated health-based criteria and

there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Overall, data continue to demonstrate compliance with the applicable criteria, for the following reasons:

- Boron was one of the Appendix III SSIs that originally triggered assessment monitoring. There is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway, as discussed further in Section 3.4.3 below. Boron concentrations have been consistently above the GWPS but less than the chronic-based mixing zone-based GSI criterion of 44,000 ug/L within the Weadock Landfill monitoring well network since monitoring under the Weadock Landfill HMP began in first quarter 2021.
- Calcium at JCW-MW-18001 was present at statistically significant levels above the GWPS beginning in first quarter 2023 resulting from increases in calcium concentration since first quarter 2021. Sulfate was present at JCW-MW-18001 at statistically significant levels above the GWPS for the first time in second quarter 2023 due to increasing concentrations. Consumers is asserting an ASD for the increases in calcium and sulfate at JCW-MW-18001, as detailed in Section 3.5.
- Sulfate and total dissolved solids at JCW-MW-18006 indicated increasing trends in third quarter 2024, as discussed in Section 3.4.1. However, the concentrations of sulfate and total dissolved solids at JCW-MW-18006 remain below the GWPSs.

Assessment Monitoring Constituents (Part 115 and Federal CCR): Based on the third quarter 2024 statistical evaluation, there are no assessment monitoring constituents present at statistically significant levels above the GWPSs within the Weadock Landfill groundwater monitoring system. Although concentrations of arsenic and molybdenum at MW-55 observed during individual sampling events are above the GWPS, the elevated concentrations of those constituents are not a result of a release from the Weadock Landfill, as detailed in Section 3.5. The head differential of 8.04 feet between OW-55 inside the slurry wall and MW-55 outside of the slurry wall also suggests that the integrity of the slurry wall is maintained and groundwater flow from the landfill to the south is impeded by the low permeability of the slurry wall. Groundwater conditions at MW-55 will continue to be monitored.

3.4.3 GSI Compliance Monitoring

The GSI monitoring program consists of the eight monitoring points located along the surface water features:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

Third quarter 2024 data from the GSI monitoring points are tabulated in Table 4. As described in the Weadock Landfill HMP, GSI monitoring program constituents were identified as detected constituents that have the potential to exceed the generic GSI criteria at the Weadock Landfill downgradient monitoring wells. At a minimum, these constituents include the following, identified based on prior groundwater monitoring as noted in the Weadock Landfill HMP:

- Boron
- Iron
- pH
- Sulfate

- Arsenic
- Lithium
- Selenium
- Chromium
- Molybdenum
- Vanadium

Additional constituents will be added to the GSI monitoring program as appropriate if detected above the relevant GSI criteria at the landfill monitoring wells in two consecutive events. Calcium, chloride, and total dissolved solids have been detected above the generic GSI criteria in one or more wells over two consecutive events; however, it is not appropriate to add these constituents to the GSI monitoring program for the following reasons:

- **Calcium:** Calcium has been detected above the generic GSI criterion at JCW-MW-18001. As discussed further in Section 3.5, the concentrations of calcium at JCW-MW-18001 are attributed to localized changes in geochemistry and are not indicative of a new release from the landfill. Concentrations in all other wells remain below the generic GSI criterion, supporting that the detected concentrations are localized to JCW-MW-18001. Given that JCW-MW-18001 is not a GSI compliance monitoring location and the increase in calcium is not attributed to the landfill operation, it is not appropriate to add calcium to the GSI compliance monitoring program.
- **Chloride:** Chloride has been detected above the generic GSI criterion of 50 mg/L in several wells. Chloride is regionally elevated, as evidenced by the calculated background concentration of 2,300 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All chloride concentrations are below the background concentration. Therefore, chloride is determined to be below the applicable level and is not included in the GSI compliance monitoring program.
- **Total Dissolved Solids:** Total dissolved solids (TDS) has been detected above the generic GSI criterion of 500 mg/L in several wells. TDS is regionally elevated, as evidenced by the calculated background concentration of 4,700 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All TDS concentrations are below the background concentration. Therefore, TDS is determined to be below the applicable level and is not included in the GSI compliance monitoring program.

The confidence interval calculations are provided in Appendix D. The confidence interval test compares the lower confidence limit to the GSI. Overall, data continue to demonstrate compliance with the applicable GSI criteria.

- **Boron:** The detection monitoring statistical evaluation found that boron concentrations are increasing at MW-53. The assessment monitoring statistical evaluation found that boron was present at statistically significant levels above the GWPS at MW-50, MW-52, MW-53,

MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006. Boron is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of boron are less than the recommended mixing-zone based GSI value specified in Table 3 of the *Implementation of a Mixing Zone Request, Consumers Energy DE Karn/JC Weadock Complex* (MDEQ, 2015) (Appendix D: Table 2).

- **pH:** The detection monitoring statistical evaluation found that pH readings were increasing at MW-53R. The assessment monitoring statistical evaluation found that pH was not present at statistically significant levels above the GWPS at any of the downgradient monitoring wells. pH is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of pH are within the applicable GSI criteria (Appendix D: Table 2).
- **Sulfate:** The detection monitoring statistical evaluation found that sulfate concentrations were increasing at JCW-MW-18001 and JCW-MW-18006. The assessment monitoring statistical evaluation found that sulfate was present at statistically significant levels above the GWPS at JCW-MW-18001, while sulfate concentrations at JCW-MW-18006 are below the GWPS. Sulfate is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Although JCW-MW-18001 and JCW-MW-18006 are not GSI compliance wells, the concentrations of sulfate at these wells remain below the applicable GSI criterion (Final Acute Value [FAV]). All observations of sulfate at the GSI compliance monitoring wells are also less than the applicable GSI criterion (Appendix D: Table 2).
- **Arsenic and Molybdenum at MW-55:** Concentrations of arsenic and molybdenum at MW-55 have at times exceeded the GSI criteria on a direct comparison to the fixed limit basis (Appendix D: Table 2).¹ The current groundwater sampling event results show that both arsenic and molybdenum concentrations are below applicable GSI criteria. The statistical evaluation presented in Appendix D shows that the lower confidence limit of the arsenic data over the past 8 events does not exceed the GSI criterion. Molybdenum concentrations have not directly exceeded the GSI criterion within the past 8 events; therefore, confidence limits were not calculated. Additionally, water levels in MW-55 closely mirror the surface water elevation measured at the NOAA gauging station, which indicates there is a minimal outward gradient to a potentially, modest reverse gradient (i.e., toward the landfill) between the monitoring well and the drain, resulting in a minimal to zero mass flux to the drain (Appendix A).

3.5 Alternate Source Demonstration

At this time, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD), for the following, as detailed below:

- Calcium and sulfate in monitoring well JCW-MW-18001; and
- Arsenic and molybdenum in monitoring well MW-55.

The groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below.

¹ Molybdenum was last observed at a concentration above the GSI criterion in fourth quarter 2021.

3.5.1 Monitoring Well JCW-MW-18001: Calcium and Sulfate

Although confirmed increasing trends were observed at JCW-MW-18001 for calcium (through Q3 2024) and sulfate (through Q2 2024) and concentrations of calcium and sulfate are present at statistically significant levels above the GWPSs at JCW-MW-18001, these trends are not indicative of a new release from the landfill. Calcium and sulfate are two of several constituents that contribute to the overall TDS concentration and increasing calcium and sulfate concentrations likely contribute to an overall increase in TDS as well. TDS concentrations are not currently exhibiting a statistically significant upward trend; however, TDS concentrations have been increasing in past events and the data are discussed as part of this ASD. Increases of calcium, sulfate, and TDS concentrations at JCW-MW-18001 are attributed to changes occurring outside of the slurry wall as a result of changing water levels, rather than a change in flux from the landfill; therefore, Consumers Energy is continuing to assert an ASD for these constituents. The following lines of evidence as well as additional time series charts included in Appendix G support this ASD:

- The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill (Appendix A).
- Concentration data also support that the slurry wall is effective in reducing the flux of groundwater from the landfill, based on the following observations (Appendix G1):
 - JCW-MW-18001 was installed after the 1,600 linear foot gap in the landfill perimeter slurry wall was closed, as discussed in Section 1.2. Prior to the slurry wall expansion in July 2018, monitoring well JCW-MW-15023 was located within the gap of the slurry wall and was sampled between December 2015 and May 2018 as a part of the original Federal CCR program monitoring well network. The groundwater quality data collected from JCW-MW-15023 shows that groundwater in contact with CCR managed within the landfill was high in arsenic, and low in sulfate, calcium, and TDS (Appendix G1).
 - To accommodate the July 2018 slurry wall expansion, JCW-MW-15023 was decommissioned. Once slurry wall construction was completed, JCW-MW-18001 was installed within 10-ft of the location of the former JCW-MW-15023 well, on the discharge channel side of the slurry wall. Additionally, an observation well, JCW-OW-18001, was installed on the landfill side of the slurry wall to monitor water levels to assess the effectiveness of the hydraulic control. Both JCW-MW-18001 (outside) and JCW-OW-18001 (inside) have been sampled recently to assess concentration trends.
 - Concentrations of arsenic are much higher inside of the slurry wall, within the landfill, while arsenic concentration remain low on the outside of the landfill.
 - Concentrations of calcium, sulfate, and TDS are much lower on the inside of the slurry wall and are higher outside of the slurry wall.
- These combined lines of evidence support that increasing concentrations of calcium, sulfate, and TDS are not a result of a change in flux from the landfill and instead are a result of changing groundwater conditions on the outside of the slurry wall.

3.5.2 Monitoring Well MW-55: Arsenic and Molybdenum

Additionally, Consumers Energy is continuing to assert an ASD for arsenic and molybdenum at MW-55 indicating elevated levels of constituents at that location are not related to materials

management of the Weadock Landfill (*2021 Annual Groundwater Monitoring and Corrective Action Report*; TRC, January 2022). The basis for this ASD is summarized below and updated time series plots in support of this ASD are included in Appendix G (Figure G2).

Data collected from the 2018 investigation as well as data collected during routine sampling events for Part 115 and Federal CCR groundwater compliance show the following:

- **Distinct Chemistry from Leachate** – The leachate chemistry from a monitoring well screened at the base of the ash fill (LH-104) is distinctly different from the groundwater chemistry near MW-55 and the temporary monitoring wells installed by TRC in the investigation area, as illustrated Appendix G of the 2019 Annual Groundwater Monitoring and Corrective Action Report (TRC, January 2020). Additionally, concentrations of arsenic are generally much lower, and concentrations of boron are much higher within the landfill (LH-104) than outside of the landfill at MW-55 (Figure G2).
- **Conservative Tracer** – Boron is a metalloid known to be present in coal ash and can be used as a conservative tracer in groundwater. The average concentration of boron in Leachate Headwell LH-104 (10,800 ug/L: November 2017 - October 2023) is significantly higher than concentrations observed at any of the other locations sampled as a part of this monitoring program. Additionally, recently observed boron concentrations at MW-55 are similar to or lower than historical concentrations, which further supports that the water quality at MW-55 is not directly affected by groundwater migrating from the landfill.
- **Reducing Conditions and Groundwater Head Levels** – Water levels observed at MW-55, as shown in Appendices A and G, increased over 4-ft between 2010 and 2020. The oxidation-reduction potential (ORP) at MW-55 has generally decreased (i.e., is more reducing) since 2010. The lowering of ORP over time as a result of increased water levels has changed the geochemical conditions in the vicinity of MW-55 and has resulted in increased solubility of arsenic and molybdenum. Since 2021, water levels have been generally decreasing, resulting in a slight increase in ORP (i.e., is less reducing) and decreases in concentrations of both arsenic and molybdenum, which further illustrates the relationship between groundwater elevations, redox state, and concentration of arsenic and molybdenum in groundwater.

4.0 Conclusions and Recommendations

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. Evaluation of the third quarter 2024 data demonstrate that the slurry wall is functioning as designed.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule, as discussed in the *2023 Annual Groundwater Monitoring and Corrective Action Report*, due to observed groundwater concentrations that are indicative of impact from past landfill operations. Evaluation of the third quarter 2024 data in accordance with the Weadock Landfill HMP demonstrate that boron, calcium, and sulfate are present at concentrations above the GWPSs. Boron, calcium, and sulfate are detection monitoring (i.e., Appendix III) constituents that do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. The statistical evaluation in third quarter 2024 found that no constituents were present at statistically significant levels above applicable GSI criteria.

Therefore, Consumers Energy will continue with the detection and assessment monitoring as required by the CCR rule as well as the monitoring program relative to the implementation of the site-specific mixing zone authorization at the Weadock Landfill unit in conformance with the JC Weadock Landfill HMP. The fourth quarter monitoring event for is scheduled for October 2024. This fourth quarter monitoring event will also serve as a semiannual assessment monitoring event in accordance with the CCR Rule.

5.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. JC Weadock Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. November 6.
- Consumers Energy Company. 2015. *Hydrogeological Monitoring Plan Rev. 2: JC Weadock Solid Waste Disposal Area*. June 9.
- Consumers Energy. 2019. *JC Weadock Landfill Response Action Plan Submittal, JC Weadock Generating Facility (WDS# 395457), Essexville, Michigan*. March 15.
- Golder Associates, Inc. 2018. *J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report*. October 30.
- Golder Associates, Inc. 2022. *Weadock Landfill 2022 Closure Plan, Type III Dry Ash Landfill, ID 395457*. March.
- Michigan Department of Natural Resources (MDNR). 1986. *Determination of Permit Exemption No. GWE-0005*. August 25.
- Michigan Department of Environmental Quality (MDEQ). 2015. *Implementation of a Mixing Zone Request Consumers Energy DE Karn/JC Weadock Complex*. December 23.
- MDEQ. 2018a. *Groundwater-Surface Water Interface Pathway Compliance Options*. April.
- MDEQ. 2018b. *Slurry Wall Construction Certification; JC Weadock Landfill, Bay County, Michigan, Waste Data System Number 395457*. December 19.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. *Closure Certification, Consumers Weadock Complex (Weadock) Bottom Ash Pond, Bay County, Waste Data System No. 395457*. November 30. [Letter]
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation, Final Report.
- Natural Resource Technology. 2010. Revised Hydrogeological Monitoring Plan – JC Weadock Solid Waste Disposal Area. TRC. 2018. Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit. Prepared for Consumers Energy Company. January.
- TRC. 2018. *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit*. Prepared for Consumers Energy Company.
- TRC. 2019a. *2018 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company*. January.
- TRC. 2019b. *Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units*. Prepared for Consumers Energy Company. September.

-
- TRC. 2020. *2019 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit*. Prepared for Consumers Energy Company. January.
- TRC. 2021. *Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan*. Prepared for Consumers Energy Company. February.
- TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.
- TRC. 2022. *2021 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- TRC. 2022. *2022 Semiannual Groundwater Monitoring Report and Second Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. July.
- TRC. 2023. *2022 Semiannual Groundwater Monitoring Report and Fourth Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. January.
- TRC. 2024. *2023 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. 2015. *40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*. 80 Federal Register 74 (April 17, 2015), pp. 21301-21501 (80 FR 21301). April
- USEPA. 2018. *40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule*. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.

Tables

Table 1
 Summary of Groundwater Elevation Data
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Static Water Level Monitoring	Groundwater Quality Monitoring	GSI Monitoring	Leachage Analysis Program	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	July 22, 2024		
								Depth to Water (ft BTOC)	Groundwater Elevation (ft)	
Background Monitoring Wells										
MW-15002	✓	✓	--	--	587.71	Sand	580.9 to 570.9	7.38	580.33	
MW-15008	✓	✓	--	--	585.36	Sand with clay	578.7 to 568.7	4.58	580.78	
MW-15016	✓	✓	--	--	586.49	Sand	581.2 to 578.2	4.78	581.71	
MW-15019	✓	✓	--	--	586.17	Sand and Sand/Clay	579.5 to 569.5	5.52	580.65	
Former Bottom Ash Pond: Downgradient Monitoring Wells										
JCW-MW-15007	✓	--	--	--	587.40	Sand	582.7 to 579.2	4.18	583.22	
JCW-MW-15009	✓	--	--	--	589.64	Sand	581.9 to 576.9	9.03	580.61	
JCW-MW-15010	✓	--	--	--	597.76	Sand	579.7 to 578.2	17.15	580.61	
JCW-MW-15028	✓	--	--	--	589.64	Sand	567.7 to 564.7	8.38	581.26	
Landfill: Downgradient Monitoring Wells (outside slurry wall)										
JCW-MW-18001	✓	✓	--	--	596.73	Sand and Sandy Clay	578.3 to 573.3	16.41	580.32	
JCW-MW-18004	✓	✓	✓	--	593.04	Sandy Clay	583.9 to 578.9	12.00	581.04	
JCW-MW-18005	✓	✓	--	--	590.89	Sand and Sandy Clay	580.0 to 575.0	9.11	581.78	
JCW-MW-18006	✓	✓	--	--	600.72	Fly Ash and Sandy Clay	582.8 to 577.8	13.80	586.92	
MW-50	✓	✓	✓	--	593.36	Sand	577.8 to 574.8	13.03	580.33	
MW-51	✓	✓	✓	--	594.29	Sand and Clay	577.8 to 574.8	13.10	581.19	
MW-52	✓	✓	✓	--	594.90	Sand	579.3 to 576.3	14.68	580.22	
MW-53	✓	✓	✓	--	593.68	Sand and Clay	579.1 to 576.1	13.39	580.29	
MW-53R	✓	✓	✓	--	594.25	Sand and Clay	580.4 to 575.4	13.91	580.34	
MW-54R	✓	✓	✓	--	593.89	Clay and Sand	581.3 to 576.3	13.49	580.40	
MW-55	✓	✓	✓	--	593.82	Sand	581.5 to 578.5	13.72	580.10	
OW-57R OUT	✓	✓	--	--	591.00	Sandy Clay	577.0 to 572.0	9.34	581.66	

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G

(Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

--: Not Applicable

(1) Anomalous measurement outside range of historical data at JCW-OW-18003.

Table 1
 Summary of Groundwater Elevation Data
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Static Water Level Monitoring	Groundwater Quality Monitoring	GSI Monitoring	Leachate Analysis Program	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	July 22, 2024		
								Depth to Water (ft BTOC)	Groundwater Elevation (ft)	
Landfill: Static Water Level Only (inside slurry wall)										
JCW-OW-18001	✓	--	--	--	595.84	Fly Ash and Sand	581.1 to 576.1	6.12	589.72	
JCW-OW-18002	✓	--	--	--	593.63	Sand	578.9 to 573.9	11.00	582.63	
JCW-OW-18003	✓	--	--	--	593.99	Sand and Clay	580.5 to 575.5	-- ⁽¹⁾	--	
JCW-OW-18004	✓	--	--	--	594.19	Sandy Clay	584.6 to 579.6	6.70	587.49	
JCW-OW-18006	✓	--	--	--	600.61	Fly Ash and Clay with Sand	582.9 to 577.9	7.00	593.61	
MW-20	✓	--	--	--	592.73	NR	~581.1 to ~578.1	6.85	585.88	
OW-51	✓	--	--	--	593.62	Clay and Sand	578.9 to 575.9	9.02	584.60	
OW-53	✓	--	--	--	593.64	Clay and Sand	579.0 to 576.0	7.53	586.11	
OW-54	✓	--	--	--	594.10	Clay and Sand	580.0 to 577.0	7.60	586.50	
OW-55	✓	--	--	--	594.67	Clay (or Sand and Clay)	580.9 to 577.9	6.53	588.14	
OW-56R	✓	--	--	--	592.01	Ash and Sand	577.5 to 572.5	6.00	586.01	
OW-57R IN	✓	--	--	--	590.86	Sandy Clay	575.7 to 570.7	5.78	585.08	
OW-61	✓	--	--	--	602.15	Ash and Sand	588.0 to 585.0	8.28	593.87	
Landfill: Leachate Headwells										
LH-103R	✓	--	--	✓	612.70	Fly Ash	30.2 to 33.2	20.95	591.75	
LH-104	✓	--	--	✓	596.56	Fly Ash	8.0 to 11.0	8.78	587.78	

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G

(Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

--: Not Applicable

(1) Anomalous measurement outside range of historical data at JCW-OW-18003.

Table 2
 Summary of Field Parameters
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
Background							
MW-15002	7/24/2024	1.00	-176.3	7.5	619	17.6	10.0
MW-15008	7/24/2024	0.95	-151.3	7.1	1,627	15.5	10.0
MW-15016	7/24/2024	1.00	-160.0	7.1	2,015	20.1	10.0
MW-15019	7/24/2024	1.40	-119.5	7.0	2,250	14.9	10.0
Weadock Landfill							
JCW-MW-18001	7/23/2024	1.00	-209.0	6.9	3,838	14.2	9.5
JCW-MW-18004	7/23/2024	9.10	-155.0	7.3	1,503	19.4	10.0
JCW-MW-18005	7/23/2024	1.15	-170.5	7.2	1,437	17.0	10.0
JCW-MW-18006	7/24/2024	1.09	-167.0	7.0	1,335	14.6	9.9
MW-50	7/23/2024	0.99	-197.5	7.6	1,602	14.6	8.5
MW-51	7/23/2024	0.99	-192.5	7.5	1,474	14.3	9.5
MW-52	7/23/2024	1.09	-155.0	7.0	1,929	14.9	9.5
MW-53	7/23/2024	1.00	-195.0	7.5	1,404	15.3	9.5
MW-53R	7/23/2024	1.39	-192.5	7.2	1,851	15.6	10.0
MW-54R	7/23/2024	1.59	-200.0	7.2	1,331	16.5	10.0
MW-55	7/23/2024	1.09	-174.0	7.4	1,225	16.9	10.0
OW-57ROUT	7/24/2024	1.00	-194.0	7.0	1,344	15.9	10.0

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celsius.

NTU - Nephelometric Turbidity Unit.

(1) The water quality meter used at this well location was determined to have a bias towards elevated dissolved oxygen readings.

Table 3
 Summary of Groundwater Sampling Results (Analytical)
 DE Karn JC Weadock Background - RCRA CCR Monitoring Program
 Essexville, Michigan

		Sample Location:				MW-15002	MW-15008	MW-15016	MW-15019
		Sample Date:				7/24/2024	7/24/2024	7/24/2024	7/24/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Background			
Appendix III⁽¹⁾									
Boron	ug/L	NC	500	500	4,000	36	144	533	247
Calcium	mg/L	NC	NC	NC	500 ^{EE}	75	106	223	169
Chloride	mg/L	250**	250^E	250^E	50	30	319	216	360
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	7.49	2.45	40.5	101
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	422	978	1,170	1,310
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.5	7.1	7.1	7.0
Appendix IV⁽¹⁾									
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	4	27	2
Barium	ug/L	2,000	2,000	2,000	1,200	55	76	167	357
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	< 10	29	52	15
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC	--	--	--	--
Radium-228	pCi/L	NC	NC	NC	NC	--	--	--	--
Radium-226/228	pCi/L	5	NC	NC	NC	--	--	--	--
Selenium	ug/L	50	50	50	5.0	< 1	< 1	< 1	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾									
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	740	13,800	23,000	22,100
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	1	< 1	2	1
Nickel	ug/L	NC	100	100	120	3	3	9	5
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	6	2	3
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

		Sample Location:				JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
		Sample Date:				7/23/2024	7/23/2024	7/23/2024	7/24/2024	7/23/2024	7/23/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Downgradient	Downgradient/GSI	Downgradient	Downgradient	Downgradient/GSI	Downgradient/GSI
Appendix III⁽¹⁾											
Boron	ug/L	NC	500	500	4,000	1,370	308	1,460	2,490	2,100	862
Calcium	mg/L	NC	NC	NC	500^{EE}	526	205	164	123	175	114
Chloride	mg/L	250**	250 ^E	250 ^E	50	45	12.6	49.2	57.3	34.9	81.5
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250^E	250^E	500^{EE}	1,810	446	156	75.5	403	283
Total Dissolved Solids	mg/L	500**	500^E	500^E	500	3,530	1,130	884	782	1,190	940
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	6.9	7.3	7.2	7.0	7.6	7.5
Appendix IV⁽¹⁾											
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	2	< 1	2	23	4	19
Barium	ug/L	2,000	2,000	2,000	1,200	50	29	67	412	188	123
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	107	50	34	49	62	28
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5	6	< 5
Radium-226	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--
Radium-228	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--
Radium-226/228	pCi/L	5	NC	NC	NC	--	--	--	--	--	--
Selenium	ug/L	50	50	50	5.0	2	< 1	2	2	1	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾											
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}	3,080	41	1,890	8,650	1,530	1,490
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	5	2	2	1	2	1
Nickel	ug/L	NC	100	100	120	13	4	11	5	7	6
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	2	< 2	< 2	3	< 2	2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

		Sample Location:				MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57ROUT
		Sample Date:				7/23/2024	7/23/2024	7/23/2024	7/23/2024	7/23/2024	7/24/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI [^]	Downgradient/GSI	Downgradient/GSI	Downgradient/GSI	Downgradient/GSI	Downgradient/GSI	Downgradient
Appendix III⁽¹⁾											
Boron	ug/L	NC	500	500	4,000	909	6,960	1,880	6,930	1,270	1,690
Calcium	mg/L	NC	NC	NC	500 ^{EE}	233	130	189	153	117	120
Chloride	mg/L	250**	250 ^E	250 ^E	50	30.1	115	40	75.4	21.8	65.9
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,100
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	542	< 1	291	60.4	60.2	75.5
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	1,470	806	1,230	924	730	760
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.0	7.5	7.2	7.2	7.4	7.0
Appendix IV⁽¹⁾											
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	2	8	1	45	2
Barium	ug/L	2,000	2,000	2,000	1,200	88	581	132	90	186	78
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,100
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	29	57	62	83	29	25
Mercury	ug/L	2	2.0	2.0	0.20 [#]	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	17	25	7
Radium-226	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--
Radium-228	pCi/L	NC	NC	NC	NC	--	--	--	--	--	--
Radium-226/228	pCi/L	5	NC	NC	NC	--	--	--	--	--	--
Selenium	ug/L	50	50	50	5.0	1	4	2	4	1	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾											
Iron	ug/L	300**	300 ^E	300 ^E	500,000 ^{EE}	7,290	1,110	280	59	12,300	77
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	1	2	2	1	2
Nickel	ug/L	NC	100	100	120	6	6	8	7	4	18
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	2	< 2	< 2	< 2	< 2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria; -- - not analyzed.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

[#] - If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

^E - Criterion is the aesthetic drinking water value per footnote (E).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 5
 Summary of Confidence Interval Evaluation: Third Quarter 2024
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Assessment Monitoring Statistical Evaluation																								
Constituent	Units	GWPS	MW-50		MW-51		MW-52		MW-53		MW-53R		MW-54R		MW-55		OW-57R OUT		JCW-MW-18001		JCW-MW-18005		JCW-MW-18006	
			LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron ⁽¹⁾	ug/L	560	1,700	2,200	520	1,000	880	1,200	4,400	9,700	2,000	2,400	5,200	6,400	850	1,300	1,700	1,800	1,300	1,600	920	1,400	2,100	2,800
Calcium	mg/L	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	480	560	150	300	--	--
Sulfate	mg/L	780	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,600	1,900	--	--	--	--
Arsenic	ug/L	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13	28
Molybdenum	ug/L	73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

GSI Monitoring Statistical Evaluation				
Constituent	Units	GSI	MW-55	
			LCL	UCL
Arsenic	ug/L	100	38	93

Notes:

ug/L - micrograms per Liter

mg/L - milligrams per Liter

-- - Not Applicable; well/parameter pair did not directly exceed the applicable criterion and was not included in further analysis.

GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated April 23, 2021

GSI - Groundwater Surface Water Interface Criteria; GSI criteria is the generic Michigan Part 201 GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

1,300	Indicates a statistically significant exceedance of the GWPS (detection monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the GWPS (assessment monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
1,300	Indicates a statistically significant exceedance of the applicable GSI criterion. An exceedance occurs when the LCL is greater than the criterion.

(1) Boron concentrations were confirmed as a statistically significant increase (SSI) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

(2) The concentrations of arsenic and molybdenum at MW-55 are not a result of a release from the unit, as detailed in the Alternate Source Demonstration (2021 Annual Groundwater Monitoring and Corrective Action Report, TRC, January 2022); therefore, confidence intervals were not calculated for comparison to GWPSs.

Table 6
 EGLE Exceedance Summary Table
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
 SUMMARY OF STATISTICAL EXCEEDANCES

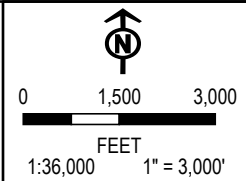
Data is in	(X) ug/L	or
	() mg/L	
unless otherwise stated		

Facility: JC Weadock – WDS# 395457

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	3 Qtr. 2024 (bold >201)	2 Qtr. 2024 (bold >201)	1 Qtr. 2024 (bold >201)	4 Qtr. 2023 (bold >201)
No Exceedances at Compliance Locations								

Figures

COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH FIPS 2113 FEET; MAP ROTATION: 0
 - SAVED BY: LULL ON 8/14/2024, 13:04:28 PM; FILE PATH: T:\1-PROJECTS\CONSUMERS_ENERGY\464096_WEADOCK\APR\WEADOCK.APRX; LAYOUT NAME: 553828-2024-001



PROJECT: **CONSUMERS ENERGY COMPANY
 DE KARN AND JC WEADOCK POWER PLANTS
 ESSEXVILLE, MICHIGAN**

TITLE: **SITE LOCATION MAP**

DRAWN BY: A. ADAIR	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 1
APPROVED BY: D. LITZ	
DATE: OCTOBER 2024	

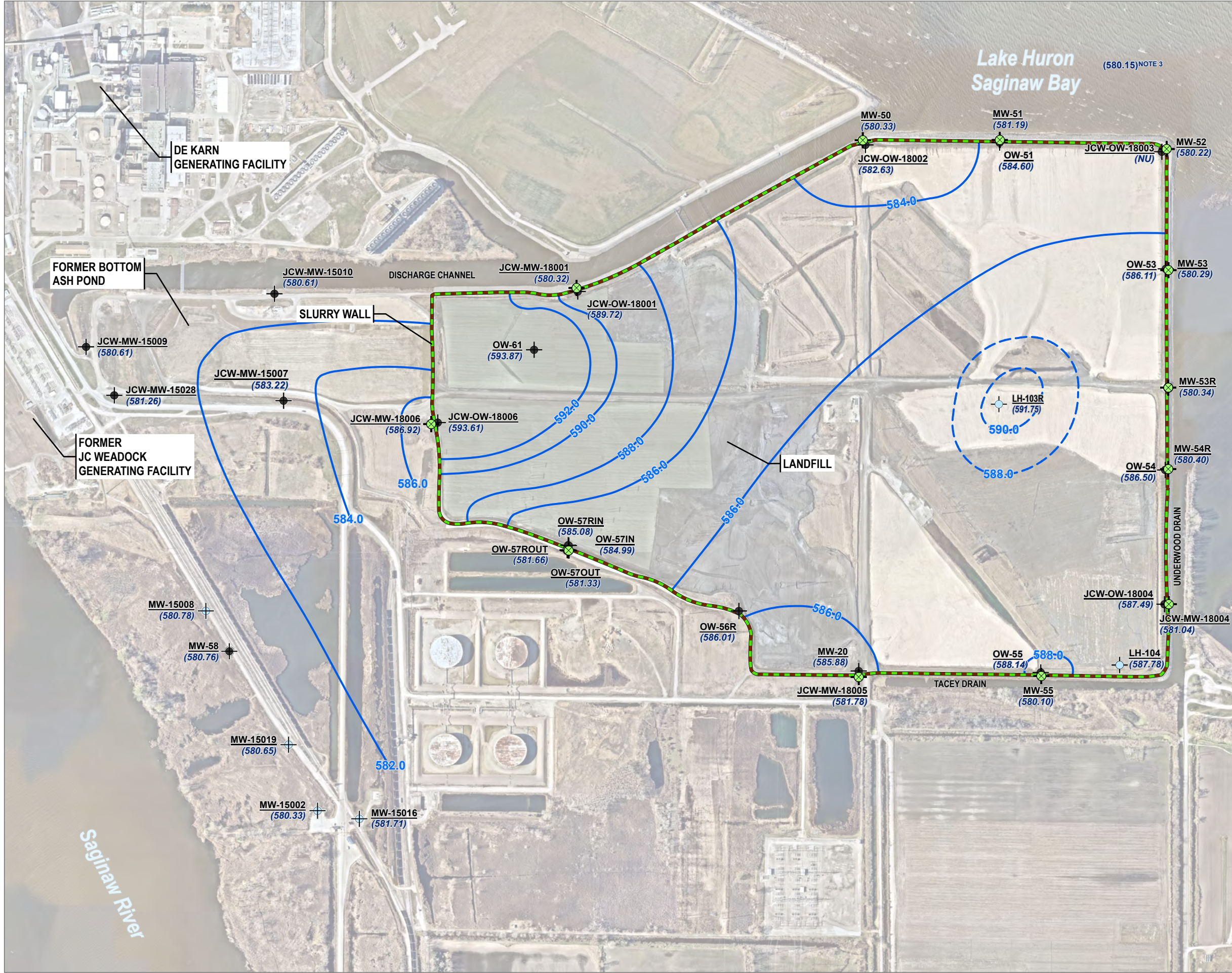


1540 EISENHOWER PLACE
 ANN ARBOR, MI 48108-3284
 PHONE: 734.971.7080

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

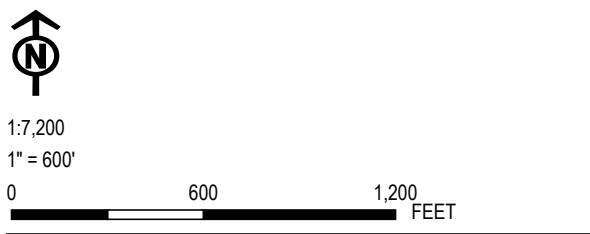
FILE: 464096_WEADOCK

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl; Map Rotation: 0
 - Saved By: LULL on 9/10/2024, 11:18:42 AM; File Path: T:\PROJECTS\Consumers_Energy\464096_Weadock.aprx; Layout Name: 553828-3024-003



- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOM ASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - DECOMMISSIONED WELL
 - SLURRY WALL (APPROXIMATE)
 - GROUNDWATER ELEVATION CONTOUR (2' INTERVAL, DASHED WHERE INFERRED)
- (590.51) GROUNDWATER ELEVATION (FEET)
 (NU) NOT USED TO DEVELOP CONTOURS

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018.
 3. NOAA/NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
 4. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: POTENTIOMETRIC SURFACE MAP JULY 2024	
DRAWN BY: A. ADAIR	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 3
APPROVED BY: D. LITZ	
DATE: OCTOBER 2024	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE: 464096_Weadock.aprx	

Appendix A

Static Water Level Evaluation

Table A1
 Static Water Levels for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Date Measured	Groundwater Water Elevation (GWE) (ft)	Saginaw Bay Surface Water Elevation (SWE) (ft)	Elevation Difference (GWE-SWE) ⁽¹⁾
MW-50	7/22/2024	580.33	580.15	0.18
MW-51	7/22/2024	581.19		1.04
MW-52	7/22/2024	580.22		0.07
MW-53	7/22/2024	580.29		0.14
MW-53R	7/22/2024	580.34		0.19
MW-54R	7/22/2024	580.4		0.25
MW-55	7/22/2024	580.1		-0.05
JCW-MW-18004	7/22/2024	581.04		0.89
Average:		580.49		

Notes:

Elevation in feet above North American Vertical Datum 1988 (NAVD 88)

TOC: top of well casing

ft BTOC: feet below top of well casing

(1) Positive elevation difference indicates flow toward the surface water body.

Table A2
Slurry Wall Gradient and Flux
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Discharge Channel													
JCW-OW-18001	589.72		22.4	4.20E-01	2.00	2.88	1,010	2.30E-08	0.42	2,904	7.96E-02	0.60	217
JCW-MW-18001		580.32			3.75								
JCW-OW-18002	582.63		28.9	7.97E-02	4.00	4.25	970		0.08	4,123	2.14E-02	0.16	58
MW-50		580.33			4.50								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Adjacent Zone													
OW-51	584.60		14.4	2.37E-01	4.00	4.50	1,850	2.30E-08	0.24	8,325	1.29E-01	0.96	351
MW-51		581.19			5.00								
JCW-OW-18003				NA									
MW-52													
OW-53	586.11		20.1	2.89E-01	1.25	1.75	730		0.29	1,278	2.41E-02	0.18	66
MW-53		580.29			2.25								
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Non-Adjacent Zone													
OW-54	586.50		21.2	2.87E-01	2.00	2.25	510	2.30E-08	0.29	1,148	2.15E-02	0.16	59
MW-54R		580.40			2.50								
JCW-OW-18004	587.49		26.6	2.43E-01	8.00	4.57	820		0.24	3,747	5.93E-02	0.44	162
JCW-MW-18004		581.04			1.14								
OW-55	588.14		24	3.36E-01	2.00	2.05	1,220		0.34	2,501	5.47E-02	0.41	149
MW-55		580.10			2.10								
MW-20	585.88		40.9	1.00E-01	1.50	1.38	1,120		0.10	1,540	1.01E-02	0.08	27
JCW-MW-18005		581.78			1.25								

Calculated Groundwater Discharge from JC Weadock (gal per day) = 2.99
(cubic ft per day) = 0.40
(cubic ft per min) 2.8E-04

Calculated Groundwater Discharge from JC Weadock (gal per yr) = 1,090
(cubic ft per yr) = 146

Calculated Groundwater Discharge from JC Weadock (gal per year per linear foot of dike) = 0.13
(cubic feet per year per linear foot of dike) = 1.77E-02

Notes:

Water level data collected on July 22, 2024 are shown by yellow cells:

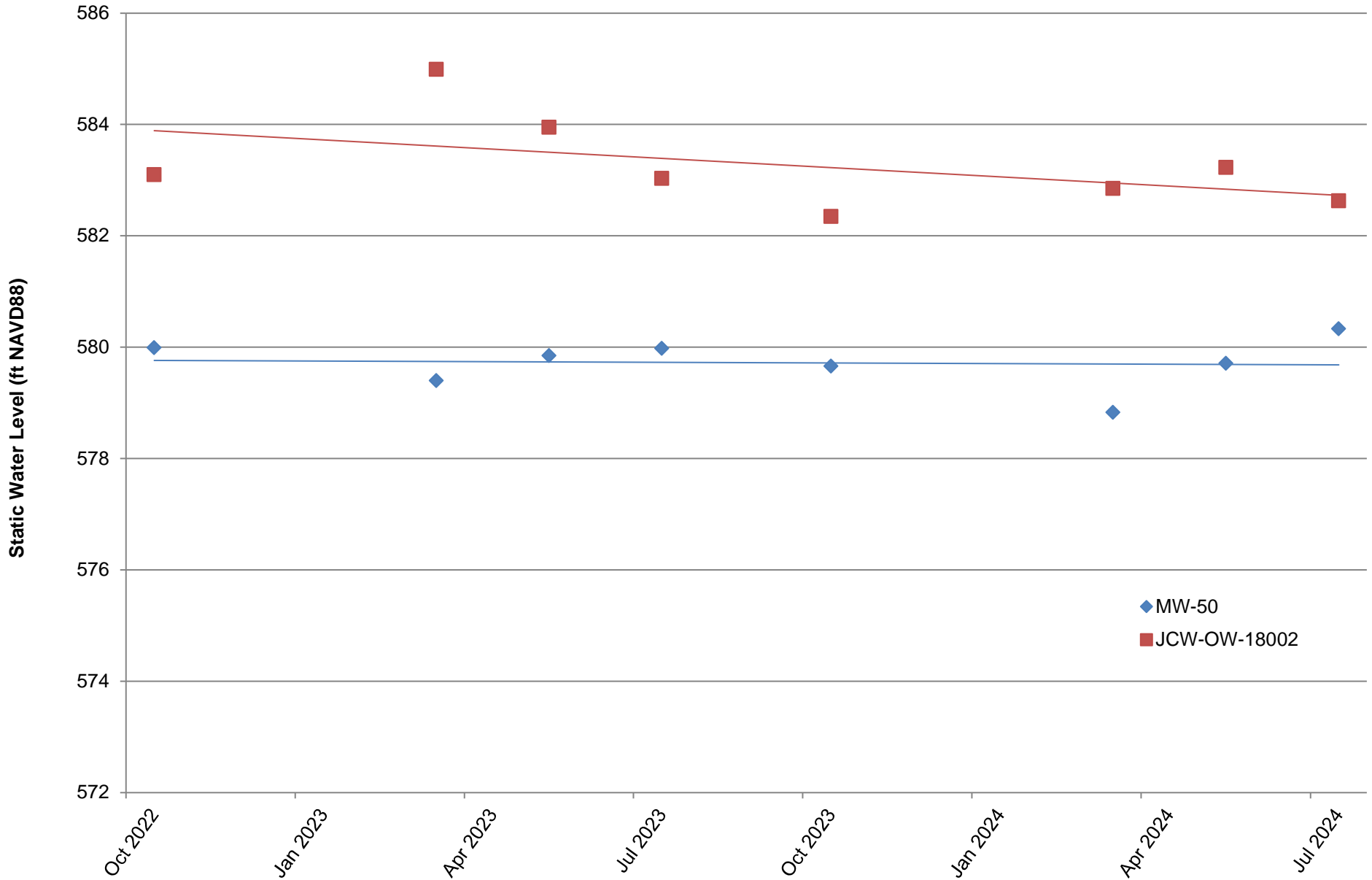
579.58

- Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- Saturated thickness will be the thickness of the sand unit when the observed SWL is above the top of the sand unit, or the measured saturated thickness of the sand unit if the SWL is below the top of the sand unit.
- Hydraulic conductivity taken as harmonic mean of laboratory tests done on in-place slurry wall from NTH Certified Quality Assurance Report, Appendix E, April 24, 2009
- Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- If Obs well SWL < MW SWL calculated flow will be zero.

SWL = Static Water Level; Obs Well = Observation Well; MW= Monitoring Well; ft NAVD 88 = feet above North American Vertical Datum 1988
 ft/ft = feet per foot; cm/sec = centimeters per second; ft² = square feet; ft³/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year
 i = hydraulic gradient; K = hydraulic conductivity; x_{wells} = distance between well pairs
 NA = Not Applicable, unable to calculate hydraulic gradient due to anomalous measurement outside range of historical data at JCW-OW-18003.

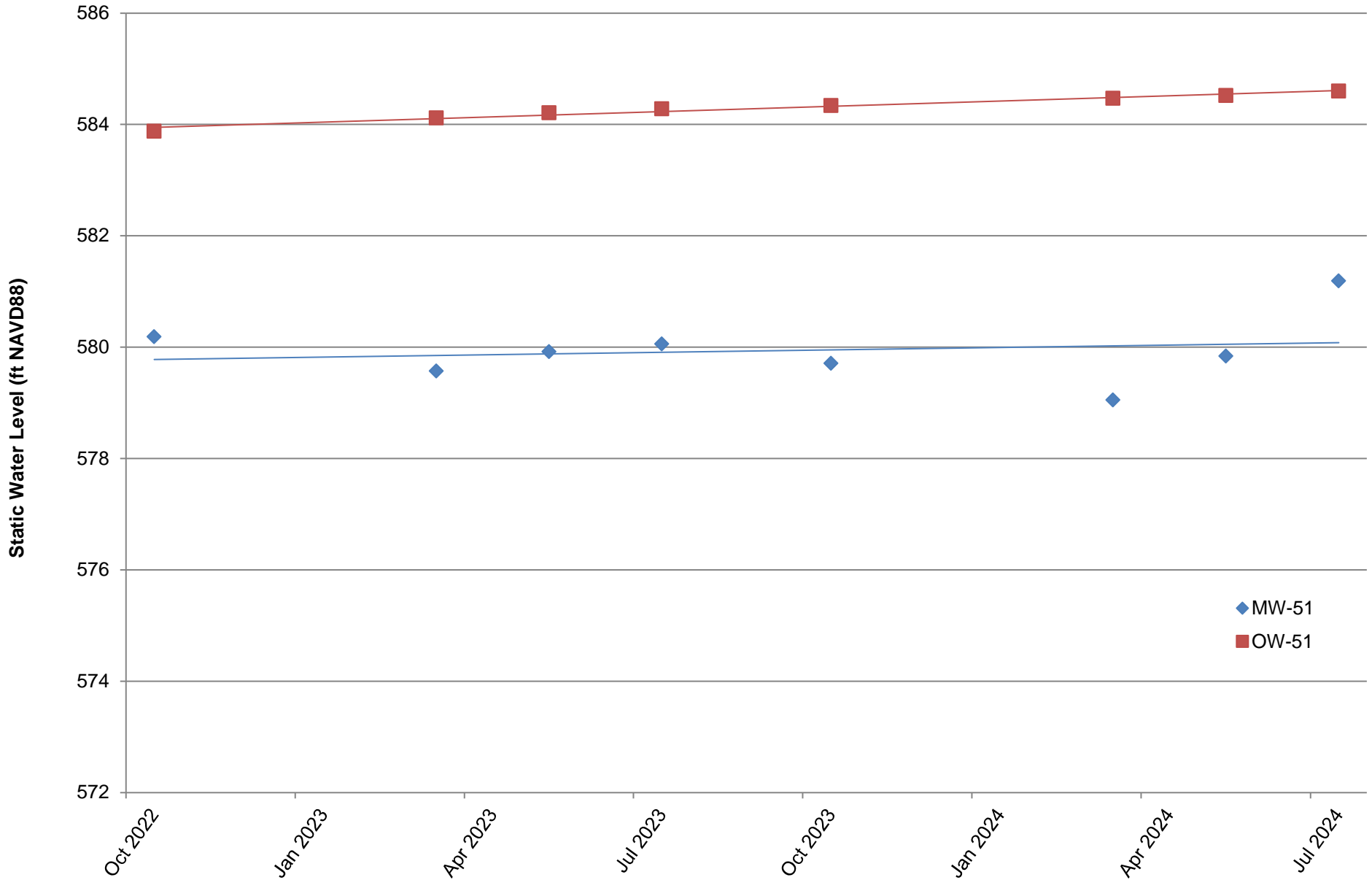
Appendix A

Static Water Level for MW-50 and JCW-OW-18002



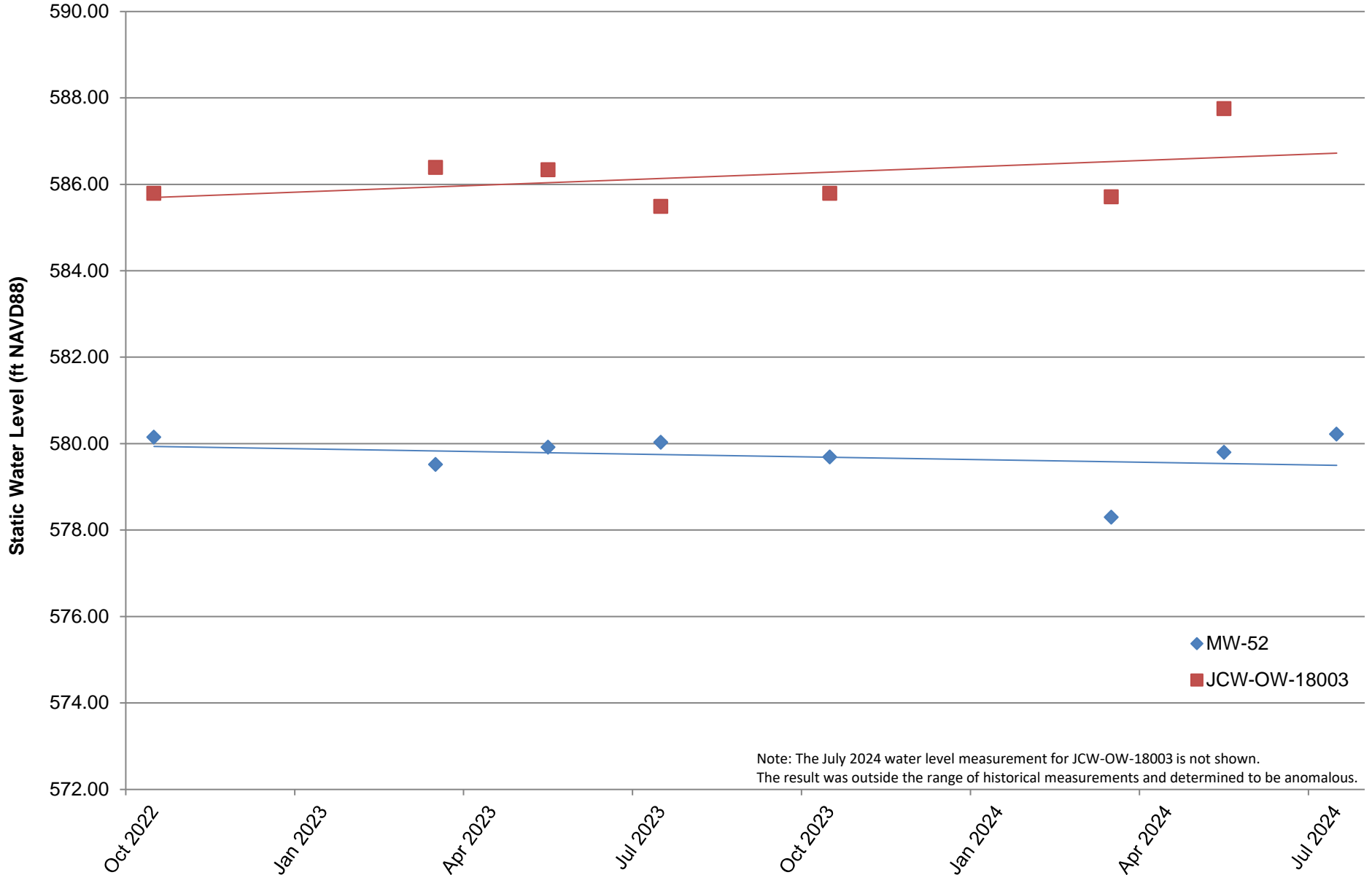
Appendix A

Static Water Level for MW-51 and OW-51



Appendix A

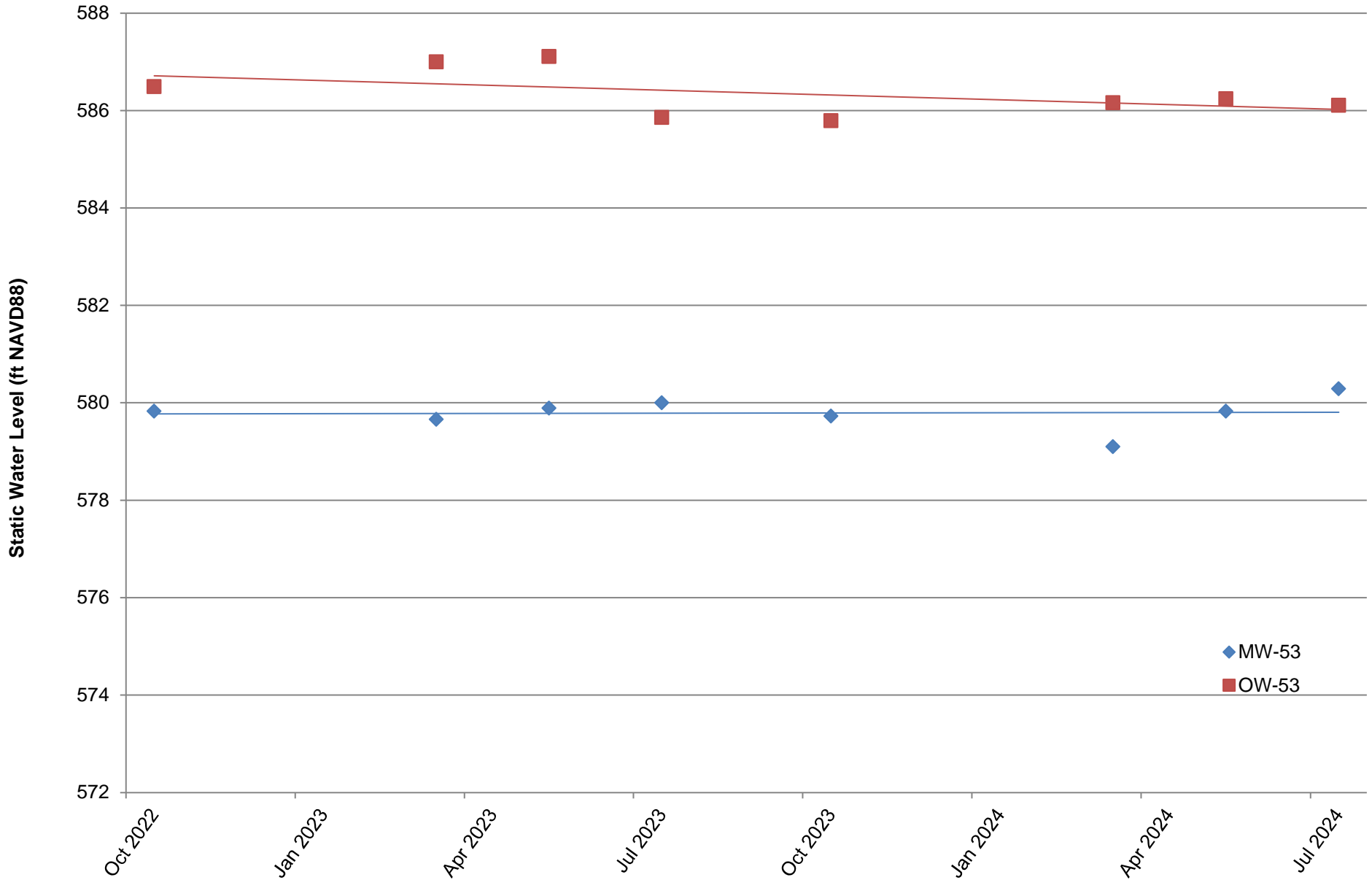
Static Water Level for MW-52 and JCW-OW-18003



Note: The July 2024 water level measurement for JCW-OW-18003 is not shown. The result was outside the range of historical measurements and determined to be anomalous.

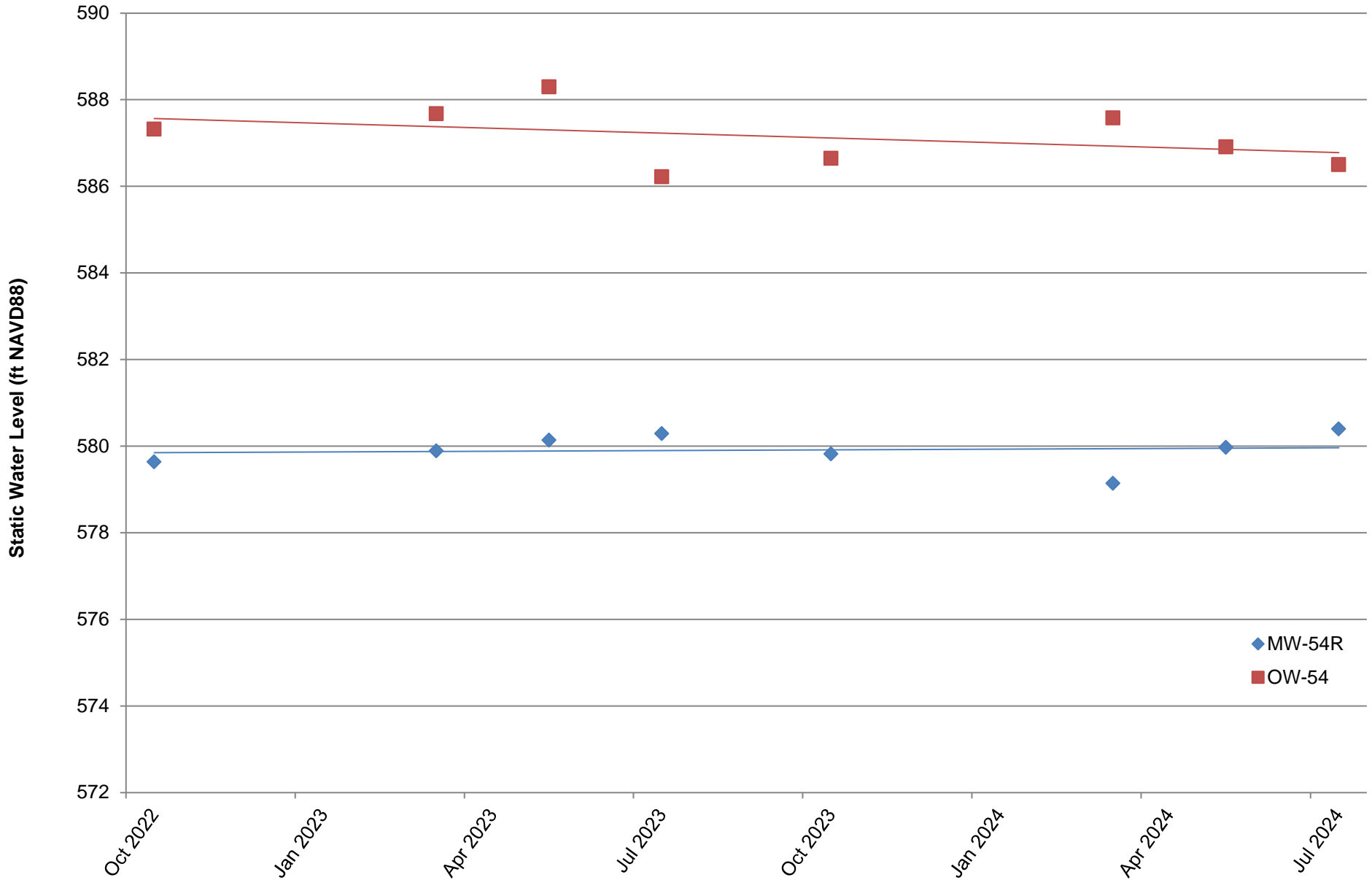
Appendix A

Static Water Level for MW-53 and OW-53



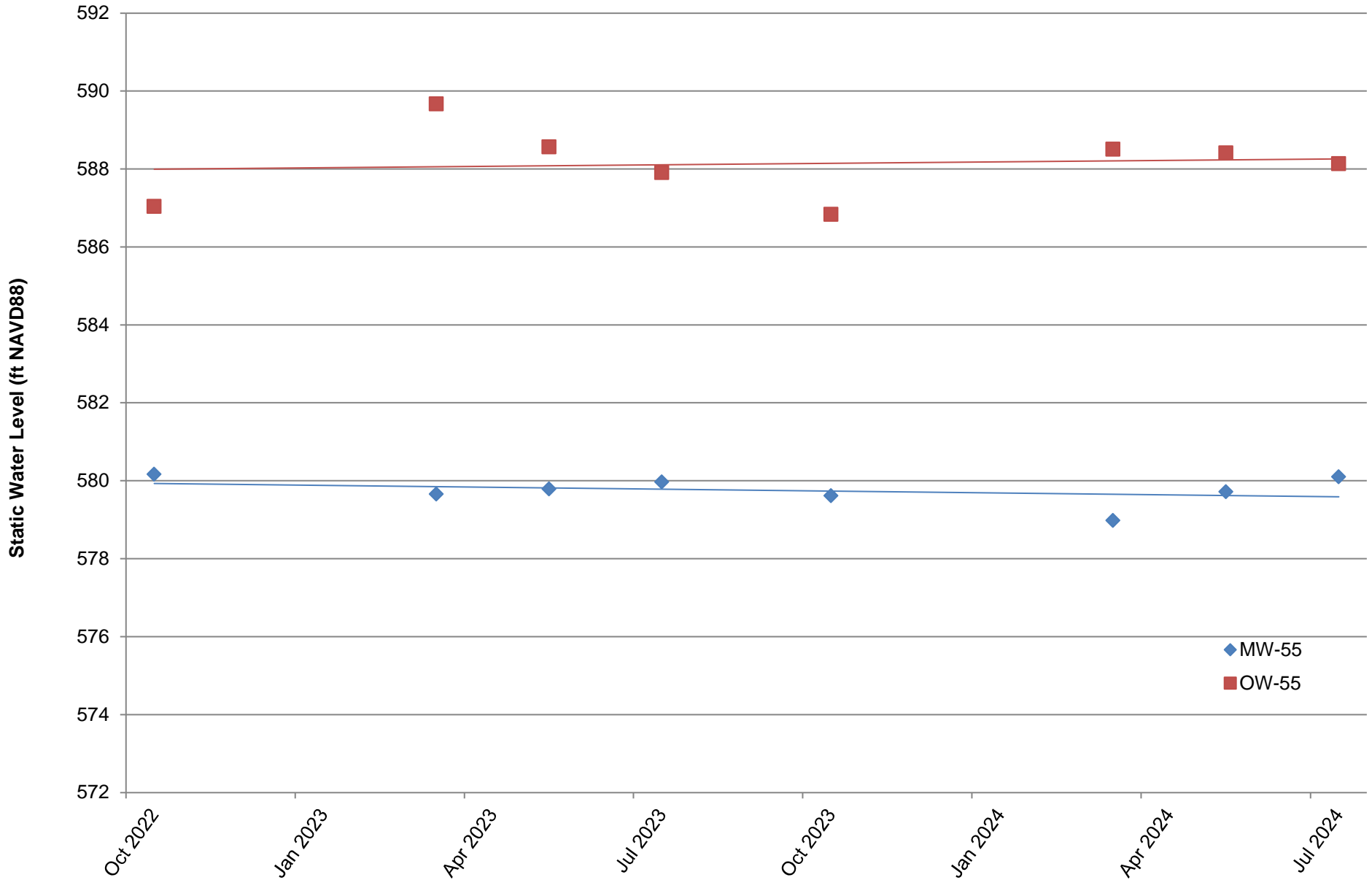
Appendix A

Static Water Level for MW-54R and OW-54



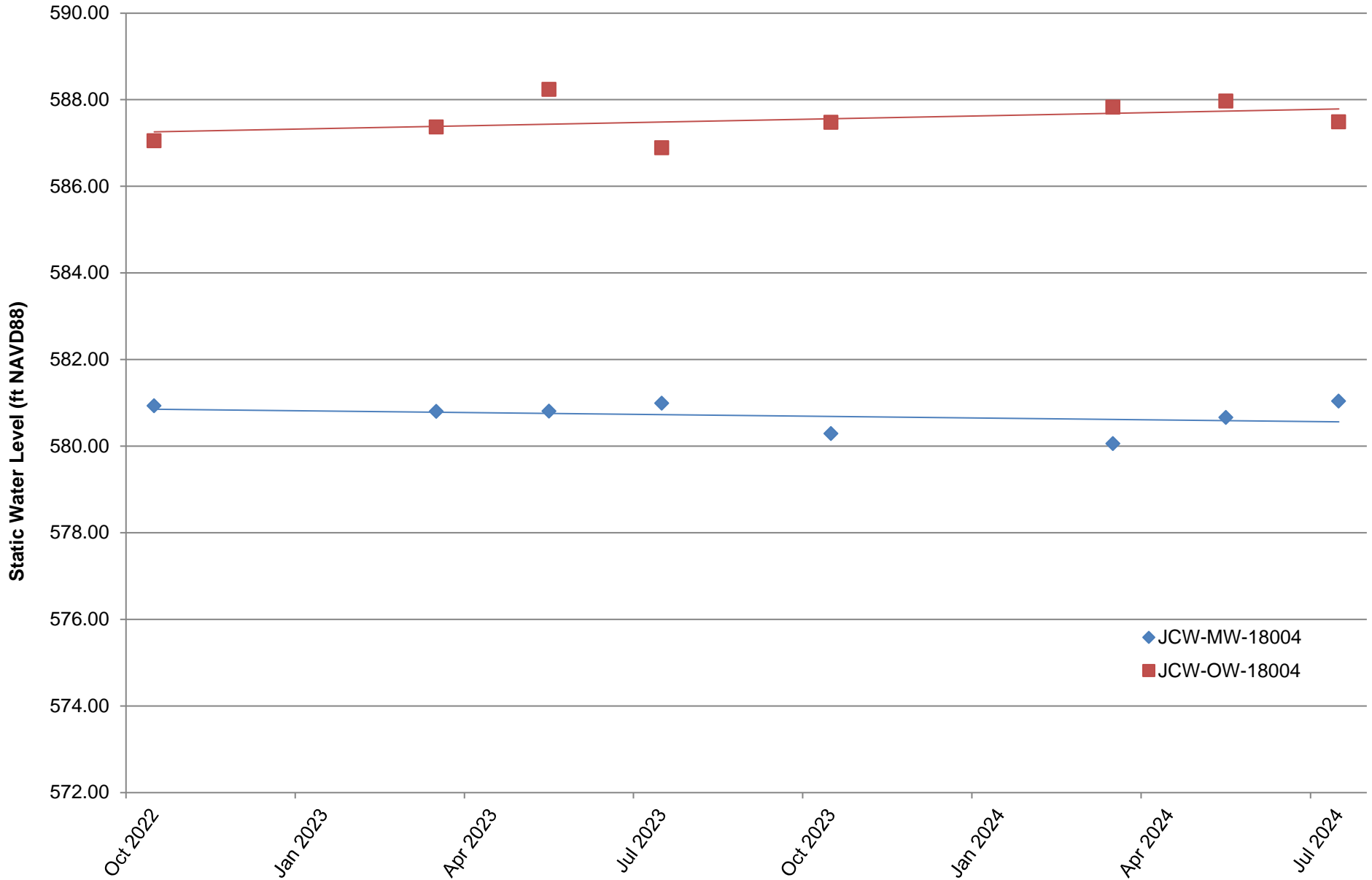
Appendix A

Static Water Level for MW-55 and OW-55



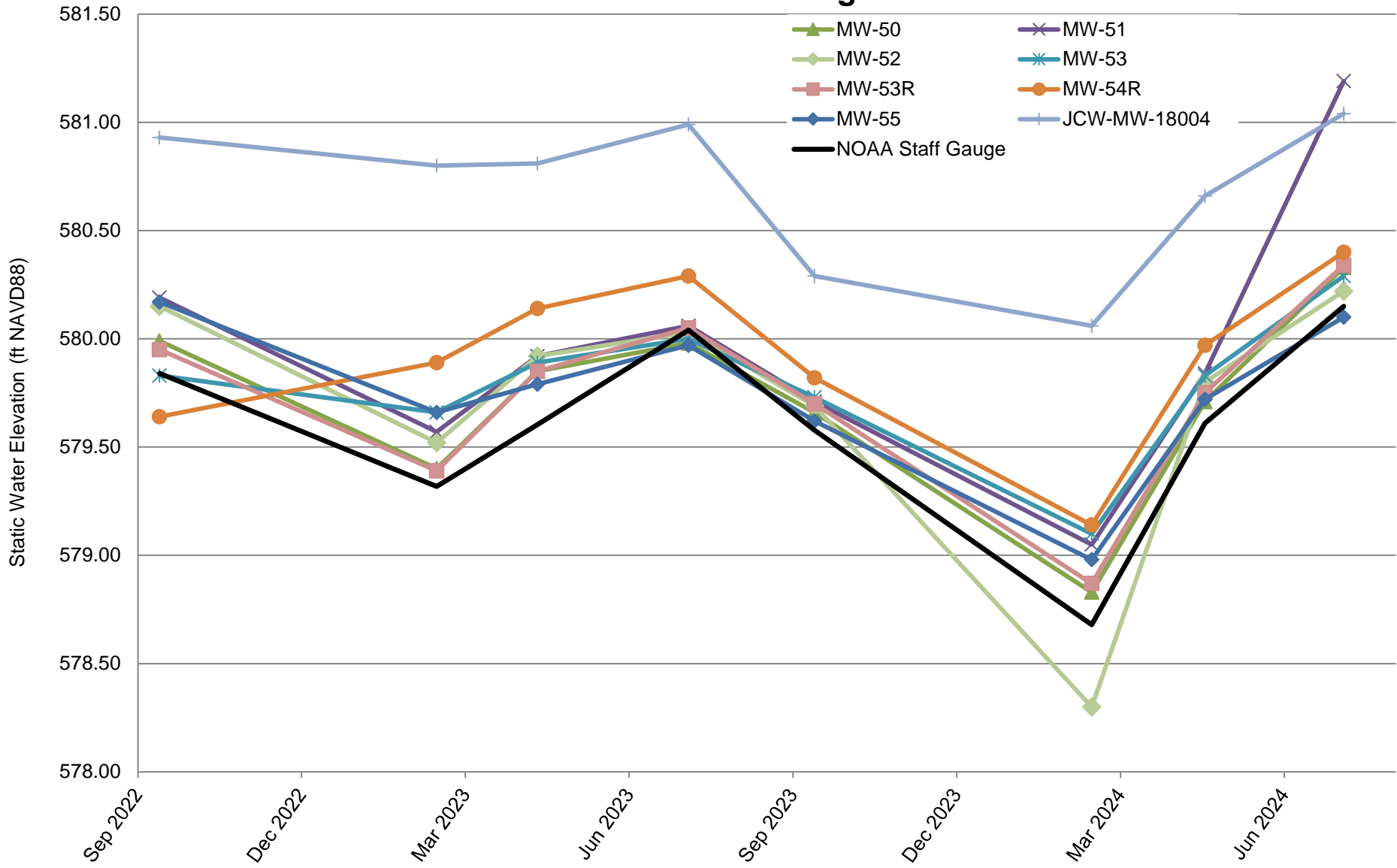
Appendix A

Static Water Level for JCW-MW-18004 and JCW-OW-18004



Appendix A

Static Water Elevations for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge



Appendix B

Data Quality Review

Laboratory Data Quality Review Groundwater Monitoring Event July 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the July 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0584.

During the July 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and laboratory control samples were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Target analytes were not detected above the RL in this blank sample.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event July 2024 JC Weadock Landfill

Porewater samples were collected by TRC for the July 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, and/or alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0585.

During the July 2024 sampling event, a porewater sample was collected from each of the following wells:

- JCW-MW-18001
- JCW-MW-18004
- JCW-MW-18005
- JCW-MW-18006
- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- MW-58
- OW-57ROUT

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;

- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-01) and one equipment blank (EB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JCW-MW-18001 for total metals and anions. The recoveries were within the acceptance limits. Relative percent differences were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- Samples DUP-JCW-LF-02/OW-57ROUT and DUP-JCW-LF-01/MW-50 were submitted as the field duplicate pairs with this data set; all criteria were met.

- Laboratory duplicate analyses were not performed on a sample from this data set.

Laboratory Data Quality Review Groundwater Monitoring Event July 2024 JCW Alternate Source Demonstration

Groundwater samples were collected by TRC for the July 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0586.

During the July 2024 sampling event, a porewater sample was collected from each of the following wells:

- JCW-OW-18001
- JCW-OW-18006

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- No field blanks or equipment blanks were collected with this data set.
- A field duplicate pair was not submitted with this data set.
- Laboratory duplicate and MS/MSD analyses were not performed on the samples from this data set.

Appendix C

Detection Monitoring Statistical Trend Tests

Appendix C

Detection Monitoring Statistical Summary for JC Weadock Facility

Third Quarter 2024

Data from October 2022 to July 2024

Porewater Monitoring Points						
Constituent	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
Boron ⁽¹⁾	O	O	O	O	O	↓
Calcium	O	O	O	O	O	↓
Chloride	↓	O	O	↓	O	↓
Fluoride	O*	O*	O*	O*	O*	O*
Iron	O	O	O	O	O	O
pH/Corrosivity ⁽¹⁾	O	O	O	O	↑*	O
Sulfate	↑ ^{ASD}	O	O	↑	O	↓
Total Dissolved Solids	O	O	O	↑	O	↓

Notes:

O* = Non-detect (70%)

O = No trend

↑ = Upward trend, continuous

↑* = Upward trend, new

↑ = Upward trend, confirmed

↓ = Downward trend, continuous

↓* = Downward trend, new

↑^{ASD} = Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

Appendix C

Detection Monitoring Statistical Summary for JC Weadock Facility

Third Quarter 2024

Data from October 2022 to July 2024

Porewater Monitoring Points						
Constituent	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57R OUT
Boron ⁽¹⁾	↓*	↑	○	○	○	○
Calcium	○	○	○	○	○	○
Chloride	○	↑*	○	○	○	○
Fluoride	○*	○*	○*	○*	○*	○
Iron	○	○	○	○	↓*	○
pH/Corrosivity ⁽¹⁾	○	○	↑	↑*	○	○
Sulfate	↓	↓	○	○	○	○
Total Dissolved Solids	○	○	○	○	○	○

Notes:

○* = Non-detect (70%)

○ = No trend

↑ = Upward trend, continuous

↑* = Upward trend, new

↑ = Upward trend, confirmed

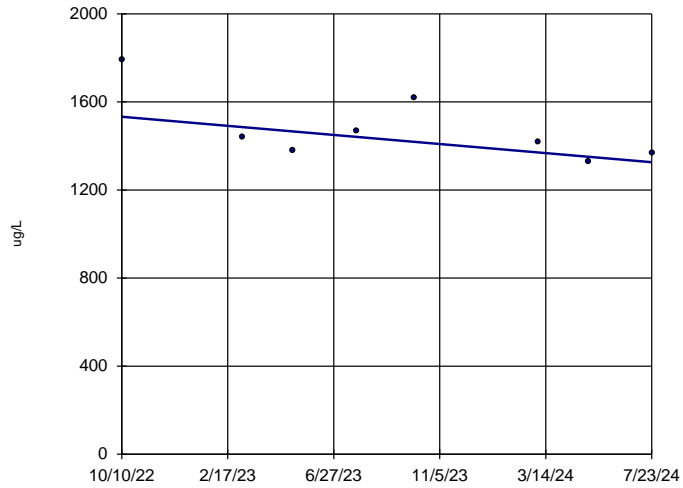
↓ = Downward trend, continuous

↓* = Downward trend, new

↑^{ASD} = Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024).

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

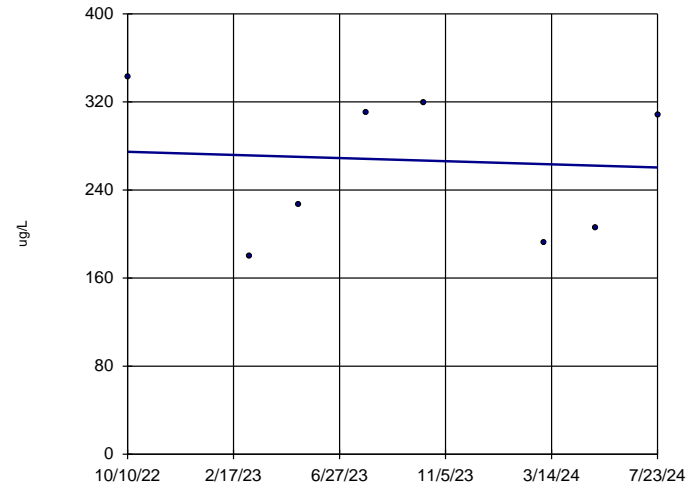
Boron, Total JCW-MW-18001



n = 8
 Slope = -115.5
 units per year.
 Mann-Kendall
 statistic = -14
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

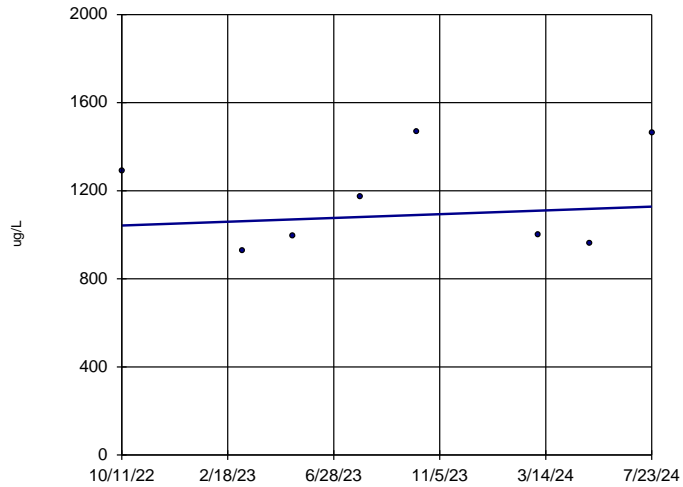
Boron, Total JCW-MW-18004



n = 8
 Slope = -7.99
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

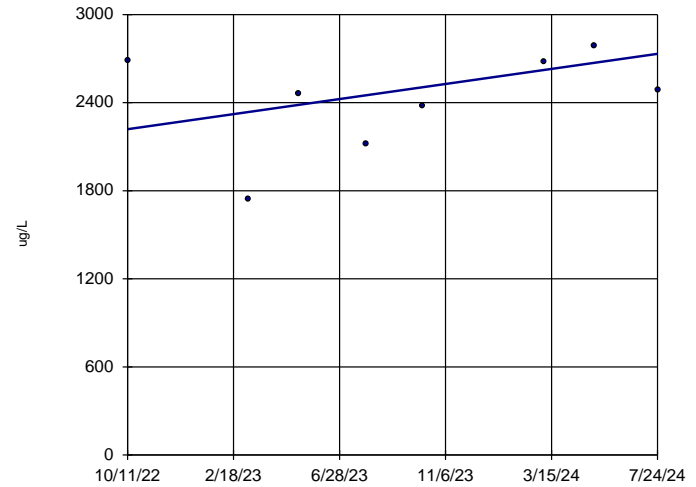
Boron, Total JCW-MW-18005



n = 8
 Slope = 48.04
 units per year.
 Mann-Kendall
 statistic = 4
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total JCW-MW-18006

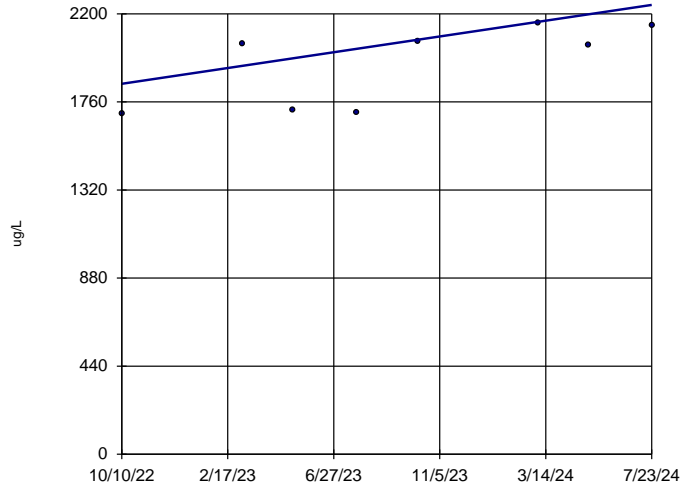


n = 8
 Slope = 286.9
 units per year.
 Mann-Kendall
 statistic = 8
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

MW-50

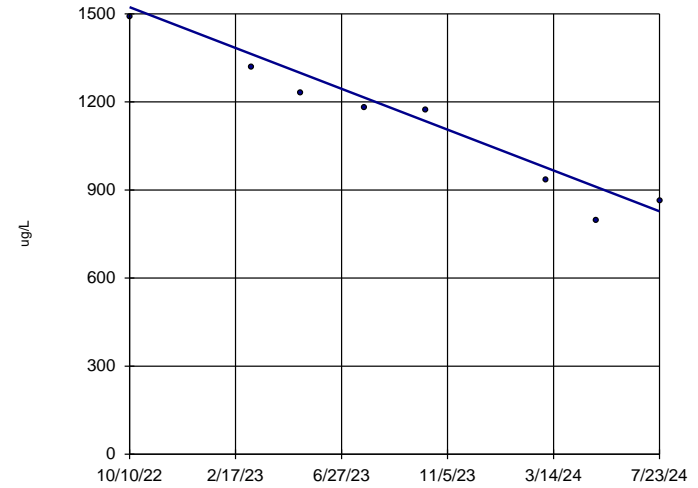


n = 8
 Slope = 220.5 units per year.
 Mann-Kendall statistic = 14
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

MW-51

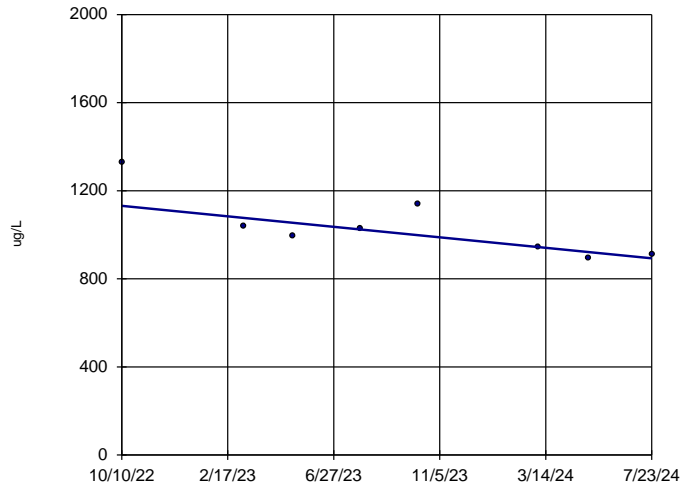


n = 8
 Slope = -389.3 units per year.
 Mann-Kendall statistic = -26
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

MW-52

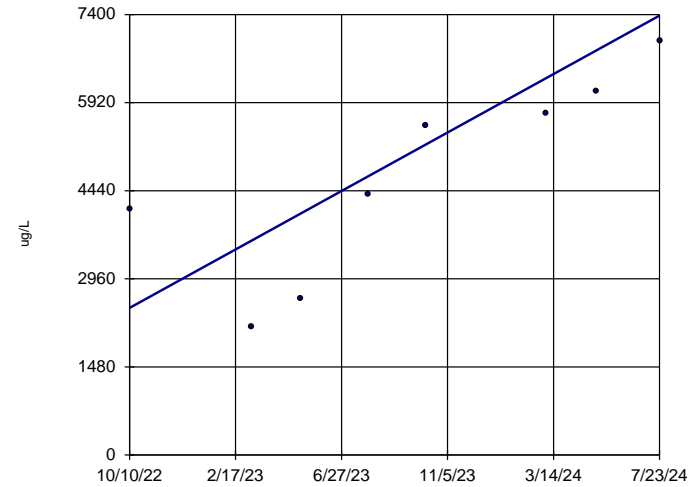


n = 8
 Slope = -133.4 units per year.
 Mann-Kendall statistic = -18
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

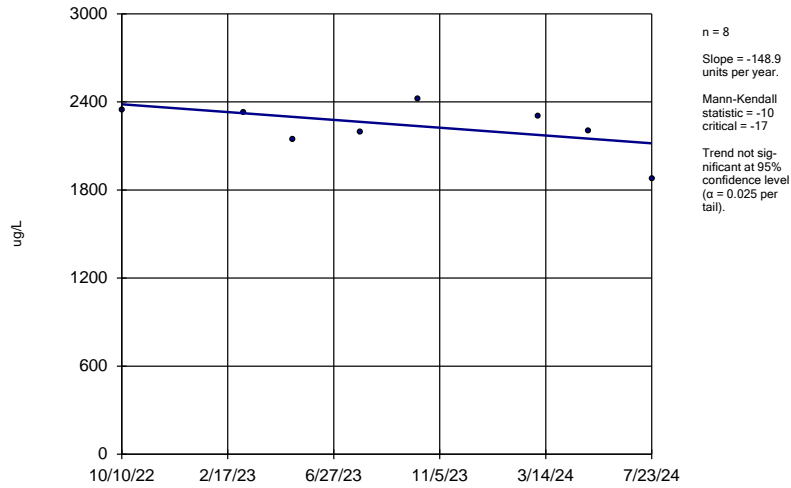
MW-53



n = 8
 Slope = 2750 units per year.
 Mann-Kendall statistic = 24
 critical = 17
 Increasing trend significant at 95% confidence level (α = 0.025 per tail).

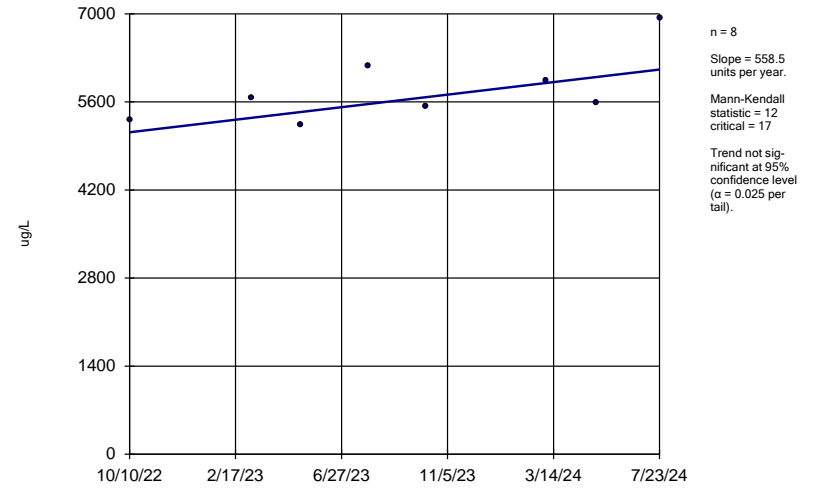
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-53R



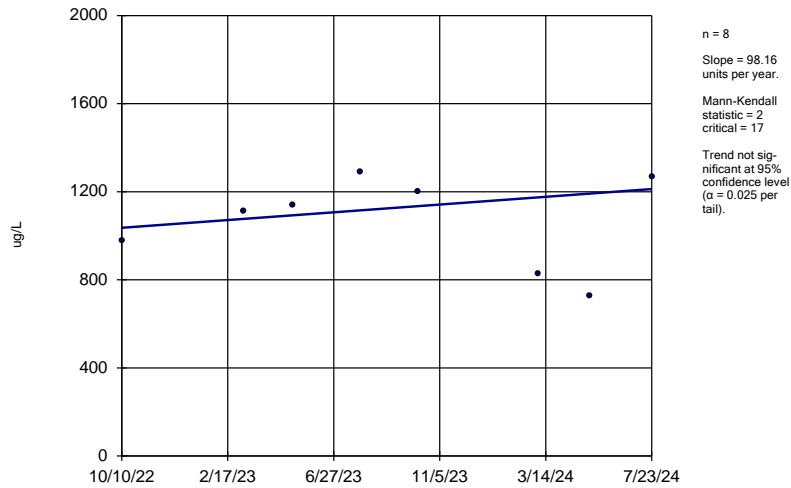
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-54R



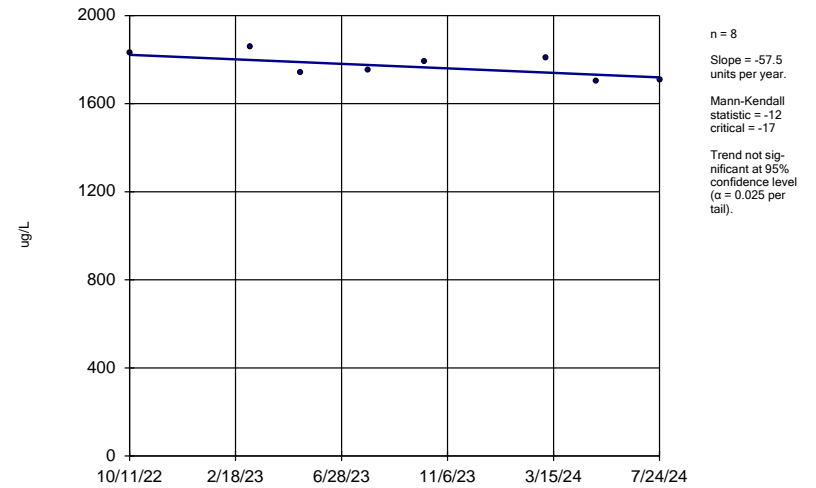
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-55



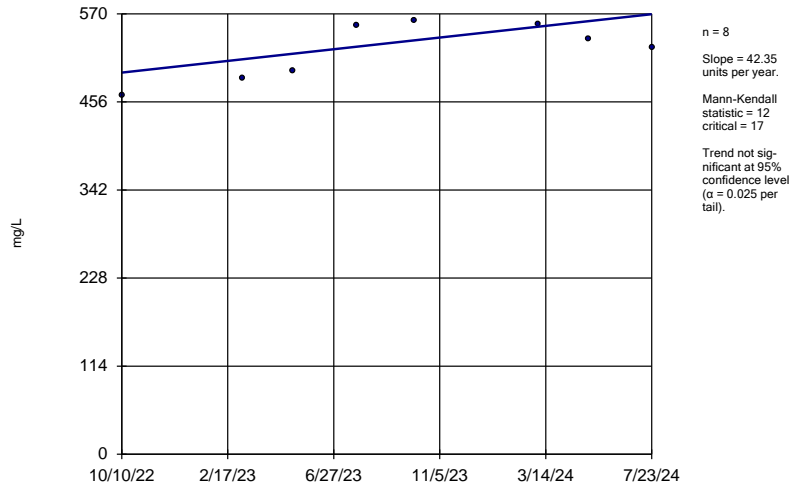
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total OW-57ROUT



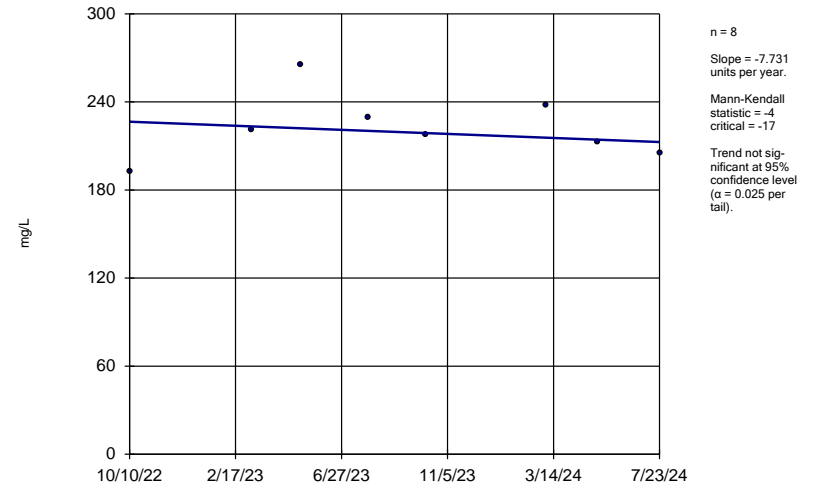
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
JCW-MW-18001



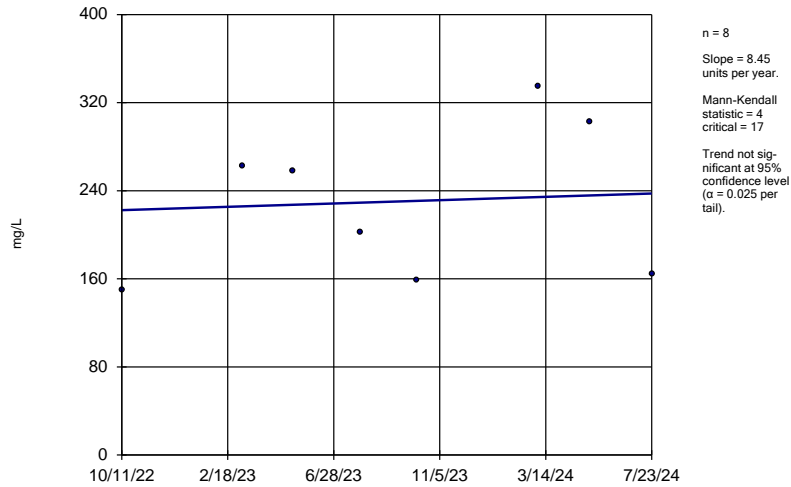
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
JCW-MW-18004



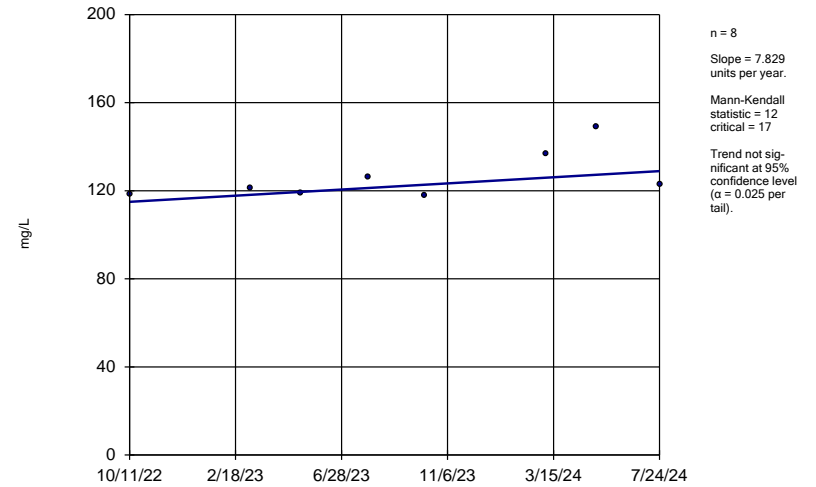
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
JCW-MW-18005



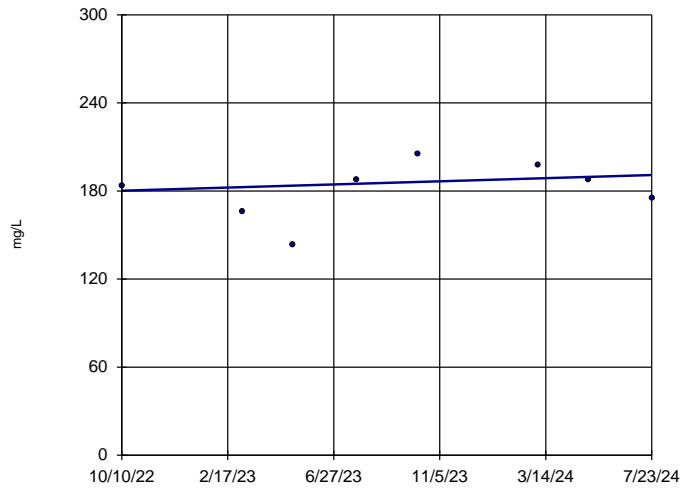
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
JCW-MW-18006



Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

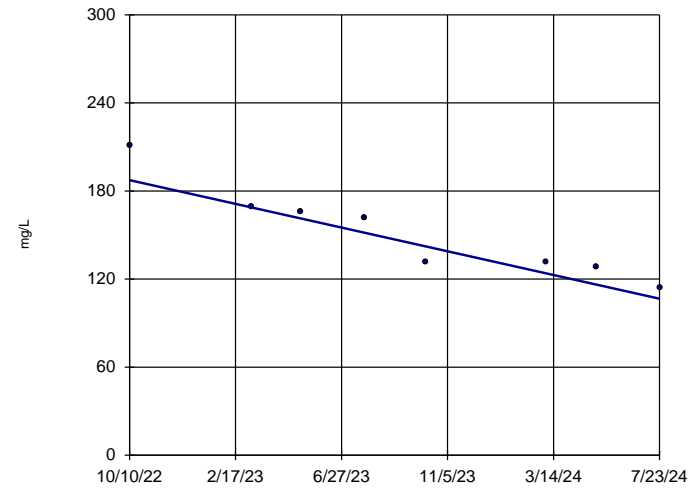
Calcium, Total
MW-50



n = 8
 Slope = 5.973
 units per year.
 Mann-Kendall
 statistic = 5
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

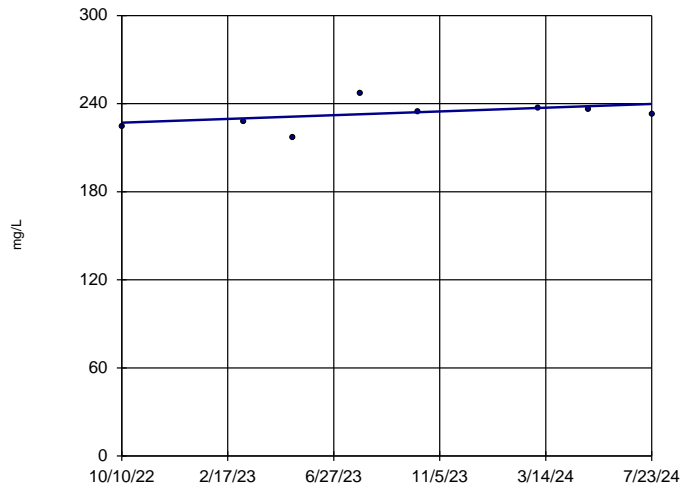
Calcium, Total
MW-51



n = 8
 Slope = -45.16
 units per year.
 Mann-Kendall
 statistic = -27
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

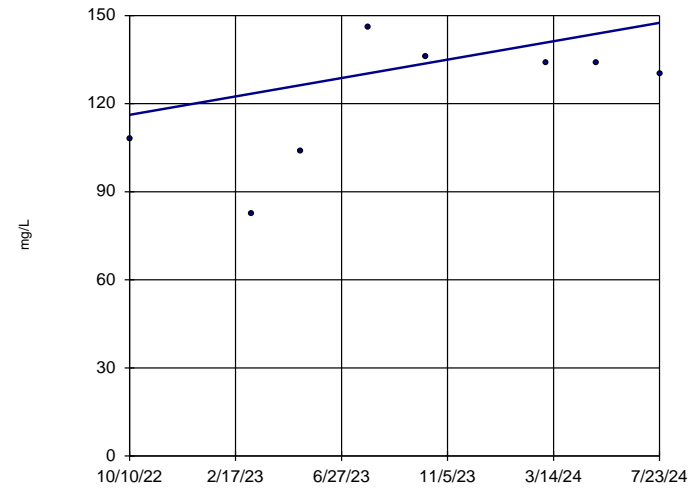
Calcium, Total
MW-52



n = 8
 Slope = 7.135
 units per year.
 Mann-Kendall
 statistic = 8
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

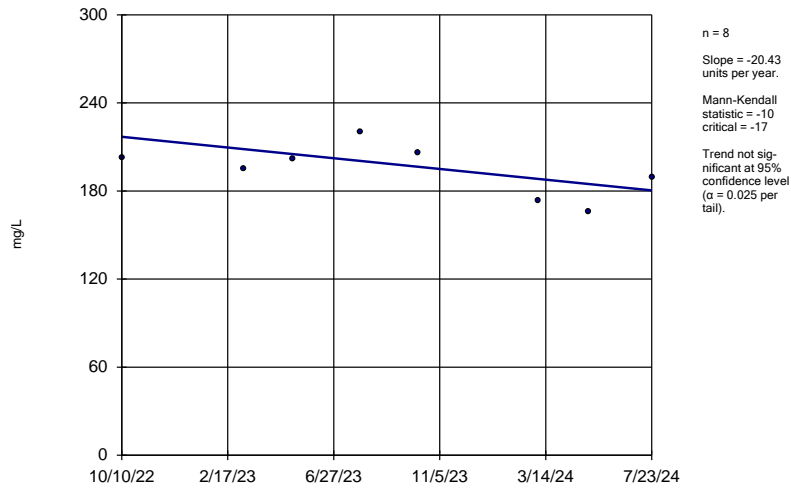
Calcium, Total
MW-53



n = 8
 Slope = 17.52
 units per year.
 Mann-Kendall
 statistic = 5
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

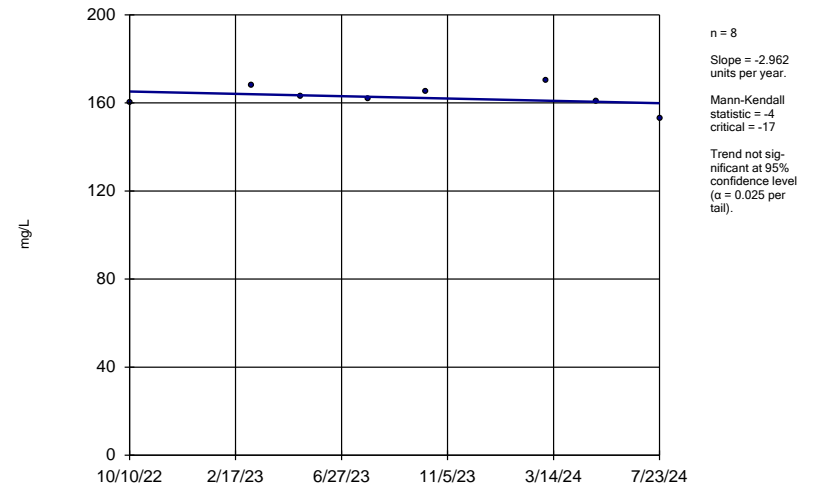
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
MW-53R



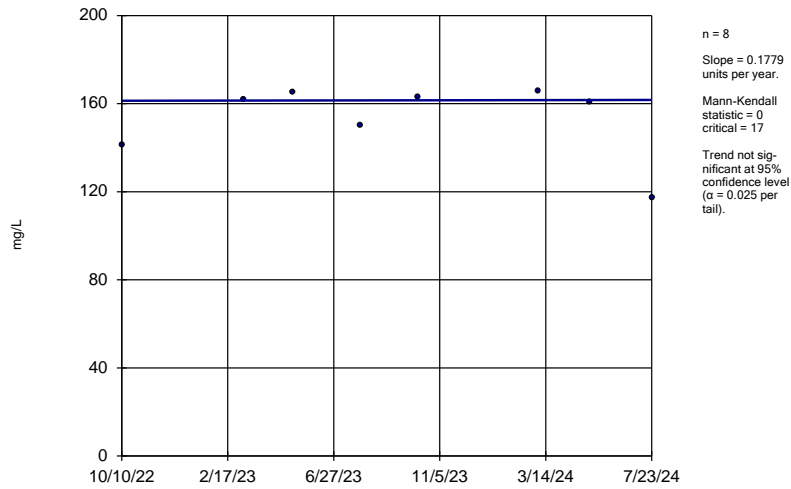
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
MW-54R



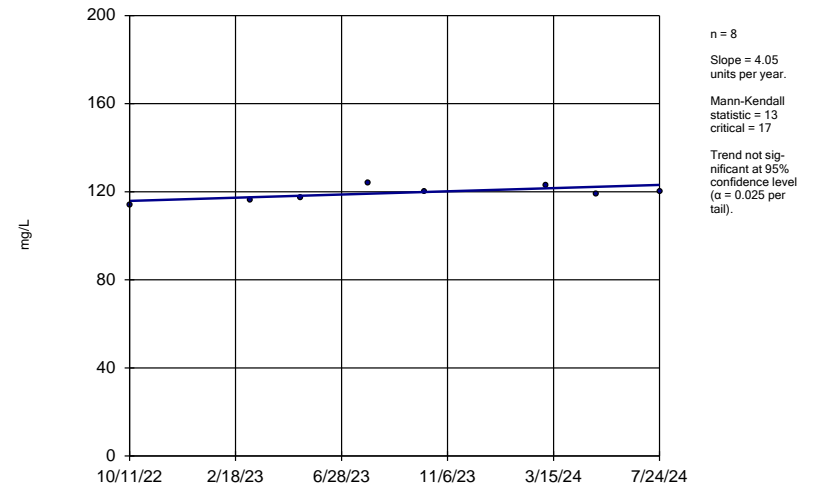
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
MW-55



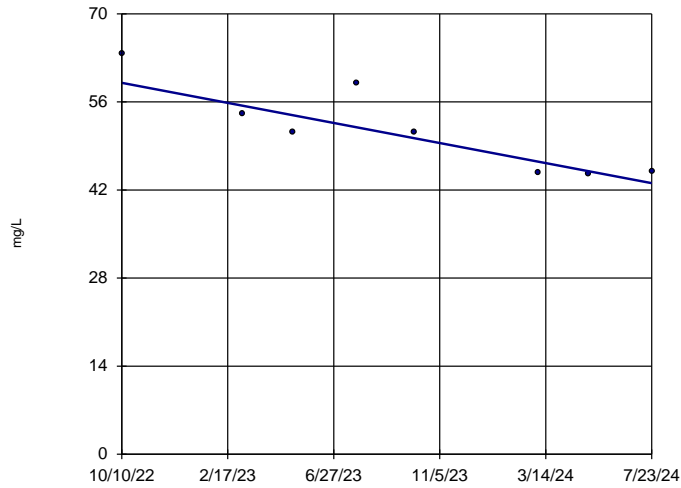
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total
OW-57ROUT



Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

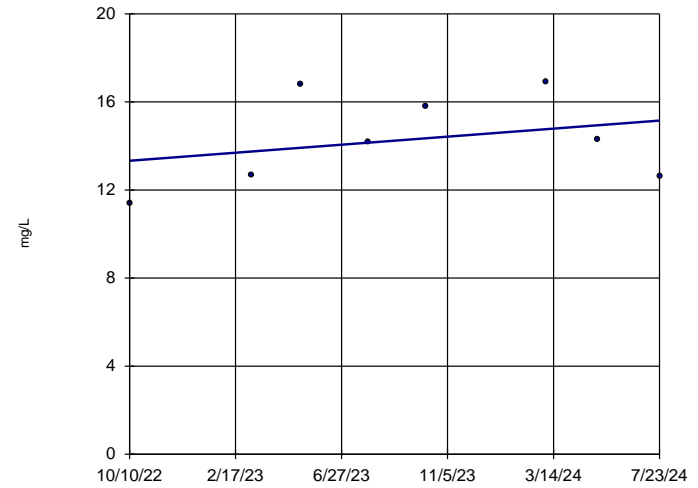
Chloride
JCW-MW-18001



n = 8
 Slope = -8.932
 units per year.
 Mann-Kendall
 statistic = -19
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

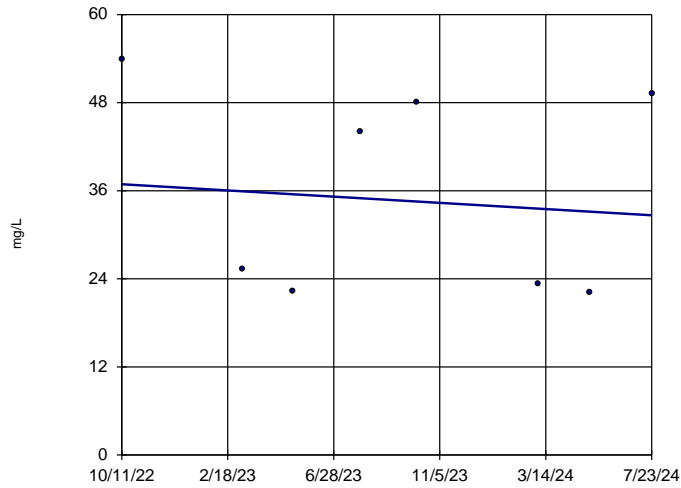
Chloride
JCW-MW-18004



n = 8
 Slope = 1.021
 units per year.
 Mann-Kendall
 statistic = 6
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

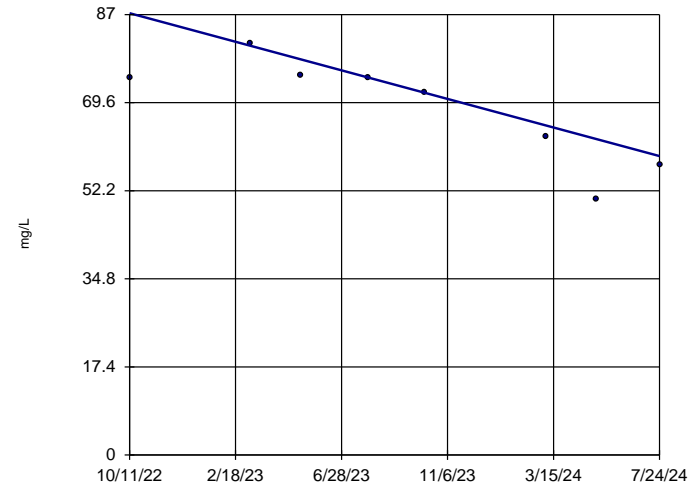
Chloride
JCW-MW-18005



n = 8
 Slope = -2.373
 units per year.
 Mann-Kendall
 statistic = -4
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

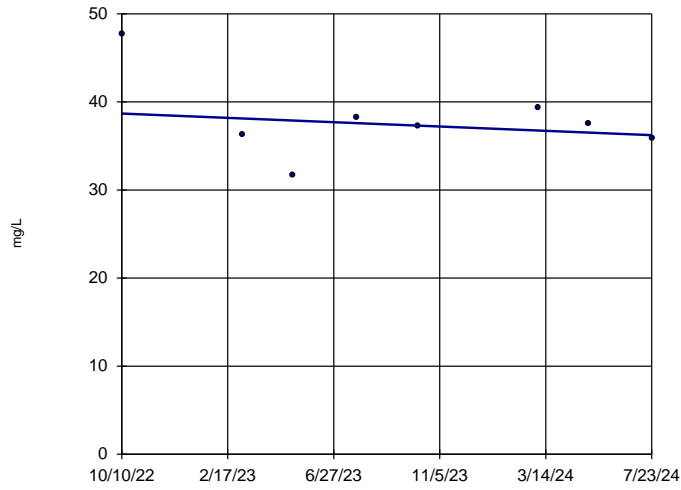
Chloride
JCW-MW-18006



n = 8
 Slope = -15.8
 units per year.
 Mann-Kendall
 statistic = -21
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

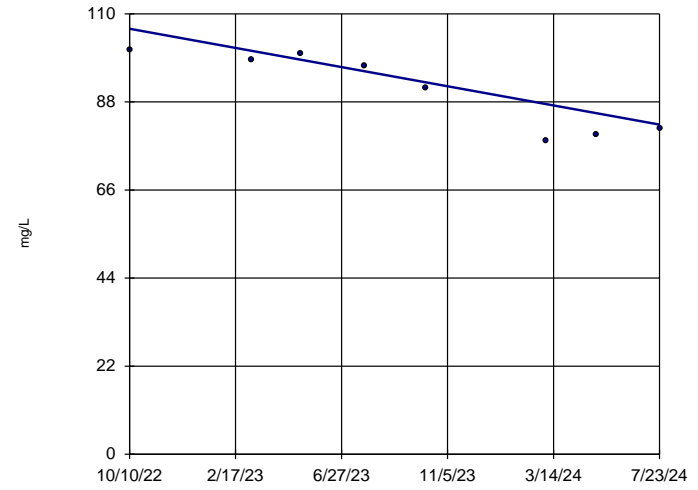
Chloride MW-50



n = 8
 Slope = -1.365
 units per year.
 Mann-Kendall
 statistic = -4
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

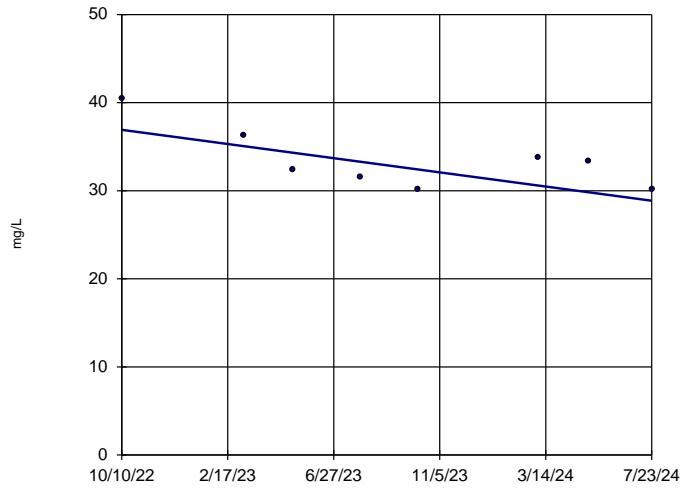
Chloride MW-51



n = 8
 Slope = -13.4
 units per year.
 Mann-Kendall
 statistic = -20
 critical = -17
 Decreasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

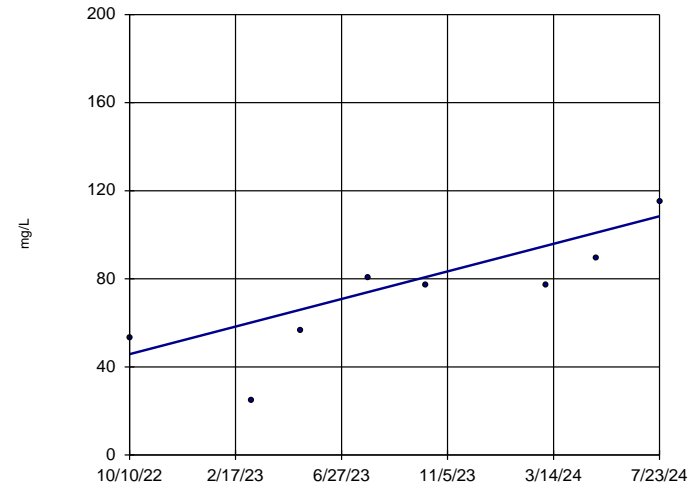
Chloride MW-52



n = 8
 Slope = -4.507
 units per year.
 Mann-Kendall
 statistic = -16
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

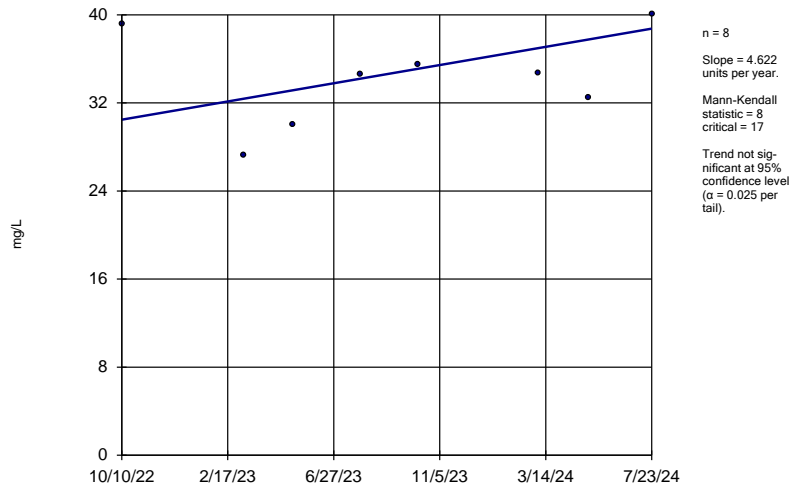
Chloride MW-53



n = 8
 Slope = 35.04
 units per year.
 Mann-Kendall
 statistic = 21
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

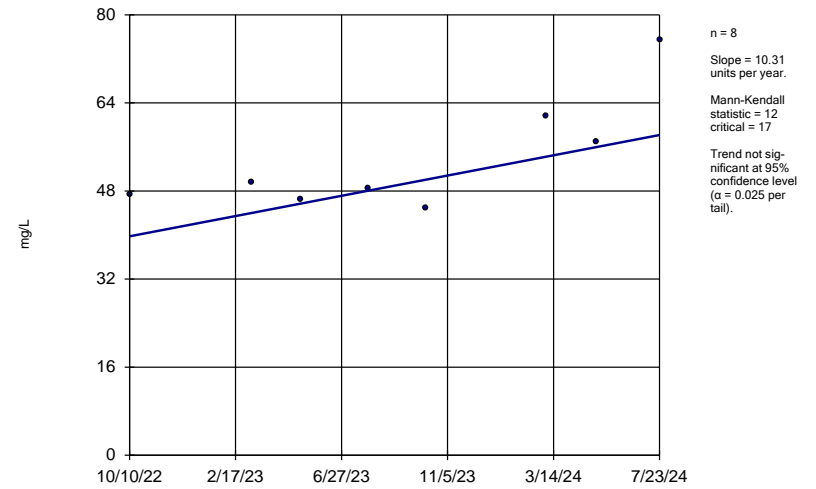
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Chloride MW-53R



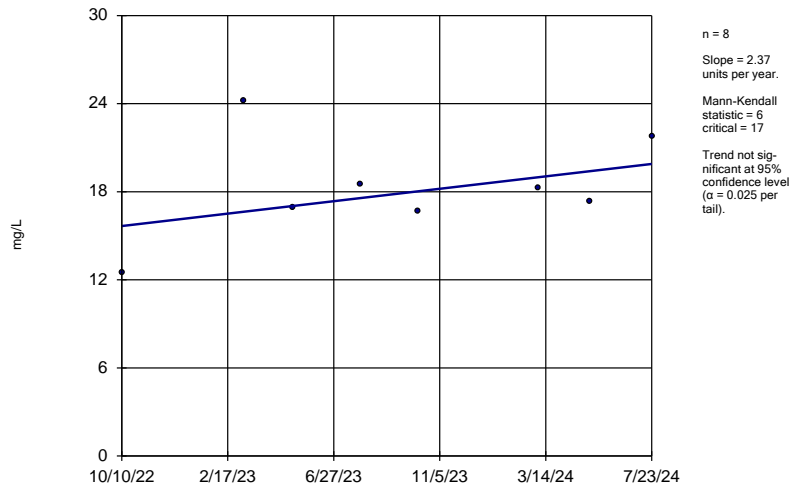
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Chloride MW-54R



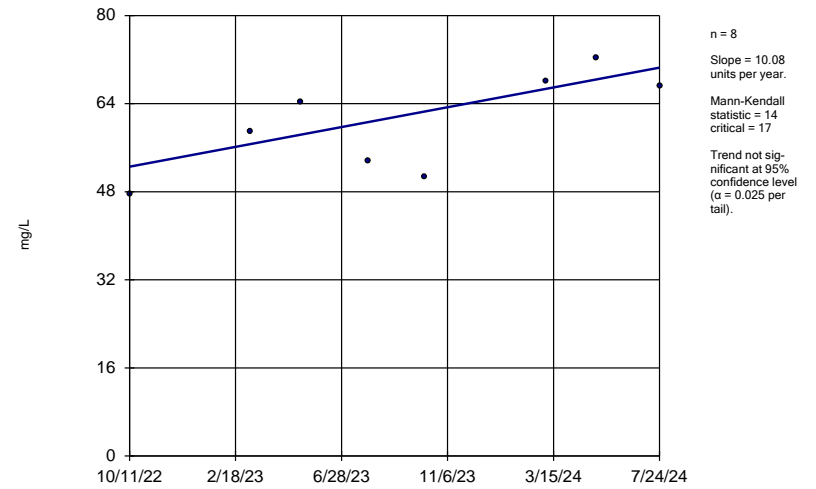
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Chloride MW-55

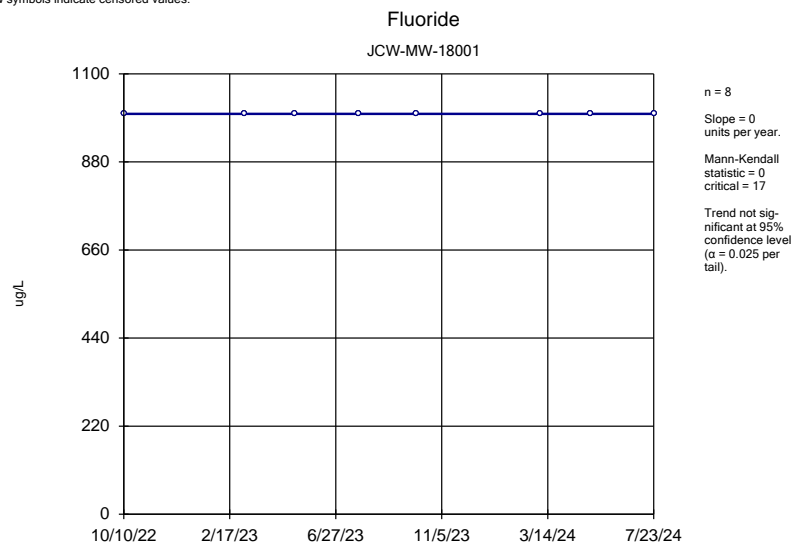


Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

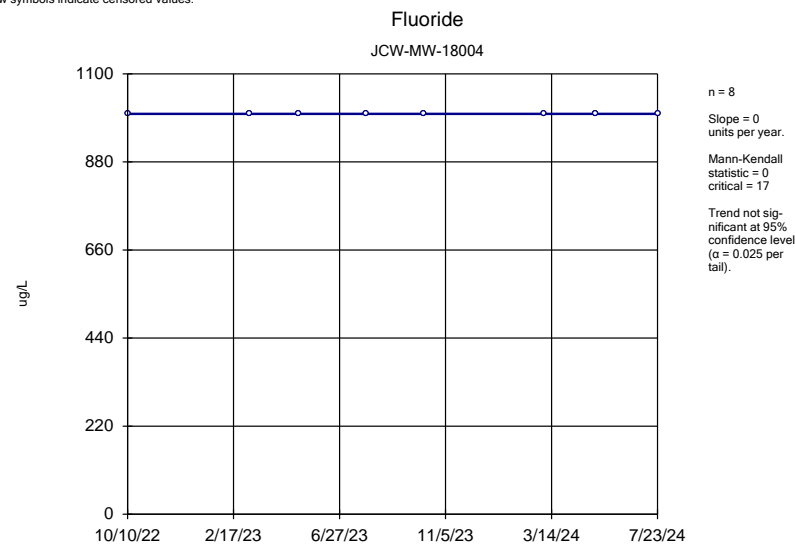
Chloride OW-57ROUT



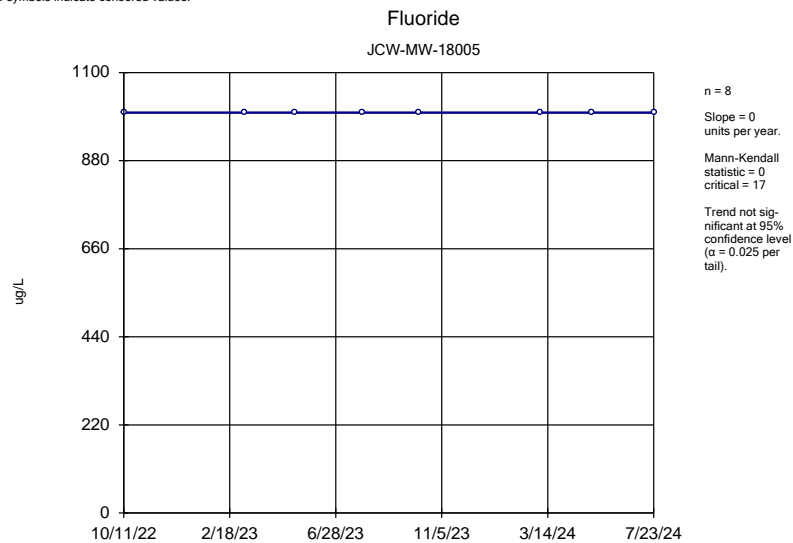
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



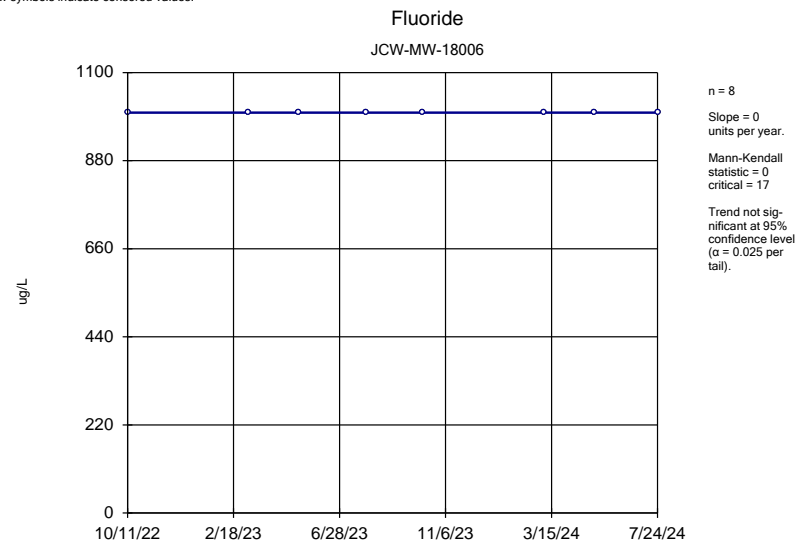
Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

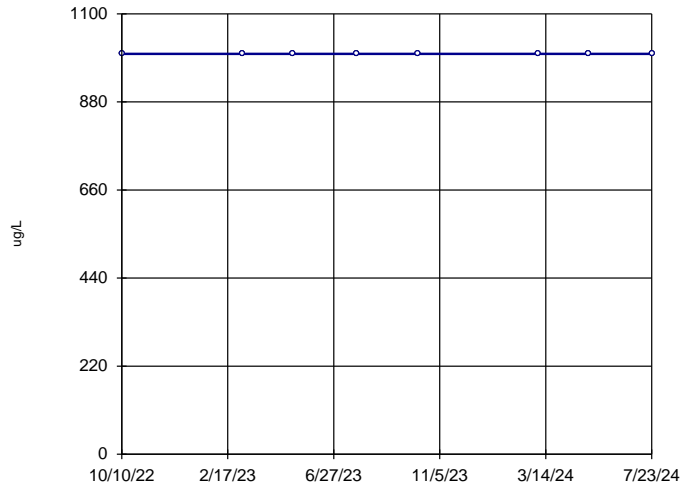


Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

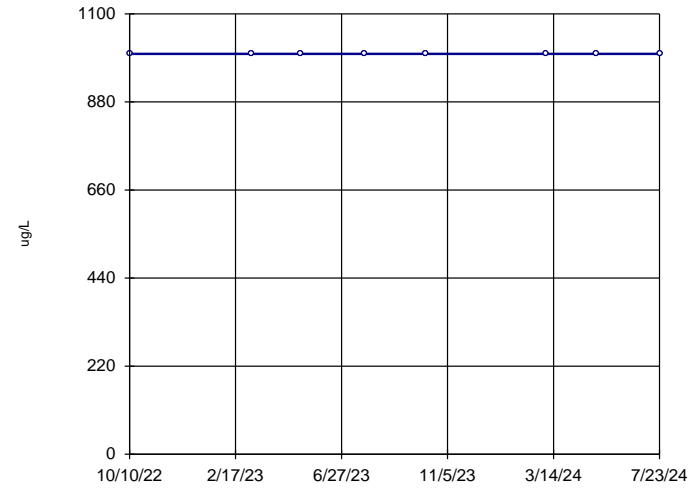
Fluoride MW-50



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

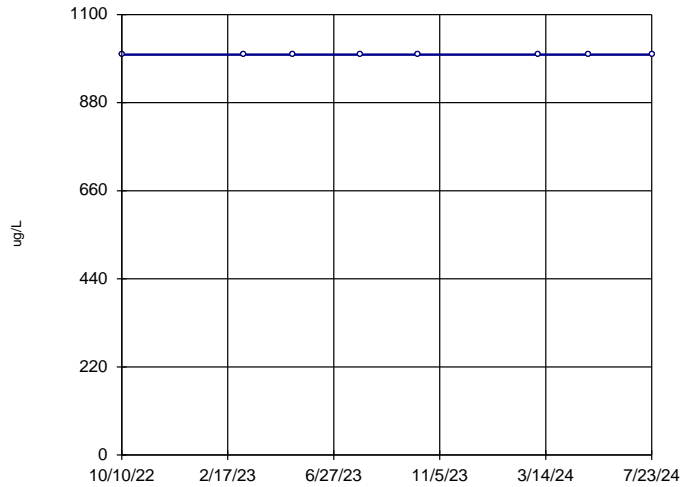
Fluoride MW-51



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

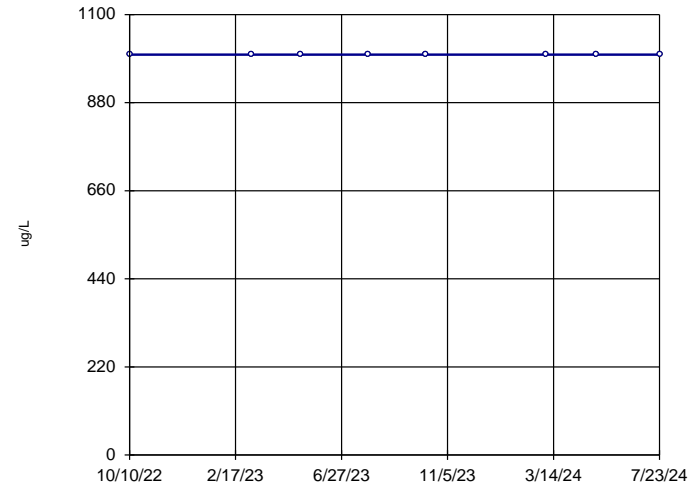
Fluoride MW-52



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

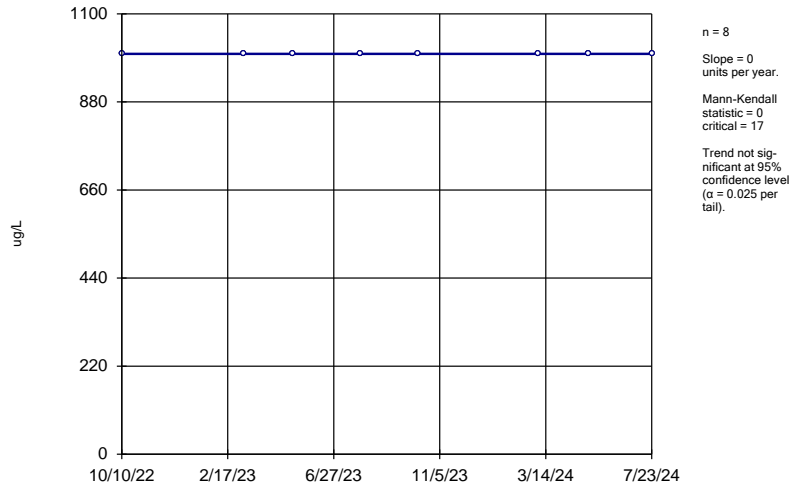
Fluoride MW-53



n = 8
Slope = 0
units per year.
Mann-Kendall
statistic = 0
critical = 17
Trend not sig-
nificant at 95%
confidence level
($\alpha = 0.025$ per
tail).

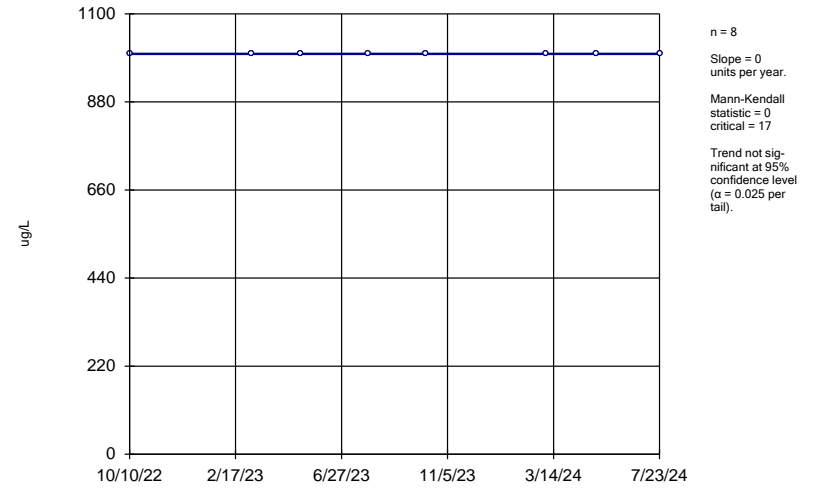
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Fluoride MW-53R



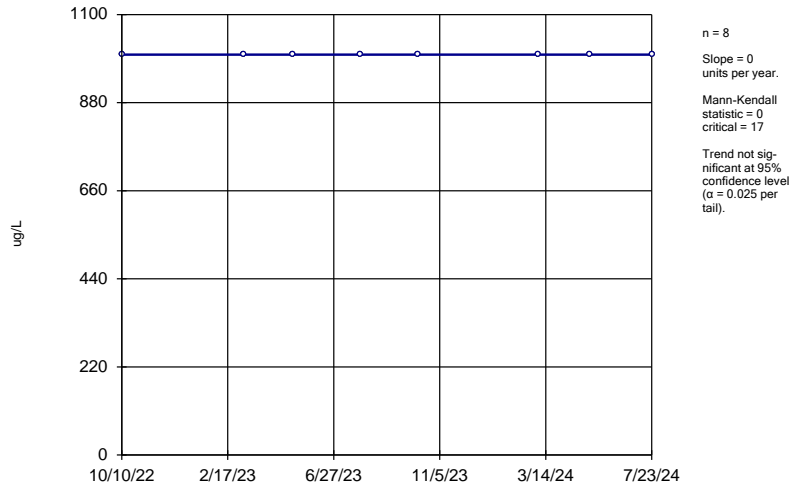
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Fluoride MW-54R



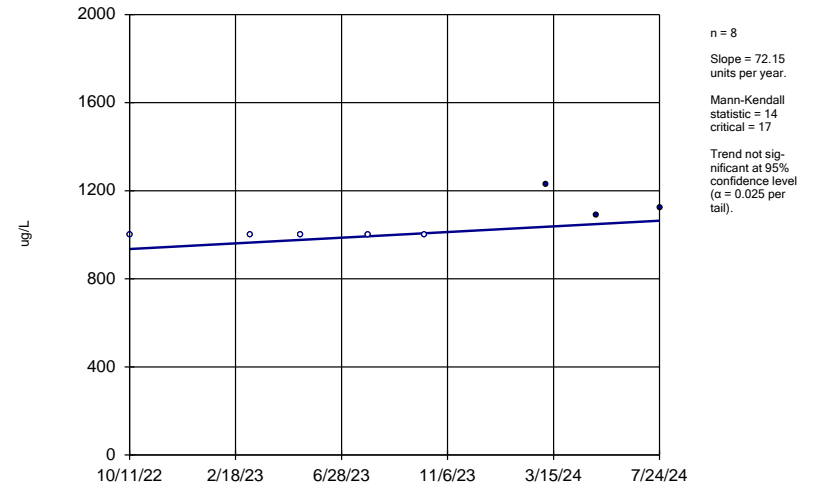
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Fluoride MW-55

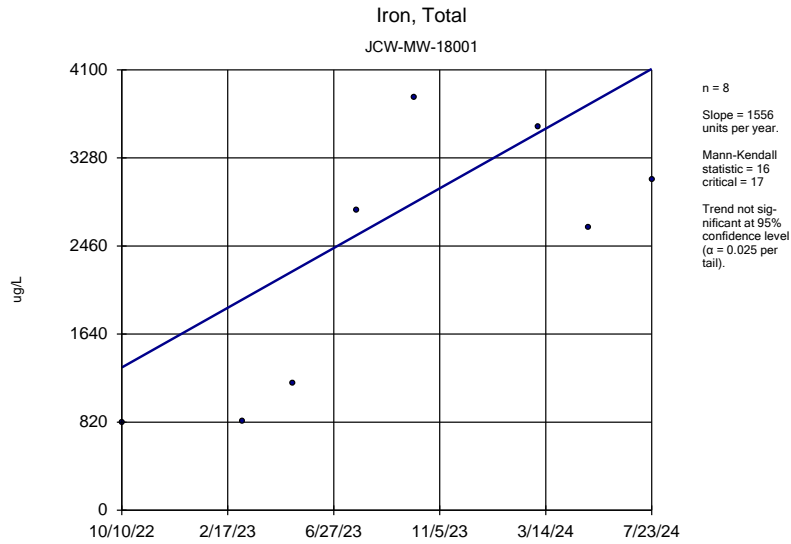


Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

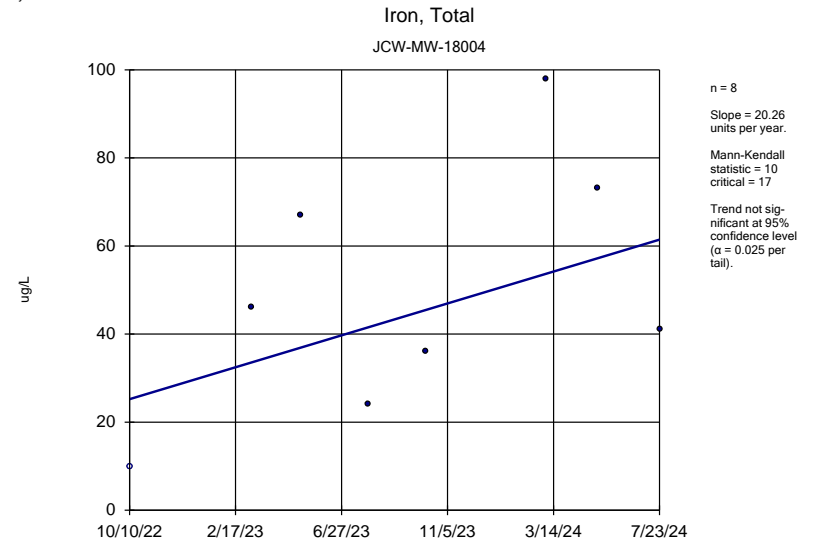
Fluoride OW-57ROUT



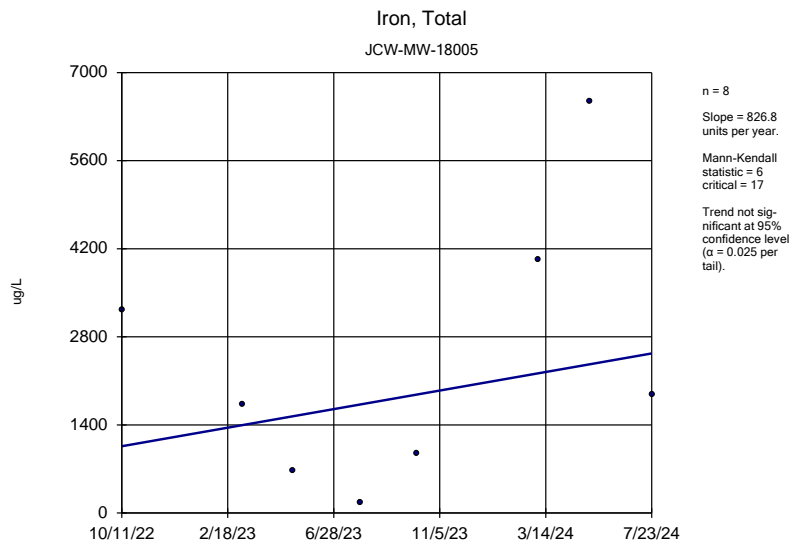
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



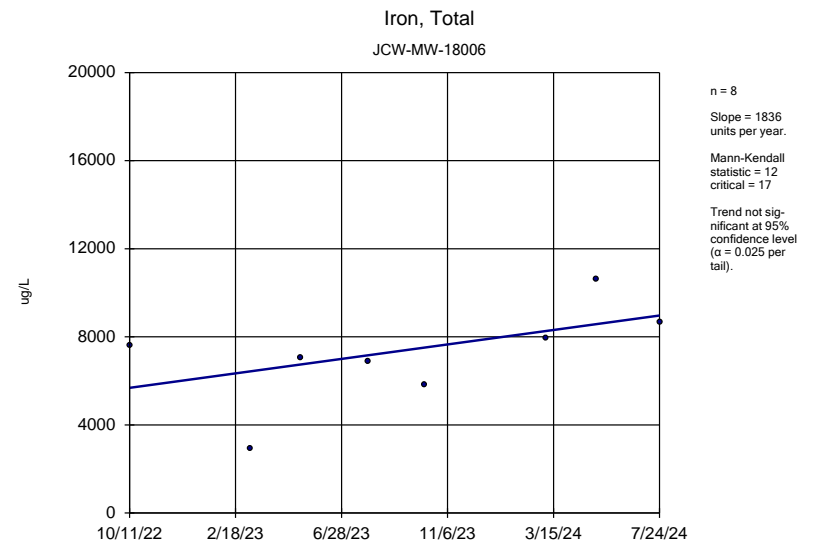
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

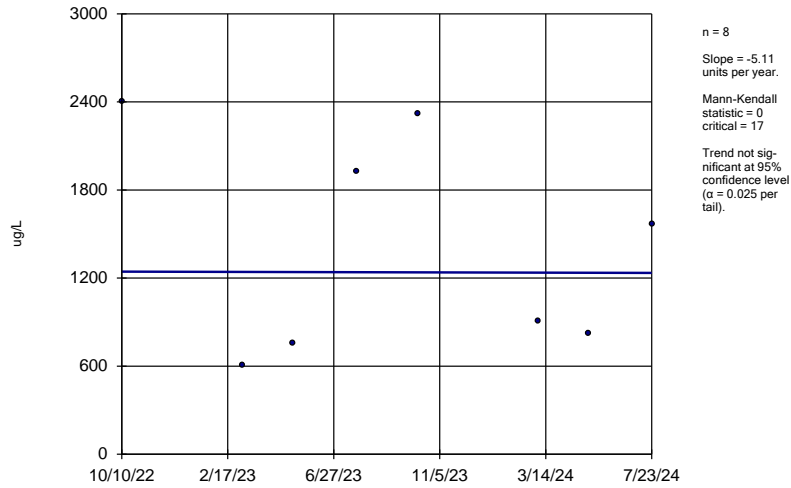


Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



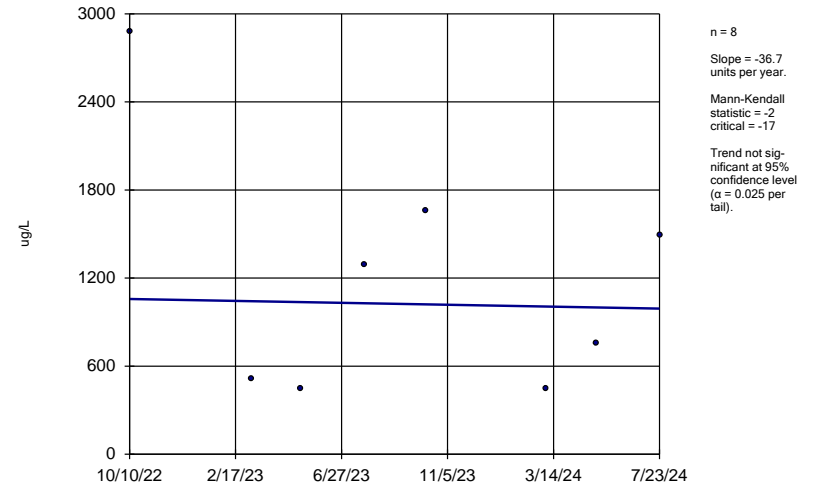
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Iron, Total MW-50



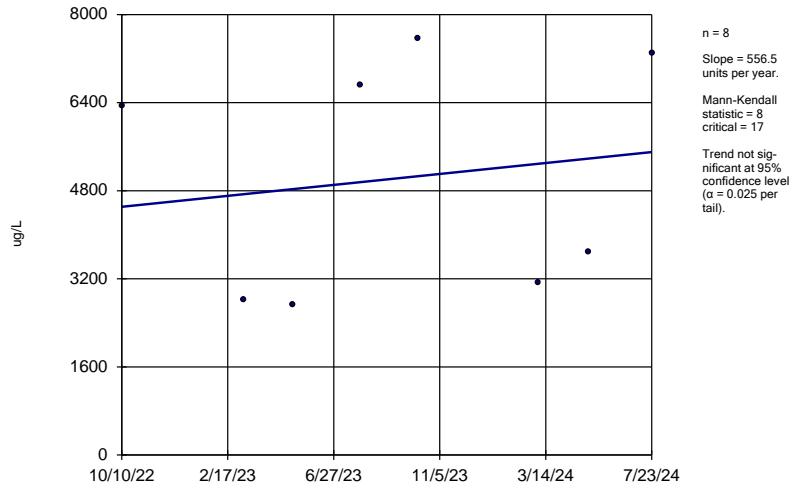
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Iron, Total MW-51



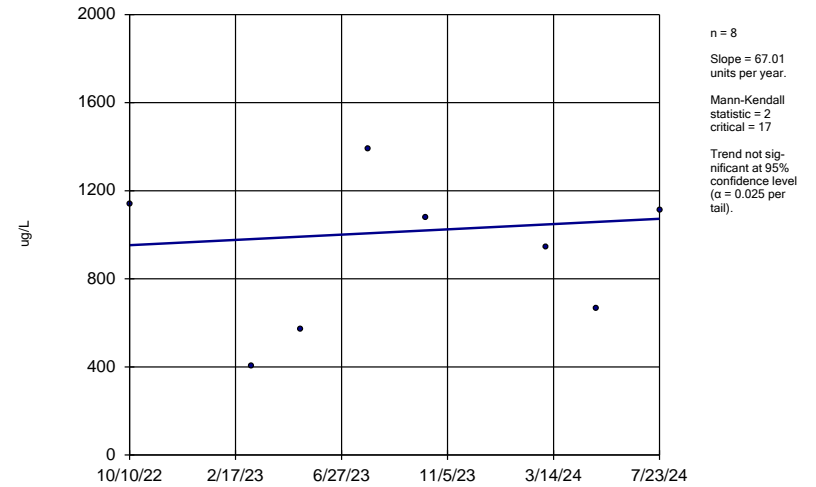
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Iron, Total MW-52



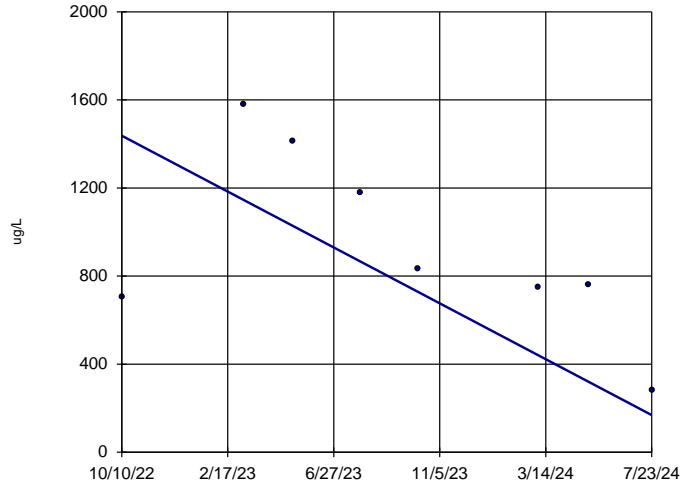
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Iron, Total MW-53



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

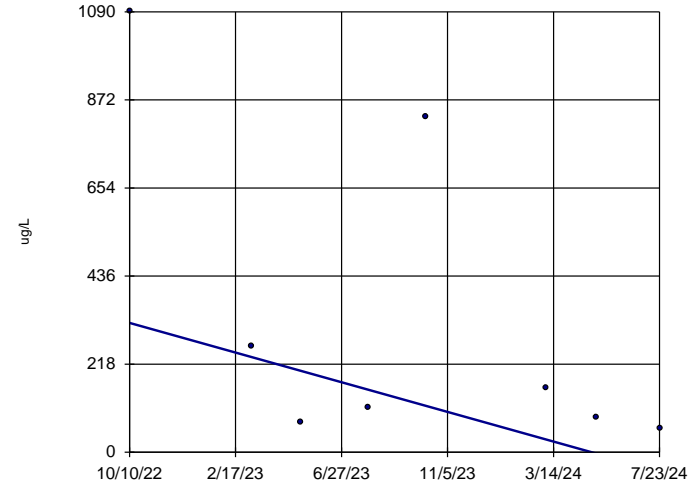
Iron, Total
MW-53R



n = 8
Slope = -710 units per year.
Mann-Kendall statistic = -14
critical = -17
Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

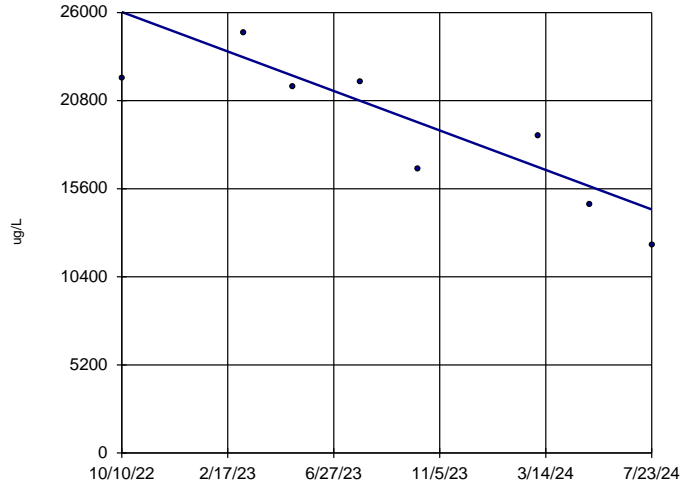
Iron, Total
MW-54R



n = 8
Slope = -205.5 units per year.
Mann-Kendall statistic = -14
critical = -17
Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

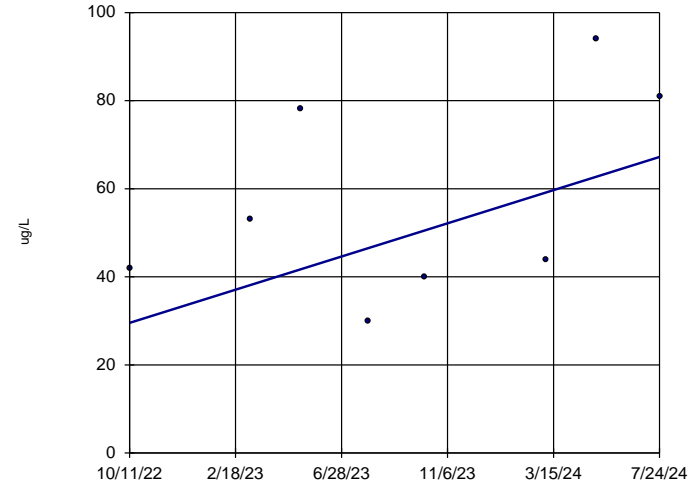
Iron, Total
MW-55



n = 8
Slope = -6525 units per year.
Mann-Kendall statistic = -22
critical = -17
Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

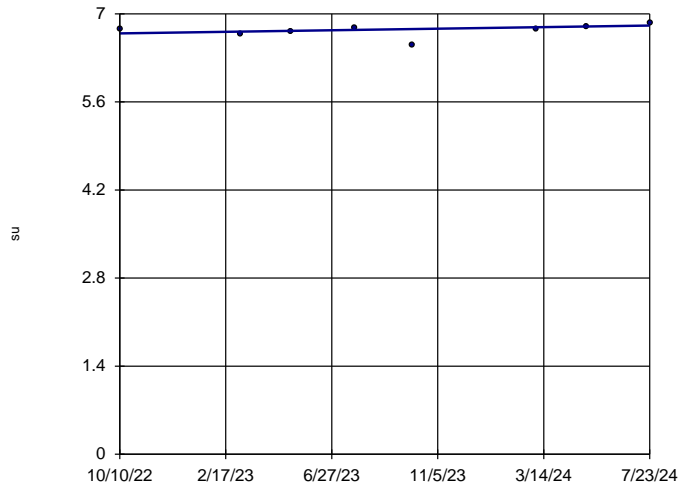
Iron, Total
OW-57ROUT



n = 8
Slope = 21.08 units per year.
Mann-Kendall statistic = 10
critical = 17
Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

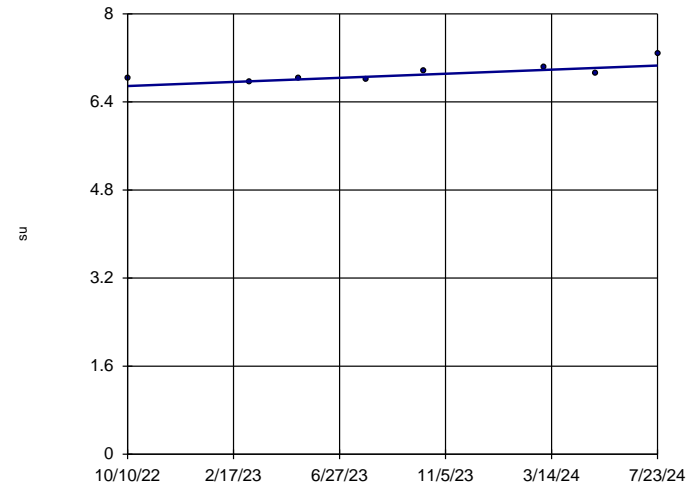
pH, Field
JCW-MW-18001



n = 8
 Slope = 0.07039
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

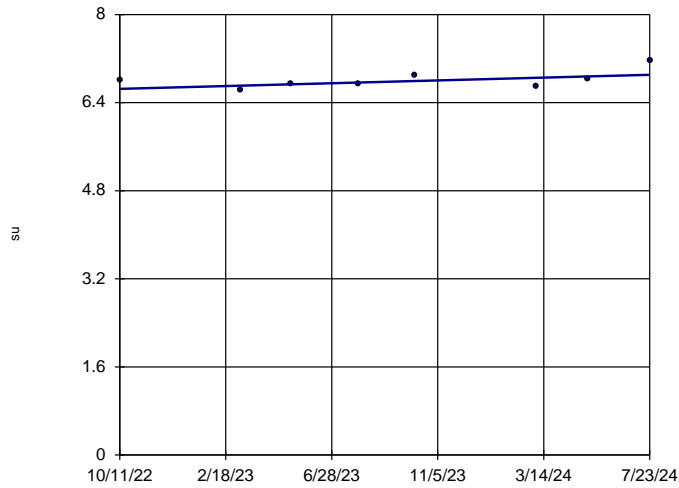
pH, Field
JCW-MW-18004



n = 8
 Slope = 0.2076
 units per year.
 Mann-Kendall
 statistic = 17
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

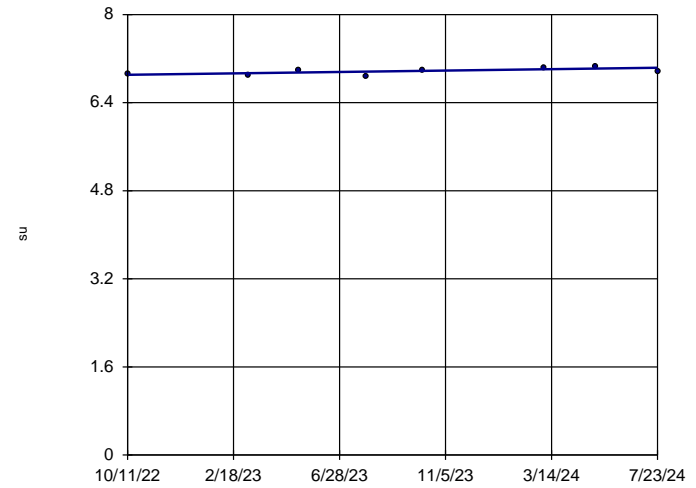
pH, Field
JCW-MW-18005



n = 8
 Slope = 0.1439
 units per year.
 Mann-Kendall
 statistic = 11
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

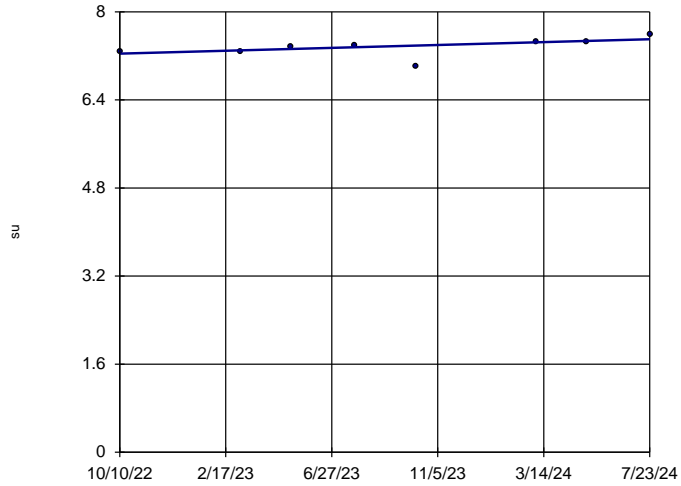
pH, Field
JCW-MW-18006



n = 8
 Slope = 0.07126
 units per year.
 Mann-Kendall
 statistic = 12
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

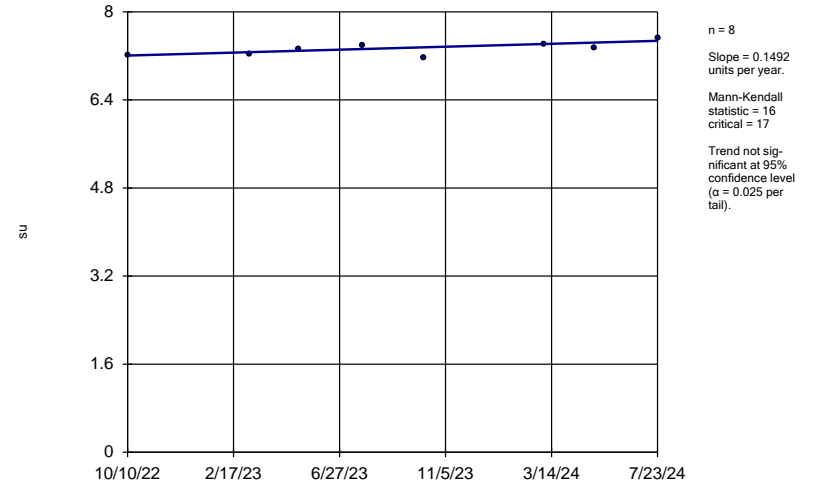
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

pH, Field MW-50



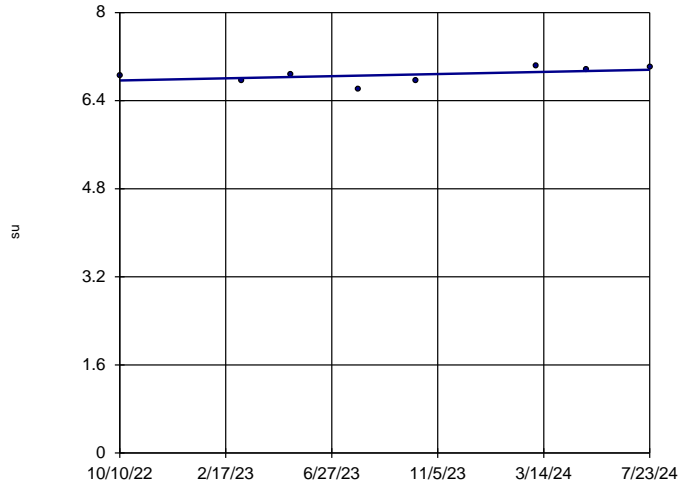
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

pH, Field MW-51



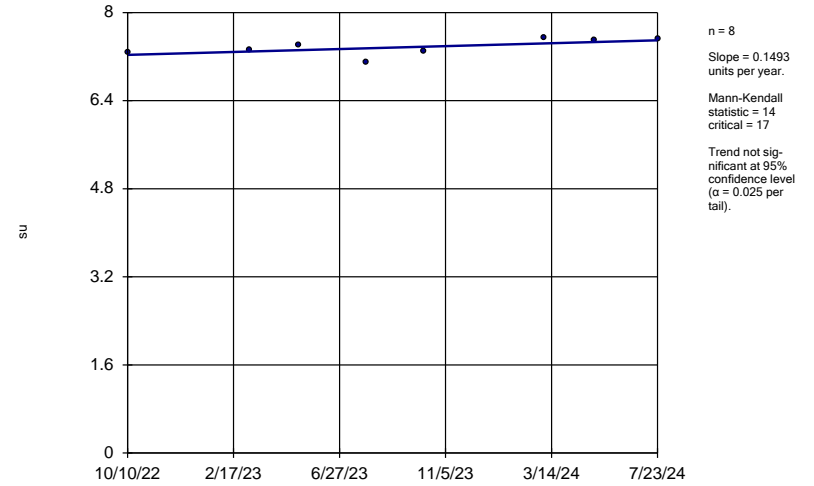
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

pH, Field MW-52



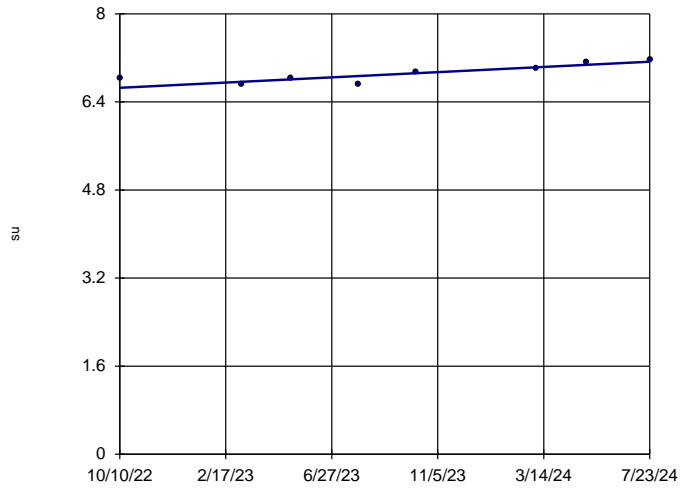
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

pH, Field MW-53



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

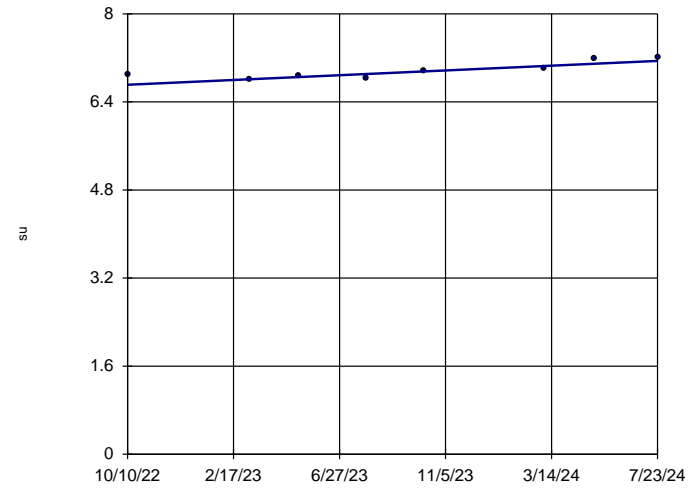
pH, Field MW-53R



n = 8
 Slope = 0.2652
 units per year.
 Mann-Kendall
 statistic = 21
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

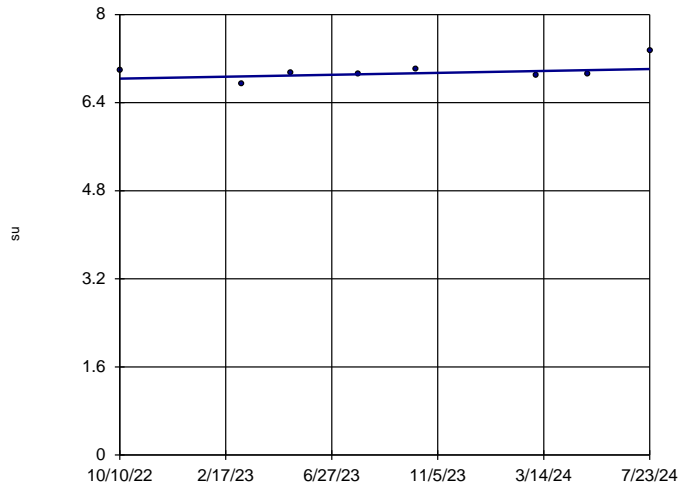
pH, Field MW-54R



n = 8
 Slope = 0.2413
 units per year.
 Mann-Kendall
 statistic = 20
 critical = 17
 Increasing trend
 significant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

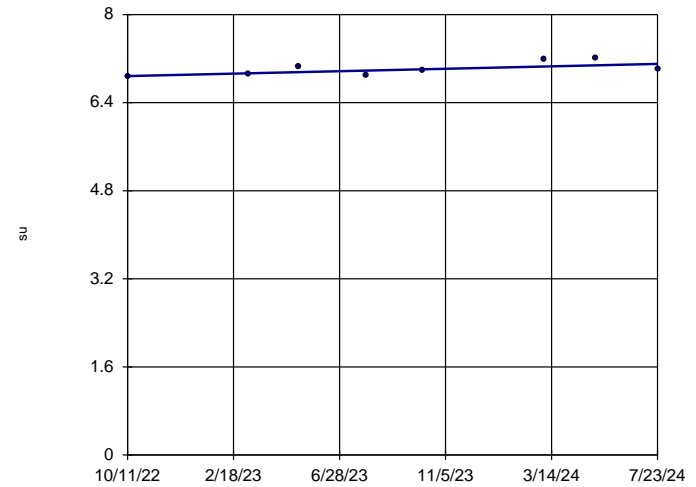
pH, Field MW-55



n = 8
 Slope = 0.09706
 units per year.
 Mann-Kendall
 statistic = 5
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

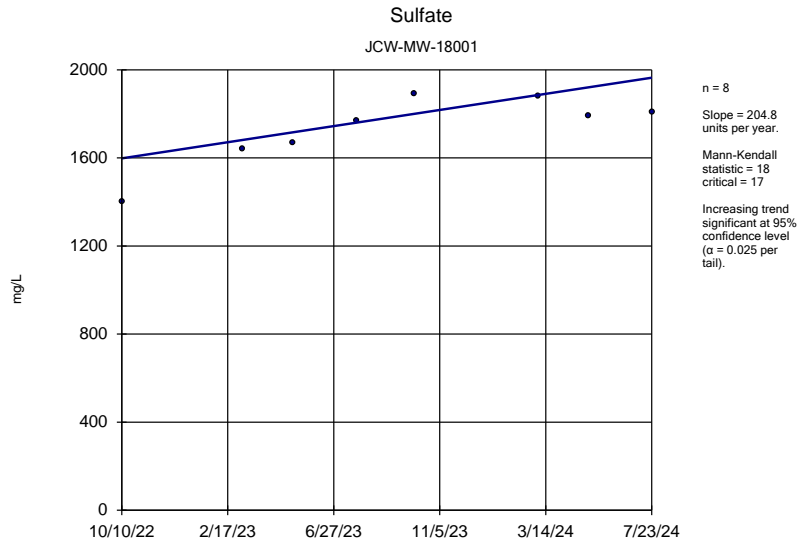
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

pH, Field OW-57ROUT

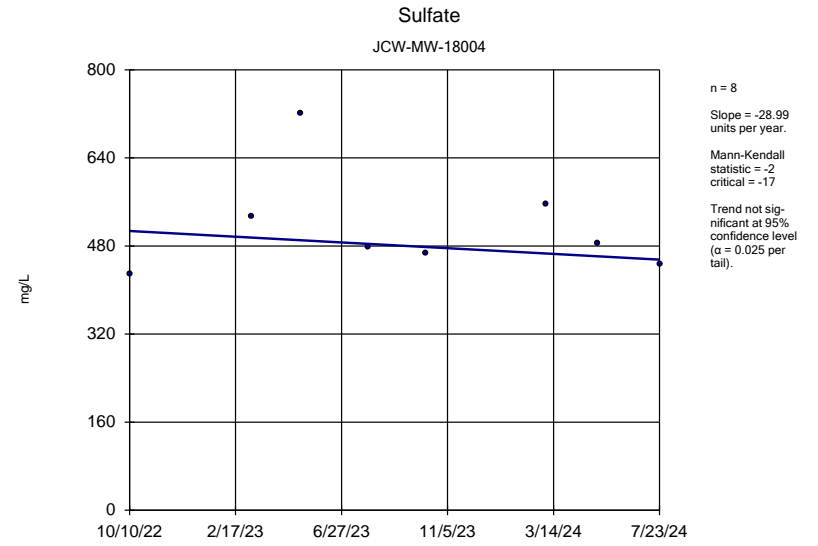


n = 8
 Slope = 0.1235
 units per year.
 Mann-Kendall
 statistic = 16
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

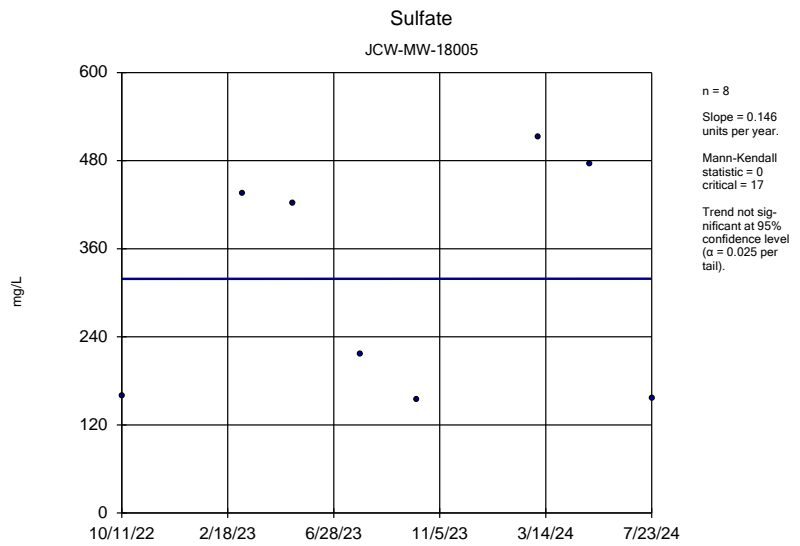
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



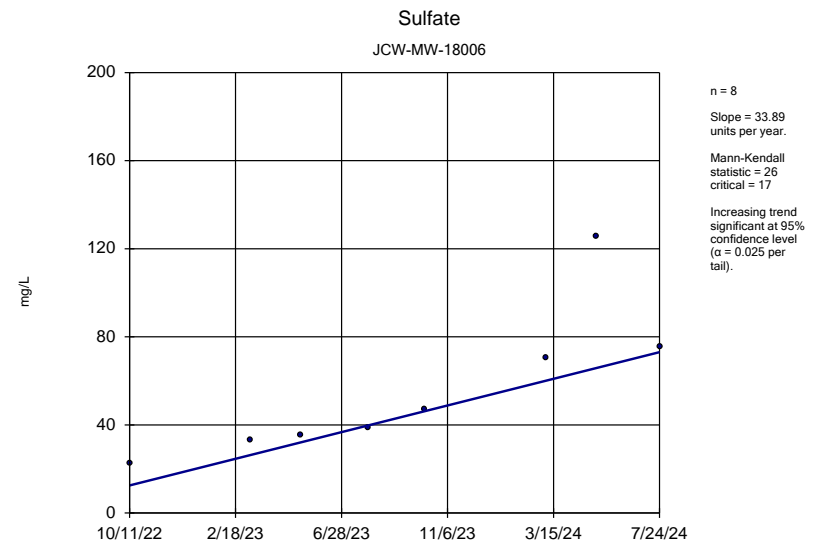
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



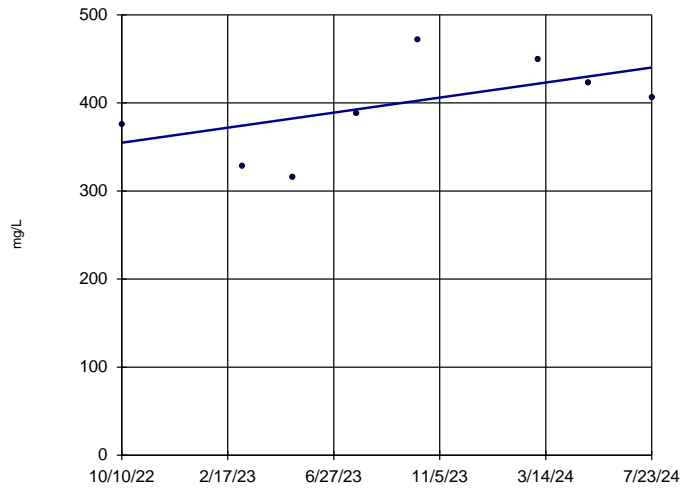
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Sulfate

MW-50

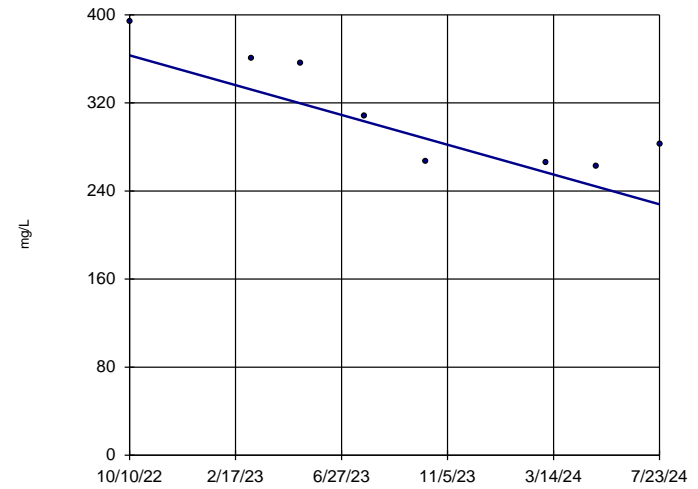


n = 8
 Slope = 47.86 units per year.
 Mann-Kendall statistic = 10
 critical = 17
 Trend not significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Sulfate

MW-51

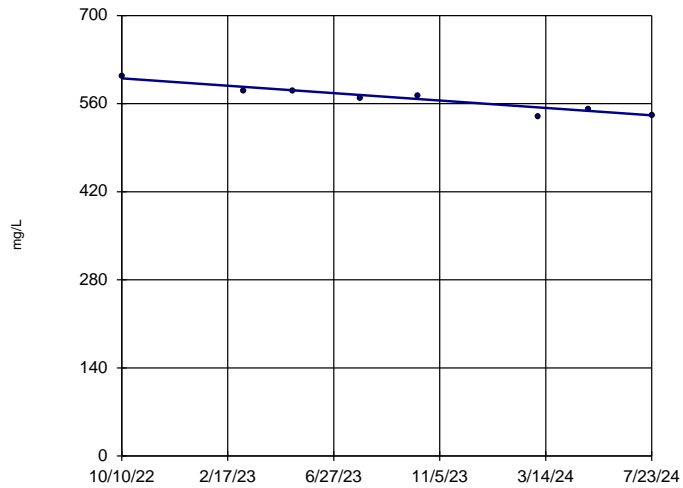


n = 8
 Slope = -75.74 units per year.
 Mann-Kendall statistic = -22
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Sulfate

MW-52

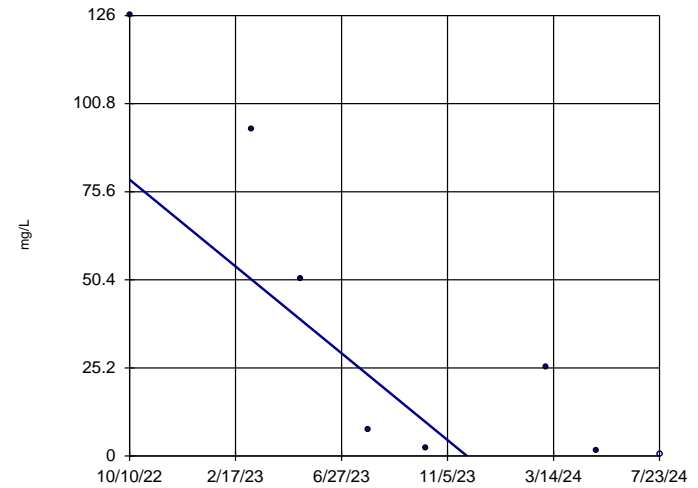


n = 8
 Slope = -32.92 units per year.
 Mann-Kendall statistic = -21
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

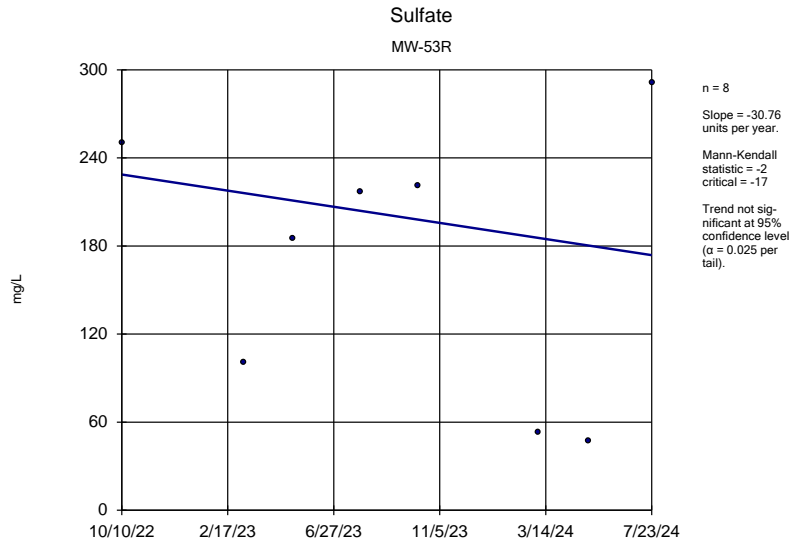
Sulfate

MW-53

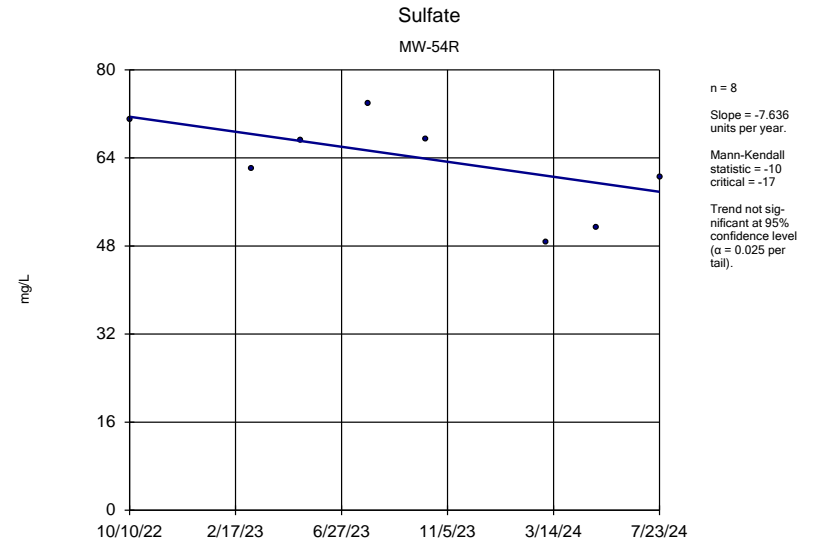


n = 8
 Slope = -69.51 units per year.
 Mann-Kendall statistic = -24
 critical = -17
 Decreasing trend significant at 95% confidence level (α = 0.025 per tail).

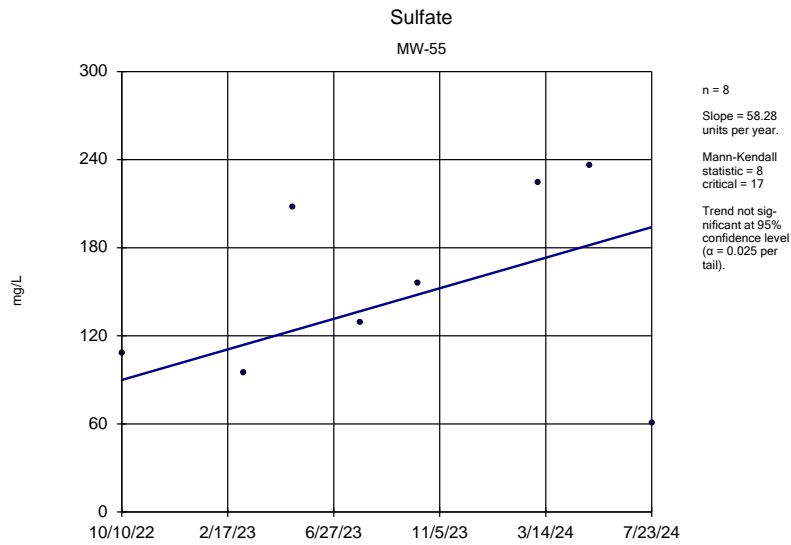
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



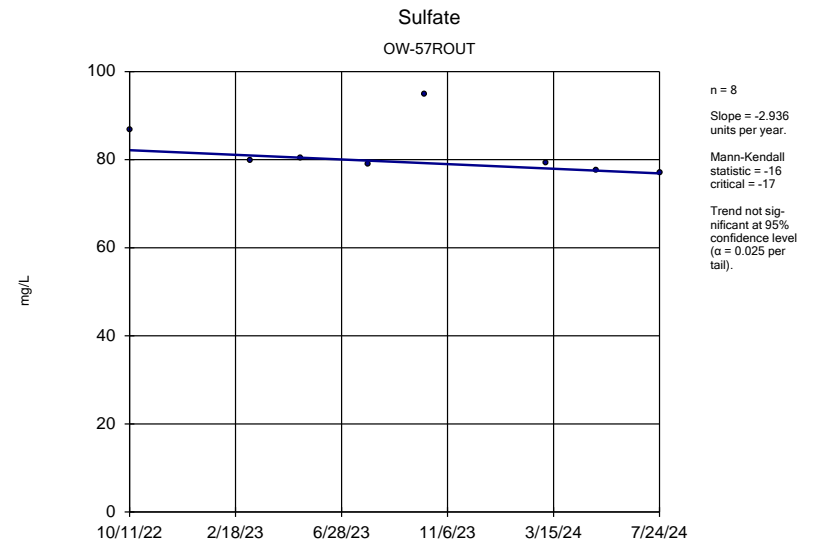
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



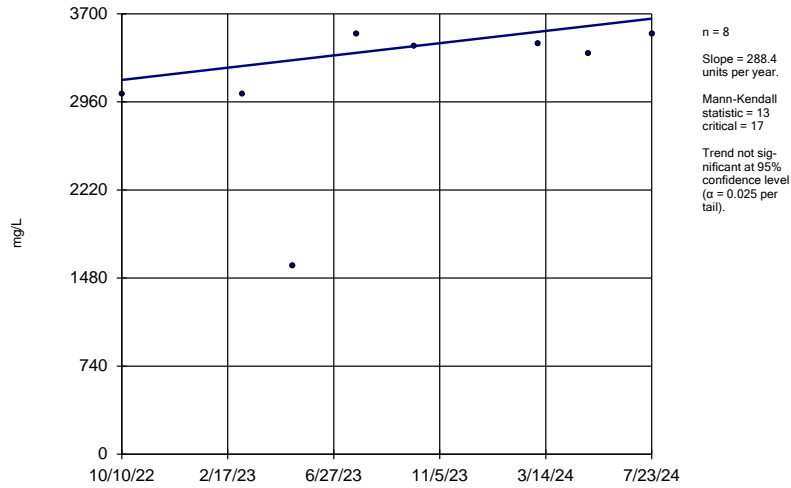
Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

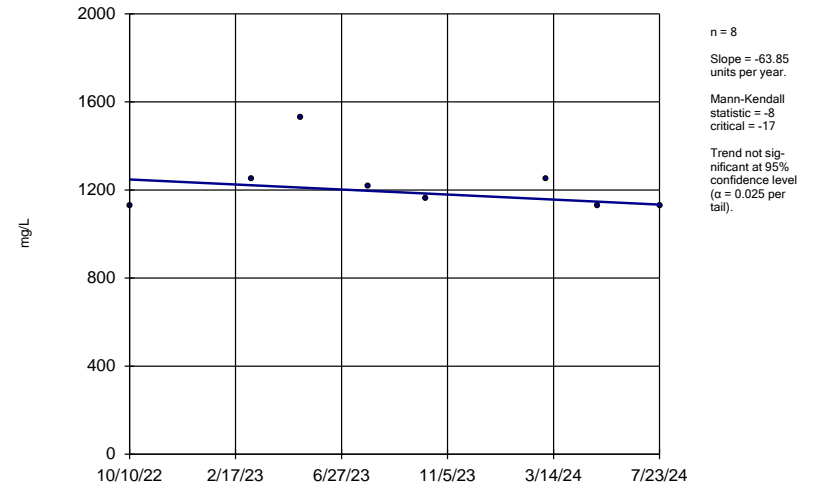
JCW-MW-18001



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

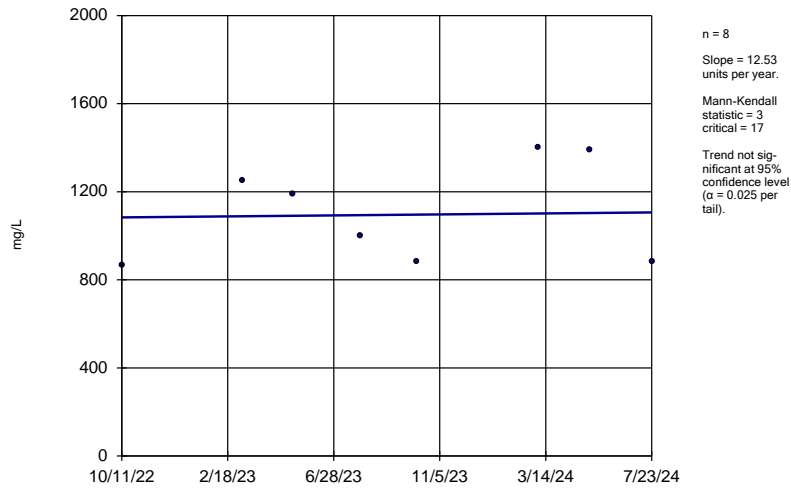
JCW-MW-18004



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

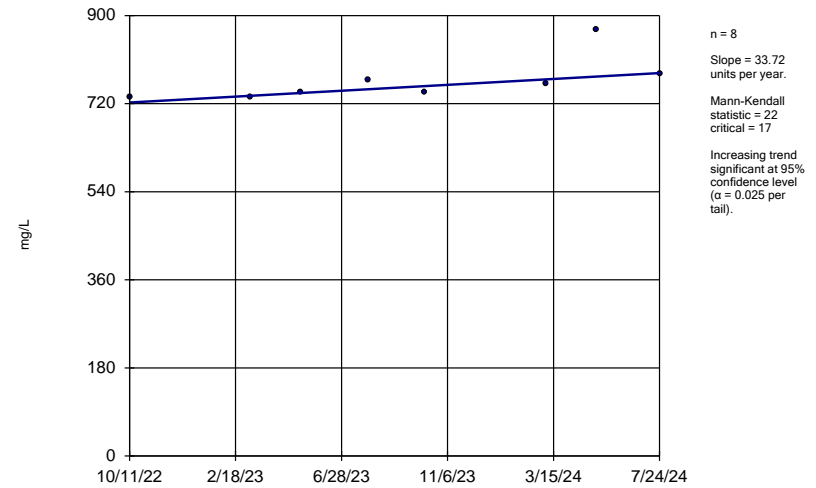
JCW-MW-18005



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

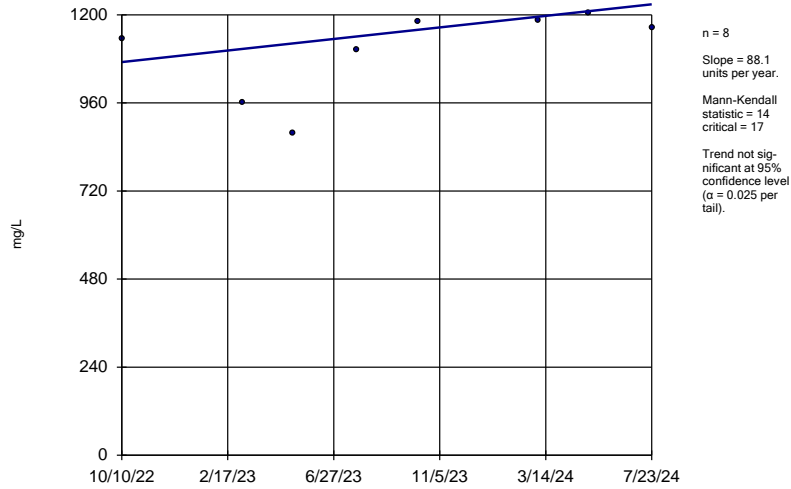
JCW-MW-18006



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

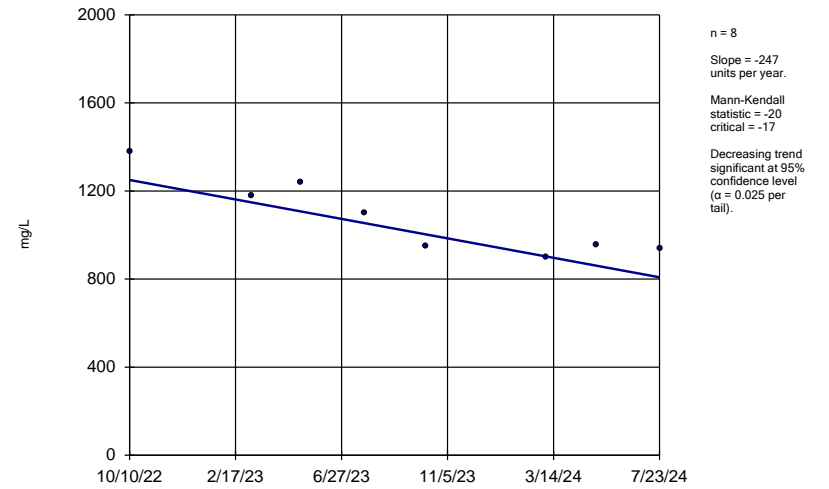
MW-50



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

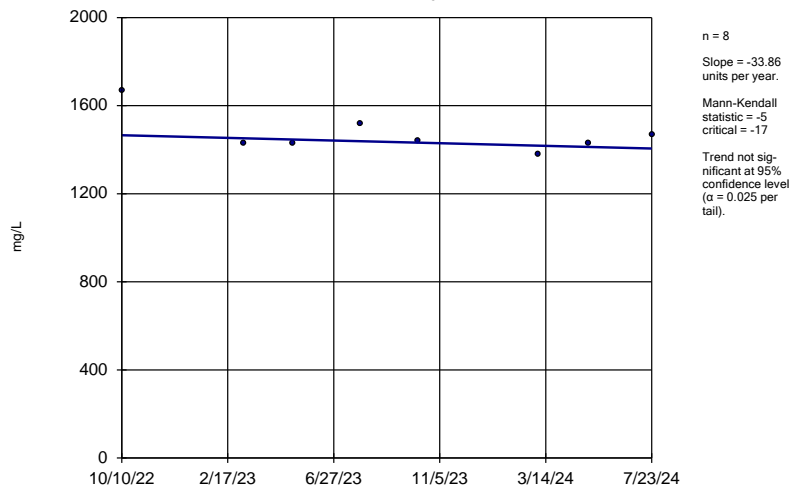
MW-51



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

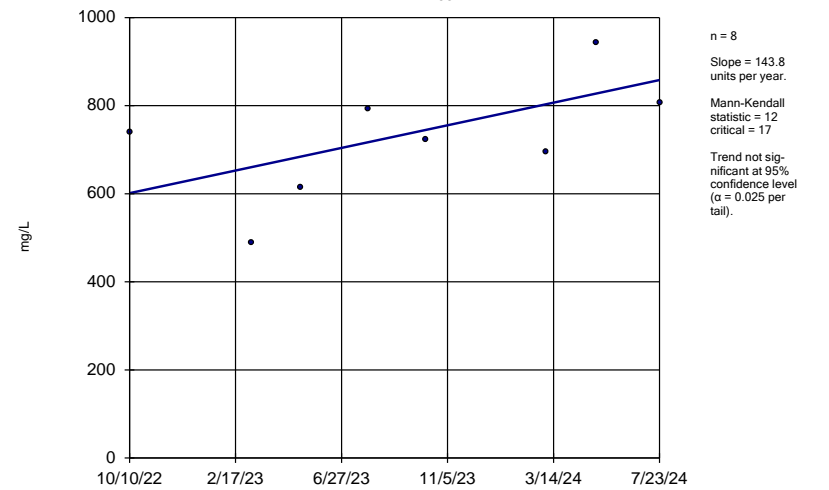
MW-52



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

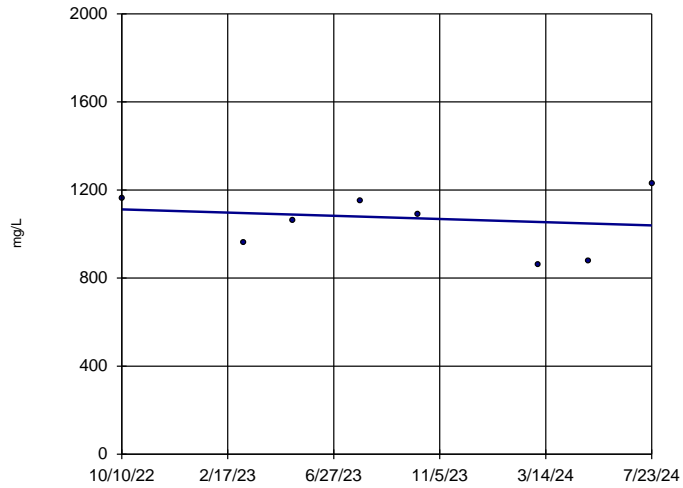
MW-53



Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

MW-53R

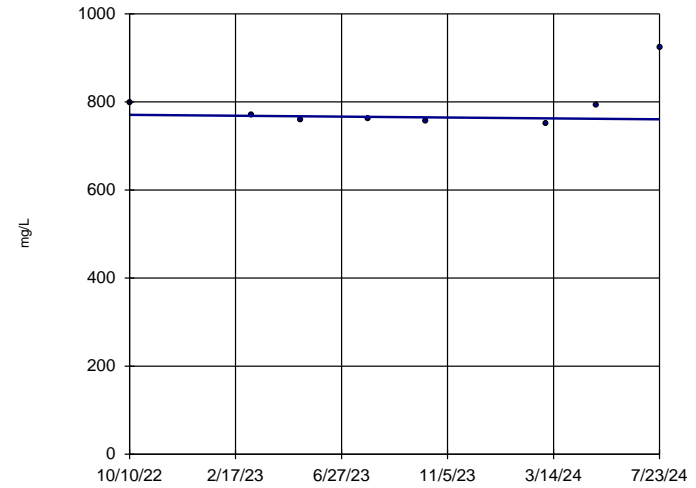


n = 8
 Slope = -40.56
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

MW-54R

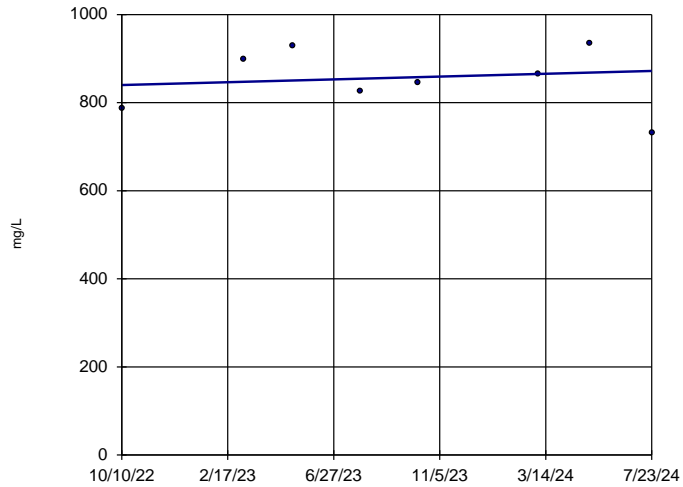


n = 8
 Slope = -5.8
 units per year.
 Mann-Kendall
 statistic = -2
 critical = -17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

MW-55

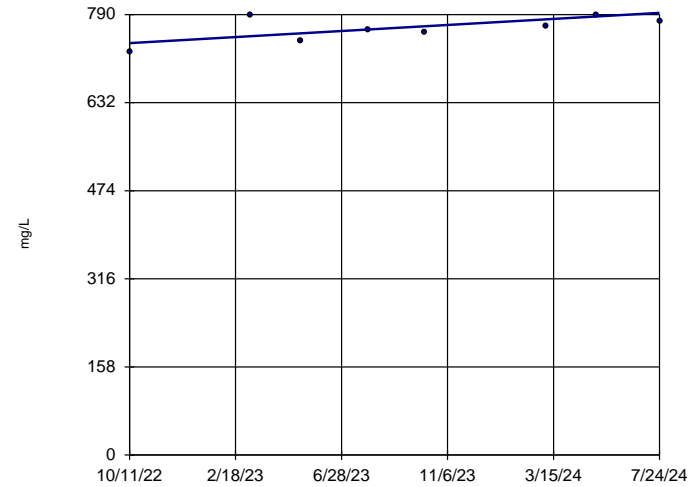


n = 8
 Slope = 17.92
 units per year.
 Mann-Kendall
 statistic = 2
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Total Dissolved Solids

OW-57ROUT



n = 8
 Slope = 30.37
 units per year.
 Mann-Kendall
 statistic = 13
 critical = 17
 Trend not sig-
 nificant at 95%
 confidence level
 ($\alpha = 0.025$ per
 tail).

Sen's Slope Estimator Analysis Run 8/28/2024 12:14 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Appendix D

Assessment Monitoring and GSI Statistical Evaluation

Technical Memorandum

Date: October 30, 2024

To: J.R. Register, Consumers Energy

From: Kristin Lowery, TRC
Noah Paalanen, TRC

Project No.: 553828.0000 Phase 002, Task 002

Subject: Assessment Monitoring and GSI Statistical Evaluation of the Third Quarter 2024 Sampling Event
JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018) for the JC Weadock Power Plant Landfill, arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standards (GWPSs). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019.

Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule¹ at the JC Weadock Power Plant Landfill and quarterly groundwater monitoring in accordance with the February 2021 Weadock Landfill Hydrogeological Monitoring Plan (HMP). The third quarter 2024 monitoring event was conducted on July 22-24, 2024. In accordance with §257.95 and the HMP, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix III and Appendix IV constituents, and additional Michigan Part 115 (as amended by PA 640) Section 11511a(3) and Section 11519b(2) constituents, are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h) and Part 115, as detailed in the April 23, 2021 Groundwater Protection Standards technical memorandum, which was also included in the First Quarter 2021 Hydrogeological Monitoring Report². In accordance with the HMP, groundwater monitoring data from the designated groundwater-surface water interface (GSI) monitoring wells must be also compared to the GSI criteria to determine whether or not the GSI monitoring constituents are detected at statistically significant levels above the GSI criteria.

The evaluation of the initial semiannual assessment monitoring event data (May 2018) indicated that arsenic was present at statistically significant levels above the GWPS at one of the three former downgradient wells. The three downgradient wells were located within a vent (e.g., opening) of the

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

² TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.

Technical Memorandum

perimeter soil/bentonite slurry wall to assess the quality of groundwater passing the waste boundary. As discussed in detail in the HMP, in July 2018, the vent in the perimeter soil/bentonite slurry wall was closed and the slurry wall is now continuous along the entire perimeter of the Weadock Landfill. As a result, the groundwater monitoring system was revised, as documented in the HMP. The monitoring well network now consists of twelve (12) downgradient monitoring wells and eight (8) GSI monitoring wells.

The statistical evaluation of the third quarter 2024 assessment monitoring event data indicates that the following constituents are present at statistically significant levels above the GWPSs in downgradient monitoring wells at the Weadock Landfill:

Constituent	GWPS	#Downgradient Wells Exceeded
Boron	560 µg/L	10 of 12
Calcium	280 mg/L	1 of 12
Sulfate	780 mg/L	1 of 12

Corrective action has been triggered as a result of data collected during the initial assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria.

Statistical Evaluation Procedures

Following each quarterly sampling event, compliance well data for the Weadock Landfill are evaluated in accordance with the Assessment Monitoring Statistical Data Evaluation and GSI Data Evaluation procedures in the HMP. The assessment monitoring and GSI monitoring programs were developed to evaluate concentrations of constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs or GSI criteria). To evaluate whether or not a criterion exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given monitoring event compared to the applicable criterion must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance³, the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the criterion. If the confidence interval straddles the criterion (i.e., the lower confidence level is below the criterion, but the upper confidence level is above), the statistical test result indicates that there is insufficient

³ USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

Technical Memorandum

confidence that the measured concentrations are different from the criterion and thus no compelling evidence that the measured concentration is a result of a release from the CCR unit versus the inherent variability of the sample data. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule and Part 115 and numerous other federal rules are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected constituent, the concentrations for each well were first compared directly to the GWPS, as shown on Table 1, or the GSI criteria, as shown on Table 2. Parameter-well combinations that included a direct exceedance of the criteria within the most recent two years of sampling events (eight quarterly sampling events, October 2022 through July 2024) were retained for further analysis.

Groundwater data were evaluated utilizing Sanitas™ statistical software. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas™ statistical program, confidence limits were used to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each parameter with a direct exceedance using a per test⁴ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas™ output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well-constituent pair;
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the assessment and GSI monitoring programs. Initially, the results were observed visually for potential outliers. No outliers were identified in the data set.

The Sanitas™ software was then used to test compliance at the downgradient monitoring wells using the confidence interval method for the most recent eight sampling events. The tests were run with a per-test significance of $\alpha = 0.01$. Non-detect data was handled in accordance with the HMP for the purposes of calculating the confidence intervals.

⁴ Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes data transformations, as appropriate.

Assessment Monitoring Statistical Evaluation

The assessment monitoring statistical evaluation is performed on the downgradient monitoring wells in accordance with the HMP. The downgradient monitoring wells include:

- JCW-MW-18001 ■ JCW-MW-18004 ■ JCW-MW-18005 ■ JCW-MW-18006
- MW-50 ■ MW-51 ■ MW-52 ■ MW-53
- MW-53R ■ MW-54R ■ MW-55 ■ OW-57R Out

The concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Constituent-well combinations that included a direct exceedance of the GWPS within the past eight monitoring events were retained for further analysis (Attachment 1). Direct comparison GWPS exceedances include the following constituent well combinations:

- Boron in MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006;
- Calcium in JCW-MW-18001 and JCW-MW-18005;
- Sulfate in JCW-MW-18001;
- Arsenic in MW-55 and JCW-MW-18006; and
- Molybdenum in MW-55.

The purpose of assessment monitoring is to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (i.e. GWPS). As detailed in the *Alternate Source Demonstration* (TRC, December 2019), the arsenic and molybdenum concentrations at MW-55 are not the result of a release from the unit; therefore, comparison of these concentrations to the GWPS is not appropriate and assessment monitoring confidence intervals were not calculated.

The software outputs for the assessment monitoring data evaluation are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 1. Visual trends were apparent in multiple wells for arsenic, boron, calcium, and sulfate. These data sets were tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend tests show that the trends for boron at MW-51 and MW-53 are statistically significant (Attachment 1). The trends are causing the confidence intervals to widen. Calculating a confidence interval around a trending data set incorporates not only variability present naturally in the underlying dataset, but also incorporates variability due to the trend itself. Based on the observed trends, confidence bands were selected as a more appropriate assessment for boron at MW-51 and MW-53. Confidence bands are selected by the Unified Guidance as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval.

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normal	Boron at JCW-MW-18005, JCW-MW-18006, MW-52, MW-53R, MW-54R, MW-55, and OW-57R OUT Calcium at JCW-MW-18005 and JCW-MW-18001 Arsenic at JCW-MW-18006 Sulfate at JCW-MW-18001
Normalized by power transformation	Boron at JCW-MW-18001 (Square Root)
Not normal (non-parametric test used)	Boron at MW-50
Not Applicable – confidence bands used	Boron at MW-51 and MW-53

The confidence bands and interval tests compare the lower confidence limit to the GWPS. Arsenic concentrations at JCW-MW-18006 were previously considered statistically significant; however, the lower confidence limit has been at or below the GWPS since the second quarter 2021. Calcium concentrations at MW-51 were previously considered statistically significant; however, calcium concentrations are generally decreasing, the lower confidence limit has been below the GWPS since the first quarter 2022, and concentrations have been below the GWPS by direct comparison since first quarter 2022. Concentration trends will continue to be monitored. Statistically significant exceedances of the GWPS were noted for boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001. Boron concentrations have been consistently above the GWPS since monitoring under the Weadock Landfill HMP began in first quarter 2021. Calcium at JCW-MW-18001 was a confirmed GWPS exceedance in first quarter 2023 resulting from increases in calcium concentration from first quarter 2021 through first quarter 2024. No trend in calcium concentrations was observed at JCW-MW-18001 as of second quarter 2024. Sulfate at JCW-MW-18001 was a confirmed GWPS exceedance in second quarter 2023 resulting from increases in sulfate concentrations. As noted in the Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024), multiple lines of evidence indicate that the increases in calcium and sulfate concentrations are not a result of a change in flux from the landfill and is instead the result of changing groundwater conditions outside the slurry wall. Corrective action has been triggered for the site as a result of data collected during the initial May 2018 assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

GSI Statistical Evaluation

Eight monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the GSI monitoring program to meet the requirements of Part 31:

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

Technical Memorandum

The concentrations from each well were first compared directly to the GSI criteria, as shown on Table 2. Constituent-well combinations that included a direct exceedance of the GSI criteria within the past eight monitoring events were retained for further analysis (Attachment 2). Direct comparison GSI criteria exceedances include the following constituent well combinations:

- Arsenic in MW-55

The purpose of the GSI statistical evaluation is to assess compliance with the GSI pathway. Although the *Alternate Source Demonstration* supports that the arsenic concentrations at MW-55 are not the result of a release from the unit, these concentrations still affect compliance with the GSI pathway. Therefore, it is appropriate to calculate confidence limits for arsenic at MW-55 for comparison to the GSI criteria.

The software outputs for the assessment monitoring data evaluation are included in Attachment 2 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 2.

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normalized by power transformation	Arsenic at MW-55 (Square Root)

The confidence interval tests compare the lower confidence limit to the GSI. The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria. Arsenic concentrations at MW-55 were previously considered statistically significant; however, the arsenic concentrations decreased in 2022 and 2023. The lower confidence limits for arsenic continued to be below the GWPS in third quarter 2024.

Attachments

Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
Table 2 Comparison of Groundwater Sampling Results to GSI

Attachment 1 Assessment Monitoring Sanitas™ Output Files
Attachment 2 GSI Evaluation Sanitas™ Output Files

Tables

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-50															
Sample Date:			10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024	7/23/2024	7/23/2024
Constituent	Unit	GWPS		Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	Field Dup	
Appendix III⁽¹⁾																		
Boron	ug/L	560	1,730	1,670	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020	2,100	2,180
Calcium	mg/L	280	186	181	152	--	142	144	188	187	205	206	199	196	184	191	175	175
Chloride	mg/L	2,300	47.7	47.6	35.9	36.7	31.5	31.9	37.4	39.1	37.6	37	40.1	38.6	37.1	38.1	34.9	36.7
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	376	376	341	315	314	316	392	385	470	472	449	448	425	421	403	410
Total Dissolved Solids	mg/L	4,700	1,120	1,150	939	984	878	880	1,100	1,110	1,170	1,190	1,180	1,190	1,250	1,160	1,190	1,140
pH, Field	SU	6.5 - 8.5	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--	7.6	--
Appendix IV⁽¹⁾																		
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	3	3	2	2	2	2	3	3	3	3	3	3	3	3	4	4
Barium	ug/L	2,000	106	108	89	92	114	87	114	113	135	136	187	179	176	180	188	192
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	62	62	65	65	55	54	58	59	59	59	69	68	61	62	62	61
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5	5	6	6
Radium-226	pCi/L	NA	0.158	0.343	--	--	0.155	0.144	--	--	0.291	0.320	--	--	0.270	0.349	--	--
Radium-228	pCi/L	NA	1.14	1.37	--	--	0.686	< 0.606	--	--	1.15	1.46	--	--	1.47	1.38	--	--
Radium-226/228	pCi/L	5.0	1.30	1.72	--	--	0.841	0.633	--	--	1.44	1.78	--	--	1.20	1.03	--	--
Selenium	ug/L	50	2	2	1	1	1	2	1	1	< 1	2	3	3	1	2	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																		
Iron	ug/L	28,000	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817	1,530	1,610
Copper	ug/L	1,000	1	< 1	< 1	< 1	< 1	< 1	2	2	1	1	1	1	2	2	2	3
Nickel	ug/L	100	4	7	< 2	< 2	3	< 2	2	< 2	< 2	2	8	8	< 2	< 2	7	8
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-51							
Sample Date:			10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,490	1,320	1,230	1,180	1,170	935	798	862
Calcium	mg/L	280	211	169	166	162	132	132	128	114
Chloride	mg/L	2,300	101	98.4	99.9	97	91.6	78.3	79.9	81.5
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	394	360	356	308	267	266	262	283
Total Dissolved Solids	mg/L	4,700	1,380	1,180	1,240	1,100	952	902	958	940
pH, Field	SU	6.5 - 8.5	7.2	7.2	7.3	7.4	7.2	7.4	7.4	7.5
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	18	10	8	10	18	10	13	19
Barium	ug/L	2,000	188	178	180	141	141	127	117	123
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	2	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	50	46	40	40	34	31	28	28
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.397	--	0.143	--	0.285	--	0.181	--
Radium-228	pCi/L	NA	2.19	--	1.01	--	1.23	--	0.863	--
Radium-226/228	pCi/L	5.0	2.51	--	1.15	--	1.52	--	0.681	--
Selenium	ug/L	50	1	2	1	< 1	< 1	1	< 1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	2,880	514	450	1,290	1,660	446	760	1,490
Copper	ug/L	1,000	1	< 1	1	3	2	1	1	1
Nickel	ug/L	100	4	< 2	3	4	< 2	< 2	3	6
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	2	2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-52							
Sample Date:			10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,330	1,040	993	1,030	1,140	945	895	909
Calcium	mg/L	280	224	228	217	247	234	237	236	233
Chloride	mg/L	2,300	40.4	36.3	32.4	31.5	30.2	33.8	33.3	30.1
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	603	581	581	569	572	540	550	542
Total Dissolved Solids	mg/L	4,700	1,670	1,430	1,430	1,520	1,440	1,380	1,430	1,470
pH, Field	SU	6.5 - 8.5	6.9	6.8	6.9	6.6	6.8	7.0	7.0	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	122	102	95	99	108	94	91	88
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	26	27	23	27	27	27	29	29
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.205	--	< 0.128	--	0.444	--	0.162	--
Radium-228	pCi/L	NA	< 0.694	--	< 0.594	--	1.64	--	1.19	--
Radium-226/228	pCi/L	5.0	0.805	--	< 0.594	--	2.08	--	1.03	--
Selenium	ug/L	50	2	1	< 1	< 1	< 1	2	1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	6,340	2,820	2,720	6,720	7,560	3,120	3,680	7,290
Copper	ug/L	1,000	2	1	1	2	1	2	2	2
Nickel	ug/L	100	3	< 2	< 2	< 2	< 2	< 2	< 2	6
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53							
Sample Date:			10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	4,140	2,150	2,620	4,370	5,530	5,740	6,110	6,960
Calcium	mg/L	280	108	82.5	104	146	136	134	134	130
Chloride	mg/L	2,300	53	24.8	56.5	80.3	77.4	77.4	89.3	115
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	126	93.6	50.8	7.39	2.28	25.4	1.53	< 1
Total Dissolved Solids	mg/L	4,700	740	489	613	792	722	694	942	806
pH, Field	SU	6.5 - 8.5	7.3	7.3	7.4	7.1	7.3	7.5	7.5	7.5
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	2	< 1	< 1	1	1	1	1	2
Barium	ug/L	2,000	285	202	272	692	719	654	582	581
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	38	33	34	44	42	50	50	57
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	7	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.269	--	0.198	--	0.679	--	0.561	--
Radium-228	pCi/L	NA	1.15	--	< 0.518	--	1.72	--	1.81	--
Radium-226/228	pCi/L	5.0	1.42	--	0.700	--	2.40	--	1.25	--
Selenium	ug/L	50	1	1	2	2	2	3	2	4
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,140	403	569	1,390	1,080	947	665	1,110
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	< 1	1	2	1
Nickel	ug/L	100	2	< 2	< 2	< 2	< 2	< 2	< 2	6
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	2	< 2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53R							
Sample Date:			10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	2,340	2,330	2,140	2,190	2,420	2,300	2,200	1,880
Calcium	mg/L	280	203	195	202	220	206	173	166	189
Chloride	mg/L	2,300	39.2	27.2	30	34.6	35.5	34.7	32.5	40
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	250	101	185	217	221	53.2	47.6	291
Total Dissolved Solids	mg/L	4,700	1,160	960	1,060	1,150	1,090	862	880	1,230
pH, Field	SU	6.5 - 8.5	6.8	6.7	6.8	6.7	7.0	7.0	7.1	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	20	17	14	17	16	9	10	8
Barium	ug/L	2,000	118	179	174	144	110	165	164	132
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Lithium	ug/L	180	63	59	56	62	61	56	53	62
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.239	--	0.275	--	0.174	--	0.155	--
Radium-228	pCi/L	NA	0.967	--	0.490	--	0.968	--	0.674	--
Radium-226/228	pCi/L	5.0	1.21	--	0.765	--	1.14	--	0.567	--
Selenium	ug/L	50	2	1	1	2	1	2	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	702	1,580	1,410	1,180	834	752	761	280
Copper	ug/L	1,000	1	1	1	1	1	2	1	2
Nickel	ug/L	100	3	< 2	< 2	< 2	< 2	< 2	< 2	8
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-54R							
Sample Date:			10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	5,310	5,660	5,240	6,170	5,520	5,940	5,580	6,930
Calcium	mg/L	280	160	168	163	162	165	170	161	153
Chloride	mg/L	2,300	47.4	49.6	46.5	48.5	45	61.7	56.9	75.4
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	70.9	62	67.2	73.8	67.4	48.6	51.3	60.4
Total Dissolved Solids	mg/L	4,700	799	770	759	761	756	752	792	924
pH, Field	SU	6.5 - 8.5	6.9	6.8	6.9	6.8	7.0	7.0	7.2	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	2	1	< 1	< 1	1	1	1	1
Barium	ug/L	2,000	123	126	98	106	113	97	83	90
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	74	71	65	75	70	76	73	83
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	12	15	13	15	17	15	18	17
Radium-226	pCi/L	NA	0.208	--	< 0.141	--	0.160	--	0.180	--
Radium-228	pCi/L	NA	1.31	--	< 0.836	--	1.38	--	0.829	--
Radium-226/228	pCi/L	5.0	1.52	--	< 0.836	--	1.54	--	0.829	--
Selenium	ug/L	50	2	1	1	1	1	3	2	4
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,090	262	74	111	829	159	87	59
Copper	ug/L	1,000	1	2	1	6	2	2	3	2
Nickel	ug/L	100	< 2	< 2	< 2	< 2	2	< 2	< 2	7
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-55							
Sample Date:			10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	976	1,110	1,140	1,290	1,200	825	729	1,270
Calcium	mg/L	280	141	162	165	150	163	166	161	117
Chloride	mg/L	2,300	12.5	24.2	16.9	18.5	16.7	18.3	17.3	21.8
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	108	94.6	208	129	156	224	236	60.2
Total Dissolved Solids	mg/L	4,700	786	898	929	827	846	866	934	730
pH, Field	SU	6.5 - 8.5	7.0	6.8	6.9	6.9	7.0	6.9	6.9	7.4
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	126	68	44	75	75	46	39	45
Barium	ug/L	2,000	223	287	267	240	248	260	235	186
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	30	27	24	27	26	26	26	29
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	91	50	30	33	56	27	25	25
Radium-226	pCi/L	NA	0.365	--	0.276	--	0.406	--	0.137	--
Radium-228	pCi/L	NA	0.966	--	< 0.916	--	1.26	--	1.11	--
Radium-226/228	pCi/L	5.0	1.33	--	< 0.916	--	1.67	--	0.971	--
Selenium	ug/L	50	< 1	3	< 1	1	1	1	4	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	22,100	24,800	21,600	21,900	16,800	18,700	14,700	12,300
Copper	ug/L	1,000	1	< 1	< 1	< 1	< 1	1	1	1
Nickel	ug/L	100	4	4	5	22	3	< 2	6	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			OW-57R OUT								
Sample Date:			10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024	7/24/2024	7/24/2024
Constituent	Unit	GWPS									Field Dup
Appendix III⁽¹⁾											
Boron	ug/L	560	1,830	1,860	1,740	1,750	1,790	1,810	1,700	1,690	1,730
Calcium	mg/L	280	114	116	117	124	120	123	119	120	120
Chloride	mg/L	2,300	47.6	59	64.2	53.7	50.6	68.1	72.3	65.9	68.6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090	1,100	1,140
Sulfate	mg/L	780	86.8	79.7	80.5	79	94.8	79.3	77.6	75.5	78.3
Total Dissolved Solids	mg/L	4,700	722	790	743	762	758	770	790	760	796
pH, Field	SU	6.5 - 8.5	6.9	6.9	7.1	6.9	7.0	7.2	7.2	7.0	--
Appendix IV⁽¹⁾											
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	1	1	2	2
Barium	ug/L	2,000	75	75	72	72	77	81	75	78	77
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	4	< 1	< 1	< 1	2	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090	1,100	1,140
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	22	26	23	24	23	28	26	25	25
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	8	6	6	6	7	6	6	7	7
Radium-226	pCi/L	NA	0.199	--	0.149	--	< 0.155	--	0.115	--	--
Radium-228	pCi/L	NA	< 0.711	--	< 0.663	--	0.586	--	0.845	--	--
Radium-226/228	pCi/L	5.0	0.870	--	< 0.663	--	0.680	--	0.731	--	--
Selenium	ug/L	50	2	2	2	1	< 1	< 1	1	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾											
Iron	ug/L	28,000	42	53	78	30	40	44	94	77	85
Copper	ug/L	1,000	2	1	1	1	2	2	2	2	2
Nickel	ug/L	100	16	15	15	13	15	12	15	18	17
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18001							
Sample Date:			10/10/2022	3/8/2023	5/8/2023	7/26/2023	10/5/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,790	1,440	1,380	1,470	1,620	1,420	1,330	1,370
Calcium	mg/L	280	465	486	496	555	562	557	537	526
Chloride	mg/L	2,300	63.6	54.2	51.1	58.9	51.1	44.7	44.5	45
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	1,400	1,640	1,670	1,770	1,890	1,880	1,790	1,810
Total Dissolved Solids	mg/L	4,700	3,020	3,030	1,580	3,530	3,430	3,450	3,370	3,530
pH, Field	SU	6.5 - 8.5	6.8	6.7	6.7	6.8	6.5	6.8	6.8	6.9
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	1	< 1	2	2
Barium	ug/L	2,000	66	47	50	49	48	49	46	50
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	97	91	83	102	110	106	102	107
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.142	--	< 0.122	--	< 0.139	--	0.124	--
Radium-228	pCi/L	NA	0.852	--	< 0.547	--	0.783	--	0.525	--
Radium-226/228	pCi/L	5.0	0.893	--	< 0.547	--	0.886	--	0.506	--
Selenium	ug/L	50	1	2	2	2	1	2	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	818	830	1,180	2,790	3,840	3,570	2,630	3,080
Copper	ug/L	1,000	3	2	3	2	2	3	4	5
Nickel	ug/L	100	15	< 2	< 2	41	3	14	4	13
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	2	< 2	3	2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18004							
Sample Date:			10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	343	180	227	310	319	192	206	308
Calcium	mg/L	280	193	221	265	229	218	238	213	205
Chloride	mg/L	2,300	11.4	12.7	16.8	14.2	15.8	16.9	14.3	12.6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	428	533	722	478	466	557	484	446
Total Dissolved Solids	mg/L	4,700	1,130	1,250	1,530	1,220	1,160	1,250	1,130	1,130
pH, Field	SU	6.5 - 8.5	6.8	6.8	6.8	6.8	7.0	7.0	6.9	7.3
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	37	24	28	30	34	26	26	29
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	46	39	42	50	49	43	43	50
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	< 0.135	--	< 0.131	--	< 0.155	--	0.102	--
Radium-228	pCi/L	NA	< 0.742	--	< 0.600	--	1.24	--	0.672	--
Radium-226/228	pCi/L	5.0	< 0.742	--	< 0.600	--	1.30	--	0.672	--
Selenium	ug/L	50	1	11	2	2	< 1	4	4	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	< 20	46	67	24	36	98	73	41
Copper	ug/L	1,000	2	1	2	2	2	2	2	2
Nickel	ug/L	100	5	< 2	< 2	< 2	< 2	< 2	< 2	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18005							
Sample Date:			10/11/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024	7/23/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,290	930	992	1,170	1,470	1,000	960	1,460
Calcium	mg/L	280	150	262	258	202	159	335	302	164
Chloride	mg/L	2,300	53.9	25.4	22.3	44.1	48.1	23.3	22.1	49.2
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	160	435	422	216	154	512	475	156
Total Dissolved Solids	mg/L	4,700	868	1,250	1,190	1,000	884	1,400	1,390	884
pH, Field	SU	6.5 - 8.5	6.8	6.6	6.8	6.8	6.9	6.7	6.8	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	5	4	2	< 1	1	3	4	2
Barium	ug/L	2,000	80	115	105	76	74	136	127	67
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	32	36	33	33	32	43	41	34
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	5	6	5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.193	--	0.134	--	0.221	--	0.165	--
Radium-228	pCi/L	NA	< 0.800	--	< 0.573	--	1.17	--	1.23	--
Radium-226/228	pCi/L	5.0	< 0.800	--	< 0.573	--	1.39	--	1.07	--
Selenium	ug/L	50	2	3	2	2	1	2	< 1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	3,220	1,720	676	171	948	4,020	6,550	1,890
Copper	ug/L	1,000	< 1	1	< 1	2	1	7	2	2
Nickel	ug/L	100	11	< 2	9	8	9	< 2	< 2	11
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18006														
Sample Date:			10/11/2022	10/11/2022	3/9/2023	3/9/2023	5/9/2023	5/9/2023	7/31/2023	7/31/2023	10/9/2023	10/9/2023	3/6/2024	3/6/2024	5/8/2024	5/8/2024	7/24/2024
Constituent	Unit	GWPS															
Appendix III⁽¹⁾				Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup	
Boron	ug/L	560	2,720	2,650	1,730	1,760	2,450	2,480	2,100	2,140	2,280	2,470	2,650	2,700	2,740	2,830	2,490
Calcium	mg/L	280	118	119	121	121	118	120	126	126	117	119	137	136	148	150	123
Chloride	mg/L	2,300	74.2	74.7	79.9	82.8	73.6	76.6	73	75.9	72.3	71.1	61.3	64.7	49.2	52	57.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	21.6	23.0	32.5	33.9	34.2	36.1	39.4	37.9	46.9	47.6	69.7	71.6	122	129	75.5
Total Dissolved Solids	mg/L	4,700	720	746	715	753	734	751	765	770	738	748	748	776	864	878	782
pH, Field	SU	6.5 - 8.5	6.9	--	6.9	--	7.0	--	6.9	--	7.0	--	7.0	--	7.1	--	7.0
Appendix IV⁽¹⁾																	
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	25	25	5	5	23	23	18	19	17	18	22	23	29	29	23
Barium	ug/L	2,000	480	499	232	238	464	465	354	346	342	381	445	464	390	387	412
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	52	52	21	23	45	47	36	36	37	39	52	54	59	61	49
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	0.516	0.259	--	--	0.337	< 0.192	--	--	0.506	0.431	--	--	0.218	0.280	--
Radium-228	pCi/L	NA	< 0.609	0.869	--	--	0.746	< 0.816	--	--	0.783	1.39	--	--	0.919	0.528	--
Radium-226/228	pCi/L	5.0	0.999	1.13	--	--	1.08	< 0.816	--	--	1.29	1.82	--	--	0.919	0.528	--
Selenium	ug/L	50	1	1	2	2	1	2	2	2	< 1	1	3	3	< 1	1	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																	
Iron	ug/L	28,000	7,620	7,630	2,930	2,910	6,890	7,210	6,910	6,860	5,660	5,930	7,970	7,890	10,400	10,800	8,650
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	2	2	1	1	1
Nickel	ug/L	100	5	6	< 2	< 2	4	< 2	< 2	< 2	< 2	3	5	9	6	6	5
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	3	4	< 2	2	2	3	3	3	2	2	4	4	3	3	3
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-50															
Sample Date:						10/10/2022	10/10/2022	3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024	7/23/2024	7/23/2024
Constituent	Unit	Generic GSI ^A	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																					
Boron	ug/L	4,000	44,000	69,000	44,000	1,730	1,670	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020	2,100	2,180
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	376	376	341	315	314	316	392	385	470	472	449	448	425	421	403	410
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.3	--	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--	7.6	--
Appendix IV⁽¹⁾																					
Arsenic	ug/L	10	100	680	100	3	3	2	2	2	2	3	3	3	3	3	3	3	3	4	4
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	62	62	65	65	55	54	58	59	59	59	69	68	61	62	62	61
Molybdenum	ug/L	120	NC	NC	120	6	6	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5	5	6	6
Selenium	ug/L	5.0	55	120	55	2	2	1	1	1	2	1	1	< 1	2	3	3	1	2	1	2
MI Part 115 Parameters⁽²⁾																					
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	2,460	2,340	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817	1,530	1,610
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 NC - no criteria.
 -- - not analyzed.
^A - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).
^{*} - Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.
^{**} - GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.
^F - Criterion is the Final Acute Value (FAV).
^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).
^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).
Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-51							
Sample Date:						10/10/2022	3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,490	1,320	1,230	1,180	1,170	935	798	862
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	394	360	356	308	267	266	262	283
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.2	7.2	7.3	7.4	7.2	7.4	7.4	7.5
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	18	10	8	10	18	10	13	19
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	2	< 1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	50	46	40	40	34	31	28	28
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	2	1	< 1	< 1	1	< 1	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	2,880	514	450	1,290	1,660	446	760	1,490
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	2	2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-52							
Sample Date:						10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,330	1,040	993	1,030	1,140	945	895	909
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	603	581	581	569	572	540	550	542
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.9	6.8	6.9	6.6	6.8	7.0	7.0	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	26	27	23	27	27	27	29	29
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	1	< 1	< 1	< 1	2	1	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	6,340	2,820	2,720	6,720	7,560	3,120	3,680	7,290
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53							
Sample Date:						10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	4,140	2,150	2,620	4,370	5,530	5,740	6,110	6,960
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	126	93.6	50.8	7.39	2.28	25.4	1.53	< 1
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.3	7.3	7.4	7.1	7.3	7.5	7.5	7.5
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	2	< 1	< 1	1	1	1	1	2
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	38	33	34	44	42	50	50	57
Molybdenum	ug/L	120	NC	NC	120	< 5	7	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	1	2	2	2	3	2	4
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,140	403	569	1,390	1,080	947	665	1,110
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	2	< 2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53R							
Sample Date:						10/10/2022	3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	2,340	2,330	2,140	2,190	2,420	2,300	2,200	1,880
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	250	101	185	217	221	53.2	47.6	291
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.7	6.8	6.7	7.0	7.0	7.1	7.2
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	20	17	14	17	16	9	10	8
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	63	59	56	62	61	56	53	62
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	1	1	2	1	2	1	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	702	1,580	1,410	1,180	834	752	761	280
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-54R							
Sample Date:						10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	5,310	5,660	5,240	6,170	5,520	5,940	5,580	6,930
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	70.9	62	67.2	73.8	67.4	48.6	51.3	60.4
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.9	6.8	6.9	6.8	7.0	7.0	7.2	7.2
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	2	1	< 1	< 1	1	1	1	1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Lithium	ug/L	440	NC	NC	440	74	71	65	75	70	76	73	83
Molybdenum	ug/L	120	NC	NC	120	12	15	13	15	17	15	18	17
Selenium	ug/L	5.0	55	120	55	2	1	1	1	1	3	2	4
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,090	262	74	111	829	159	87	59
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
Comparison of Groundwater Sampling Results to GSI
JC Weadock Landfill – Hydrogeological Monitoring Program
Essexville, Michigan

Sample Location:						MW-55							
Sample Date:						10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	976	1,110	1,140	1,290	1,200	825	729	1,270
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	108	94.6	208	129	156	224	236	60.2
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.0	6.8	6.9	6.9	7.0	6.9	6.9	7.4
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	126	68	44	75	75	46	39	45
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	30	27	24	27	26	26	26	29
Molybdenum	ug/L	120	NC	NC	120	91	50	30	33	56	27	25	25
Selenium	ug/L	5.0	55	120	55	< 1	3	< 1	1	1	1	4	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	22,100	24,800	21,600	21,900	16,800	18,700	14,700	12,300
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						JCW-MW-18004							
Sample Date:						10/10/2022	3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	343	180	227	310	319	192	206	308
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	428	533	722	478	466	557	484	446
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.8	6.8	6.8	7.0	7.0	6.9	7.3
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	46	39	42	50	49	43	43	50
Molybdenum	ug/L	120	NC	NC	120	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	11	2	2	< 1	4	4	< 1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	< 20	46	67	24	36	98	73	41
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental Quality (MDEQ) approval letter dated December 23, 2015.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV) .

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

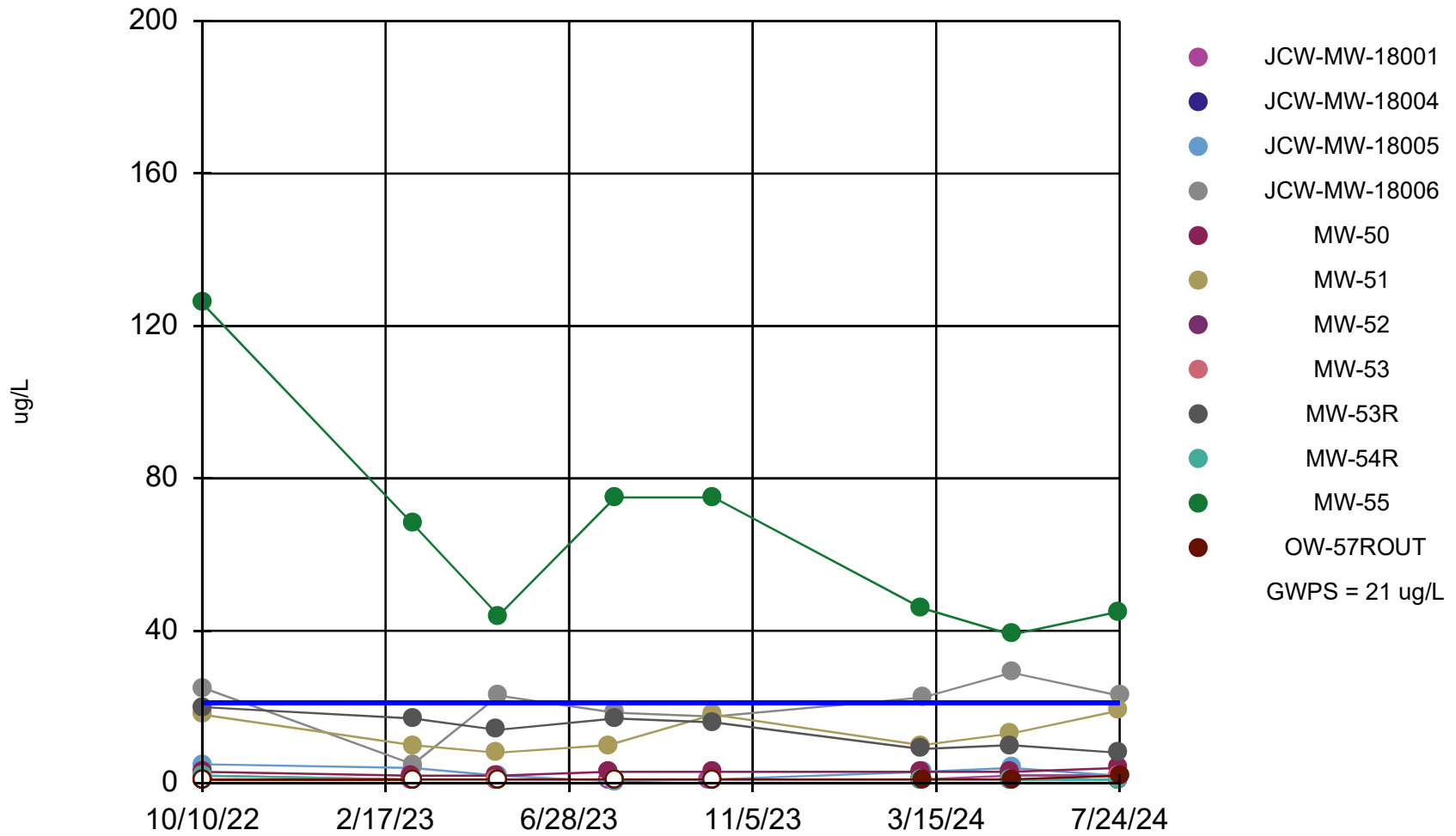
All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

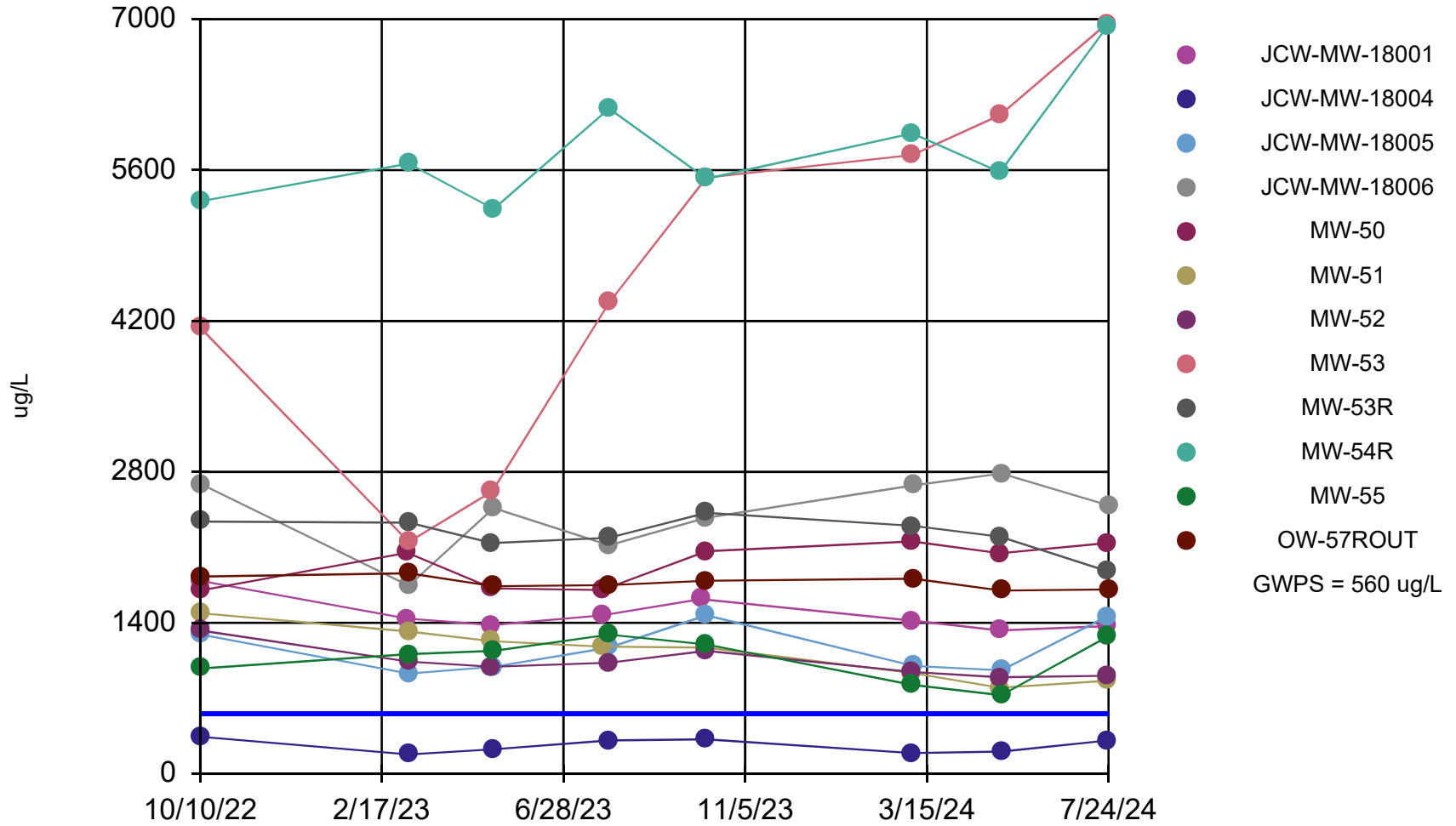
Attachment 1
Assessment Monitoring Sanitas™ Output Files

Arsenic Comparison to GWPS



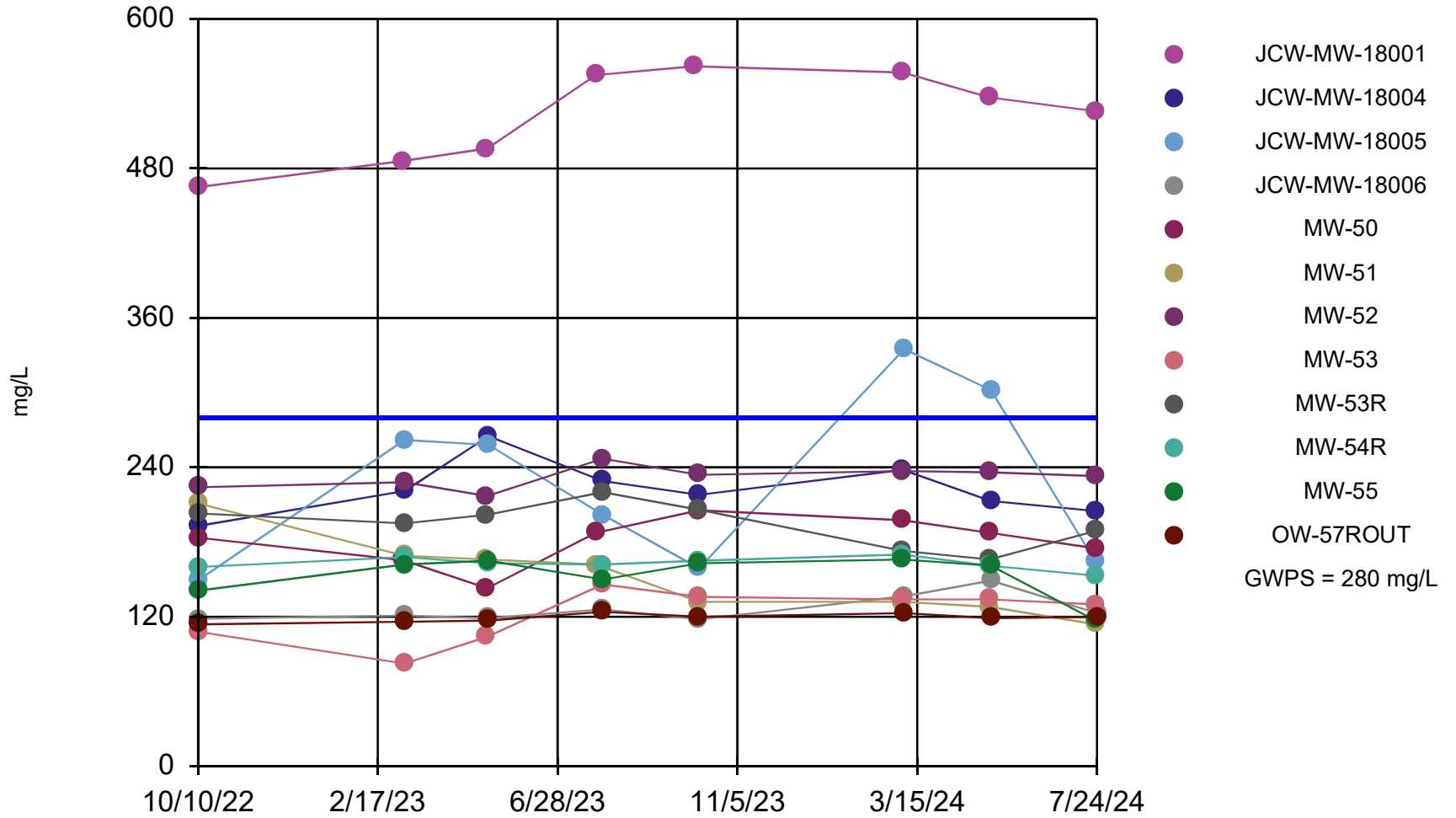
Time Series Analysis Run 8/28/2024 11:00 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron Comparison to GWPS



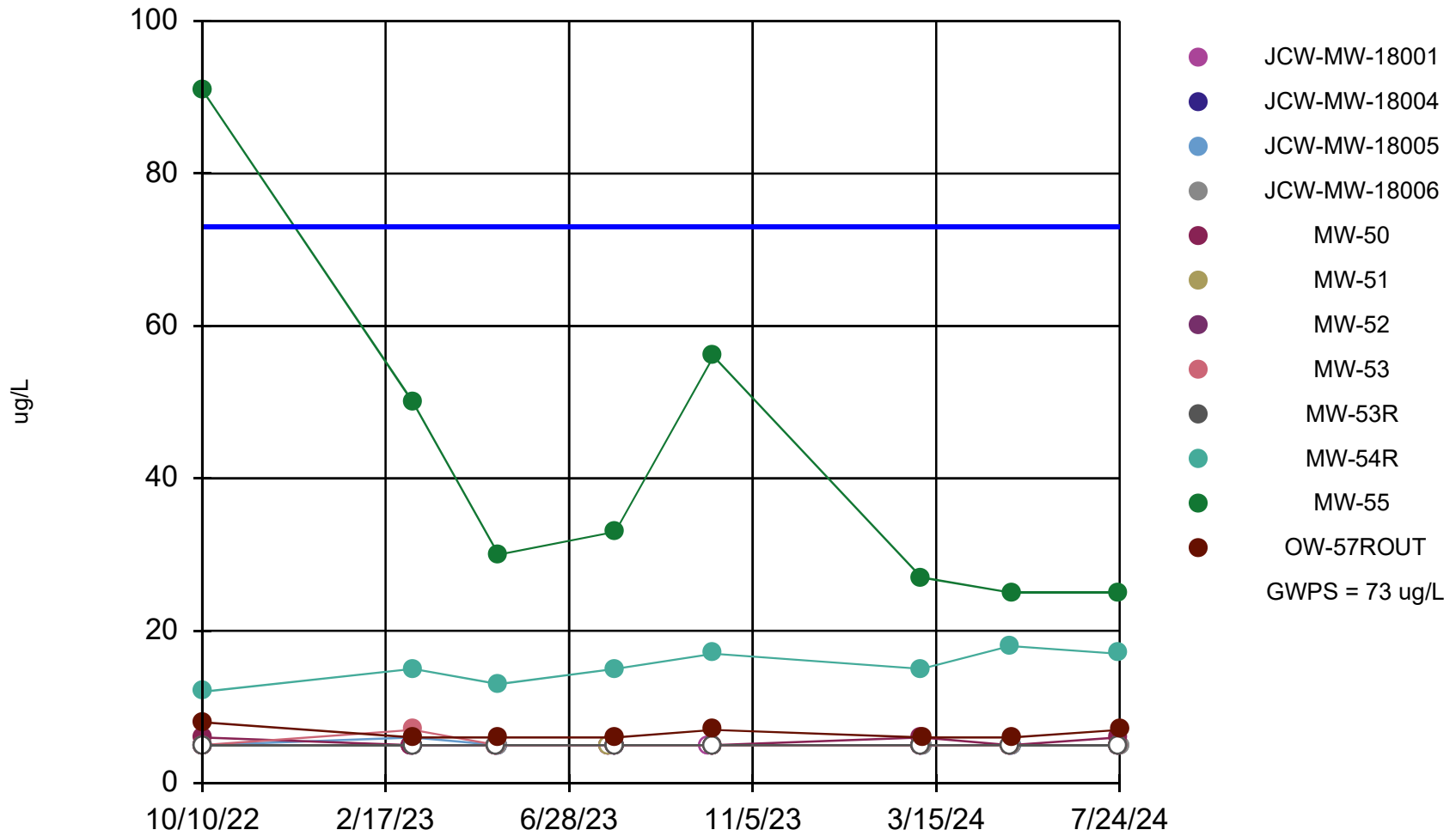
Time Series Analysis Run 8/28/2024 11:08 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium Comparison to GWPS



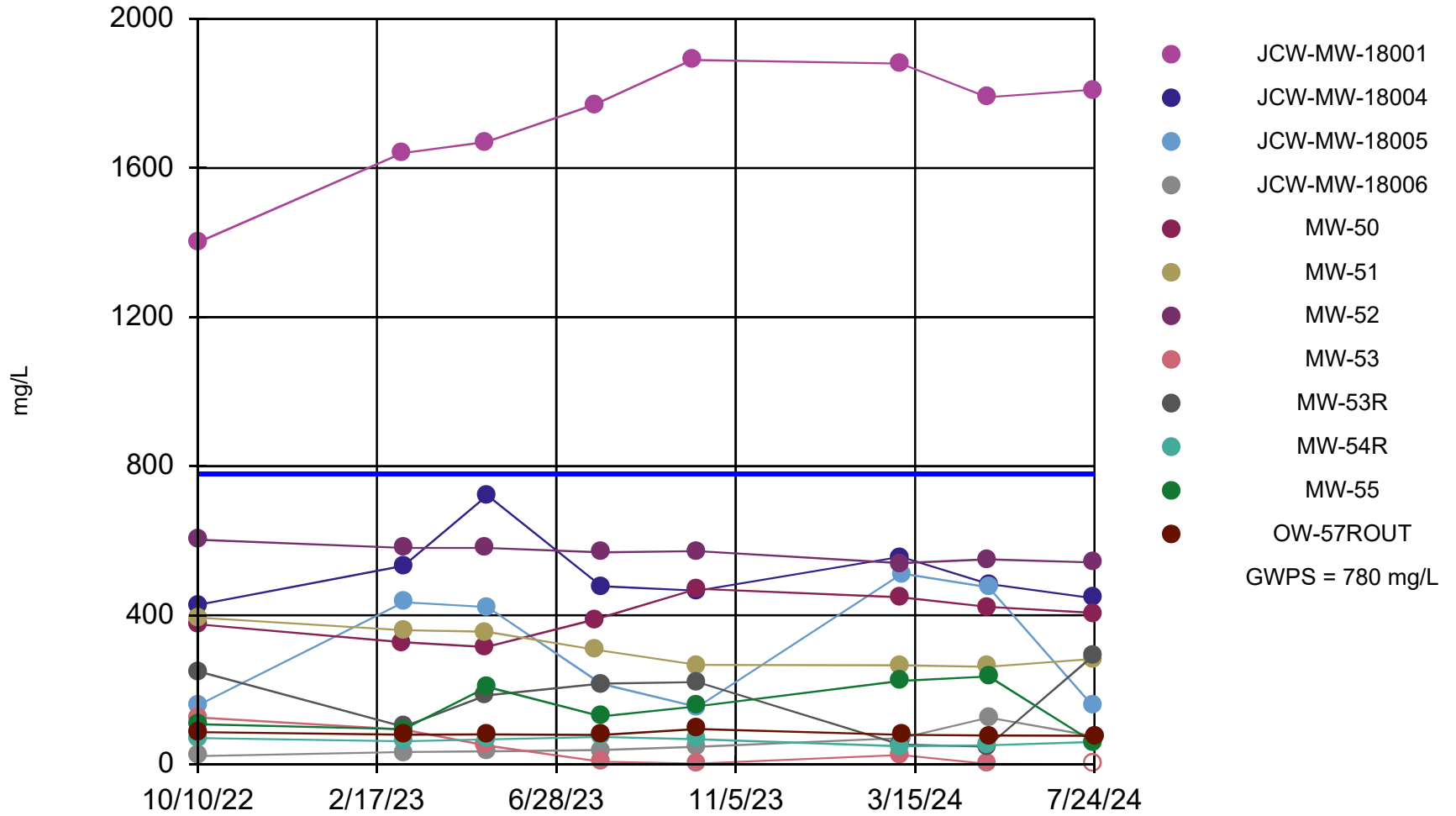
Time Series Analysis Run 8/28/2024 11:10 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Molybdenum Comparison to GWPS



Time Series Analysis Run 8/28/2024 11:12 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Sulfate comparison to GWPS



Time Series Analysis Run 8/28/2024 11:17 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Summary Report

Constituent: Arsenic, Total Analysis Run 8/28/2024 11:21 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

For observations made between 10/10/2022 and 7/24/2024, a summary of the selected data set:

Observations = 96
 NDs = 32%
 Wells = 12
 Minimum Value = 0.5
 Maximum Value = 126
 Mean Value = 10.39
 Median Value = 2
 Standard Deviation = 19.5
 Coefficient of Variation = 1.878
 Skewness = 3.422

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	62%	1	2	1.25	1	0.4629	0.3703	1.155
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
JCW-MW-18005	8	12%	0.5	5	2.688	2.5	1.58	0.5878	0.03859
JCW-MW-18006	8	0%	5	29	20.44	22.75	7.193	0.352	-1.209
MW-50	8	0%	2	4	2.875	3	0.6409	0.2229	0.0544
MW-51	8	0%	8	19	13.25	11.5	4.432	0.3345	0.275
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	25%	1	2	1.25	1	0.4629	0.3703	1.155
MW-53R	8	0%	8	20	13.88	15	4.39	0.3164	-0.138
MW-54R	8	25%	1	2	1.125	1	0.3536	0.3143	2.268
MW-55	8	0%	39	126	64.75	57	28.8	0.4448	1.225
OW-57ROUT	8	62%	1	2	1.125	1	0.3536	0.3143	2.268

Summary Report

Constituent: Boron, Total Analysis Run 8/28/2024 11:21 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

For observations made between 10/10/2022 and 7/24/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 180
 Maximum Value = 6960
 Mean Value = 2082
 Median Value = 1700
 Standard Deviation = 1631
 Coefficient of Variation = 0.7834
 Skewness = 1.566

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1330	1790	1478	1430	153.8	0.1041	1.167
JCW-MW-18004	8	0%	180	343	260.6	267.5	65.68	0.252	-0.03433
JCW-MW-18005	8	0%	930	1470	1159	1085	223.5	0.1929	0.4242
JCW-MW-18006	8	0%	1745	2785	2418	2478	342.9	0.1418	-0.9252
MW-50	8	0%	1700	2155	1948	2048	202	0.1037	-0.3982
MW-51	8	0%	798	1490	1123	1175	238.9	0.2127	-0.003494
MW-52	8	0%	895	1330	1035	1012	143.1	0.1383	1.102
MW-53	8	0%	2150	6960	4703	4950	1695	0.3605	-0.3103
MW-53R	8	0%	1880	2420	2225	2250	167.3	0.07521	-1.018
MW-54R	8	0%	5240	6930	5794	5620	552	0.09528	1.096
MW-55	8	0%	729	1290	1068	1125	205.9	0.1929	-0.5544
OW-57ROUT	8	0%	1700	1860	1774	1770	57.8	0.03259	0.1261

Summary Report

Constituent: Calcium, Total Analysis Run 8/28/2024 11:21 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

For observations made between 10/10/2022 and 7/24/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 82.5
 Maximum Value = 562
 Mean Value = 201.4
 Median Value = 166
 Standard Deviation = 108.3
 Coefficient of Variation = 0.5379
 Skewness = 2.185

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	465	562	523	531.5	36.58	0.06995	-0.4095
JCW-MW-18004	8	0%	193	265	222.8	219.5	21.97	0.09861	0.6664
JCW-MW-18005	8	0%	150	335	229	230	70.3	0.307	0.2242
JCW-MW-18006	8	0%	118	149	126.4	122	10.96	0.08675	1.269
MW-50	8	0%	143	205.5	180.6	185.5	19.58	0.1084	-0.7336
MW-51	8	0%	114	211	151.8	147	31.36	0.2067	0.6659
MW-52	8	0%	217	247	232	233.5	9.071	0.0391	-0.07734
MW-53	8	0%	82.5	146	121.8	132	21.39	0.1756	-0.7465
MW-53R	8	0%	166	220	194.3	198.5	17.79	0.09159	-0.3378
MW-54R	8	0%	153	170	162.8	162.5	5.23	0.03214	-0.4443
MW-55	8	0%	117	166	153.1	161.5	16.93	0.1106	-1.353
OW-57ROUT	8	0%	114	124	119.1	119.5	3.399	0.02853	0.002552

Summary Report

Constituent: Molybdenum, Total Analysis Run 8/28/2024 11:21

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

For observations made between 10/10/2022 and 7/24/2024, a summary of the selected data set:

Observations = 96

NDs = 66%

Wells = 12

Minimum Value = 5

Maximum Value = 91

Mean Value = 9.135

Median Value = 5

Standard Deviation = 12.13

Coefficient of Variation = 1.328

Skewness = 4.47

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18004	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18005	8	62%	5	6	5.125	5	0.3536	0.06899	2.268
JCW-MW-18006	8	100%	5	5	5	5	0	0	NaN
MW-50	8	50%	5	6	5.375	5	0.5175	0.09629	0.5164
MW-51	8	100%	5	5	5	5	0	0	NaN
MW-52	8	100%	5	5	5	5	0	0	NaN
MW-53	8	87%	5	7	5.25	5	0.7071	0.1347	2.268
MW-53R	8	100%	5	5	5	5	0	0	NaN
MW-54R	8	0%	12	18	15.25	15	2.053	0.1346	-0.2516
MW-55	8	0%	25	91	42.13	31.5	22.96	0.545	1.311
OW-57ROUT	8	0%	6	8	6.5	6	0.7559	0.1163	1.061

Summary Report

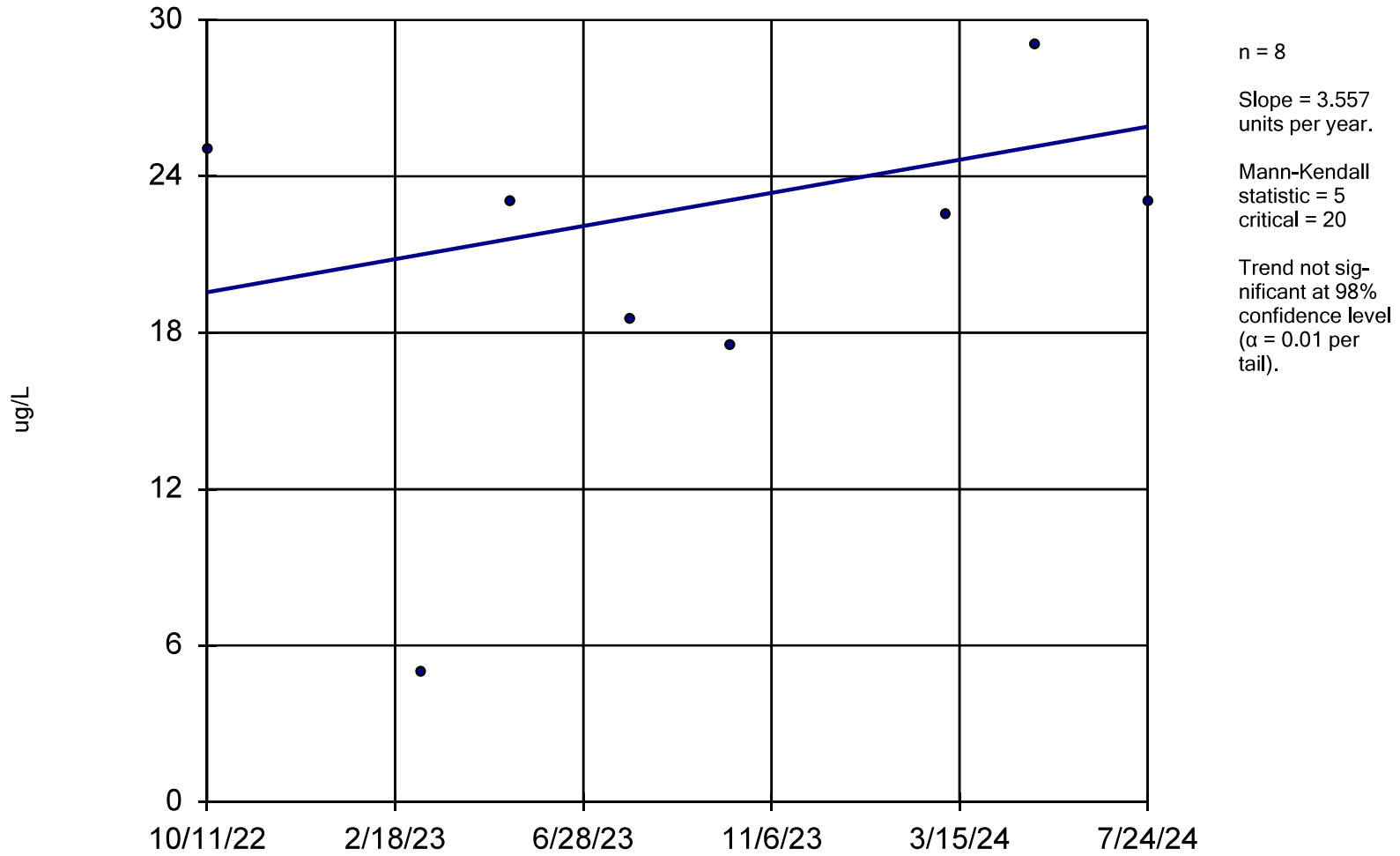
Constituent: Sulfate Analysis Run 8/28/2024 11:21 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

For observations made between 10/10/2022 and 7/24/2024, a summary of the selected data set:

Observations = 96
 NDs = 1%
 Wells = 12
 Minimum Value = 0.5
 Maximum Value = 1890
 Mean Value = 366.4
 Median Value = 222.5
 Standard Deviation = 455.6
 Coefficient of Variation = 1.243
 Skewness = 2.238

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1400	1890	1731	1780	160.5	0.0927	-1.082
JCW-MW-18004	8	0%	428	722	514.3	481	94.11	0.183	1.448
JCW-MW-18005	8	0%	154	512	316.3	319	158.2	0.5004	0.04433
JCW-MW-18006	8	0%	22.3	125.5	56.03	42.95	33.58	0.5994	1.132
MW-50	8	0%	315	471	394.6	397.5	54.57	0.1383	-0.1663
MW-51	8	0%	262	394	312	295.5	51.36	0.1646	0.4614
MW-52	8	0%	540	603	567.3	570.5	21.91	0.03862	0.1385
MW-53	8	12%	0.5	126	38.44	16.4	47.97	1.248	0.9089
MW-53R	8	0%	47.6	291	170.7	201	92.16	0.5398	-0.2656
MW-54R	8	0%	48.6	73.8	62.7	64.6	9.003	0.1436	-0.457
MW-55	8	0%	60.2	236	152	142.5	65	0.4277	0.04657
OW-57ROUT	8	0%	76.9	94.8	81.83	79.5	6.045	0.07388	1.425

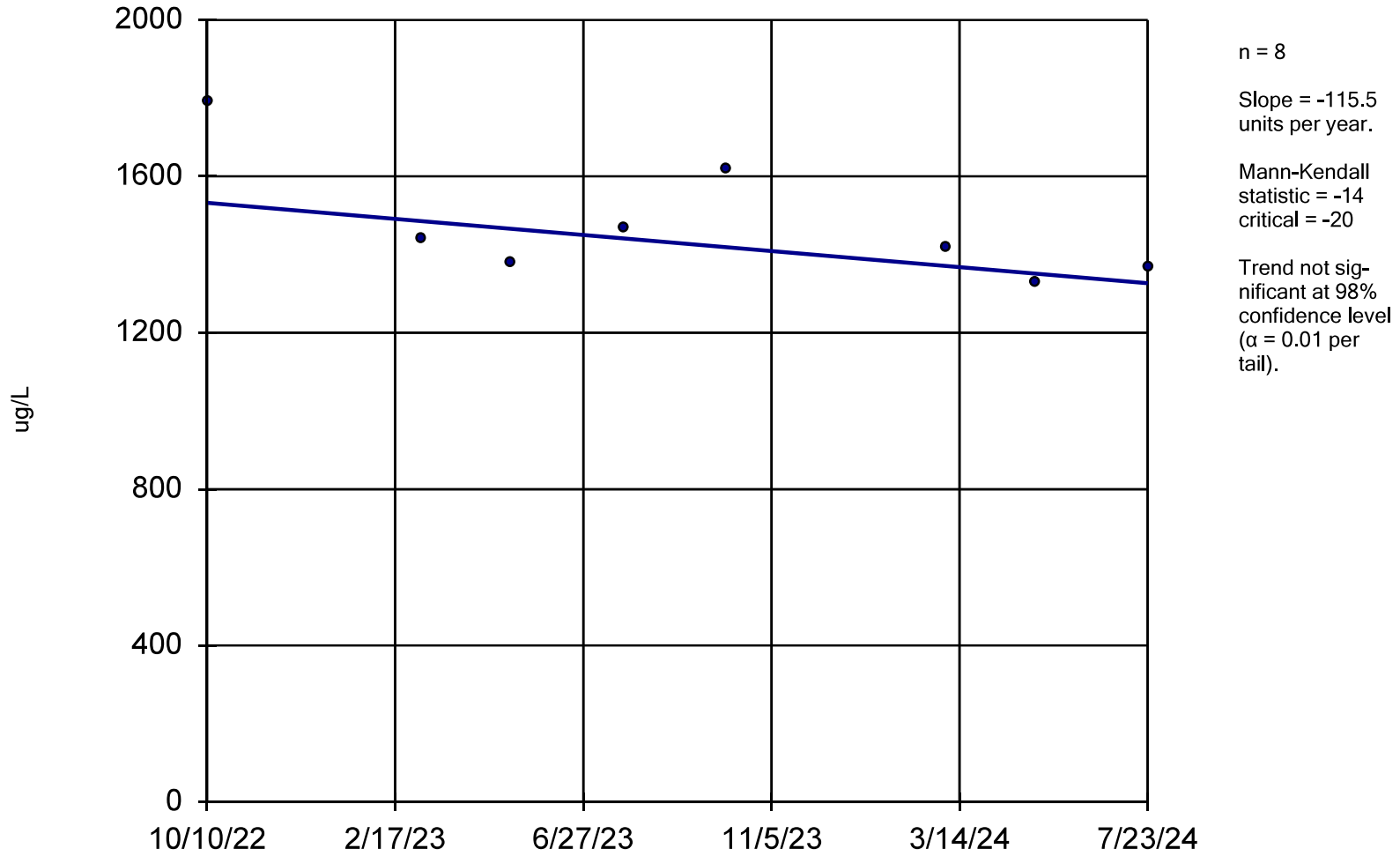
Arsenic, Total JCW-MW-18006



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total JCW-MW-18001

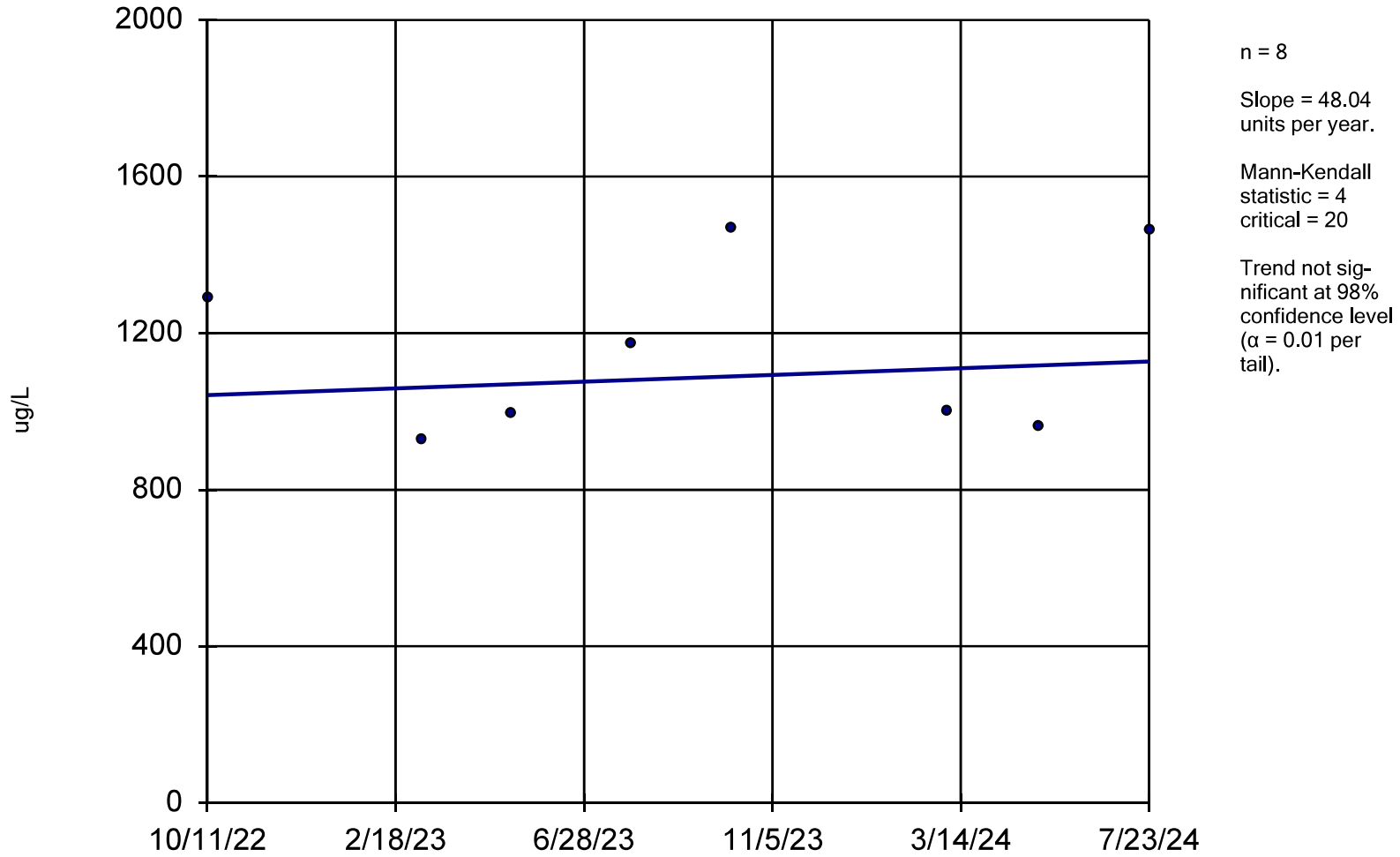


Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

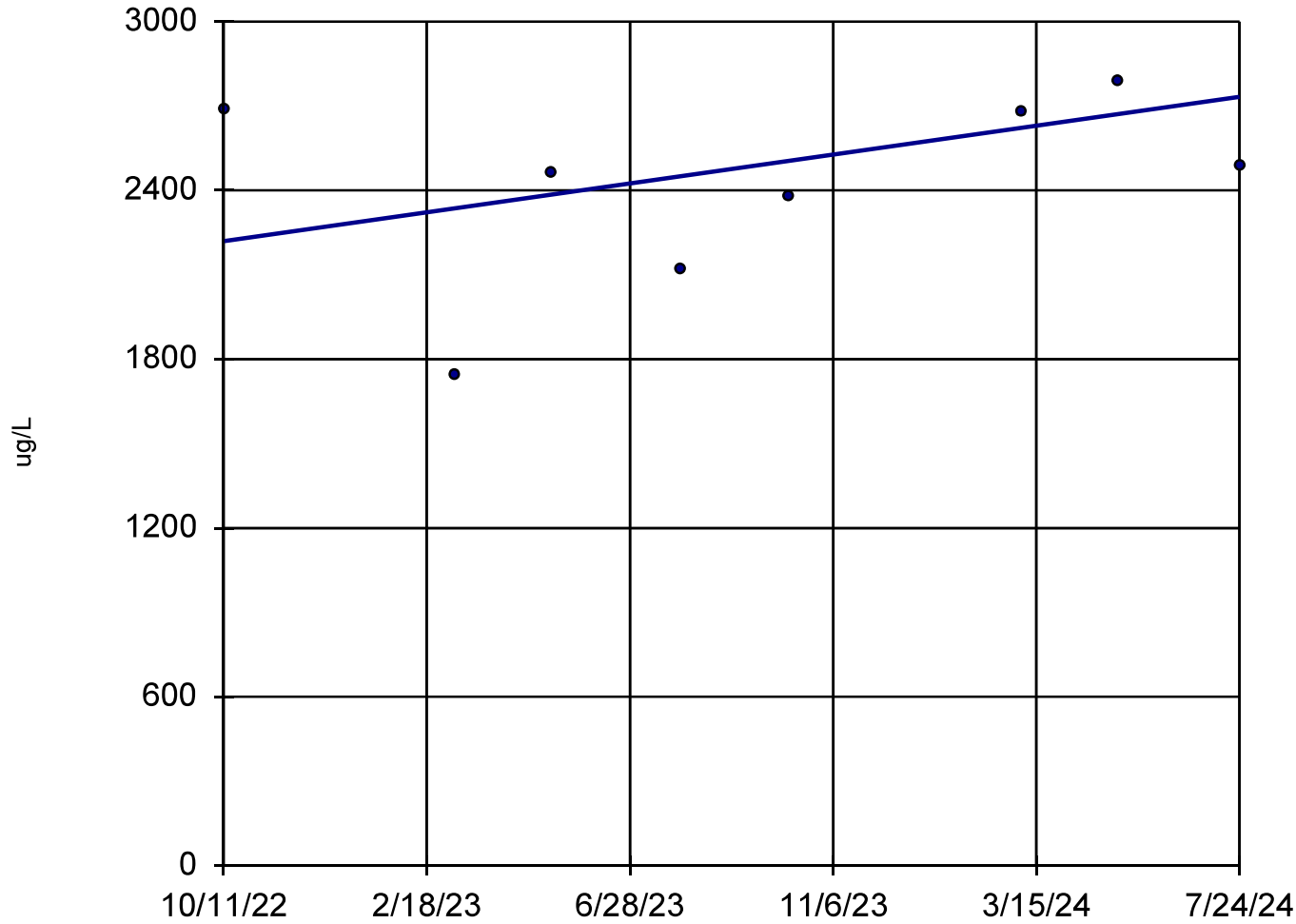
JCW-MW-18005



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

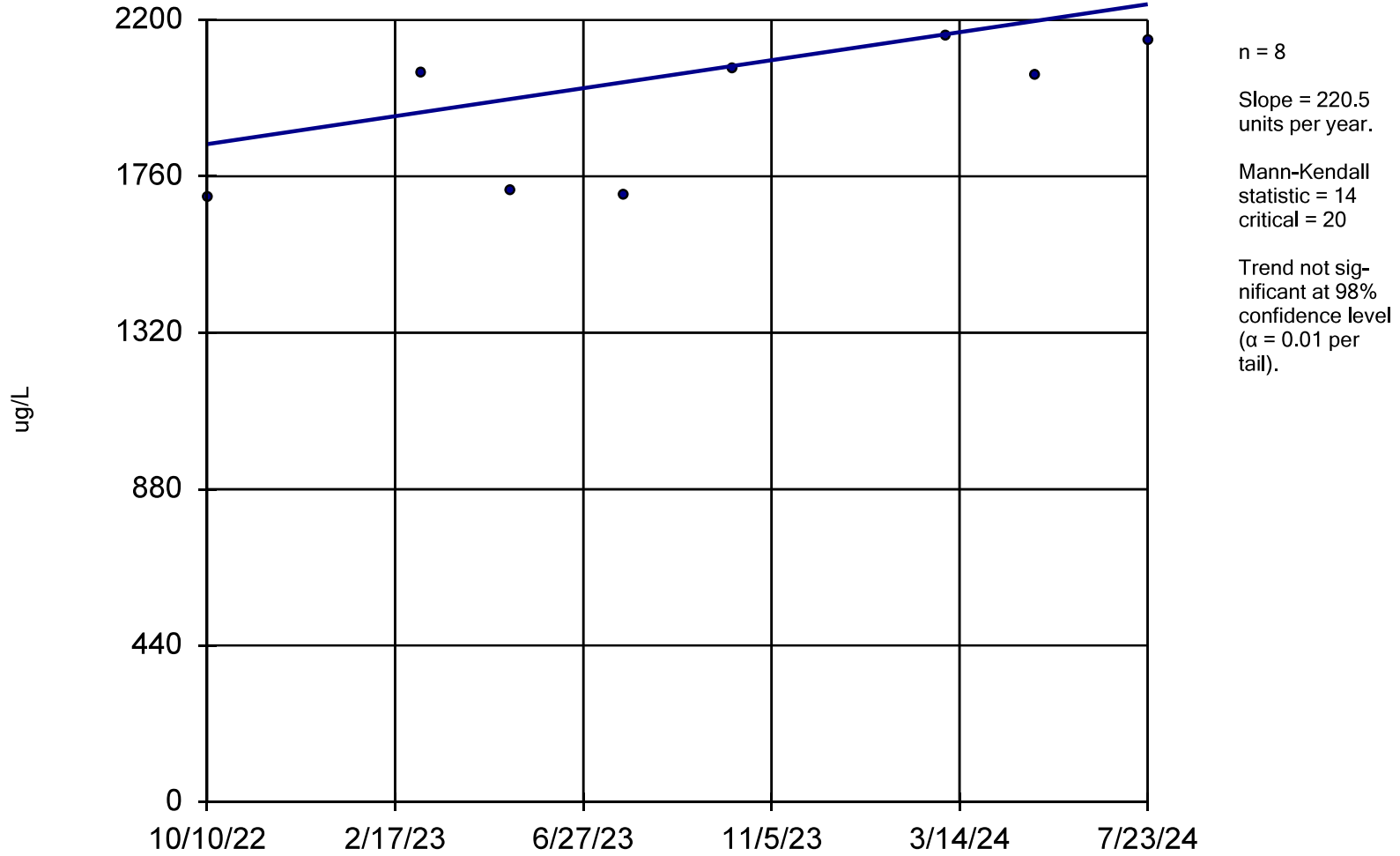
Boron, Total JCW-MW-18006



n = 8
Slope = 286.9
units per year.
Mann-Kendall
statistic = 8
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-50

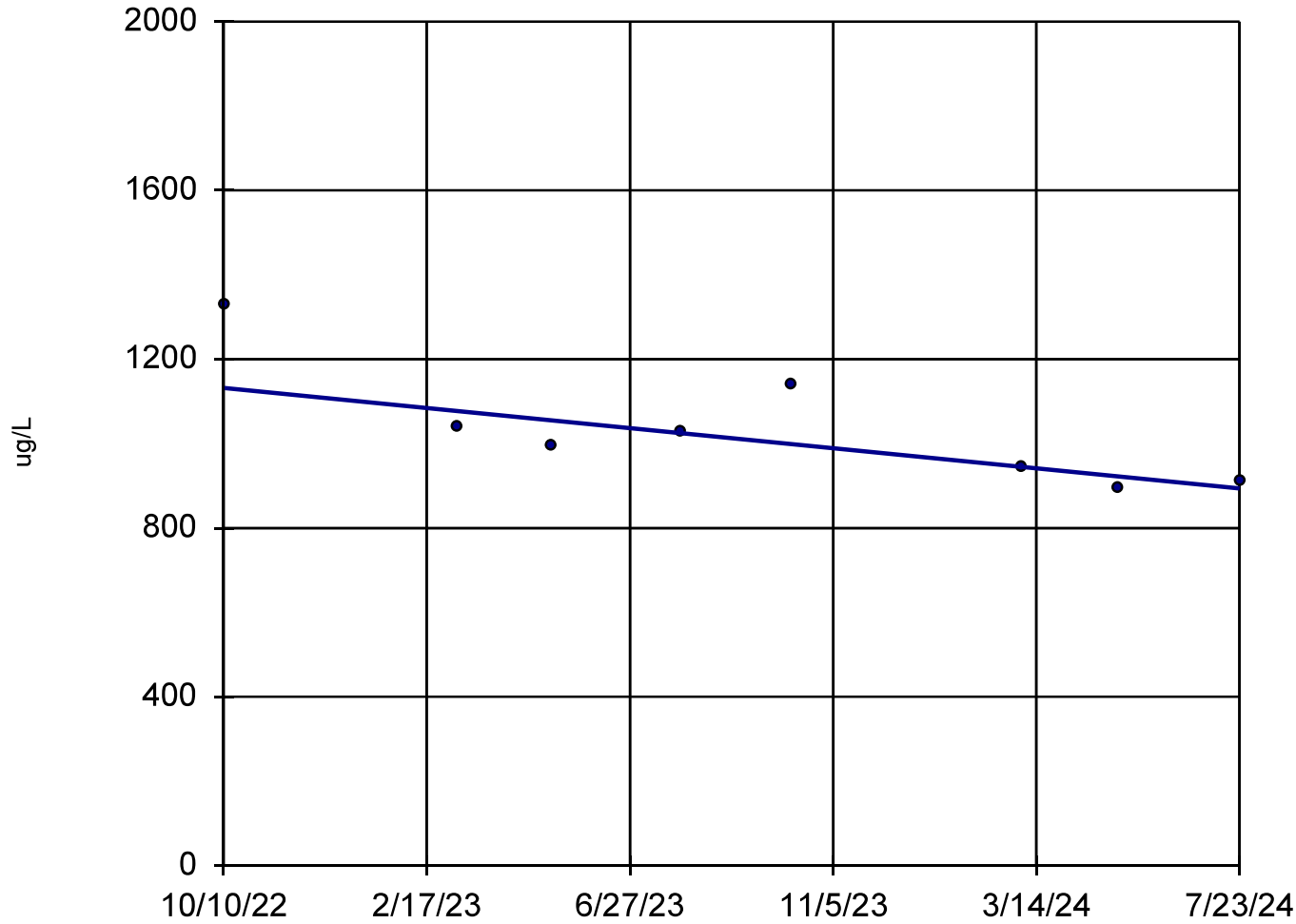


Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

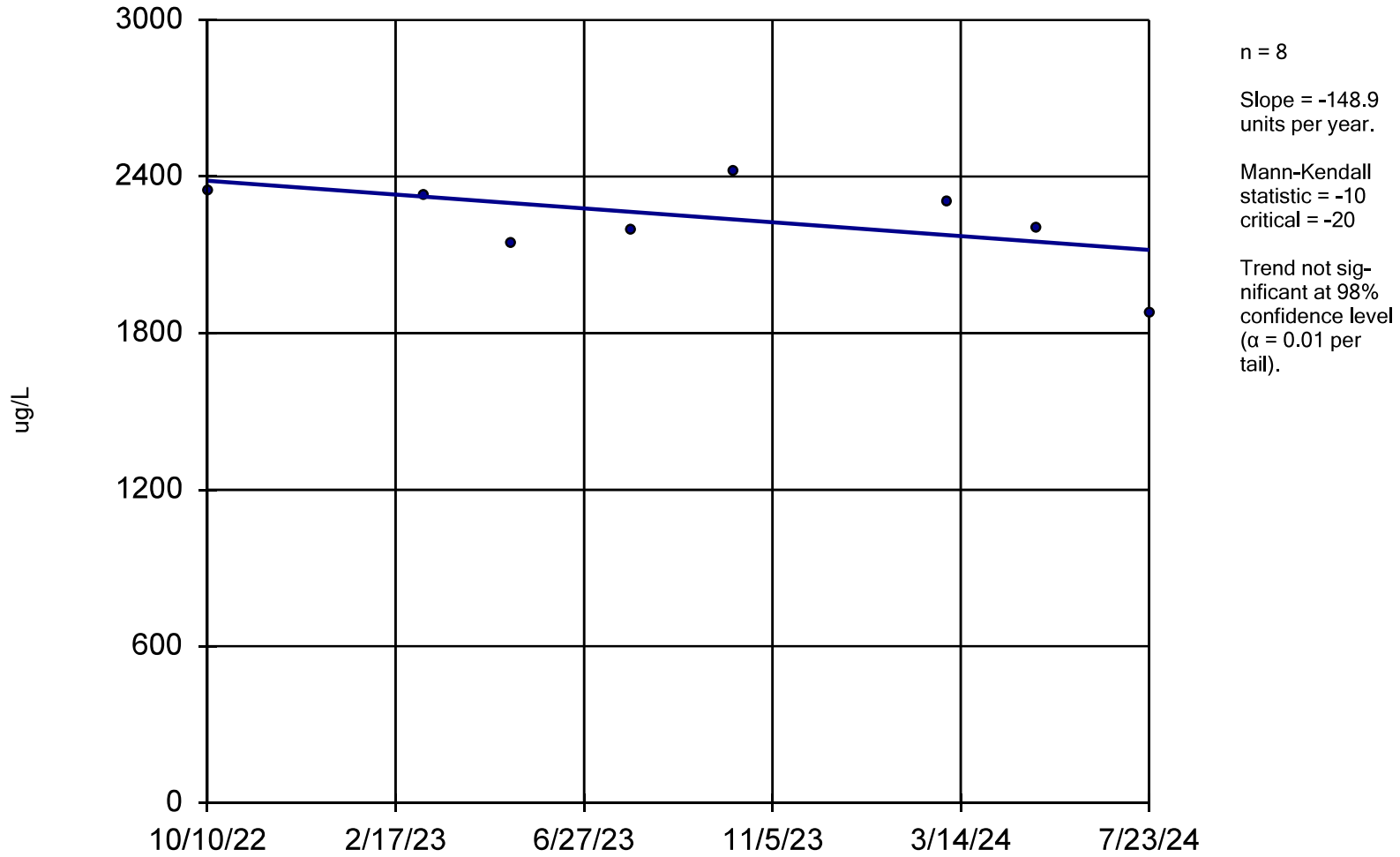
MW-52



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-53R

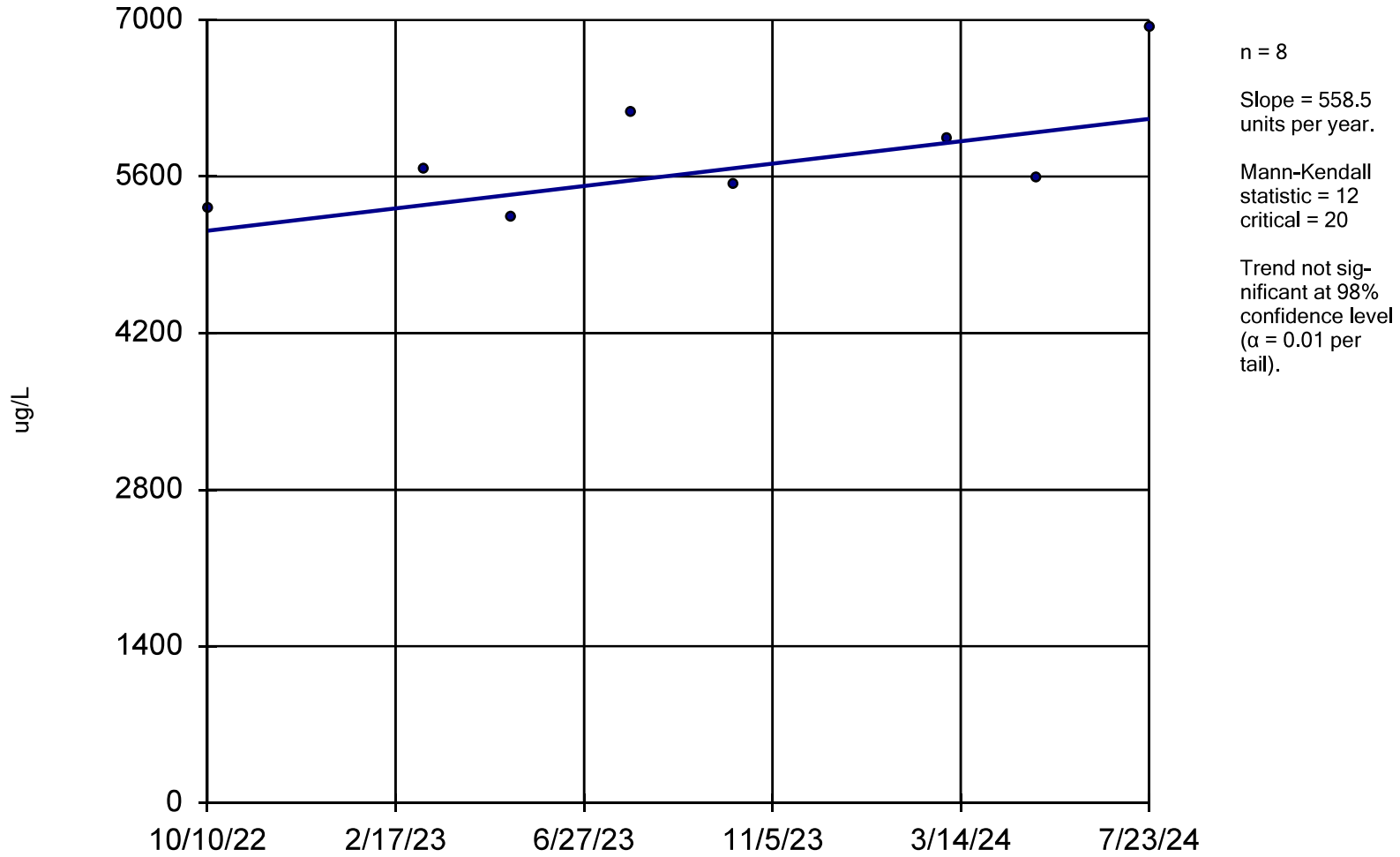


Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

MW-54R

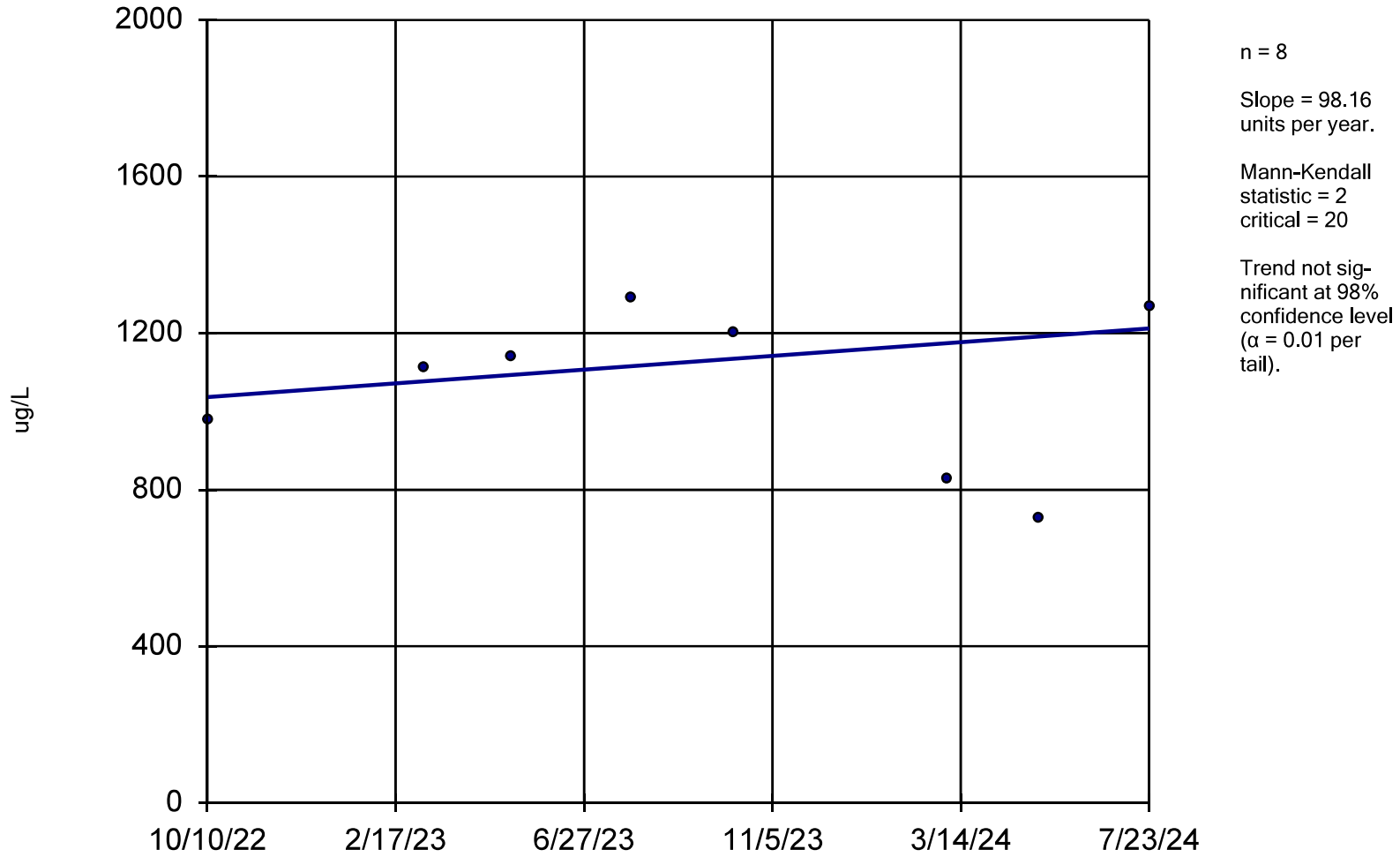


Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total

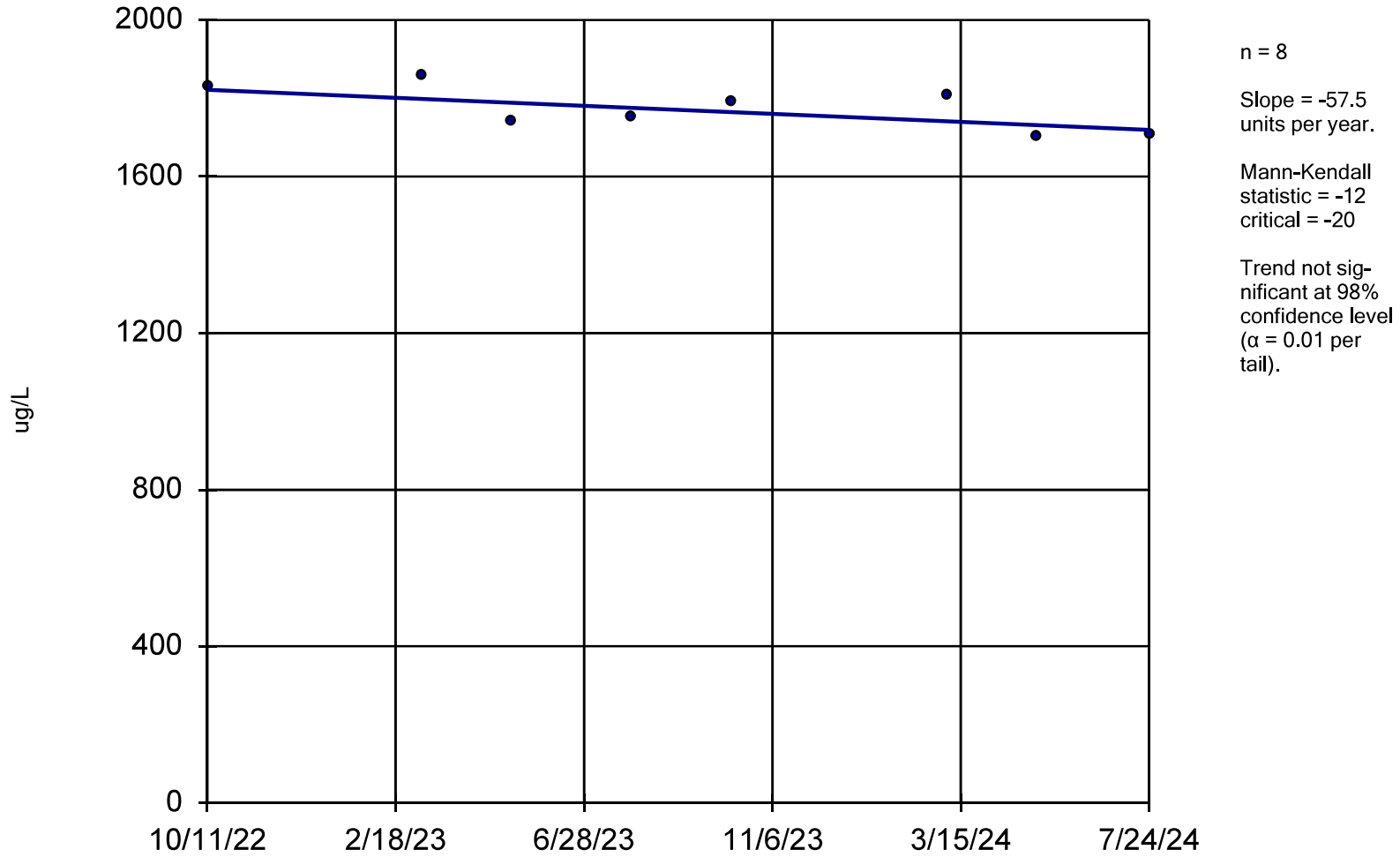
MW-55



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

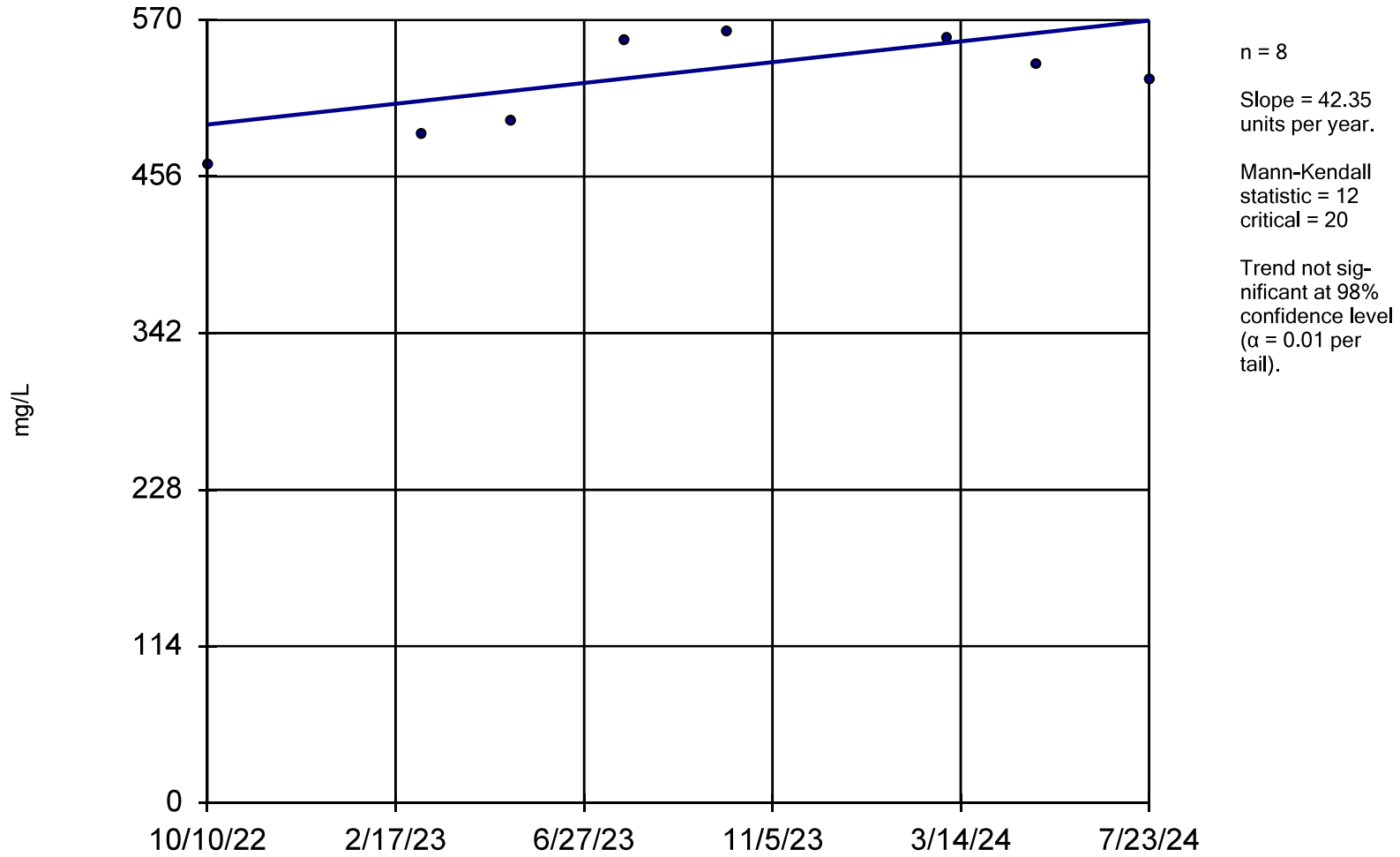
Boron, Total OW-57ROUT



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

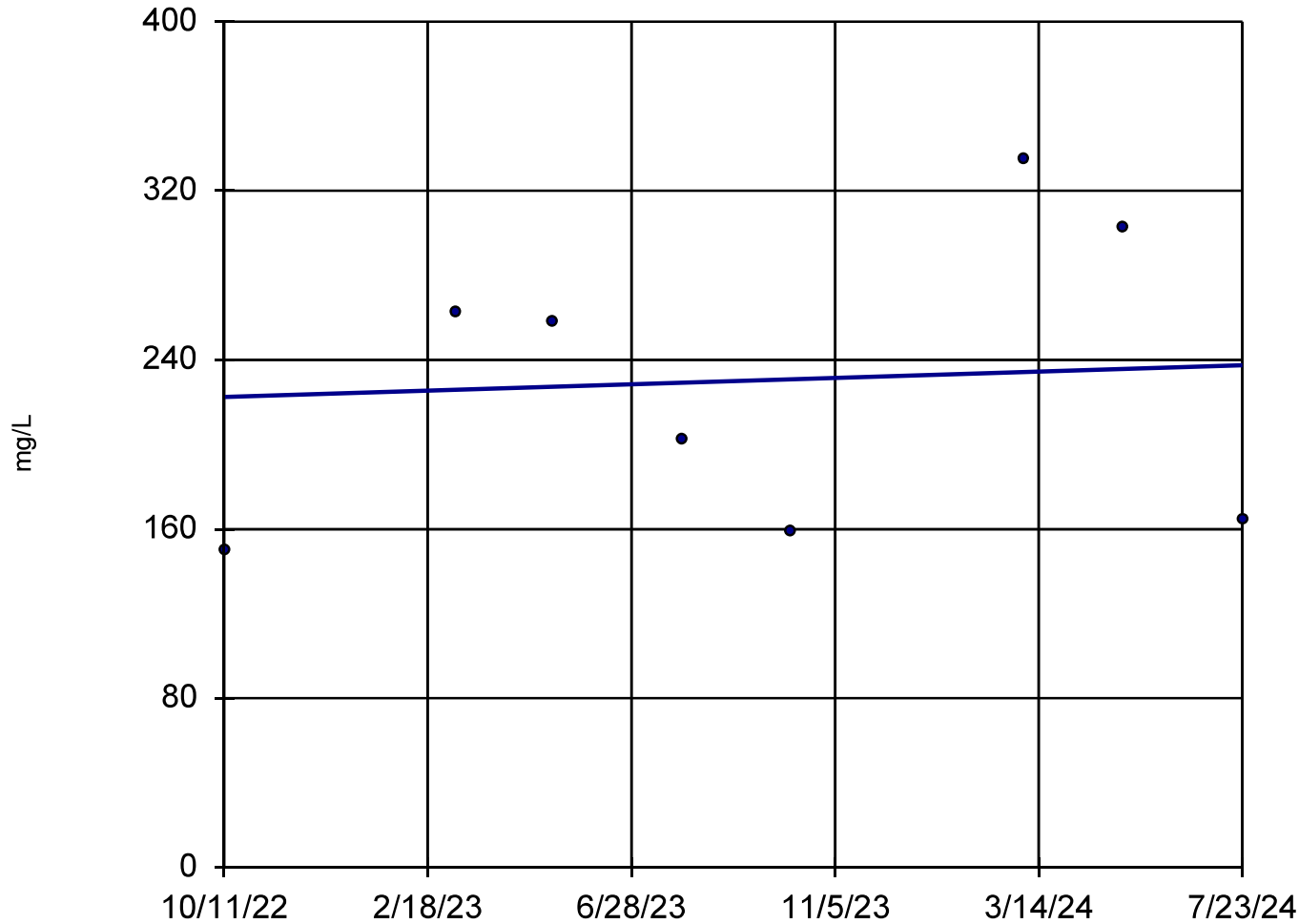
Calcium, Total JCW-MW-18001



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Calcium, Total JCW-MW-18005

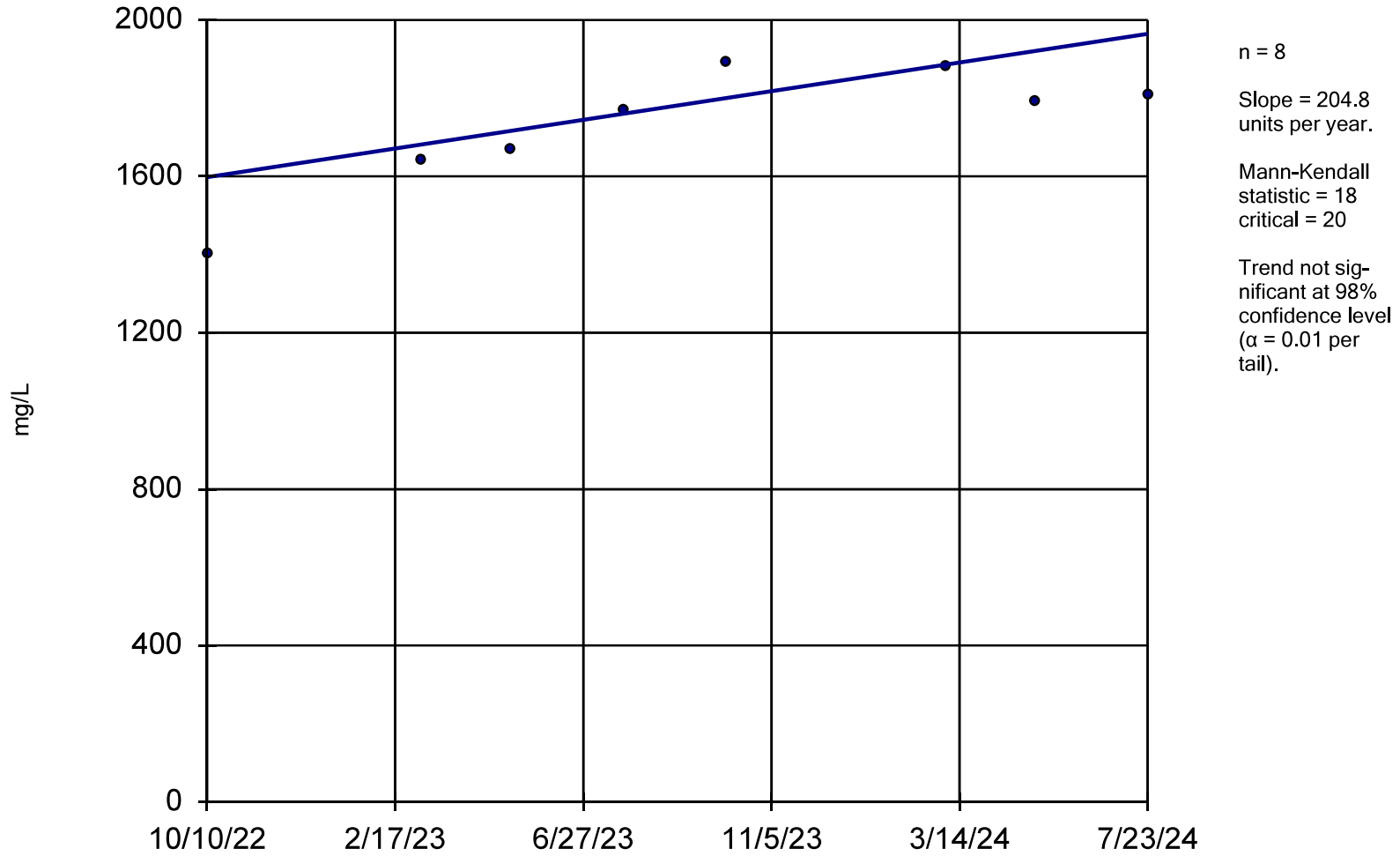


n = 8
Slope = 8.45
units per year.
Mann-Kendall
statistic = 4
critical = 20
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Sulfate

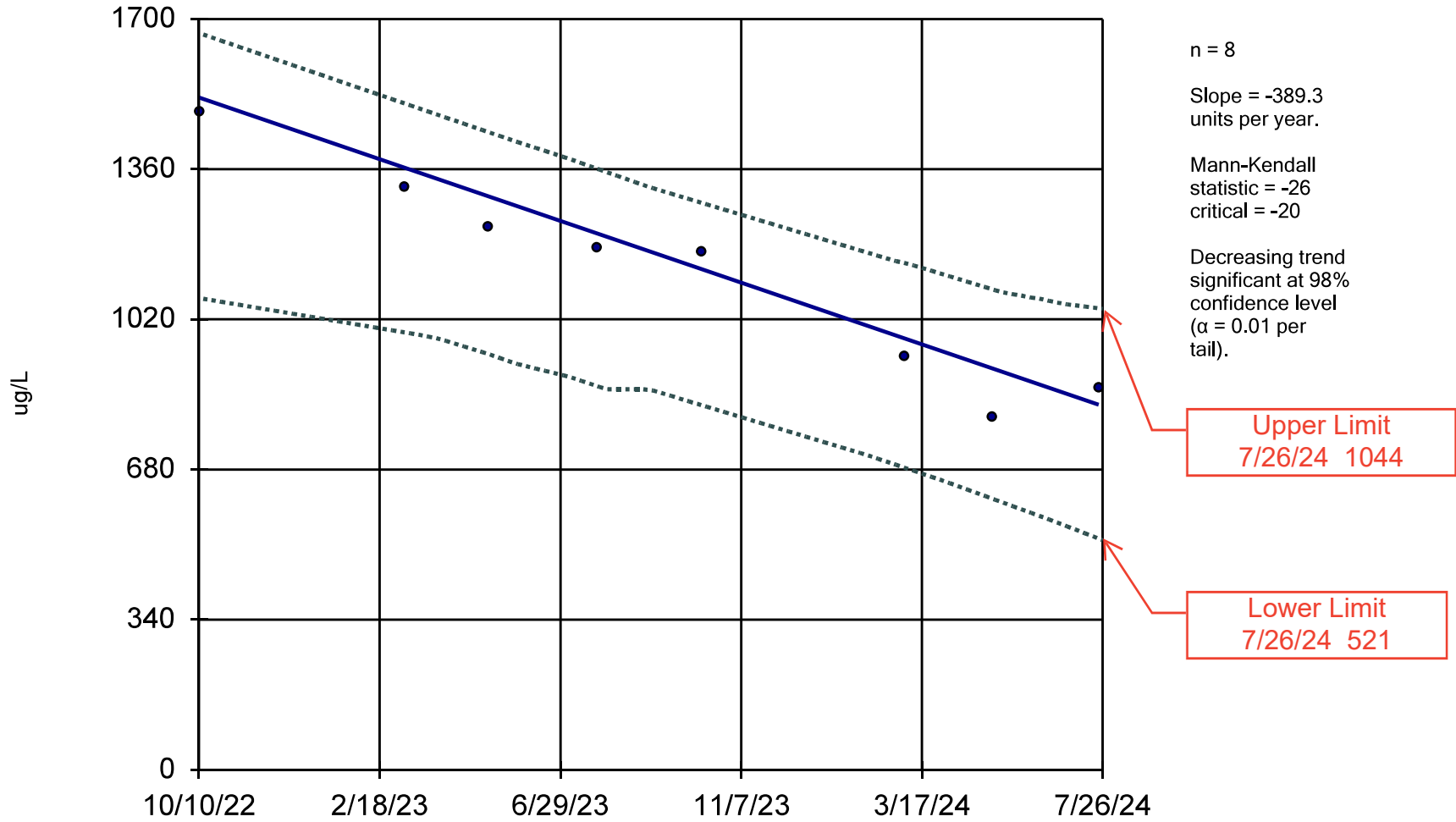
JCW-MW-18001



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

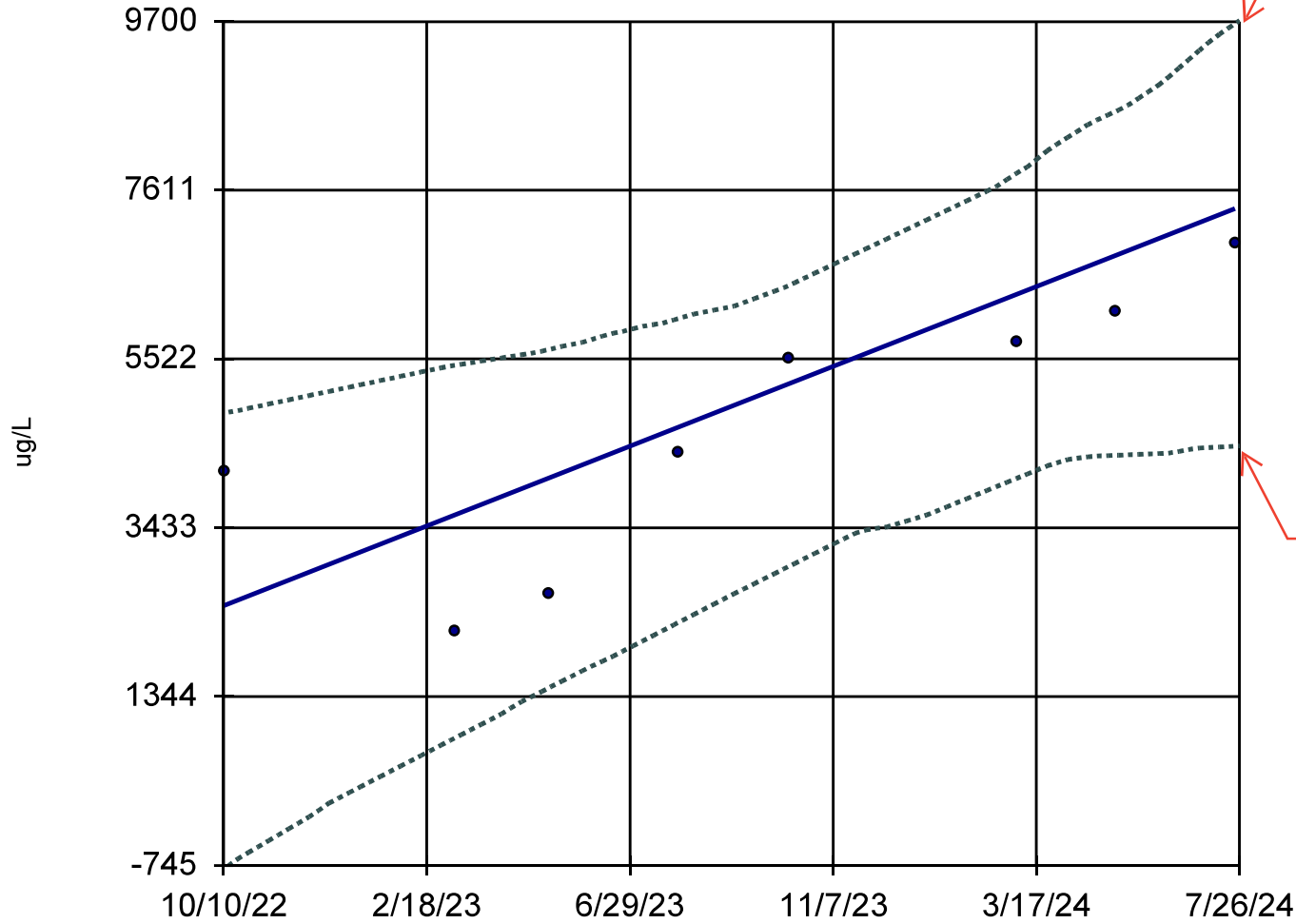
Boron, Total MW-51



Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Boron, Total MW-53



Upper Limit
7/26/24 9712

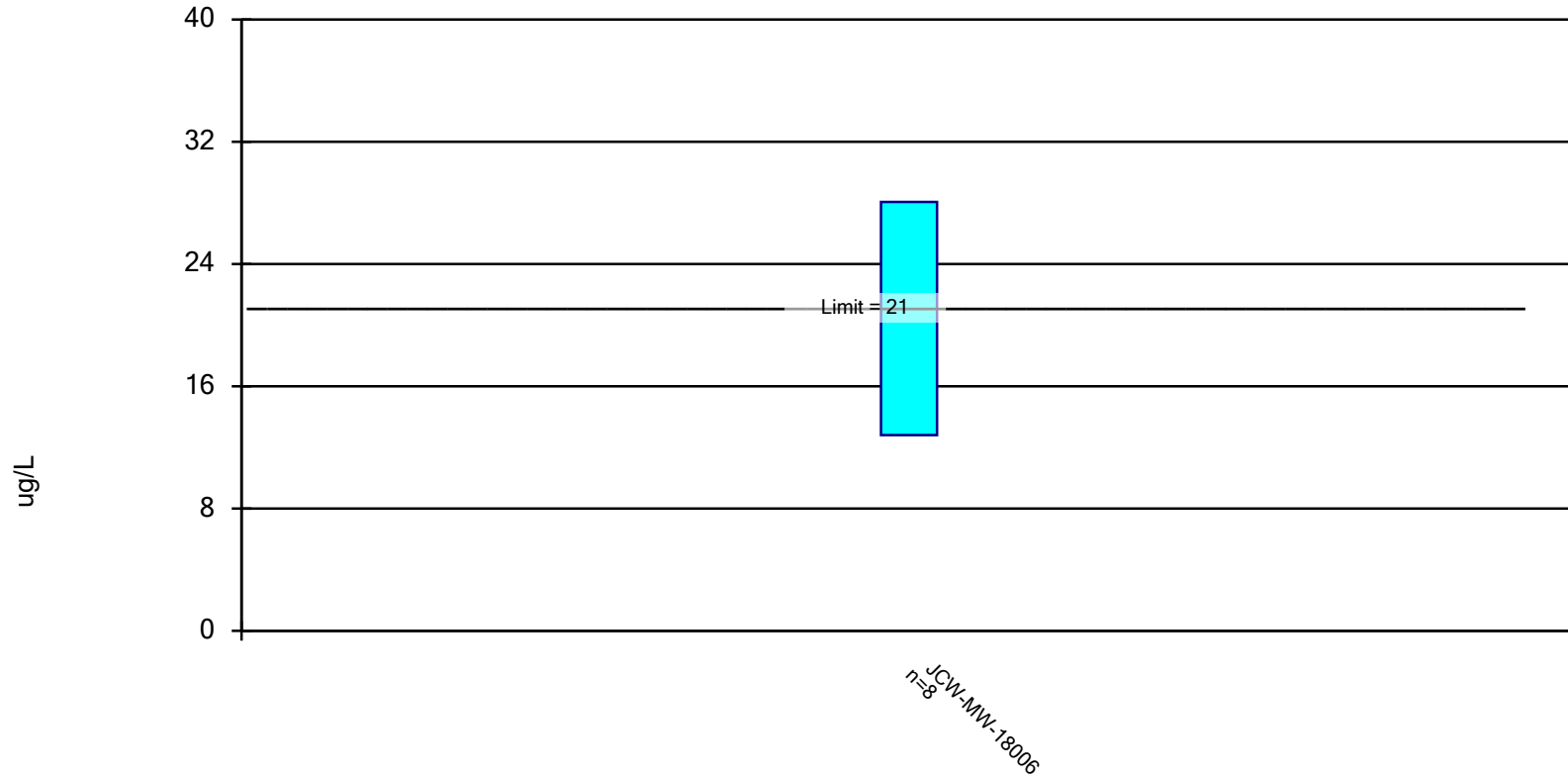
n = 8
Slope = 2750
units per year.
Mann-Kendall
statistic = 24
critical = 20
Increasing trend
significant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Lower Limit
7/26/24 4449

Sen's Slope and 98% Confidence Band Analysis Run 9/5/2024 4:29 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 9/17/2024 10:14 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 9/17/2024 10:15 AM

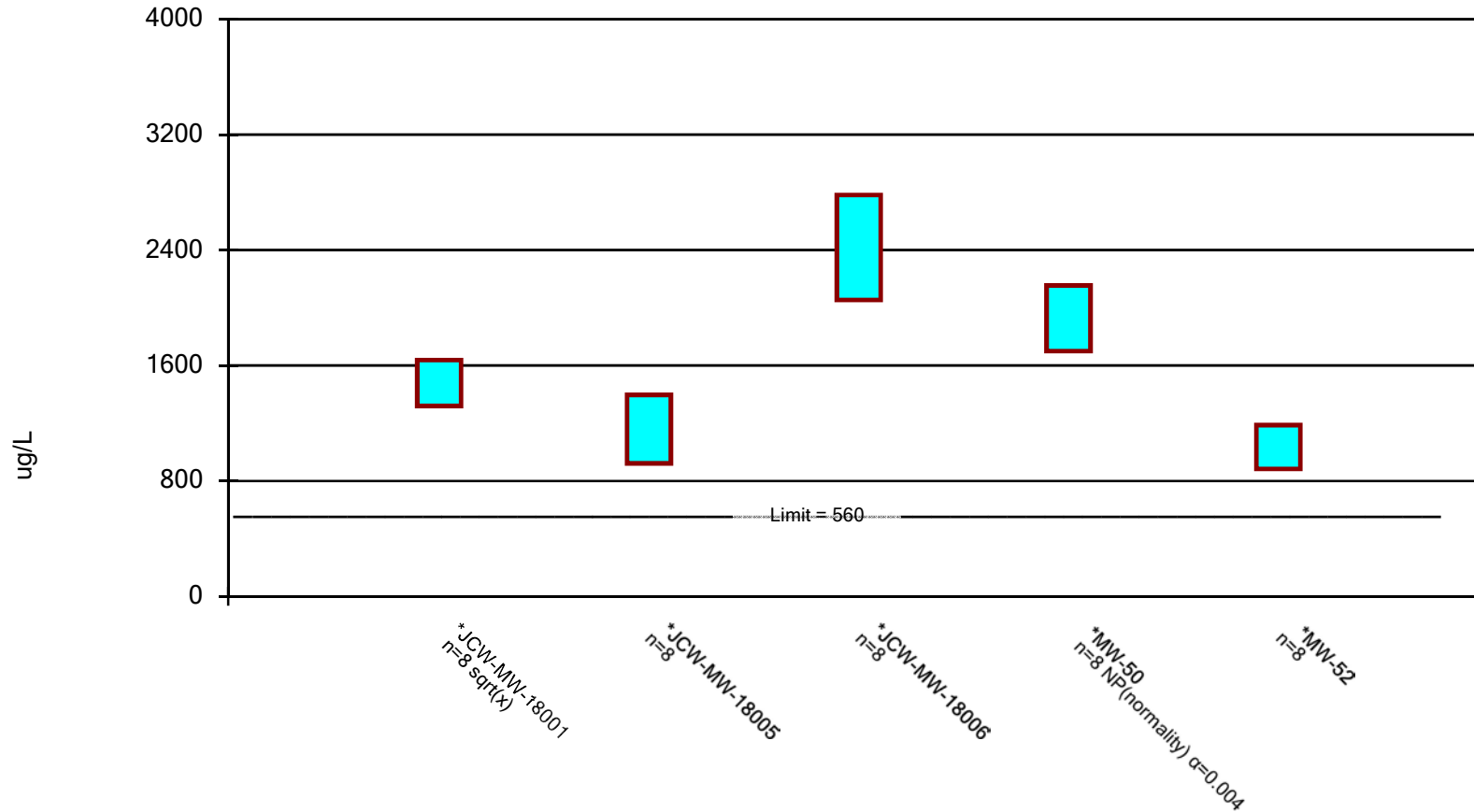
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

JCW-MW-18006

10/11/2022	25 (D)
3/9/2023	5 (D)
5/9/2023	23 (D)
7/31/2023	18.5 (D)
10/9/2023	17.5 (D)
3/6/2024	22.5 (D)
5/8/2024	29 (D)
7/24/2024	23
Mean	20.44
Std. Dev.	7.193
Upper Lim.	28.06
Lower Lim.	12.81

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 8/28/2024 11:47 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

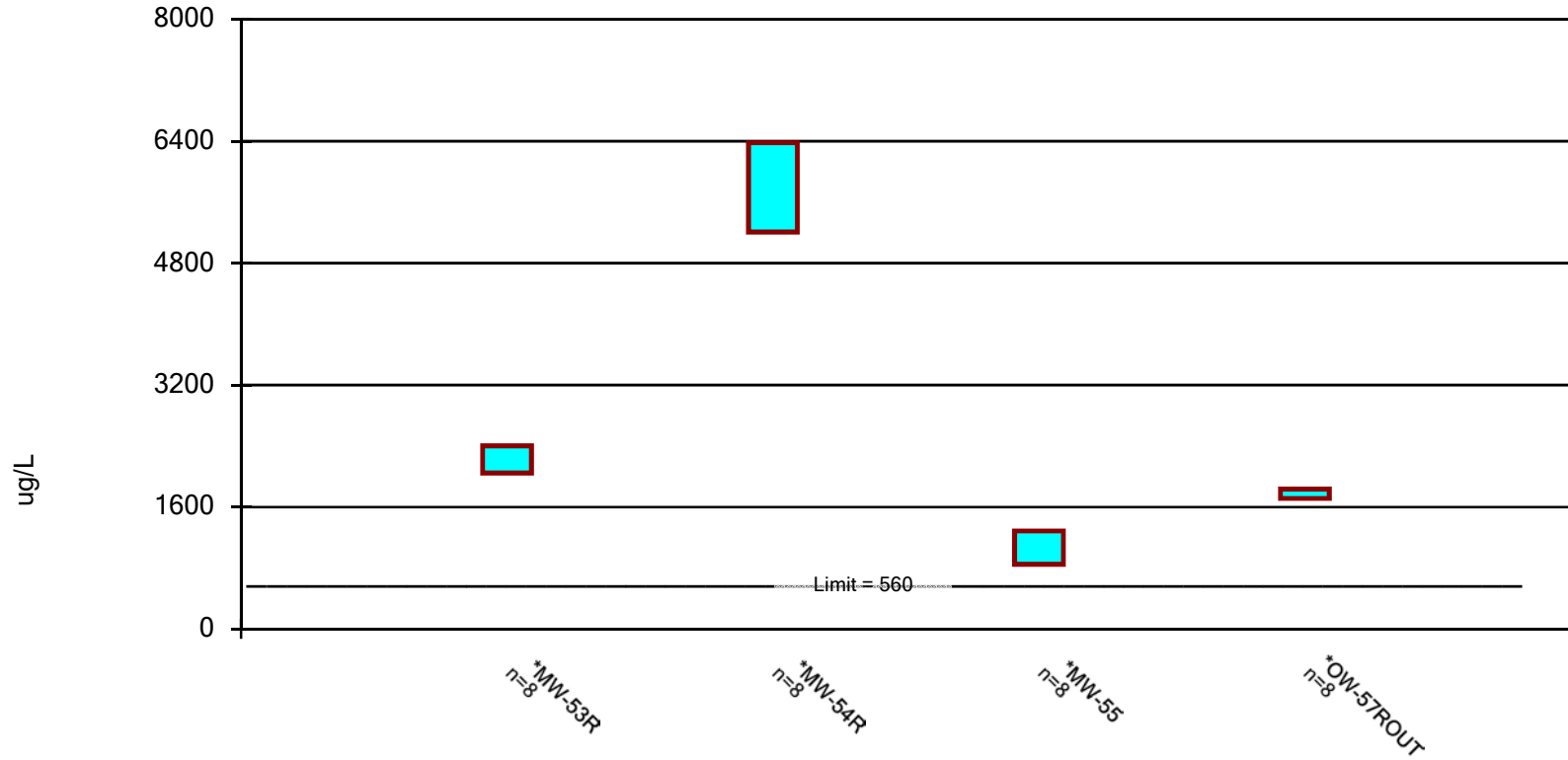
Confidence Interval

Constituent: Boron, Total (ug/L) Analysis Run 8/28/2024 11:48
AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

	JCW-MW-18001	JCW-MW-18005	JCW-MW-18006	MW-50	MW-52
10/10/2022	1790			1700 (D)	1330
10/11/2022		1290	2685 (D)		
3/8/2023	1440			2050 (D)	
3/9/2023		930	1745 (D)		1040
5/8/2023	1380			1720 (D)	993
5/9/2023		992	2465 (D)		
7/26/2023	1470			1705 (D)	
7/31/2023		1170	2120 (D)		1030
10/5/2023	1620				
10/9/2023		1470	2375 (D)	2065 (D)	1140
3/5/2024	1420			2155 (D)	945
3/6/2024		1000	2675 (D)		
5/7/2024	1330			2045 (D)	895
5/8/2024		960	2785 (D)		
7/23/2024	1370	1460		2140 (D)	909
7/24/2024			2490		
Mean	1478	1159	2418	1948	1035
Std. Dev.	153.8	223.5	342.9	202	143.1
Upper Lim.	1637	1396	2781	2155	1187
Lower Lim.	1320	922.1	2054	1700	883.5

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 8/28/2024 11:47 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

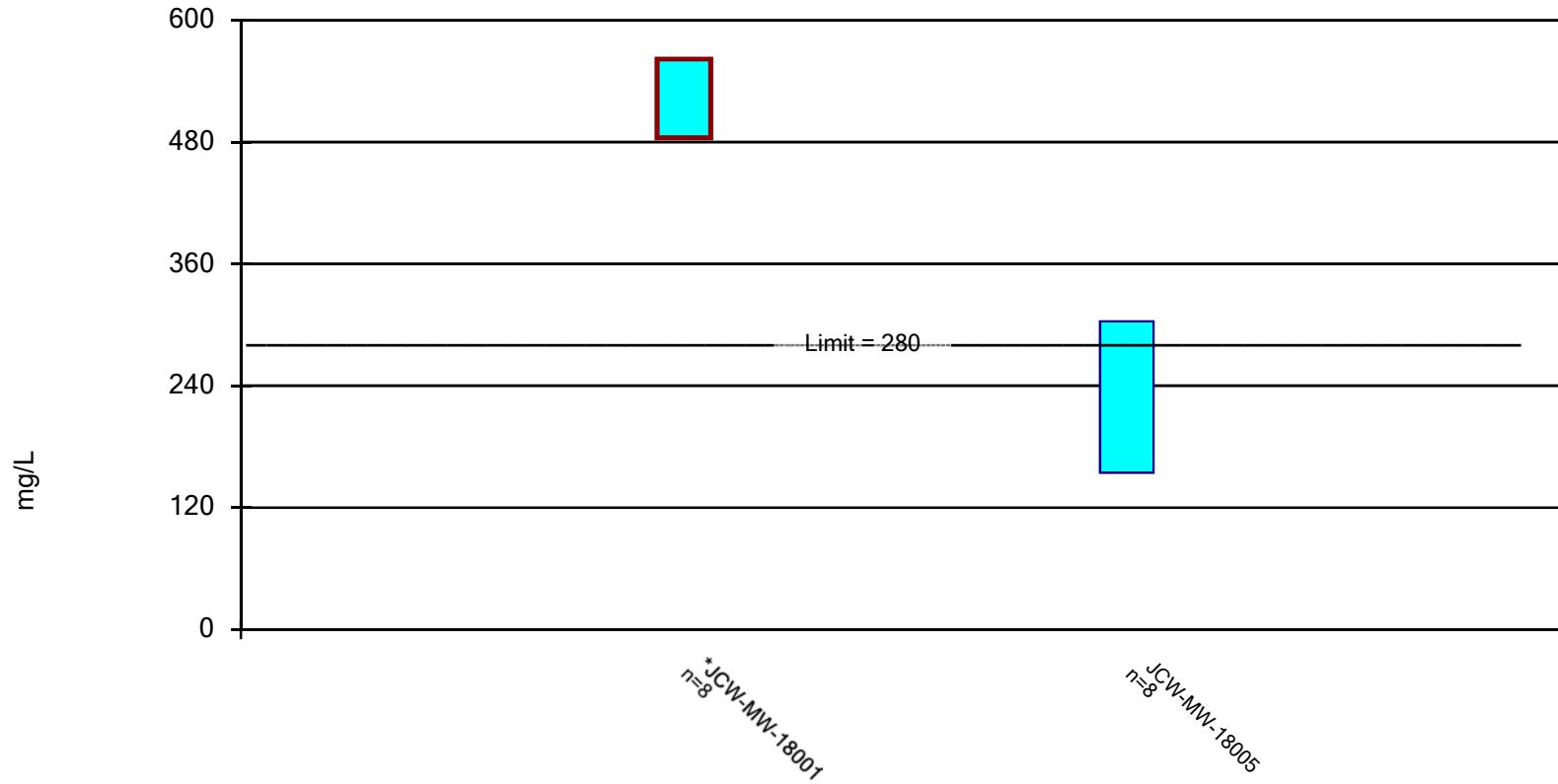
Confidence Interval

Constituent: Boron, Total (ug/L) Analysis Run 8/28/2024 11:48
AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

	MW-53R	MW-54R	MW-55	OW-57ROUT
10/10/2022	2340	5310	976	
10/11/2022				1830
3/9/2023	2330	5660	1110	1860
5/8/2023	2140			
5/9/2023		5240	1140	1740
7/31/2023	2190	6170	1290	1750
10/9/2023	2420	5520	1200	1790
3/5/2024	2300	5940	825	
3/6/2024				1810
5/7/2024	2200	5580		
5/8/2024			729	1700
7/23/2024	1880	6930	1270	
7/24/2024				1710 (D)
Mean	2225	5794	1068	1774
Std. Dev.	167.3	552	205.9	57.8
Upper Lim.	2402	6379	1286	1835
Lower Lim.	2048	5209	849.2	1712

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium, Total Analysis Run 8/28/2024 11:54 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Confidence Interval

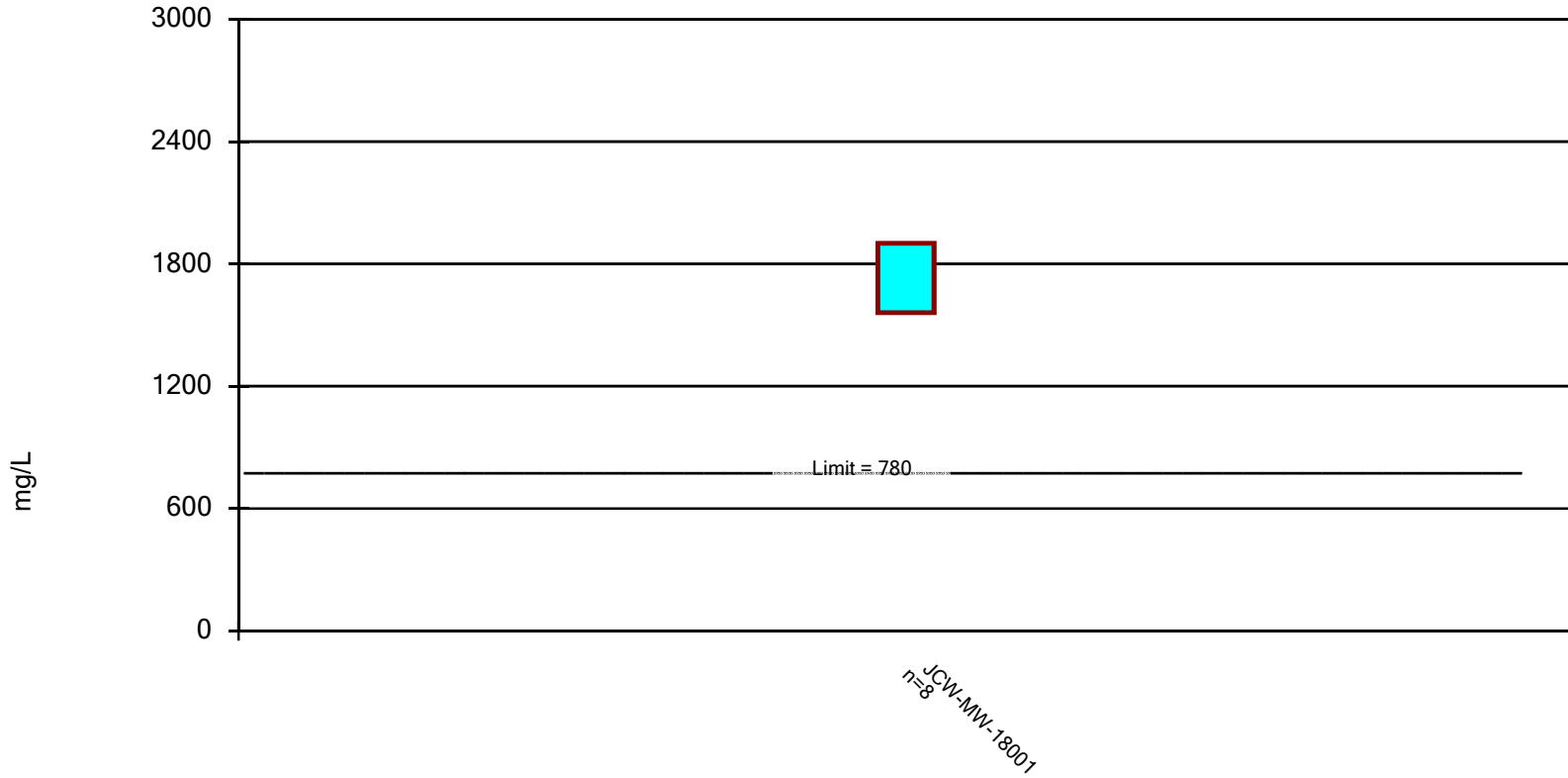
Constituent: Calcium, Total (mg/L) Analysis Run 9/4/2024 12:03 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

	JCW-MW-18001	JCW-MW-18005
10/10/2022	465	
10/11/2022		150
3/8/2023	486	
3/9/2023		262
5/8/2023	496	
5/9/2023		258
7/26/2023	555	
7/31/2023		202
10/5/2023	562	
10/9/2023		159
3/5/2024	557	
3/6/2024		335
5/7/2024	537	
5/8/2024		302
7/23/2024	526	164
Mean	523	229
Std. Dev.	36.58	70.3
Upper Lim.	561.8	303.5
Lower Lim.	484.2	154.5

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 9/4/2024 12:01 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Confidence Interval

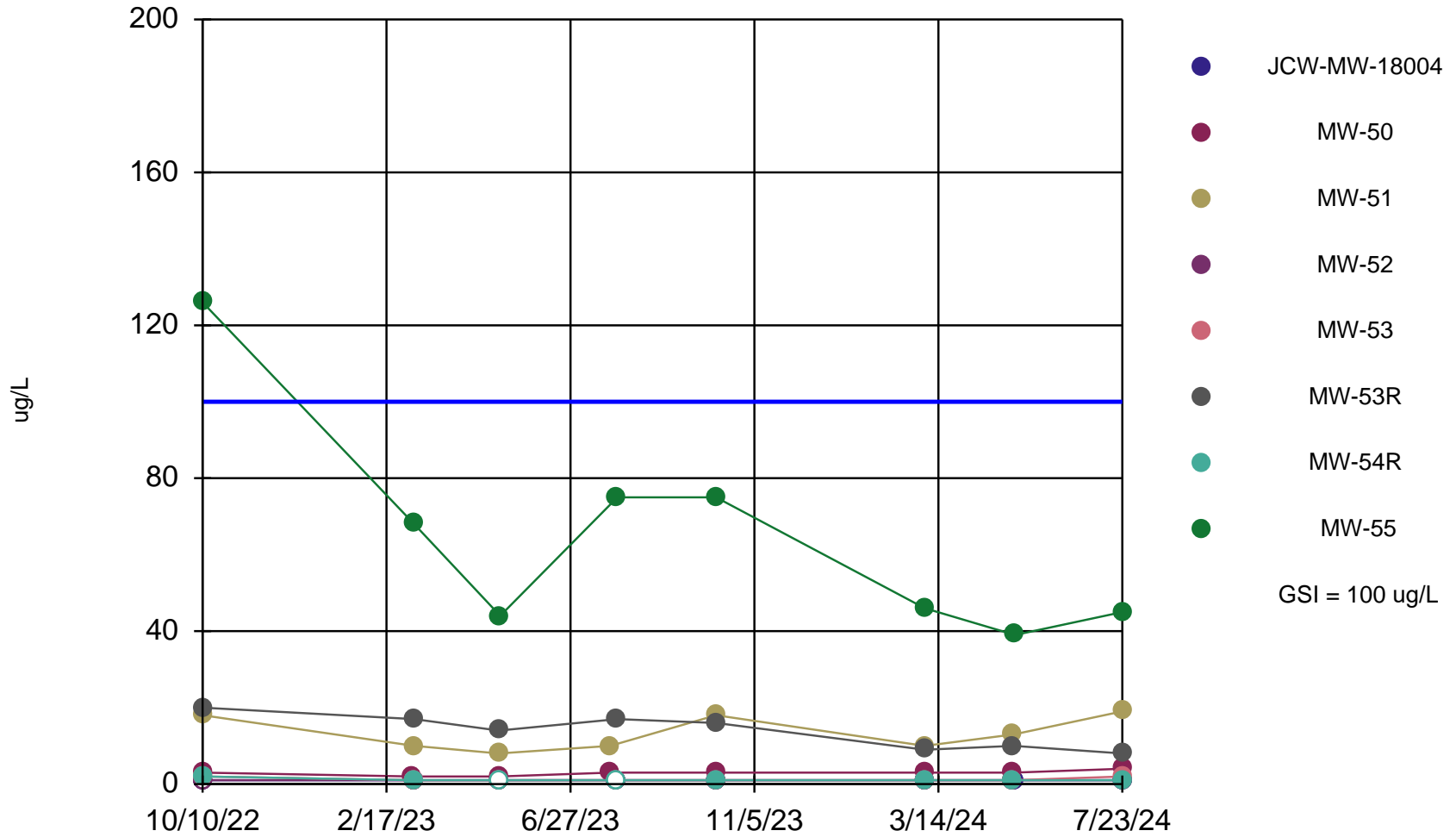
Constituent: Sulfate (mg/L) Analysis Run 9/4/2024 12:01 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

JCW-MW-18001

10/10/2022	1400
3/8/2023	1640
5/8/2023	1670
7/26/2023	1770
10/5/2023	1890
3/5/2024	1880
5/7/2024	1790
7/23/2024	1810
Mean	1731
Std. Dev.	160.5
Upper Lim.	1901
Lower Lim.	1561

Attachment 2
GSI Evaluation Sanitas™ Output Files

Arsenic Comparison to GSI



Time Series Analysis Run 9/4/2024 11:32 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Summary Report

Constituent: Arsenic, Total Analysis Run 9/4/2024 11:34 AM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

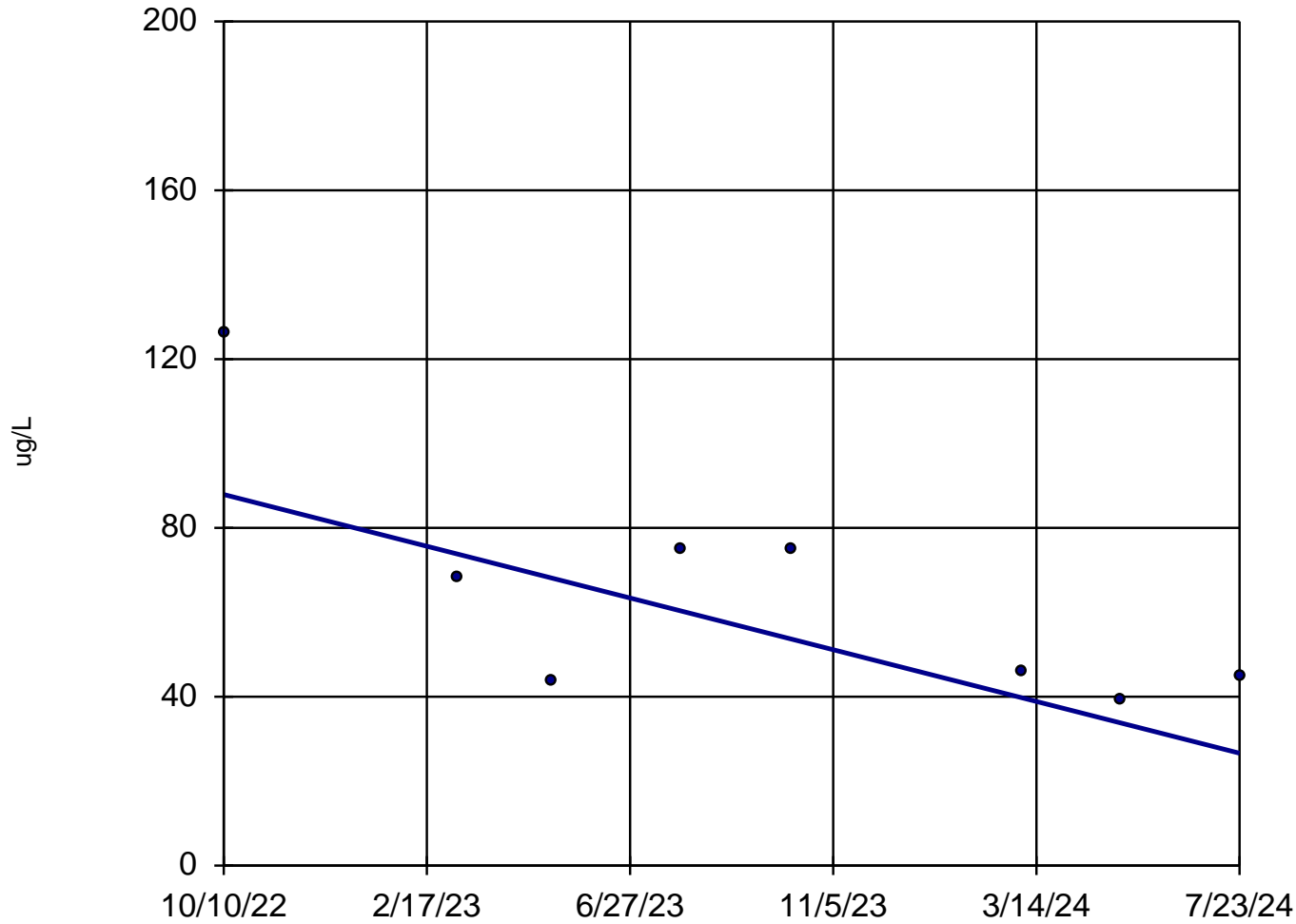
For observations made between 10/10/2022 and 7/23/2024, a summary of the selected data set:

Observations = 64
 NDs = 31%
 Wells = 8
 Minimum Value = 1
 Maximum Value = 126
 Mean Value = 12.39
 Median Value = 2
 Standard Deviation = 22.83
 Coefficient of Variation = 1.843
 Skewness = 2.956

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
MW-50	8	0%	2	4	2.875	3	0.6409	0.2229	0.0544
MW-51	8	0%	8	19	13.25	11.5	4.432	0.3345	0.275
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	25%	1	2	1.25	1	0.4629	0.3703	1.155
MW-53R	8	0%	8	20	13.88	15	4.39	0.3164	-0.138
MW-54R	8	25%	1	2	1.125	1	0.3536	0.3143	2.268
MW-55	8	0%	39	126	64.75	57	28.8	0.4448	1.225

Arsenic, Total

MW-55

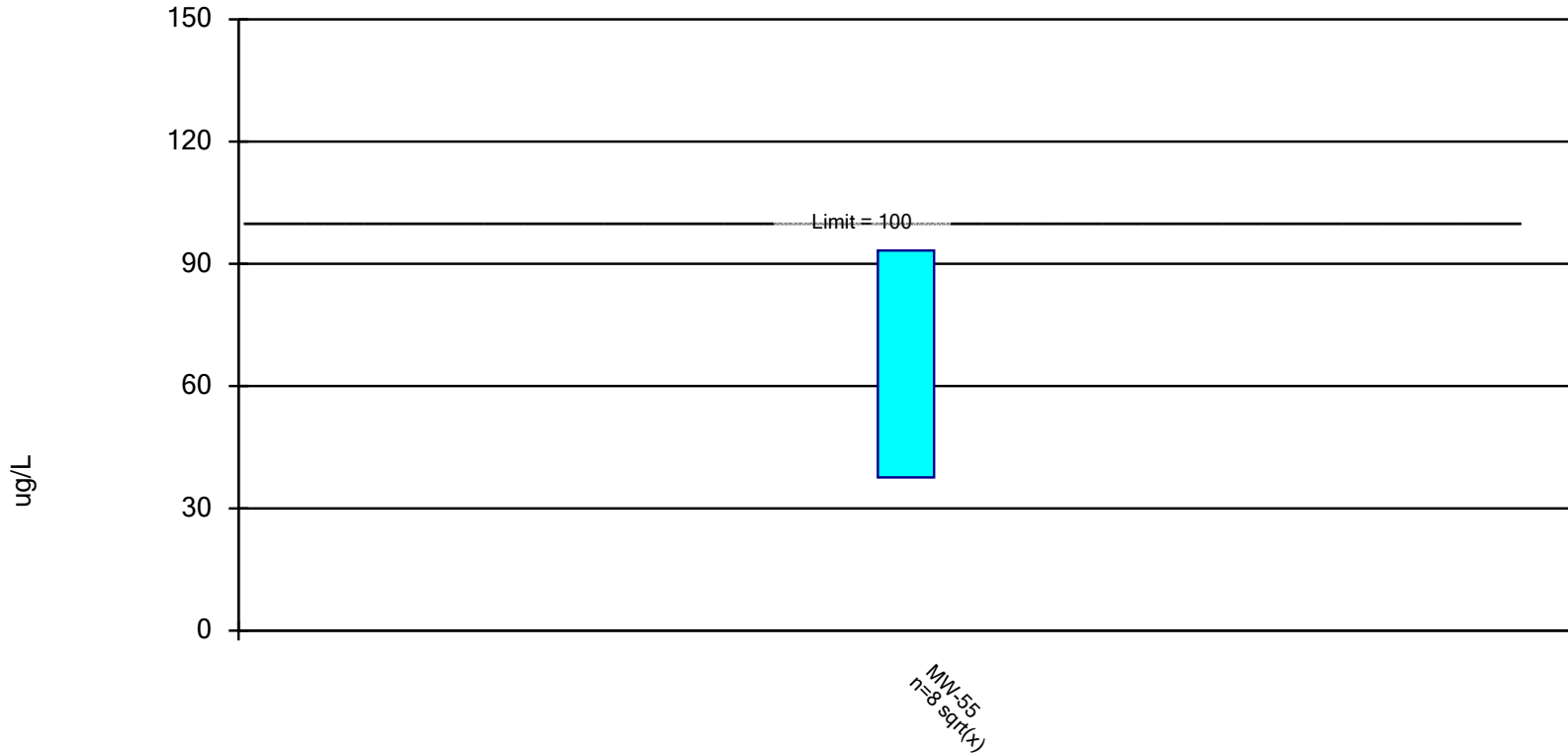


n = 8
Slope = -34.3
units per year.
Mann-Kendall
statistic = -13
critical = -21
Trend not sig-
nificant at 99%
confidence level
($\alpha = 0.005$ per
tail).

Sen's Slope Estimator Analysis Run 9/4/2024 11:35 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 9/4/2024 11:38 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

Confidence Interval

Constituent: Arsenic, Total (ug/L) Analysis Run 9/4/2024 11:38 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q3

	MW-55
10/10/2022	126
3/9/2023	68
5/9/2023	44
7/31/2023	75
10/9/2023	75
3/5/2024	46
5/8/2024	39
7/23/2024	45
Mean	64.75
Std. Dev.	28.8
Upper Lim.	93.26
Lower Lim.	37.61

Appendix E

Laboratory Analytical Report

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 08, 2024

Subject: HMP GROUNDWATER MONITORING – JCW POREWATER – 2024 Q3

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0585

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 07/22/2024 for the 3rd Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 07/25/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q3-2024 Weadock Porewater Wells
Date Received: 7/25/2024
Chemistry Project: 24-0585

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0585-01	JCW-MW-18001	Groundwater	07/23/2024 06:18	JCW Solid Waste Disposal Area, Porewater
24-0585-02	JCW-MW-18004	Groundwater	07/23/2024 12:44	JCW Solid Waste Disposal Area, Porewater
24-0585-03	JCW-MW-18005	Groundwater	07/23/2024 14:24	JCW Solid Waste Disposal Area, Porewater
24-0585-04	JCW-MW-18006	Groundwater	07/24/2024 07:26	JCW Solid Waste Disposal Area, Porewater
24-0585-05	MW-50	Groundwater	07/23/2024 07:55	JCW Solid Waste Disposal Area, Porewater
24-0585-06	MW-51	Groundwater	07/23/2024 08:46	JCW Solid Waste Disposal Area, Porewater
24-0585-07	MW-52	Groundwater	07/23/2024 09:27	JCW Solid Waste Disposal Area, Porewater
24-0585-08	MW-53	Groundwater	07/23/2024 10:10	JCW Solid Waste Disposal Area, Porewater
24-0585-09	MW-53R	Groundwater	07/23/2024 11:12	JCW Solid Waste Disposal Area, Porewater
24-0585-10	MW-54R	Groundwater	07/23/2024 12:04	JCW Solid Waste Disposal Area, Porewater
24-0585-11	MW-55	Groundwater	07/23/2024 13:32	JCW Solid Waste Disposal Area, Porewater
24-0585-12	OW-57ROUT	Groundwater	07/24/2024 06:30	JCW Solid Waste Disposal Area, Porewater
24-0585-13	MW-58	Groundwater	07/24/2024 08:50	JCW Solid Waste Disposal Area, Porewater
24-0585-14	DUP-JCW-LF-01	Groundwater	07/23/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0585-15	DUP-JCW-LF-02	Groundwater	07/24/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0585-16	JCW-MW-18001 MS	Groundwater	07/23/2024 06:18	JCW Solid Waste Disposal Area, Porewater
24-0585-17	JCW-MW-18001 MSD	Groundwater	07/23/2024 06:18	JCW Solid Waste Disposal Area, Porewater
24-0585-18	FB-01	Water	07/24/2024 09:00	JCW Solid Waste Disposal Area, Porewater
24-0585-19	EB-01	Water	07/24/2024 09:04	JCW Solid Waste Disposal Area, Porewater

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001**
 Lab Sample ID: 24-0585-01
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 06:18 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-01-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-01-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	2		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	50		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1370		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	526000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	5		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	3080		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	107		ug/L	10.0	08/01/2024	AB24-0801-07
Magnesium	130000		ug/L	1000.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	13		ug/L	2.0	08/01/2024	AB24-0801-07
Potassium	16400		ug/L	100.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Sodium	226000		ug/L	1000.0	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	2		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-01-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	45000		ug/L	1000.0	08/01/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/01/2024	AB24-0731-03
Sulfate	1810000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-01-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	3530		mg/L	10.0	07/25/2024	AB24-0725-13



Analytical Report

Report Date: 08/08/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
Field Sample ID: **JCW-MW-18001**
Lab Sample ID: 24-0585-01
Matrix: Groundwater

Laboratory Project: **24-0585**
Collect Date: 07/23/2024
Collect Time: 06:18 AM

Alkalinity by SM 2320B

Aliquot #: 24-0585-01-C04-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	715000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Bicarbonate	715000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-04

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18004**
 Lab Sample ID: 24-0585-02
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 12:44 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	29		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	308		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	205000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	41		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	50		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	4		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	12600		ug/L	1000.0	08/01/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/01/2024	AB24-0731-03
Sulfate	446000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1130		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18005**
 Lab Sample ID: 24-0585-03
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 02:24 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-03-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-03-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	2		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	67		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1460		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	164000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	1890		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	34		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	11		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-03-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	49200		ug/L	1000.0	08/01/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/01/2024	AB24-0731-03
Sulfate	156000		ug/L	1000.0	08/01/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-03-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	884		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18006**
 Lab Sample ID: 24-0585-04
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 07:26 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-04-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-04-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	23		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	412		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	2490		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	123000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	1		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	8650		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	49		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	5		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	3		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-04-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	57300		ug/L	1000.0	08/01/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/01/2024	AB24-0731-03
Sulfate	75500		ug/L	1000.0	08/01/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-04-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	782		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-50**
 Lab Sample ID: 24-0585-05
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 07:55 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0585-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0585-05-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	4		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	188		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	2100		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	175000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	1530		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	62		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	6		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	7		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0585-05-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	34900		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	403000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0585-05-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1190		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-51**
 Lab Sample ID: 24-0585-06
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 08:46 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-06-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-06-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	19		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	123		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	862		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	114000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	1		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	1490		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	28		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	6		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	2		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-06-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	81500		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	283000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-06-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	940		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-52**
 Lab Sample ID: 24-0585-07
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 09:27 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0585-07-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0585-07-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	88		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	909		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	233000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	7290		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	29		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	6		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0585-07-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	30100		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	542000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0585-07-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1470		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53**
 Lab Sample ID: 24-0585-08
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 10:10 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0585-08-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0585-08-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	2		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	581		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	6960		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	130000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	1		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	1110		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	57		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	6		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	4		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	2		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0585-08-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	115000		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	ND		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0585-08-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	806		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53R**
 Lab Sample ID: 24-0585-09
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 11:12 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0585-09-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0585-09-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	8		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	132		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1880		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	189000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	280		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	62		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	8		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0585-09-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	40000		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	291000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0585-09-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1230		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-54R**
 Lab Sample ID: 24-0585-10
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 12:04 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-10-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-10-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	1		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	90		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	6930		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	153000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	59		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	83		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	17		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	7		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	4		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-10-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	75400		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	60400		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-10-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	924		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-55**
 Lab Sample ID: 24-0585-11
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 01:32 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-11-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-11-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	45		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	186		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1270		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	117000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	1		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	12300		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	29		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	25		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	4		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-11-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	21800		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	60200		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-11-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	730		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **OW-57ROUT**
 Lab Sample ID: 24-0585-12
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 06:30 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-12-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-12-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	2		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	78		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1690		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	120000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	77		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	25		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	7		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	18		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-12-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	65900		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	1100		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	75500		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-12-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	760		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-58**
 Lab Sample ID: 24-0585-13
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 08:50 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-13-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-13-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	5		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	135		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	155		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	93200		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	12700		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	22		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	4		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	8		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-13-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	580000		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	8610		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-13-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1380		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-01**
 Lab Sample ID: 24-0585-14
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-14-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-14-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	4		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	192		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	2180		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	175000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	3		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	1610		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	61		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	6		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	8		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-14-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	36700		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	410000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-14-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1140		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-02**
 Lab Sample ID: 24-0585-15
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-15-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-15-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	2		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	77		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1730		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	120000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	85		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	25		ug/L	10.0	08/01/2024	AB24-0801-07
Molybdenum	7		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	17		ug/L	2.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-15-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	68600		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	1140		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	78300		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0585-15-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	796		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MS**
 Lab Sample ID: 24-0585-16
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 06:18 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-16-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-16-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	106		%	1.0	08/01/2024	AB24-0801-07
Arsenic	106		%	1.0	08/01/2024	AB24-0801-07
Barium	106		%	5.0	08/01/2024	AB24-0801-07
Beryllium	92		%	1.0	08/01/2024	AB24-0801-07
Boron	108		%	20.0	08/01/2024	AB24-0801-07
Cadmium	106		%	0.2	08/01/2024	AB24-0801-07
Calcium	110		%	1000.0	08/01/2024	AB24-0801-07
Chromium	105		%	1.0	08/01/2024	AB24-0801-07
Cobalt	104		%	6.0	08/01/2024	AB24-0801-07
Copper	94		%	1.0	08/01/2024	AB24-0801-07
Iron	107		%	20.0	08/01/2024	AB24-0801-07
Lead	97		%	1.0	08/01/2024	AB24-0801-07
Lithium	88		%	10.0	08/01/2024	AB24-0801-07
Magnesium	113		%	1000.0	08/01/2024	AB24-0801-07
Molybdenum	113		%	5.0	08/01/2024	AB24-0801-07
Nickel	104		%	2.0	08/01/2024	AB24-0801-07
Potassium	100		%	100.0	08/01/2024	AB24-0801-07
Selenium	107		%	1.0	08/01/2024	AB24-0801-07
Silver	96.1		%	0.2	08/01/2024	AB24-0801-07
Sodium	118		%	1000.0	08/01/2024	AB24-0801-07
Thallium	97		%	2.0	08/01/2024	AB24-0801-07
Vanadium	109		%	2.0	08/01/2024	AB24-0801-07
Zinc	95		%	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-16-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	103		%	1000.0	08/02/2024	AB24-0731-03
Fluoride	93		%	1000.0	08/02/2024	AB24-0731-03
Sulfate	109		%	1000.0	08/02/2024	AB24-0731-03

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MSD**
 Lab Sample ID: 24-0585-17
 Matrix: Groundwater

Laboratory Project: **24-0585**
 Collect Date: 07/23/2024
 Collect Time: 06:18 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0585-17-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	98.0		%	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0585-17-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	108		%	1.0	08/01/2024	AB24-0801-07
Arsenic	106		%	1.0	08/01/2024	AB24-0801-07
Barium	107		%	5.0	08/01/2024	AB24-0801-07
Beryllium	95		%	1.0	08/01/2024	AB24-0801-07
Boron	106		%	20.0	08/07/2024	AB24-0801-07
Cadmium	105		%	0.2	08/01/2024	AB24-0801-07
Calcium	113		%	1000.0	08/01/2024	AB24-0801-07
Chromium	100		%	1.0	08/01/2024	AB24-0801-07
Cobalt	98		%	6.0	08/01/2024	AB24-0801-07
Copper	89		%	1.0	08/01/2024	AB24-0801-07
Iron	115		%	20.0	08/07/2024	AB24-0801-07
Lead	92		%	1.0	08/01/2024	AB24-0801-07
Lithium	93		%	10.0	08/01/2024	AB24-0801-07
Magnesium	108		%	1000.0	08/01/2024	AB24-0801-07
Molybdenum	114		%	5.0	08/01/2024	AB24-0801-07
Nickel	104		%	2.0	08/01/2024	AB24-0801-07
Potassium	99		%	100.0	08/01/2024	AB24-0801-07
Selenium	108		%	1.0	08/01/2024	AB24-0801-07
Silver	94.6		%	0.2	08/01/2024	AB24-0801-07
Sodium	111		%	1000.0	08/01/2024	AB24-0801-07
Thallium	94		%	2.0	08/01/2024	AB24-0801-07
Vanadium	105		%	2.0	08/01/2024	AB24-0801-07
Zinc	92		%	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0585-17-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	102		%	1000.0	08/02/2024	AB24-0731-03
Fluoride	93		%	1000.0	08/02/2024	AB24-0731-03
Sulfate	101		%	1000.0	08/02/2024	AB24-0731-03

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **FB-01**
 Lab Sample ID: 24-0585-18
 Matrix: Water

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 09:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-18-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-18-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	ND		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	ND		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	ND		ug/L	10.0	08/01/2024	AB24-0801-07
Magnesium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Potassium	ND		ug/L	100.0	08/01/2024	AB24-0801-07
Selenium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Sodium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-18-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	ND		ug/L	1000.0	08/02/2024	AB24-0731-03

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **EB-01**
 Lab Sample ID: 24-0585-19
 Matrix: Water

Laboratory Project: **24-0585**
 Collect Date: 07/24/2024
 Collect Time: 09:04 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0585-19-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0585-19-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	ND		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	ND		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	ND		ug/L	10.0	08/01/2024	AB24-0801-07
Magnesium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Molybdenum	ND		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Potassium	ND		ug/L	100.0	08/01/2024	AB24-0801-07
Selenium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Sodium	ND		ug/L	1000.0	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0585-19-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	ND		ug/L	1000.0	08/02/2024	AB24-0731-03

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

CONSUMERS
ENERGY

Chemistry Department
General Standard Operating Procedure

PROC CHEM-1,2,01
PAGE 1 OF 2
REVISION 5
ATTACHMENT A

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0585 Inspection Date: 7/25/24 Inspection By: CIE

Sample Origin/Project Name: DEK (JCW) Q3-2024 Porewater

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____

Tracking Number: _____ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed N/A _____

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.2-0.9 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723/ 6-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>38</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>15</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 2-15-25
FSP # 13-640-508

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 12
EIS 072524

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock Porewater Wells				PROJECT NUMBER: 24-0585		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																									
SAMPLING TEAM:				TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																	
SEND REPORT TO: Joseph Firlit		email:		phone:		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS PRESERVATIVE				REMARKS																									
COPY TO: Harold Register		TRC		LAB SAMPLE ID										SAMPLE COLLECTION		MATRIX		FIELD SAMPLE ID / LOCATION		TOTAL #		None		HNO ₃		H ₂ SO ₄		NaOH		HCl		MeOH		Other		Total Metals	
		DATE		TIME																																	
24-0585-01		7/23/24		0618		GW		JCW-MW-18001		5		4		1																							
-02		7/23/24		1244		GW		JCW-MW-18004		3		2		1																							
-03		7/23/24		1424		GW		JCW-MW-18005		3		2		1																							
-04		7/24/24		0720		GW		JCW-MW-18006		3		2		1																							
-05		7/23/24		0755		GW		MW-50		3		2		1																							
-06		7/23/24		0846		GW		MW-51		3		2		1																							
-07		7/23/24		0937		GW		MW-52		3		2		1																							
-08		7/23/24		1000		GW		MW-53		3		2		1																							
-09		7/23/24		1112		GW		MW-53R		3		2		1																							
-10		7/23/24		1204		GW		MW-54R		3		2		1																							
-11		7/23/24		1332		GW		MW-55		3		2		1																							
-12		7/24/24		0630		GW		OW-57ROUT		3		2		1																							

RELINQUISHED BY:		DATE/TIME: 7/25/24 0730		RECEIVED BY:		COMMENTS:					
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>LS027723</u>					
						Temperature: <u>0.2-0.9</u> °C Cal. Due Date: <u>6-27-25</u>					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page +2 of +2
EB 072624

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0585			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																										
SEND REPORT TO: Caleb Batts		email:		phone:																									
COPY TO: Harold Register		TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste				CONTAINERS																					
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX		FIELD SAMPLE ID / LOCATION		TOTAL #		PRESERVATIVE																			
		DATE TIME								None		HNO ₃		H ₂ SO ₄		NaOH		HCl		MeOH		Other		Total Metals		Anions		TDS		Alkalinity
24-0585-13		7/24/24 0850		GW		MW-58		3		2		1																	
-14		7/23/24 —		GW		DUP-JCW-LF-01		3		2		1																	
-15		7/24/24 —		GW		DUP-JCW-LF-02		3		2		1																	
-16		7/27/24 0618		GW		JCW-MW-18001 MS		2		1		1																	
-17		7/23/24 0618		GW		JCW-MW-18001 MSD		2		1		1																	
-18		7/24/24 0900		W		FB-01		2		1		1																	
-19		7/24/24 0904		W		EB-01		2		1		1																	

RELINQUISHED BY:		DATE/TIME: 7/25/24 0736		RECEIVED BY:		COMMENTS:							
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		M&TE #: LS027723		Temperature: 0.2-0.9°C		Cal. Due Date: 6-27-25	

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 08, 2024

Subject: HMP GROUNDWATER MONITORING – JCWEADOCK ASD – 2024 Q3

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0586

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 07/22/2024 for the 3rd Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The sample was received for analysis by the Chemistry department of Laboratory Services on 07/25/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q3-2024 Weadock ASD
Date Received: 7/25/2024
Chemistry Project: 24-0586

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0586-01	JCW-OW-18001	Groundwater	07/23/2024 07:10	JC Weadock ASD
24-0586-02	JCW-OW-18006	Groundwater	07/24/2024 08:04	JC Weadock ASD

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18001**
 Lab Sample ID: 24-0586-01
 Matrix: Groundwater

Laboratory Project: **24-0586**
 Collect Date: 07/23/2024
 Collect Time: 07:10 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0586-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0586-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	161		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	73		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	1720		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	204000		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	9390		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	61		ug/L	10.0	08/01/2024	AB24-0801-07
Magnesium	46900		ug/L	1000.0	08/01/2024	AB24-0801-07
Molybdenum	7		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	4		ug/L	2.0	08/01/2024	AB24-0801-07
Potassium	11400		ug/L	100.0	08/01/2024	AB24-0801-07
Selenium	2		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Sodium	73800		ug/L	1000.0	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0586-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	70200		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	452000		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C Aliquot #: 24-0586-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1220		mg/L	10.0	07/26/2024	AB24-0726-03



Analytical Report

Report Date: 08/08/24

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18001**
Lab Sample ID: 24-0586-01
Matrix: Groundwater

Laboratory Project: **24-0586**
Collect Date: 07/23/2024
Collect Time: 07:10 AM

Alkalinity by SM 2320B

Aliquot #: 24-0586-01-C04-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	377000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Bicarbonate	377000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Carbonate	ND		ug/L	10000.0	08/01/2024	AB24-0801-04

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18006**
 Lab Sample ID: 24-0586-02
 Matrix: Groundwater

Laboratory Project: **24-0586**
 Collect Date: 07/24/2024
 Collect Time: 08:04 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0586-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0586-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Arsenic	165		ug/L	1.0	08/01/2024	AB24-0801-07
Barium	207		ug/L	5.0	08/01/2024	AB24-0801-07
Beryllium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Boron	2400		ug/L	20.0	08/01/2024	AB24-0801-07
Cadmium	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Calcium	13300		ug/L	1000.0	08/01/2024	AB24-0801-07
Chromium	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Cobalt	ND		ug/L	6.0	08/01/2024	AB24-0801-07
Copper	2		ug/L	1.0	08/01/2024	AB24-0801-07
Iron	ND		ug/L	20.0	08/01/2024	AB24-0801-07
Lead	ND		ug/L	1.0	08/01/2024	AB24-0801-07
Lithium	17		ug/L	10.0	08/01/2024	AB24-0801-07
Magnesium	2860		ug/L	1000.0	08/01/2024	AB24-0801-07
Molybdenum	51		ug/L	5.0	08/01/2024	AB24-0801-07
Nickel	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Potassium	29100		ug/L	100.0	08/01/2024	AB24-0801-07
Selenium	1		ug/L	1.0	08/01/2024	AB24-0801-07
Silver	ND		ug/L	0.2	08/01/2024	AB24-0801-07
Sodium	115000		ug/L	1000.0	08/01/2024	AB24-0801-07
Thallium	ND		ug/L	2.0	08/01/2024	AB24-0801-07
Vanadium	3		ug/L	2.0	08/01/2024	AB24-0801-07
Zinc	ND		ug/L	10.0	08/01/2024	AB24-0801-07

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0586-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	74600		ug/L	1000.0	08/02/2024	AB24-0731-03
Fluoride	ND		ug/L	1000.0	08/02/2024	AB24-0731-03
Sulfate	4680		ug/L	1000.0	08/02/2024	AB24-0731-03

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0586-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	416		mg/L	10.0	07/26/2024	AB24-0726-03



Analytical Report

Report Date: 08/08/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18006**
Lab Sample ID: 24-0586-02
Matrix: Groundwater

Laboratory Project: **24-0586**
Collect Date: 07/24/2024
Collect Time: 08:04 AM

Alkalinity by SM 2320B

Aliquot #: 24-0586-02-C04-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	234000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Bicarbonate	166000		ug/L	10000.0	08/01/2024	AB24-0801-04
Alkalinity Carbonate	67700		ug/L	10000.0	08/01/2024	AB24-0801-04

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

CONSUMERS
ENERGY

Chemistry Department
General Standard Operating Procedure

PROC CHEM-1.2.01
PAGE 1 OF 2
REVISION 5
ATTACHMENT A

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0586 Inspection Date: 7/25/24 Inspection By: CLE

Sample Origin/Project Name: DEK | JCW Q3-2024

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____

Tracking Number: _____ Other (Carry In (whom)) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed N/A _____

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.3 - 0.8 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723/ 6-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	<u>4</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>4</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>2</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 2-15-25
FSP # 13-640-508

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock ASD			PROJECT NUMBER: 24-0586		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____													
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR. <input type="checkbox"/> 48 HR. <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																					
SEND REPORT TO:	Joseph Firlit		email:		phone:		Total Metals	Anions	TDS	Alkalinity														
COPY TO:	Harold Register		MATRIX CODES:		CONTAINERS								TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other				
	TRC		GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		FIELD SAMPLE ID / LOCATION																			
LAB SAMPLE ID	SAMPLE COLLECTION	MATRIX	DATE	TIME																				
24-0586-01	7/23/24	0710	GW	JCW-OW-18001	5	4	1																	
↓ -02	7/24/24	0804	GW	JCW-OW-18006	5	4	1																	

RELINQUISHED BY:		DATE/TIME: 7/25/24 0730		RECEIVED BY:		COMMENTS:	
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>LS 027723</u> Temperature: <u>0.3-0.8</u> °C Cal. Due Date: <u>6-27-25</u>	

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 08, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q3

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0584

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 07/22/2024 for the 3rd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 07/25/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q3-2024 DEK-JCW Background Wells
Date Received: 7/25/2024
Chemistry Project: 24-0584

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0584-01	MW-15002	Groundwater	07/24/2024 11:05	DEK JCW Background
24-0584-02	MW-15008	Groundwater	07/24/2024 09:34	DEK JCW Background
24-0584-03	MW-15016	Groundwater	07/24/2024 11:43	DEK JCW Background
24-0584-04	MW-15019	Groundwater	07/24/2024 10:08	DEK JCW Background
24-0584-05	DUP-Background	Groundwater	07/24/2024 00:00	DEK JCW Background
24-0584-06	FB- Background	Water	07/24/2024 11:50	DEK JCW Background

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15002**
 Lab Sample ID: 24-0584-01
 Matrix: Groundwater

Laboratory Project: **24-0584**
 Collect Date: 07/24/2024
 Collect Time: 11:05 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0584-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0584-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	55		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	36		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	75000		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	1		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	740		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	ND		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	3		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0584-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	30000		ug/L	1000.0	07/31/2024	AB24-0730-11
Fluoride	ND		ug/L	1000.0	07/31/2024	AB24-0730-11
Sulfate	7490		ug/L	1000.0	07/31/2024	AB24-0730-11

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0584-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	422		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15008**
 Lab Sample ID: 24-0584-02
 Matrix: Groundwater

Laboratory Project: **24-0584**
 Collect Date: 07/24/2024
 Collect Time: 09:34 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0584-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0584-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	4		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	76		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	144		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	106000		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	13800		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	29		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	3		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	6		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0584-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	319000		ug/L	1000.0	07/31/2024	AB24-0730-11
Fluoride	ND		ug/L	1000.0	07/31/2024	AB24-0730-11
Sulfate	2450		ug/L	1000.0	07/31/2024	AB24-0730-11

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0584-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	978		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15016**
 Lab Sample ID: 24-0584-03
 Matrix: Groundwater

Laboratory Project: **24-0584**
 Collect Date: 07/24/2024
 Collect Time: 11:43 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0584-03-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0584-03-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	27		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	167		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	533		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	223000		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	2		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	23000		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	52		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	9		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	2		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0584-03-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	216000		ug/L	1000.0	07/31/2024	AB24-0730-11
Fluoride	ND		ug/L	1000.0	07/31/2024	AB24-0730-11
Sulfate	40500		ug/L	1000.0	07/31/2024	AB24-0730-11

Total Dissolved Solids by SM 2540C Aliquot #: 24-0584-03-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1170		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15019**
 Lab Sample ID: 24-0584-04
 Matrix: Groundwater

Laboratory Project: **24-0584**
 Collect Date: 07/24/2024
 Collect Time: 10:08 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0584-04-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/29/2024	AB24-0727-06

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0584-04-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	2		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	357		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	247		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	169000		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	1		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	22100		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	15		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	5		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	3		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0584-04-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	360000		ug/L	1000.0	08/01/2024	AB24-0730-11
Fluoride	ND		ug/L	1000.0	07/31/2024	AB24-0730-11
Sulfate	101000		ug/L	1000.0	07/31/2024	AB24-0730-11

Total Dissolved Solids by SM 2540C Aliquot #: 24-0584-04-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1310		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
Field Sample ID: **DUP-Background**
Lab Sample ID: 24-0584-05
Matrix: Groundwater

Laboratory Project: **24-0584**
Collect Date: 07/24/2024
Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0584-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0584-05-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	3		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	76		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	144		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	106000		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	2		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	13900		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	29		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	3		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	6		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0584-05-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	314000		ug/L	1000.0	08/01/2024	AB24-0730-11
Fluoride	ND		ug/L	1000.0	07/31/2024	AB24-0730-11
Sulfate	2480		ug/L	1000.0	07/31/2024	AB24-0730-11

Total Dissolved Solids by SM 2540C Aliquot #: 24-0584-05-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1100		mg/L	10.0	07/25/2024	AB24-0725-13

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **FB- Background**
 Lab Sample ID: 24-0584-06
 Matrix: Water

Laboratory Project: **24-0584**
 Collect Date: 07/24/2024
 Collect Time: 11:50 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0584-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/30/2024	AB24-0730-04

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0584-06-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Arsenic	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Barium	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Beryllium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Boron	ND		ug/L	20.0	07/31/2024	AB24-0731-09
Cadmium	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Calcium	ND		ug/L	1000.0	07/31/2024	AB24-0731-09
Chromium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Cobalt	ND		ug/L	6.0	07/31/2024	AB24-0731-09
Copper	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Iron	ND		ug/L	20.0	07/31/2024	AB24-0731-09
Lead	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Lithium	ND		ug/L	10.0	07/31/2024	AB24-0731-09
Molybdenum	ND		ug/L	5.0	07/31/2024	AB24-0731-09
Nickel	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Selenium	ND		ug/L	1.0	07/31/2024	AB24-0731-09
Silver	ND		ug/L	0.2	07/31/2024	AB24-0731-09
Thallium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Vanadium	ND		ug/L	2.0	07/31/2024	AB24-0731-09
Zinc	ND		ug/L	10.0	07/31/2024	AB24-0731-09



Laboratory Services
A CENTURY OF EXCELLENCE

Analytical Report

Report Date: 08/08/24

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

CONSUMERS
ENERGY

Chemistry Department
General Standard Operating Procedure

PROC CHEM-1.2.01
PAGE 1 OF 2
REVISION 5
ATTACHMENT A

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0584 Inspection Date: 7/25/24 Inspection By: CIE

Sample Origin/Project Name: DEK/JCW Q3-2024 Background

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____

Tracking Number: _____ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler (1) Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed N/A _____

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 0.1 - 0.6 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723/ 6.27.25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>11</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>5</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 2.15.25

FSP # 13-640-508

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q3-2024 JCW-DEK Background Wells			PROJECT NUMBER: 24-0584		SAP CC or WO#: REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)						QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____ REMARKS																		
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email:									phone:																	
SEND REPORT TO:	Joseph Firlit		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">TOTAL #</th> <th colspan="7">PRESERVATIVE</th> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">TDS</th> </tr> <tr> <th>None</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>							TOTAL #	PRESERVATIVE							Total Metals	Anions	TDS	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other
TOTAL #	PRESERVATIVE														Total Metals	Anions	TDS														
	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																								
COPY TO:	Harold Register		FIELD SAMPLE ID / LOCATION		TOTAL #		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>None</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> <th>Total Metals</th> <th>Anions</th> <th>TDS</th> </tr> </table>							None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS								
None	HNO ₃	H ₂ SO ₄												NaOH	HCl	MeOH	Other	Total Metals	Anions	TDS											
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX																												
	DATE	TIME																													

RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		COMMENTS:			
		7/25/24 0730							
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>LS027723</u> Temperature: <u>0.1 - 0.6</u> °C Cal. Due Date: <u>6-27-25</u>			

Appendix F Field Records



PROJECT NAME:	CEC Karn LF and Weadock LF: 2024 GW Compliance
PROJECT NUMBER:	553814.0000/553814.0001/553828.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI
DATES OF FIELDWORK:	TO 7-22-2024
PURPOSE OF FIELDWORK:	Site Wide Water Levels
WORK PERFORMED BY:	Javier Jasso

 8-2-24
SIGNED DATE

 8-2-24
CHECKED BY DATE



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn LF and Weadock	SAMPLER NAME:	Javier Jasso
PROJECT NO.:	553814.0000/553814.0001/5		

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	PROJECT DEDICATED
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	PROJECT DEDICATED
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

NA	NA
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

BLADDER PUMP (DEDICATED)	PROJECT DEDICATED
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

NA	NA
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED TEFLON TUBING	<input type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

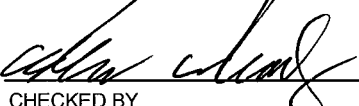
PURGE WATER DISPOSAL METHOD

- GROUND
 DRUM
 POTW
 POLYTANK
 OTHER _____

DECONTAMINATION WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE

 8-2-24
 SIGNED _____ DATE _____

 8-2-24
 CHECKED BY _____ DATE _____



WATER LEVEL DATA

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514404.0000.0000	AUTHOR: Jake Krenz, Javier Jasso, And

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	1319	TOC	10.50	12.77	NA	NM
OW-10	1336	TOC	8.31	17.95	NA	NM
OW-11	0931	TOC	24.60	29.50	NA	NM
OW-12	0902	TOC	19.00	23.41	NA	NM
OW-13	0850	TOC	could not locate	could not locate	NA	NM
OW-15	0912	TOC	4.95	15.25	NA	NM
EW-01	1151	TOC	13.53	DWM	NA	NM
EW-02	1202	TOC	14.95	↓	NA	NM
EW-03	1220	TOC	14.38		NA	NM
EW-04	1231	TOC	14.29		NA	NM
EW-05	1238	TOC	13.68		NA	NM
EW-06	1249	TOC	10.46		NA	NM
PZ-01	1144	TOC	13.67		14.10	NA	NM
PZ-02	1146	TOC	15.29	23.10	NA	NM
PZ-03	1200	TOC	14.65	19.80	NA	NM
PZ-04	1205	TOC	14.52	20.95	NA	NM
PZ-05	1210	TOC	14.35	21.18	NA	NM
PZ-06	1228	TOC	14.89	20.35	NA	NM
PZ-07	1233	TOC	14.45	21.00	NA	NM
PZ-08	1236	TOC	14.20	20.54	NA	NM
PZ-09	1240	TOC	15.08	21.61	NA	NM
PZ-10	1251	TOC	10.82	17.74	NA	NM
PZ-11	1253	TOC	13.45	18.10	NA	NM
OW-13	1303	TOC	3.97	14.38	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE



WATER LEVEL DATA

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/25/24
PROJECT NUMBER: 514404.0000.0000	AUTHOR: AW, JJ, JK

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MW-01	1100	TOC	16.61	24.24	NA	NM
MW-02	1108	TOC	17.19	30.38	NA	NM
MW-03	1106	TOC	17.12	30.75	NA	NM
MW-04	1107	TOC	17.85	33.82	NA	NM
MW-06	1116	TOC	9.39		NA	NM
MW-08	1135	TOC	18.25	27.50	NA	NM
MW-10	1154	TOC	16.58	29.85	NA	NM
MW-12	1232	TOC	18.25	23.85	NA	NM
MW-14	1244	TOC	14.05	19.23	NA	NM
MW-16	1300	TOC	15.41	21.23	NA	NM
MW-17	1334	TOC	14.49	24.34	NA	NM
MW-18	1007	TOC	26.94	39.65	NA	NM
MW-19	1013	TOC	16.88	30.00	NA	NM
MW-20	1029	TOC	52.58	72.00	NA	NM
MW-21	1025	TOC	51.60	60.58	NA	NM
MW-22	1146	TOC	17.51	24.59	NA	NM
MW-23	1214	TOC	14.55	15.10	NA	NM
OW-01	1035	TOC	51.28	64.00	NA	NM
OW-02	1141	TOC	16.49	21.95	NA	NM
OW-03	1149	TOC	17.24	28.20	NA	NM
OW-04	1242	TOC	9.89	14.26	NA	NM
OW-05	1256	TOC	12.89	18.00	NA	NM
OW-06	1326	TOC	22.05	24.80	NA	NM
OW-07	1216	TOC	15.41	23.91	NA	NM
OW-08	1320	TOC	11.30	17.96	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE



WATER LEVEL DATA

PROJECT NAME: CEC Karn LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514404.0000.0000	AUTHOR: Jake Krenz, Javier Jasso, And

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	0933		9.78	19.74		
DEK-MW-15002	0900		7.95	16.84		
DEK-MW-15003	0945		19.45	27.89		
DEK-MW-15004	1004		29.20	41.78		
DEK-MW-15005	0458		9.45	22.30		
DEK-MW-15006	0905		7.94	21.53		
DEK-MW-22001	0956		9.25	24.15		
DEK-MW-22002	1002		12.08	26.85		
DEK-MW-22003	0948		12.20	24.40		
DEK-MW-22004	0952		10.55	22.40		
DEK-MW-22005	0953		8.85	20.30		
DEK-MW-22006	0950		9.88	17.10		
Tw-21-003	1047		17.80	26.20		
Tw-21-008	1049		12.49	20.51		
Tw-21-001	1055		12.46	17.59		
Tw-21-013	1108		22.49	36.50		
Tw-21-012D	1115		20.05	54.80		
Tw-21-012I	1113		20.33	38.60		
Tw-21-012J	1111		20.15	27.85		
Tw-21-011S	1120		21.84	27.60		
Tw-21-011I	1121		21.31	35.30		
Tw-21-011D	1123		21.50	50.35		
Tw-21-010	1127		20.82	28.00		
Tw-21-009	1130		21.45	27.91		
Tw-21-008	1302		13.55	19.80		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED J 7/25/24 DATE

CHECKED JL Jy 7-31-24 DATE



WATER LEVEL DATA

PROJECT NAME: CEC KARN LF 2023 GW COMPLIANCE	DATE: <u>7/22/24</u>
PROJECT NUMBER: 514404.0000.0000	AUTHOR: J JASSO

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
TW-21-007	1305		12.53	18.40		
TW-21-004	1310		9.30	13.50		
TW-21-005	1313		10.28	14.80		
TW-21-004	1316		12.64	16.64		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR
(E.G., 1.1 + 0.00 T/PVC).

[Signature] 7/21/24
SIGNED _____ DATE

[Signature] 7-31-24
CHECKED _____ DATE



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514403.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	0629	TOC	16.41	19.76	NA	NM
JCW-MW-18004	0709	TOC	12.00	14.72	NA	NM
JCW-MW-18005	0734	TOC	9.11	16.28	NA	NM
JCW-MW-18006	0758	TOC	13.80	23.68	NA	NM
JCW-OW-18001	0631	TOC	10.12	20.25	NA	NM
JCW-OW-18002	0636	TOC	11.00	19.41	NA	NM
JCW-OW-18003	6:47	TOC	18.74	14.72	NA (sk not used)	NM
JCW-OW-18004	0710	TOC	6.70	14.65	NA	NM
JCW-OW-18006	0800	TOC	8.00	23.45	NA	NM
LH-103R	0728	TOC	20.95	33.44	NA	NM
LH-104	0717	TOC	8.78	14.00	NA	NM
JCW-MW-20	0737	TOC	6.85	14.00	NA	NM
MW-50	0635	TOC	13.03	19.46	NA	NM
MW-51	0640	TOC	13.10	20.08	NA	NM
MW-52	0645	TOC	14.68	19.74	NA	NM
MW-53	652	TOC	13.39	18.18	NA	NM
MW-53R	657	TOC	13.91	18.80	NA	NM
MW-54R	0702	TOC	13.49	17.22	NA	NM
MW-55	0721	TOC	13.72	16.38	NA	NM
MW-58	0823	TOC	5.50	18.28	NA	NM
OW-51	0641	TOC	9.02	17.28	NA	NM
OW-53	0654	TOC	7.53	18.00	NA	NM
OW-54	0705	TOC	7.60	16.48	NA	NM
OW-55	0723	TOC	6.53	18.42	NA	NM
OW-56	0741	TOC	6.00	19.27	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED [Signature] 7/25/24 DATE

CHECKED [Signature] 7-31-24 DATE

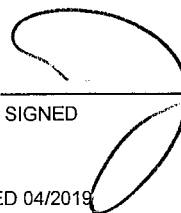



WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2023 GW Compliance	DATE: 7/22/24
PROJECT NUMBER: 514403.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-56R	0742	TOC	6.00	20.22	NA	NM
OW-57 IN	0753	TOC	5.64	20.18	NA	NM
OW-57R IN	7.51	TOC	5.78	19.60	NA	NM
OW-57 OUT	0748	TOC	9.95	19.46	NA	NM
OW-57R OUT	0749	TOC	9.34	20.20	NA	NM
JCW-MW-15007	0557	TOC	4.18	8.95	NA	NM
JCW-MW-15009	0604	TOC	9.03	13.00	NA	NM
JCW-MW-15010	0614	TOC	17.15	19.57	NA	NM
JCW-MW-15028	0604	TOC	8.38	25.16	NA	NM
MW-15002	0825	TOC	7.38	16.80	NA	NM
MW-15008	0817	TOC	4.94	17.40	NA	NM
MW-15016	0846	TOC	4.78	8.16	NA	NM
MW-15019	0822	TOC	5.92	16.87	NA	NM
OW-Cell	0625		8.24	37.07		
JCW-MW15003	0648		14.84	DNM		
JCW-MW15006	0656		13.85	DNM		
MW-11eR	0704		14.00	19.67		
JCW-MW15021	0713		13.94	DNM		
MW-19	0805		9.54	20.83		
MW15020	0820		5.21	17.17		
MW-11eB	0824		5.00	DNM		
MW-15024	0824		5.93	17.17		
MW-15018	0832		5.92	9.94		
JCW-MW15001	0836		7.85	DNM		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  7/25/24
DATE

CHECKED  7-31-24
DATE



WATER LEVEL DATA

PROJECT NAME: CEC WEAKOCK BAP LF 2023 GW COMPLIANCE	DATE: 7/22/24
PROJECT NUMBER: 514403.0001.0000	AUTHOR: J JASSO

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW=MW 15007	0557		4.18	8.95		
JCW-MW-15009	0609		9.03	13.02		
JCW-MW-15010	0614		17.15	19.57		
JCW-MW-15028	0604		8.38	25.16		
Sec-MW15003	0610		8.41	D.N.M		
MW-15002	0635		7.38	16.80		
MW-15008	0817		4.58	17.40		
MW-15016	0840		4.78	8.10		
MW-15019	0830		5.57	14.87		
JCW-MW-15008						
MW-106B	0606		8.86	41.18		

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR
(E.G., 1.1 + 0.00 T/PVC).

7/15/24

 SIGNED DATE

7-31-24

 CHECKED DATE



PROJECT NAME:	CEC Karn BAP/LI: 2024 GW Compliance
PROJECT NUMBER:	553814.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	7/24/24 TO
PURPOSE OF FIELDWORK:	Third Quarter 2024 Groundwater Sampling Background Wells
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Whaley, K Krieger

[Signature] 7-31-24
SIGNED DATE

[Signature] 8-2-24
CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: <u>7/24/24</u>	TIME ARRIVED: <u>0535</u>
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: <u>1200</u>

WEATHER		
TEMPERATURE: <u>67</u> °F	WIND: <u>15</u> MPH	VISIBILITY: <u>overcast</u>
WORK / SAMPLING PERFORMED		
<u>Wells Sample on 57Rout, Dip #2, saw mw 18006</u>		
<u>saw on 18006, mw 58, FB #01, ED #01, mw-15008, Dip #01</u>		
<u>mw-15009, mw-15002, and mw-15016</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED [Signature] 7/25/24 DATE

CHECKED BY [Signature] 7-31-24 DATE



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2024 GW	SAMPLER NAME:	J. Jasso, J. Krenz, A. Whaley, K. Krieger
PROJECT NO.:	553814.0001.0000		

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

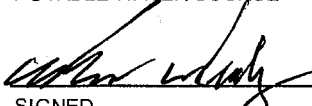
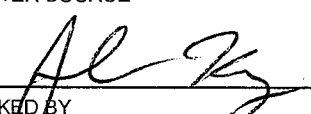
GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTERATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

PURGE WATER DISPOSAL METHOD

GROUND DRUM POTW POLYTANK OTHER _____

DECONTAMINATION AND FIELD BLANK WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
 7/25/24	 7-31-24
SIGNED DATE	CHECKED BY DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: TRC A2	DATE: 7/24/24

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #): 46B 1046	(EXP. DATE): 2/26	(LOT #): 46-02008	(EXP. DATE): 6/26		
POST-CAL. READING / STANDARD	700 / 700	POST-CAL. READING / STANDARD	460 / 460	<input checked="" type="checkbox"/> WITHIN RANGE	050
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 460233	(°CELSIUS)		
(EXP. DATE): 3/5			
POST-CAL. READING / STANDARD	1413 / 1413	24	050
/	/	<input checked="" type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 22310030	(°CELSIUS)		
(EXP. DATE): 6/28			
POST-CAL. READING / STANDARD	223 / 223	23	050
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
	(°CELSIUS)		
POST-CAL. READING / SATURATED AIR	841 / 841	24	050
/	/	<input checked="" type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): 13097	(LOT #):		
(EXP. DATE): 6/25	(EXP. DATE):		
POST-CAL. READING / STANDARD	0 / 0	180 / 100	050
/	/	<input checked="" type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED J 5/6/24 DATE

CHECKED BY jl Ry DATE 7-31-24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2023 GW		PREPARED		CHECKED	
PROJECT NUMBER: 514403.0001.0000		BY: JJ	DATE: 7/24/24	BY: JK	DATE: 7-31-24
SAMPLE ID: MW-15008		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 0908	DATE: 7/24/24	SAMPLE	TIME: 0934	DATE: 7/24/24
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.06	SU	CONDUCTIVITY: 1627 umhos/cm	
		ORP: -151.3	mV	DO: 0.91 mg/L	
DEPTH TO WATER: 4.56 T/ PVC		TURBIDITY: 10 NTU			
DEPTH TO BOTTOM: 17.40 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 15.5 °C		OTHER:	
VOLUME REMOVED: 2.5 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Brown		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP-401		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0908	100	7.38	2140	-117	10	120	18	443	INITIAL
0914		7.12	1827	-140	1.35	11	15.8	444	1
0919		7.12	1617	-146	1.12	11	15.7	445	1
0924		7.05	1614	-151.5	0.99	10	15.6	445	1.5
0929		7.06	1626	-151.3	0.95	10	15.5	445	2
0934		7.06	1627	-151.3	0.95	10	15.5	445	2.0
									3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	225	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125	PI	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2023 GW	PREPARED	CHECKED
PROJECT NUMBER: 514403.0001.0000	BY: JJ	DATE: <u>7/25/24</u>
	BY: <u>JL</u>	DATE: <u>7-31-24</u>

SAMPLE ID: <u>nw 15019</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0948</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>1008</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.95</u> SU	CONDUCTIVITY: <u>2280</u> umhos/cm	ORP: <u>-119.5</u> mV	DO: <u>1.4</u> mg/L	
DEPTH TO WATER: <u>5.59</u> T/ PVC	TURBIDITY: <u>10</u> NTU				
DEPTH TO BOTTOM: <u>16.87</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>14.9</u> °C	OTHER: _____			
VOLUME REMOVED: <u>2</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>Cloudy</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____	FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____	COMMENTS: _____		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0948	100	7.27	1009	-114.5	1.1	20	18.0	535	INITIAL
0953		6.98	2228	-114.1	2.52	11	15.1	541	1.5
0958		6.95	2238	-119.5	1.4	10	15.0	541	1.0
1003		6.95	2243	-119.5	1.4	10	15.0	541	1.0
1008		6.95	2280	-119.5	1.4	10	14.9	541	2
1013								541	2.5
									3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250	PI	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125	PI	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125	PI	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>lab drop off</u>	DATE SHIPPED: <u>7-24-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2023 GW		PREPARED		CHECKED	
PROJECT NUMBER: 514403.0001.0000		BY: JJ	DATE: <u>7/25/24</u>	BY: JK	DATE: <u>7-31-24</u>
SAMPLE ID: <u>Mw-15002</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: <u>1030</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>1105</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: <u>7.47</u> SU		CONDUCTIVITY: <u>619</u> umhos/cm	
		ORP: <u>-176.3</u> mV		DO: <u>1.0</u> mg/L	
DEPTH TO WATER: <u>7.38</u> T/ PVC		TURBIDITY: <u>10</u> NTU			
DEPTH TO BOTTOM: <u>16.40</u> T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: <u>17.6</u> °C		OTHER:	
VOLUME REMOVED: <u>3.5</u> LITERS <input type="checkbox"/> GALLONS		COLOR: <u>clear</u>		ODOR: <u>non</u>	
COLOR: <u>clear</u>		ODOR: <u>non</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR:		FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		COMMENTS:	

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1030	100	7.76	361	-137	10	30	19.7	6.94	INITIAL
1035		7.61	580	-191	3.0	12.7	17.0	7.11	.5
1040		7.50	567	-193	1.71	12	17.0	7.11	1
1045		7.49	567	-157	1.34	12	17.1	7.11	1.5
1050		7.47	570	-165	1.10	11	17.4	7.11	2
1055		7.47	586	-176.5	1.00	10	17.5	7.11	2.7
1100		7.47	606	-176.3	1.00	10	17.6	7.11	3
1105		7.47	619	-176.3	1.00	10	17.6	7.11	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125	PI	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2023 GW	PREPARED	CHECKED
PROJECT NUMBER: 514403.0001.0000	BY: JJ	DATE: 7/24/24
	BY: JK	DATE: 7-31-24

SAMPLE ID: MW-15064	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1110	DATE: 7/24/24	SAMPLE	TIME: 1143	DATE: 7/24/24
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.07	SU	CONDUCTIVITY: 2015	umhos/cm	
	ORP: -160	mV	DO: 1.00	mg/L	
DEPTH TO WATER: 4.78	T/ PVC		TURBIDITY: 10	NTU	
DEPTH TO BOTTOM: 8.10	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 20.1	°C OTHER:		
VOLUME REMOVED: 2.5	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none		
COLOR: Brownish	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1110	100	7.33	893	-155	10	140	21.0	3.74	INITIAL
1123		7.07	1989	-147	2.19	19	19.7	4.00	1.5
1128		7.08	1985	-157.5	1.39	12	19.9	4.00	1
1133		7.09	2000	-157.9	1.60	10	20.1	4.00	1.5
1138		7.09	2010	-157.9	1.00	10	20.1	4.00	2
1143		7.09	2015	-160	1.00	10	20.1	4.00	2.5
									3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125	PI	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125	PI	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock BAP: 2023 GW	PREPARED	CHECKED
PROJECT NUMBER: 514403.0001.0000	BY: JJ	DATE: <u>7/24/24</u>
BY: SK	DATE: <u>7-31-24</u>	

SAMPLE ID: <u>F.B #01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME:	DATE: <u>7/24/24</u>
PURGE METHOD: <input type="checkbox"/> PUMP PERISTALTIC PUMP			PH: <u>7.7</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	
<input type="checkbox"/> BAILER			ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: <u>NA</u> T/ PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: <u>NA</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C	OTHER:	
VOLUME REMOVED: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>	ODOR: <u>None</u>	
COLOR: <u>NA</u>	ODOR: <u>NA</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR:	FILTRATE ODOR:	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

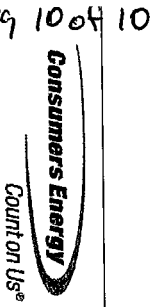
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>125</u>	<u>PC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
				<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7/25/24</u>

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

AMPLING SITE / CUSTOMER:
3-2024 JCW-DEK Background Wells

PROJECT NUMBER:
24-0584

SAP CC or WO#:
REQUESTER: Harold Register

AMPLING TEAM:
Joseph Fritlit

TURNAROUND TIME REQUIRED:
 24 HR
 48 HR
 3 DAYS
 STANDARD
 OTHER _____

END REPORT TO:
Harold Register

email: _____ phone: _____

COPY TO: TRC

MATRIX CODES:
 GW = Groundwater OX = Other
 WW = Wastewater SL = Sludge
 W = Water / Aqueous Liquid A = Air
 S = Soil / General Solid WP = Wipe
 O = Oil WT = General Waste

LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	CONTAINERS							Total Metals	Anions	TDS	REMARKS
						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other				
24-0584-01	7/24/24	1057	GW	MW-15002	3	2	1									
-02	7/24/24	0934	GW	MW-15008	3	2	1									
-03	7/24/24	1143	GW	MW-15016	3	2	1									
-04	7/24/24	1208	GW	MW-15019	3	2	1									
-05	7/24/24	—	GW	DUP-Background	3	2	1									
-06	7/24/24	1150	W	FB-Background	1											

BLINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____

RECEIVED ON: 7/24/24 0730

RECEIVED BY: _____

Received on Ice? Yes No M&TB #: _____

Temperature: _____ °C Cal. Due Date: _____

QA REQUIREMENT:
 NPDES
 TNI
 ISO 17025
 10 CFR 50 APP. B
 INTERNAL INFO
 OTHER _____



PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance
PROJECT NUMBER:	553828.0000.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	7/23/24 ^{7/22/24} TO 7/24/24
PURPOSE OF FIELDWORK:	Third Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	Javier Jasso

SIGNED [Signature] 7/25/24 DATE

CHECKED BY [Signature] 7-31-24 DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 7/23/24	TIME ARRIVED: 0830
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: 1500

WEATHER		
TEMPERATURE: <u>60</u> °F	WIND: <u>20</u> MPH	VISIBILITY: <u>over cast</u>
WORK / SAMPLING PERFORMED		
Wells Sam, Jcw-mw-18001, mstmsd, Jcw-mw-18001 mw-50, Dup #01, 51, 52, 53, 54R, Jcw-mw-18004, 55, Jcw-mw-18005,		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED [Signature] 7/25/24 DATE

CHECKED BY [Signature] 7-31-24 DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: <u>7/24/24</u>	TIME ARRIVED: <u>0535</u>
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: <u>1200</u>

WEATHER		
TEMPERATURE: <u>67</u> °F	WIND: <u>15</u> MPH	VISIBILITY: <u>Overcast</u>

WORK / SAMPLING PERFORMED
<u>Wells Sample on 57Rout, Dep #2, Saw mw 18006</u> <u>scw on 18006, mw 58, FB #01, ED #01, mw-15008, Dep #01</u> <u>mw-15009, mw-15002, and mw-15016</u>

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED [Signature] 7/25/24 DATE

CHECKED BY [Signature] 7-31-24 DATE



EQUIPMENT SUMMARY

PROJECT NAME: CEC Weadock LF: 2024 GW Co	SAMPLER NAME: J. Jasso,
PROJECT NO.: 553828.0000.0000	

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

NA	NA
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

PURGE WATER DISPOSAL METHOD

GROUND
 DRUM
 POTW
 POLYTANK
 OTHER _____

DECONTAMINATION AND FIELD BLANK WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
SIGNED _____	CHECKED BY _____
7/27/24 DATE	7-31-24 DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: TRC A2	DATE: 7/23/24

PH CALIBRATION CHECK

pH 7 (LOT #): 4681948 (EXP. DATE): 2/06	pH 4 / 10 (LOT #): 44020099 (EXP. DATE): 6/26	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
700 / 700	400 / 400	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): 460033 (EXP. DATE): 3/25	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1413 / 1413	24	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): 23110070 (EXP. DATE): 9/28	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
223 / 223	23	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.61 / 8.61	24	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): A 2097 (EXP. DATE): 4/25	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
0 / 0	/	<input checked="" type="checkbox"/> WITHIN RANGE	0500
100 / 100	/	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

[Signature] 7/25/24

CHECKED BY

DATE

[Signature] 7-31-24



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: YSI Pro DSS	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: TRC A2	DATE: 7/24/24

PH CALIBRATION CHECK

pH 7 (LOT #): 46B 1046 (EXP. DATE): 2/26	pH 4 / 10 (LOT #): 46-02008 (EXP. DATE): 6/26	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
7.00 / 7.00	4.00 / 4.00	<input checked="" type="checkbox"/> WITHIN RANGE	05:00
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): 46-0230 (EXP. DATE): 3/15	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1413 / 1413	24	<input checked="" type="checkbox"/> WITHIN RANGE	05:00
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): 223 10030 (EXP. DATE): 6/28	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
223 / 223	23	<input type="checkbox"/> WITHIN RANGE	05:00
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.41 / 8.41	24	<input checked="" type="checkbox"/> WITHIN RANGE	05:00
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): A3097 (EXP. DATE): 6/25	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
0 / 0	/	<input checked="" type="checkbox"/> WITHIN RANGE	05:00
100 / 100	/	<input checked="" type="checkbox"/> WITHIN RANGE	05:00
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
(1) CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER	

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

DATE

J 5/6/24

CHECKED BY

DATE

JL Ry 7-31-24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7-25-24</u> BY: JK DATE: <u>7-31-24</u>

SAMPLE ID: <u>JCW-MW 16001</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0548</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>0618</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.85</u> SU	CONDUCTIVITY: <u>3838</u> umhos/cm	ORP: <u>-209</u> mV	DO: <u>1.00</u> mg/L	
DEPTH TO WATER: <u>16.41</u> T/ PVC	TURBIDITY: <u>9.5</u> NTU				
DEPTH TO BOTTOM: <u>19.76</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>14.3</u> °C	FERROUS Fe _____ mg/L			
VOLUME REMOVED: <u>3</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>clear</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			FILTRATE ODOR: _____		
COMMENTS: _____					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0548</u>	<u>100</u>	<u>4.6</u>	<u>3775</u>	<u>203</u>	<u>0.4</u>	<u>17</u>	<u>18.5</u>	<u>1647</u>	INITIAL
<u>0553</u>		<u>6.77</u>	<u>3861</u>	<u>-192.5</u>	<u>2.0</u>	<u>12</u>	<u>14.6</u>	<u>1653</u>	<u>.5</u>
<u>0558</u>		<u>6.80</u>	<u>3774</u>	<u>-200</u>	<u>1.50</u>	<u>9.7</u>	<u>14.5</u>	<u>1652</u>	<u>1</u>
<u>0603</u>		<u>6.85</u>	<u>3759</u>	<u>-200</u>	<u>1.30</u>	<u>9.6</u>	<u>14.4</u>	<u>1652</u>	<u>1.5</u>
<u>0608</u>		<u>6.85</u>	<u>3796</u>	<u>-209</u>	<u>1.00</u>	<u>9.5</u>	<u>14.4</u>	<u>1652</u>	<u>2</u>
<u>0613</u>		<u>6.85</u>	<u>3819</u>	<u>-209</u>	<u>1.00</u>	<u>9.4</u>	<u>14.3</u>	<u>1652</u>	<u>2.5</u>
<u>0618</u>		<u>6.85</u>	<u>3838</u>	<u>-209</u>	<u>1.00</u>	<u>9.5</u>	<u>14.3</u>	<u>1652</u>	<u>3</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>3</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>3</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7/25/24
	BY: JK	DATE: 7-31-24

SAMPLE ID: <u>CEW000-180001</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0640</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>0710</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.99</u> SU	CONDUCTIVITY: <u>170.3</u> umhos/cm	ORP: <u>-185</u> mV	DO: <u>1.08</u> mg/L	
DEPTH TO WATER: <u>7.13</u> T/ PVC	TURBIDITY: <u>9.0</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>202.5</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>15.4</u> °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>3.2</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>clear</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0640	100	7.16	884	-168.5	9.3	9.5	17.5	6.53	INITIAL
0645		7.00	1743	-177	2.66	9.2	16.3	6.60	.5
0650		7.00	1733	-185	1.46	9.0	15.7	6.60	1
0655		6.99	1740	-185	1.20	8.9	15.4	6.60	1.5
0700		6.99	1735	-185	1.10	8.9	15.5	6.60	2
0705		6.99	1711	-185	1.09	9.0	15.4	6.60	2.5
0710		6.99	1707	-185	1.08	9.0	15.4	6.60	3
									<u>7.13</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____											
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED			NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		
1	250 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		125 mL	PLASTIC	D	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1	125 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		40 mL	VOA	E	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2	60 mL	VOA	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		1 L	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1	125 mL	PLASTIC	B	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	125 mL	PLASTIC	C	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7-31-24

SAMPLE ID: MW-50	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0725	DATE: 7/28/24	SAMPLE	TIME: 0755	DATE: 7/29/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.59 SU	CONDUCTIVITY: 1602 umhos/cm	ORP: -197.5 mV	DO: 0.99 mg/L	
DEPTH TO WATER: 130.5 T/ PVC	TURBIDITY: 8.5 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: 19.40 T/ PVC	WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 14.6 °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: 3 LITERS	COLOR: Clear	ODOR: _____			
COLOR: Clear	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____	FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- A-CJ	COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0725	100	7.59	1645	-161.6	1.0	13.5	17.0	13.10	INITIAL
0730		7.59	1726	-168.0	2.4	8.9	14.6	1315	.5
0735		7.63	1661	-180	1.40	8.5	14.4	1315	1
0740		7.60	1621	-185	1.10	8.8	14.5	1315	1.5
0745		7.59	1604	-198	1.0	8.5	14.4	1315	2
0750		7.59	1602	-197.5	0.99	8.5	14.5	1315	2.5
0755		7.59	1602	-197.5	0.99	8.5	14.4	1315	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7-25-24

SAMPLE ID: MW 51	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0811	DATE: 7/23/24	SAMPLE	TIME: 0846	DATE: 7/23/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.51	SU	CONDUCTIVITY: 1474	umhos/cm	
DEPTH TO WATER: 1316 T/ PVC	ORP: -192.5	mV	DO: 0.99	mg/L	
DEPTH TO BOTTOM: 2006 T/ PVC	TURBIDITY: 9.5	NTU			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 14.3	°C			
VOLUME REMOVED: 3.5 <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear	ODOR: none			
COLOR: Brown	ODOR: none	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY	FILTRATE COLOR:	FILTRATE ODOR:			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-	COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0811	100	7.91	725	-156	10	180	17.2	13.93	INITIAL
0816		7.55	1530	-176	2.67	125	14.4	14.00	.5
0821		7.50	1518	-173	1.35	10.7	14.3	14.00	1
0826		7.56	1494	-180	1.15	9.8	14.2	14.00	1.5
0831		7.50	1485	-185	1.00	9.6	14.3	14.00	2
0836		7.51	1480	-192.5	1.00	9.7	14.3	14.00	2.5
0841		7.51	1476	-192.5	1.00	9.6	14.2	14.00	3
0846		7.51	1474	-192.5	0.99	9.5	14.3	14.00	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7-25-24
	BY: JK	DATE: 7-31-24

SAMPLE ID: MW 52	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0902	DATE: 7/23/24	SAMPLE	TIME: 0927	DATE: 7/31/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.00	SU	CONDUCTIVITY: 1929	umhos/cm	
	ORP: -155	mV	DO: 1.09	mg/L	
DEPTH TO WATER: 14.68	T/ PVC		TURBIDITY: 9.5	NTU	
DEPTH TO BOTTOM: 19.74	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 14.9	°C	
VOLUME REMOVED: 2.5	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear	ODOR: none	
COLOR: Clear	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR:	FILTRATE ODOR:	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0902	100	7.56	908	-151	10	33	18.1	14.50	INITIAL
0907		7.05	1928	-147	1.44	10	15.0	14.66	.5
0912		7.00	1929	-158	1.30	9.8	14.9	14.66	1
0917		7.00	1927	-155	1.10	9.6	15.1	14.66	1.5
0922		7.00	1929	-155	1.09	9.5	15.0	14.66	2
0927		7.00	1929	-155	1.09	9.5	14.9	14.66	2.5
									3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/25/24</u>
	BY: JK	DATE: <u>7-31-24</u>

SAMPLE ID: <u>MW 53</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0940</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>1010</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.53</u> SU	CONDUCTIVITY: <u>1404</u> umhos/cm	ORP: <u>-195</u> mV	DO: <u>1.0</u> mg/L	
DEPTH TO WATER: <u>13.39</u> T/ PVC	TURBIDITY: <u>9.5</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>18.18</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>15.3</u> °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>3</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>clear</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE ODOR: _____	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0940</u>	<u>100</u>	<u>7.59</u>	<u>1635</u>	<u>-161.5</u>	<u>1.0</u>	<u>12</u>	<u>20</u>	<u>1331</u>	INITIAL
<u>0945</u>		<u>7.59</u>	<u>1412</u>	<u>-185</u>	<u>3.60</u>	<u>9.7</u>	<u>16.4</u>	<u>1340</u>	<u>.5</u>
<u>0950</u>		<u>7.55</u>	<u>1396</u>	<u>-188</u>	<u>1.32</u>	<u>9.4</u>	<u>15.5</u>	<u>1340</u>	<u>1</u>
<u>0955</u>		<u>7.52</u>	<u>1401</u>	<u>-195</u>	<u>1.16</u>	<u>9.4</u>	<u>15.4</u>	<u>1340</u>	<u>1.5</u>
<u>1000</u>		<u>7.52</u>	<u>1402</u>	<u>-194</u>	<u>1.0</u>	<u>9.5</u>	<u>15.5</u>	<u>1340</u>	<u>2</u>
<u>1005</u>		<u>7.52</u>	<u>1403</u>	<u>-195</u>	<u>1.0</u>	<u>9.6</u>	<u>15.4</u>	<u>1340</u>	<u>2.5</u>
<u>1010</u>		<u>7.53</u>	<u>1404</u>	<u>-195</u>	<u>1.0</u>	<u>9.5</u>	<u>15.3</u>	<u>1340</u>	<u>3</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7-25-24
	BY: JK	DATE: 7-31-24

SAMPLE ID: MW 53R	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1027	DATE: 7/23/24	SAMPLE	TIME: 1112	DATE: 7/23/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.16	SU	CONDUCTIVITY: 1851	umhos/cm	
	ORP: -192.5	mV	DO: 1.39	mg/L	
DEPTH TO WATER: 13.91	T/ PVC		TURBIDITY: 10	NTU	
DEPTH TO BOTTOM: 16.80	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 15.6	°C	
VOLUME REMOVED: 4.5	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear	ODOR: none	
COLOR: Brown	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR:	FILTRATE ODOR:	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1027	100	7.63	962	-178.0	10	800	20.3	1366	INITIAL
1037		7.19	2062	-174	30	63	15.9	14.15	.5
1037		7.15	2076	-173	2.43	19.9	15.8	14.15	1
1042		7.15	2061	-179	1.90	17.0	15.7	14.15	1.5
1047		7.14	2039	-182	1.67	14	15.7	14.15	2
1052		7.15	1998	-186	1.50	13	15.6	14.15	2.5
1057		7.16	1920	-188	1.46	14	15.5	14.15	3
1102		7.16	1865	-192.5	1.40	10	15.7	14.15	3.5
1107		7.16	1846	-192.5	1.40	10	15.6	14.15	4
1112		7.16	1851	-192.5	1.39	10	15.6	14.15	4.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
(	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 7/25/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7/25/24
	DATE: 7/25/24	DATE: 7-21-24

SAMPLE ID: <u>mw 542</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1129</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>1204</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.20</u> SU	CONDUCTIVITY: <u>1331</u> umhos/cm	ORP: <u>-200</u> mV	DO: <u>1.59</u> mg/L	
DEPTH TO WATER: <u>1349</u> T/ PVC	TURBIDITY: <u>10</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>1700</u> T/ PVC	TEMPERATURE: <u>16.5</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: <u>NA</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
VOLUME REMOVED: <u>3.54</u> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____			
COLOR: <u>cloudy</u>	ODOR: <u>none</u>	QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1129	100	7.77	432	-156.1	10.0	300	21.8	13.58	INITIAL
1134		7.26	1323	-187	2.79	18	16.6	13.70	.5
1139		7.26	1320	-182.5	2.56	12	16.5	13.70	1
1144		7.24	1320	-195	1.98	10	16.8	13.70	1.5
1149		7.23	1324	-200	1.74	11	16.8	13.70	2
1154		7.20	1328	-200	1.60	10	16.4	13.70	2.5
1159		7.20	1330	-200	1.59	10	16.5	13.70	3
1204		7.20	1331	-200	1.59	10	16.5	13.70	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- .10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7/25/24
	BY: JK	DATE: 7-31-24

SAMPLE ID: <u>CEC WADOCK LF - 18004</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1219</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>1244</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.28</u> SU	CONDUCTIVITY: <u>1503</u> umhos/cm	
			ORP: <u>-155</u> mV	DO: <u>9.1</u> mg/L	
DEPTH TO WATER: <u>200</u> T/ PVC			TURBIDITY: <u>10</u> NTU		
DEPTH TO BOTTOM: <u>14.52</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>19.4</u> °C		FERROUS Fe _____ mg/L
VOLUME REMOVED: <u>2.5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>clear</u>		ODOR: <u>none</u>
COLOR: <u>cloudy</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1219	100	7.51	1204	-153	9.5	10	24.5	1196	INITIAL
1224		7.30	1537	-162	8.64	11.2	19.3	1225	1
1229		7.25	1507	-156	9.2	10	19.3	1225	1
1234		7.28	1500	-155.7	9.1	10	19.3	1225	1.1
1239		7.28	1506	-155	9.1	10	19.4	1225	2
1244		7.28	1503	-155	9.1	10	19.4	1225	2.1

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/25/24</u>
	BY: <u>SK</u>	DATE: <u>7-31-24</u>

SAMPLE ID: <u>MW 55</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1257</u>	DATE: <u>7/23/24</u>	SAMPLE	TIME: <u>1332</u>	DATE: <u>7/23/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.35</u> SU	CONDUCTIVITY: <u>1225</u> umhos/cm	ORP: <u>-174</u> mV	DO: <u>1.09</u> mg/L	
DEPTH TO WATER: <u>13.72</u> T/ PVC	TURBIDITY: <u>10</u> NTU				
DEPTH TO BOTTOM: <u>16.38</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>16.9</u> °C	FERROUS Fe _____ mg/L			
VOLUME REMOVED: <u>3.5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>Brown</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY			FILTRATE COLOR: _____		
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1257	100	7.97	1221	-194	10	340	24.7	1368	INITIAL
1302		7.40	1216	-183	2.0	20	17.1	1373	.5
1307		7.35	1214	-179	1.40	18	16.9	1373	1
1312		7.34	1218	-177	1.20	13	16.9	1373	1.5
1317		7.34	1220	-174	1.15	12	17.0	1373	2
1322		7.35	1222	-174	1.10	10	16.9	1373	2.5
1327		7.35	1224	-174	1.09	10	16.9	1373	3
1332		7.35	1225	-174	1.09	10	16.9	1373	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
(	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
(	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
|	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 7-25-24

SAMPLE ID: JCW MW 1 8005	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1344	DATE: 7/23/24	SAMPLE	TIME: 1424	DATE: 7/23/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.16	SU	CONDUCTIVITY: 1437	umhos/cm	
	ORP: -170.5	mV	DO: 1.11	mg/L	
DEPTH TO WATER: 9.11	T/ PVC		TURBIDITY: 10	NTU	
DEPTH TO BOTTOM: 16.20	T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA	<input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 17.0	°C	
VOLUME REMOVED: 4	<input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear	ODOR: none	
COLOR: orange	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR:	FILTRATE ODOR:	
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1344	100	7.40	830	-160	10	600	23.5	9.20	INITIAL
1349		7.20	1553	-162.5	2.0	61	17.4	9.85	0.5
1354		7.18	1461	-162	1.50	22	16.6	10.14	1
1359		7.17	1447	-162	1.33	21	17.0	10.25	1.5
1404		7.16	1435	-164	1.24	18	17.1	10.35	2
1409		7.16	1436	-169	1.17	14	17.1	10.4	2.5
1414		7.16	1437	-170.5	1.16	10	17.0	10.40	3
1419		7.16	1437	-170.5	1.15	10	17.1	10.45	3.5
1424		7.16	1437	-170.5	1.11	10	17.0	10.45	4
1429									4.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		1L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 7/29/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/25/24</u> BY: <u>JK</u> DATE: <u>7-31-24</u>

SAMPLE ID: <u>GW-57R out</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0550</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0630</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.00</u> SU	CONDUCTIVITY: <u>1344</u> umhos/cm	
			ORP: <u>-194</u> mV	DO: <u>6.0</u> mg/L	
DEPTH TO WATER: <u>934</u> T/ PVC			TURBIDITY: <u>10</u> NTU		
DEPTH TO BOTTOM: <u>20.20</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>15.9</u> °C		FERROUS Fe _____ mg/L
VOLUME REMOVED: <u>4</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>		ODOR: <u>non</u>
COLOR: <u>clear</u> ODOR: <u>non</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____	FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>#02</u>		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0550</u>	<u>100</u>	<u>7.00</u>	<u>800</u>	<u>277</u>	<u>8.4</u>	<u>21</u>	<u>20.0</u>	<u>9.20</u>	INITIAL
<u>0555</u>		<u>6.61</u>	<u>1440</u>	<u>-160</u>	<u>2.50</u>	<u>15</u>	<u>16.3</u>	<u>9.96</u>	<u>1.5</u>
<u>0600</u>		<u>6.67</u>	<u>1409</u>	<u>-174</u>	<u>1.40</u>	<u>11.7</u>	<u>16.1</u>	<u>10.95</u>	<u>1</u>
<u>0605</u>		<u>6.95</u>	<u>1328</u>	<u>-181</u>	<u>1.24</u>	<u>11</u>	<u>16.1</u>	<u>11.40</u>	<u>1.5</u>
<u>0610</u>		<u>6.95</u>	<u>1379</u>	<u>-189.0</u>	<u>1.15</u>	<u>11</u>	<u>16.0</u>	<u>11.88</u>	<u>2</u>
<u>0615</u>		<u>7.00</u>	<u>1363</u>	<u>-189.0</u>	<u>1.13</u>	<u>10</u>	<u>16.0</u>	<u>12.15</u>	<u>2.5</u>
<u>0620</u>		<u>7.00</u>	<u>1350</u>	<u>-194</u>	<u>1.00</u>	<u>10</u>	<u>16.0</u>	<u>12.44</u>	<u>3</u>
<u>0625</u>		<u>7.00</u>	<u>1344</u>	<u>-194</u>	<u>1.00</u>	<u>10</u>	<u>15.9</u>	<u>12.95</u>	<u>3.5</u>
<u>0630</u>		<u>7.00</u>	<u>1344</u>	<u>-194</u>	<u>1.00</u>	<u>10</u>	<u>15.9</u>	<u>13.25</u>	<u>4</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>2</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/25/24</u>

SAMPLE ID: <u>JCW-MW-18006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0650</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0720</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>6.96</u> SU	CONDUCTIVITY: <u>1331</u> umhos/cm	
			ORP: <u>-1670</u> mV	DO: <u>1.09</u> mg/L	
DEPTH TO WATER: <u>13.80</u> T/ PVC			TURBIDITY: <u>9.9</u> NTU		
DEPTH TO BOTTOM: <u>23.60</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>14.6</u> °C		FERROUS Fe: _____ mg/L
VOLUME REMOVED: <u>3</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>Clear</u>		ODOR: <u>none</u>
COLOR: <u>Brown</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY			FILTRATE COLOR: _____		FILTRATE ODOR: _____
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0650</u>	<u>100</u>	<u>7.41</u>	<u>731</u>	<u>-153</u>	<u>10</u>	<u>110</u>	<u>18.1</u>	<u>1360</u>	INITIAL
<u>0655</u>		<u>7.12</u>	<u>1431</u>	<u>-167</u>	<u>2.14</u>	<u>20</u>	<u>15.2</u>	<u>1380</u>	<u>1.5</u>
<u>0700</u>		<u>7.00</u>	<u>1312</u>	<u>-109.5</u>	<u>1.53</u>	<u>12.5</u>	<u>15.0</u>	<u>1380</u>	<u>1</u>
<u>0705</u>		<u>6.97</u>	<u>1289</u>	<u>-168</u>	<u>1.29</u>	<u>10</u>	<u>14.6</u>	<u>1380</u>	<u>1.5</u>
<u>0710</u>		<u>6.96</u>	<u>1295</u>	<u>-167.5</u>	<u>1.09</u>	<u>10.0</u>	<u>14.7</u>	<u>1380</u>	<u>2</u>
<u>0715</u>		<u>6.96</u>	<u>1305</u>	<u>-167.5</u>	<u>1.09</u>	<u>9.9</u>	<u>14.6</u>	<u>1380</u>	<u>2.5</u>
<u>0720</u>		<u>6.96</u>	<u>1331</u>	<u>-1670</u>	<u>1.09</u>	<u>9.9</u>	<u>14.6</u>	<u>1380</u>	<u>3</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/25/24</u> BY: SK DATE: <u>7-31-24</u>

SAMPLE ID: <u>JCW-00-18006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0734</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0804</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>9.4</u> SU	CONDUCTIVITY: <u>764</u> umhos/cm	ORP: <u>-270</u> mV	DO: <u>1.9</u> mg/L	
DEPTH TO WATER: <u>8.02</u> T/ PVC	TURBIDITY: <u>10</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>2345</u> T/ PVC	WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>14.4</u> °C	FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>3</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>clear</u>	ODOR: <u>none</u>	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____ FILTRATE ODOR: _____		
TURBIDITY <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
DISPOSAL METHOD <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0734</u>	<u>100</u>	<u>8.91</u>	<u>360</u>	<u>-170</u>	<u>10</u>	<u>17</u>	<u>17.1</u>	<u>8.33</u>	INITIAL
<u>0739</u>		<u>8.83</u>	<u>847</u>	<u>-230</u>	<u>2.29</u>	<u>12.5</u>	<u>14.8</u>	<u>7.51</u>	<u>.5</u>
<u>0744</u>		<u>8.87</u>	<u>845</u>	<u>-274</u>	<u>1.52</u>	<u>11.0</u>	<u>14.5</u>	<u>7.56</u>	<u>1</u>
<u>0749</u>		<u>8.90</u>	<u>847</u>	<u>-236</u>	<u>1.33</u>	<u>11.0</u>	<u>14.5</u>	<u>7.96</u>	<u>1.5</u>
<u>0754</u>		<u>9.4</u>	<u>804</u>	<u>-270</u>	<u>1.18</u>	<u>10</u>	<u>14.4</u>	<u>7.56</u>	<u>2</u>
<u>0759</u>		<u>9.4</u>	<u>774</u>	<u>-270</u>	<u>1.7</u>	<u>10</u>	<u>14.4</u>	<u>7.56</u>	<u>2.5</u>
<u>0804</u>		<u>9.4</u>	<u>764</u>	<u>-270</u>	<u>1.17</u>	<u>10</u>	<u>14.4</u>	<u>7.56</u>	<u>3</u>
0804								7.46	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>2</u>	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: <u>7/24/24</u> BY: JK DATE: <u>7-31-24</u>

SAMPLE ID: <u>MW 58</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0830</u>	DATE: <u>7/24/24</u>	SAMPLE	TIME: <u>0850</u>	DATE: <u>7/24/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.15</u> SU	CONDUCTIVITY: <u>2532</u> umhos/cm	ORP: <u>-159.0</u> mV	DO: <u>1.09</u> mg/L	
DEPTH TO WATER: <u>5.50</u> T/ PVC	TURBIDITY: <u>10</u> NTU				
DEPTH TO BOTTOM: <u>18.20</u> T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: <u>15.7</u> °C	FERROUS Fe _____ mg/L			
VOLUME REMOVED: <u>6</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
COLOR: <u>cloudy</u>	ODOR: <u>none</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY			FILTRATE COLOR: _____		
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0830</u>	<u>200</u>	<u>7.78</u>	<u>2557</u>	<u>-176</u>	<u>9.0</u>	<u>60</u>	<u>17.1</u>	<u>5.40</u>	INITIAL
<u>0835</u>		<u>7.35</u>	<u>2754</u>	<u>-163</u>	<u>2.55</u>	<u>13</u>	<u>15.5</u>	<u>5.41</u>	<u>1</u>
<u>0830</u>		<u>7.23</u>	<u>2716</u>	<u>-160</u>	<u>1.59</u>	<u>10</u>	<u>15.4</u>	<u>5.41</u>	<u>2</u>
<u>0835</u>		<u>7.15</u>	<u>2615</u>	<u>-158</u>	<u>1.20</u>	<u>10</u>	<u>15.5</u>	<u>5.41</u>	<u>3</u>
<u>0840</u>		<u>7.15</u>	<u>2567</u>	<u>-158.5</u>	<u>1.10</u>	<u>10</u>	<u>15.7</u>	<u>5.41</u>	<u>4</u>
<u>0845</u>		<u>7.15</u>	<u>2542</u>	<u>-158.5</u>	<u>1.09</u>	<u>10</u>	<u>15.7</u>	<u>5.41</u>	<u>5</u>
<u>0850</u>		<u>7.15</u>	<u>2532</u>	<u>-159.0</u>	<u>1.09</u>	<u>10</u>	<u>15.7</u>	<u>5.41</u>	<u>6</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
<u>1</u>	<u>250 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>125 mL</u>	<u>PLASTIC</u>	<u>D</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>A</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		<u>40 mL</u>	<u>VOA</u>	<u>E</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>60 mL</u>	<u>VOA</u>	<u>A</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N		<u>1 L</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N
<u>1</u>	<u>125 mL</u>	<u>PLASTIC</u>	<u>B</u>	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	<u>125 mL</u>	<u>PLASTIC</u>	<u>C</u>	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/25/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C			PREPARED			CHECKED		
PROJECT NUMBER: 553828.0000.0000			BY: JJ	DATE: <u>7/25/24</u>	BY: JK	DATE: <u>7-31-24</u>		
SAMPLE ID: <u>FB #01</u>			WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER					
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER								
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER								
PURGING	TIME:	DATE:		SAMPLE	TIME: <u>0900</u>	DATE: <u>7/24/24</u>		
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER				PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm			
				ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L			
DEPTH TO WATER: _____ T/ PVC				TURBIDITY: <u>NA</u> NTU				
DEPTH TO BOTTOM: _____ T/ PVC				<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				TEMPERATURE: <u>NA</u> °C		FERROUS Fe _____ mg/L		
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS				COLOR: <u>Clear</u>		ODOR: <u>None</u>		
COLOR: _____ ODOR: _____				FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO				
TURBIDITY				FILTRATE COLOR: _____		FILTRATE ODOR: _____		
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY				QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-				
DISPOSAL METHOD <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				COMMENTS:				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:
 pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/>	<input type="checkbox"/>		125 mL	PLASTIC	D	<input type="checkbox"/>	<input type="checkbox"/>
<u>1</u>	125 mL	PLASTIC	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		40 mL	VOA	E	<input type="checkbox"/>	<input type="checkbox"/>
	60 mL	VOA	A	<input type="checkbox"/>	<input checked="" type="checkbox"/>		1 L	PLASTIC	B	<input type="checkbox"/>	<input type="checkbox"/>
<u>1</u>	125 mL	PLASTIC	B	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>
	125 mL	PLASTIC	C	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>

SHIPPING METHOD: <u>Lab Drop off</u>	DATE SHIPPED: <u>7-25-24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>7/29/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 7/21/24	BY: JK	DATE: 7-31-24
SAMPLE ID: E.B.H.C1		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VVV <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME:	DATE:	SAMPLE	TIME: 0904	DATE: 7/24/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: NA SU	CONDUCTIVITY: NA umhos/cm	
		ORP: NA mV		DO: NA mg/L	
DEPTH TO WATER: NA T/ PVC			TURBIDITY: NA NTU		
DEPTH TO BOTTOM: NA T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA LITERS GALLONS			TEMPERATURE: NA °C	FERROUS Fe mg/L	
VOLUME REMOVED: NA LITERS GALLONS			COLOR: Clear	ODOR: no	
COLOR:	ODOR:		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR:	FILTRATE ODOR:	
DISPOSAL METHOD <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
									INITIAL

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input checked="" type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: Lab Drop off	DATE SHIPPED: 7-25-24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 7/25/24

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page _____ of _____

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock Poterwater Wells		PROJECT NUMBER: 24-0585		SAP CC or WO#: _____ REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____											
SAMPLING TEAM: SEND REPORT TO: Joseph Firlit		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: _____ phone: _____		ANIONS TDS Alkalinity		REMARKS											
COPY TO: Harold Register TRC		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		CONTAINERS PRESERVATIVE None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other		Total Metals Anions TDS Alkalinity		COMMENTS:											
LAB SAMPLE ID DATE TIME MATRIX		FIELD SAMPLE ID / LOCATION MATRIX		TOTAL #		Total Metals Anions TDS Alkalinity		COMMENTS:											
24-0585-01	7/23/24	0618	GW	JCW-MW-18001	5	4	1	x	x	x									
-02	7/23/24	1244	GW	JCW-MW-18004	3	2	1	x	x	x									
-03	7/23/24	1424	GW	JCW-MW-18005	3	2	1	x	x	x									
-04	7/24/24	0726	GW	JCW-MW-18006	3	2	1	x	x	x									
-05	7/23/24	0717	GW	MW-50	3	2	1	x	x	x									
-06	7/23/24	0846	GW	MW-51	3	2	1	x	x	x									
-07	7/23/24	0957	GW	MW-52	3	2	1	x	x	x									
-08	7/23/24	1010	GW	MW-53	3	2	1	x	x	x									
-09	7/23/24	1112	GW	MW-53R	3	2	1	x	x	x									
-10	7/23/24	1204	GW	MW-54R	3	2	1	x	x	x									
-11	7/23/24	1332	GW	MW-55	3	2	1	x	x	x									
-12	7/24/24	0630	GW	OW-57ROUT	3	2	1	x	x	x									

Pg 24 of 26

RELINQUISHED BY: DATE/TIME: 7/25/24 07:31

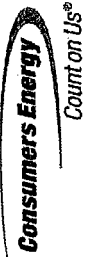
RECEIVED BY: DATE/TIME: _____

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: _____ DATE/TIME: _____

Received on Ice? Yes No M&TE #: _____
 Temperature: _____ °C Cal. Due Date: _____

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page _____ of _____

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock Porewater Wells		PROJECT NUMBER: 24-0585		SAP CC or WO#: _____ REQUESTER: Harold Register		ANALYSIS REQUESTED (Attach List if More Space is Needed)		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____	
SAMPLING TEAM: SEND REPORT TO: Caleb Batts		TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: _____ phone: _____		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		REMARKS	
COPY TO: Harold Register		MATRIX		CONTAINERS		PRESERVATIVE		Total Metals	
TRC		TIME		PRESERVATIVE		HNO ₃		Anions	
DATE		MATRIX		H ₂ SO ₄		HCl		TDS	
SAMPLE COLLECTION		MATRIX		NaOH		MeOH		Alkalinity	
DATE		TIME		None		Other		Other _____	
LAB SAMPLE ID		TOTAL #		TOTAL #		Total Metals		Anions	
24-0585-13		7/24/24 0850		3 2 1		MW-58		x x	
-14		7/23/24		3 2 1		DUP-JCW-LF-01		x x	
-15		7/24/24		3 2 1		DUP-JCW-LF-02		x x	
-16		7/27/24		2 1 1		JCW-MW-18001 MS		x x	
-17		7/23/24		2 1 1		JCW-MW-18001 MSD		x x	
-18		7/24/24		2 1 1		FB-01		x x	
-19		7/24/24		2 1 1		EB-01		x x	

RELINQUISHED BY: _____ DATE/TIME: _____ RECEIVED BY: _____
 RELINQUISHED BY: *[Signature]* DATE/TIME: 7/27/24 0736 RECEIVED BY: *[Signature]*

COMMENTS: _____
 Received on Ice? Yes No M&TE #: _____
 Temperature: _____ °C Cal. Due Date: _____

Pg 25 of 26

CHAIN OF CUSTODY

CONSUMERS ENERGY COMPANY - LABORATORY SERVICES 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251



Page ____ of ____

SAMPLING SITE / CUSTOMER: Q3-2024 JC Weadock ASD			PROJECT NUMBER: 24-0586			SAP CC or WO#:		ANALYSIS REQUESTED (Attach List if More Space is Needed)			QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____		
SAMPLING TEAM: Joseph Firlit Harold Registrar			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER			REQUESTER: Harold Registrar							
SEND REPORT TO: Joseph Firlit			MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil			OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste							
COPY TO: TRC			MATRIX			CONTAINERS							
LAB SAMPLE ID	DATE	TIME	FIELD SAMPLE ID / LOCATION	TOTAL #	PRESERVATIVE				Total Metals	Anions	TDS	Alkalinity	REMARKS
					None	HNO3	H2O2	NaOH						HCl	MeOH	Other
24-0586-01	7/23/24	0710	JCW-OW-18001	5	4	1				x	x	x	
-02	7/24/24	0824	JCW-OW-18006	5	4	1				x	x	x	

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: *[Signature]* DATE/TIME: **7/25/24 0736**

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: _____ DATE/TIME: _____

COMMENTS:

Received on Ice? Yes No M&TE #: _____

Temperature: _____ °C Cal. Due Date: _____

Pg 26 of 26

Appendix G

Alternate Source Demonstration Supporting Information

Figure G1: Time Series Plots for JCW-MW-18001 ASD

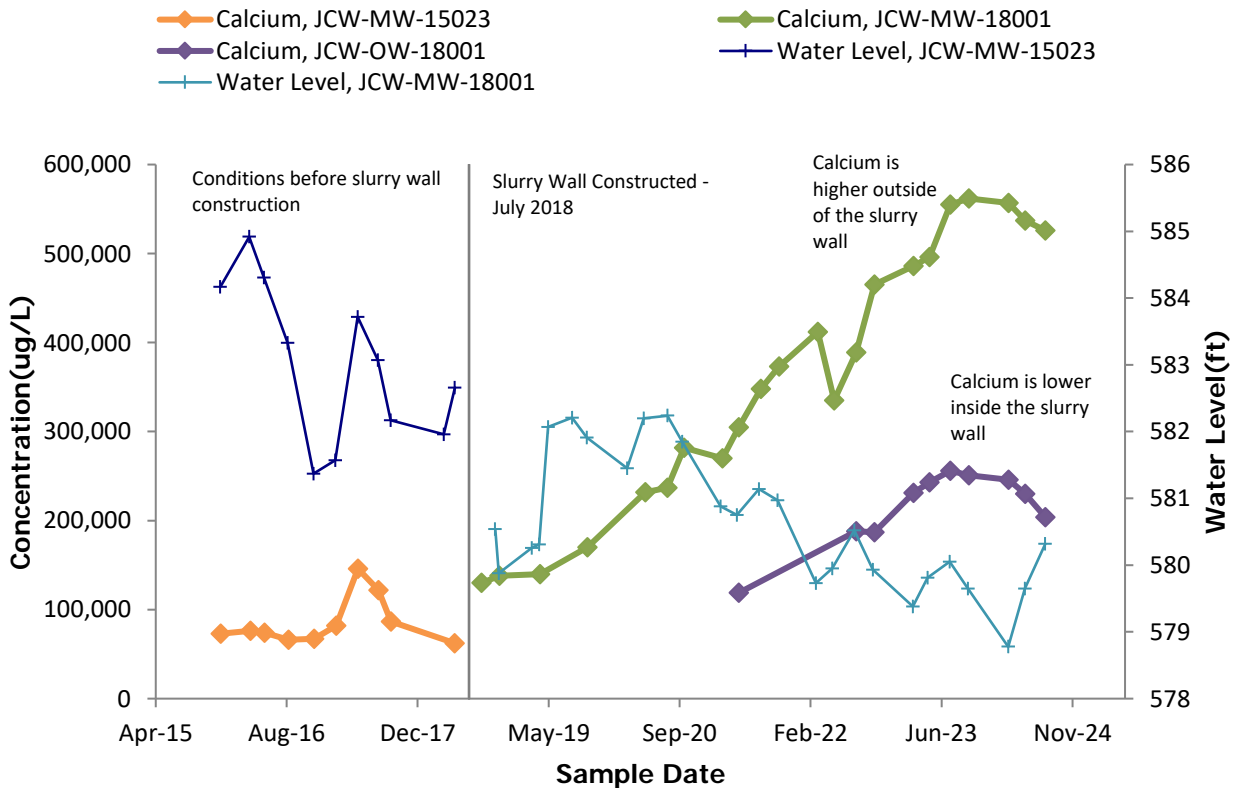
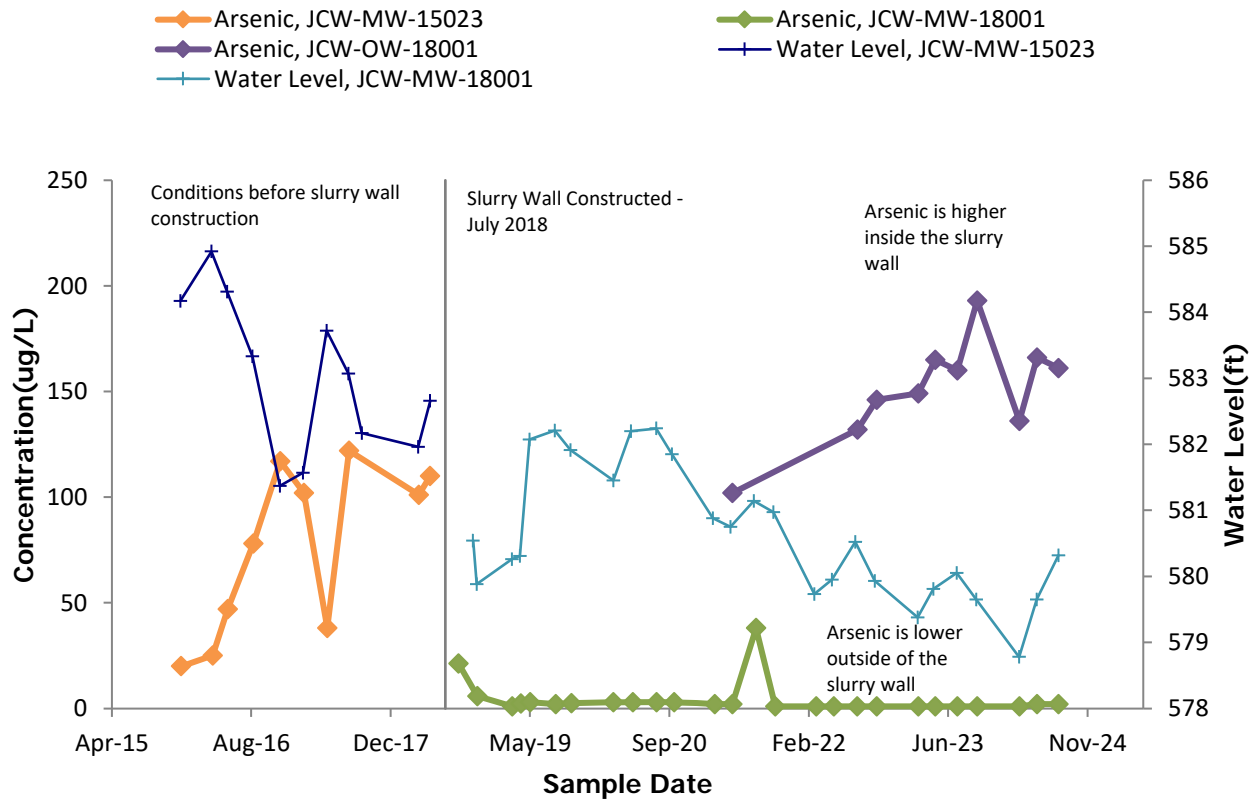


Figure G1: Time Series Plots for JCW-MW-18001 ASD

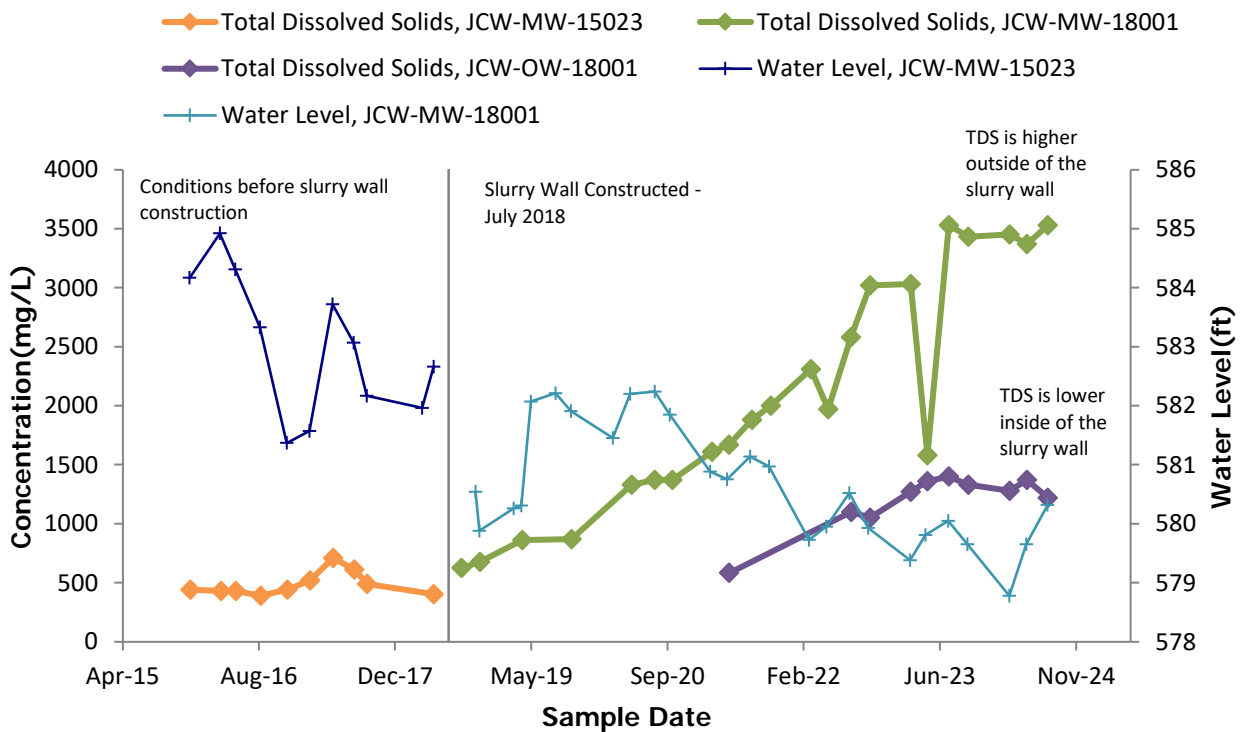
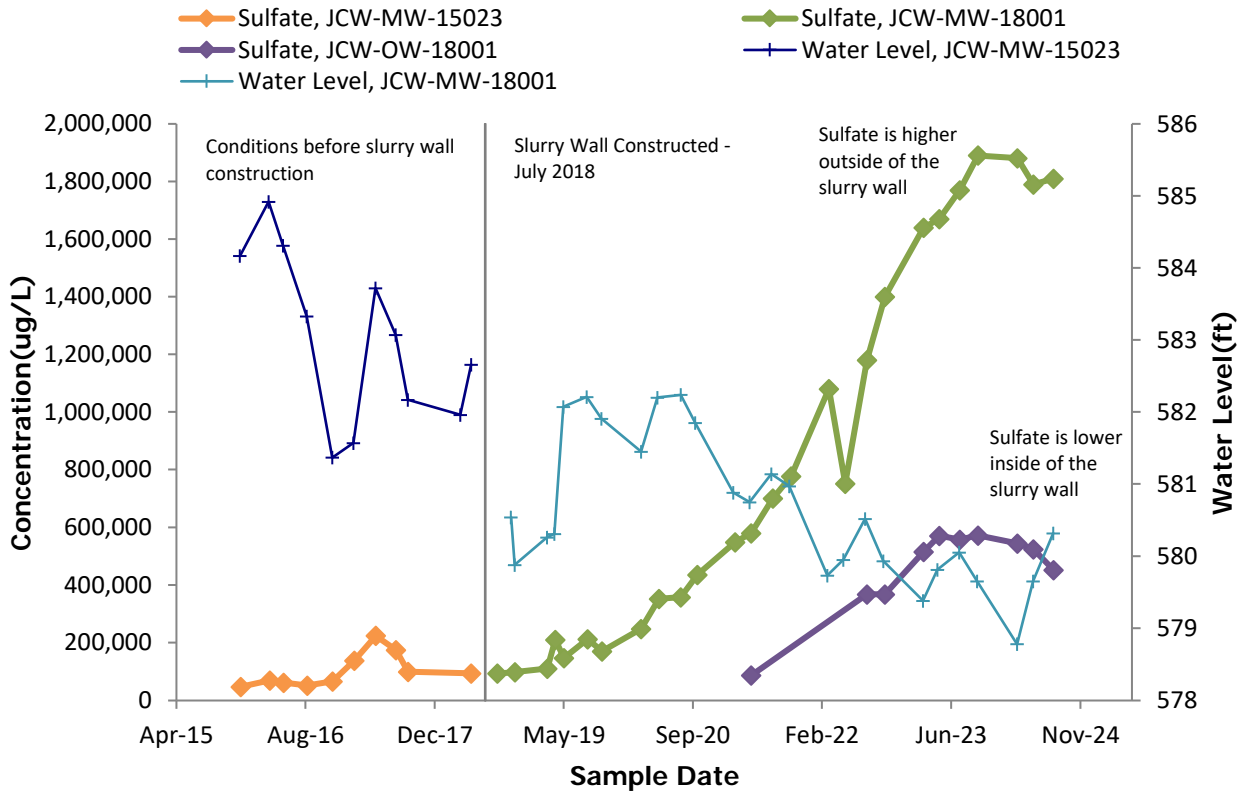


Figure G1: Time Series Plots for JCW-MW-18001 ASD

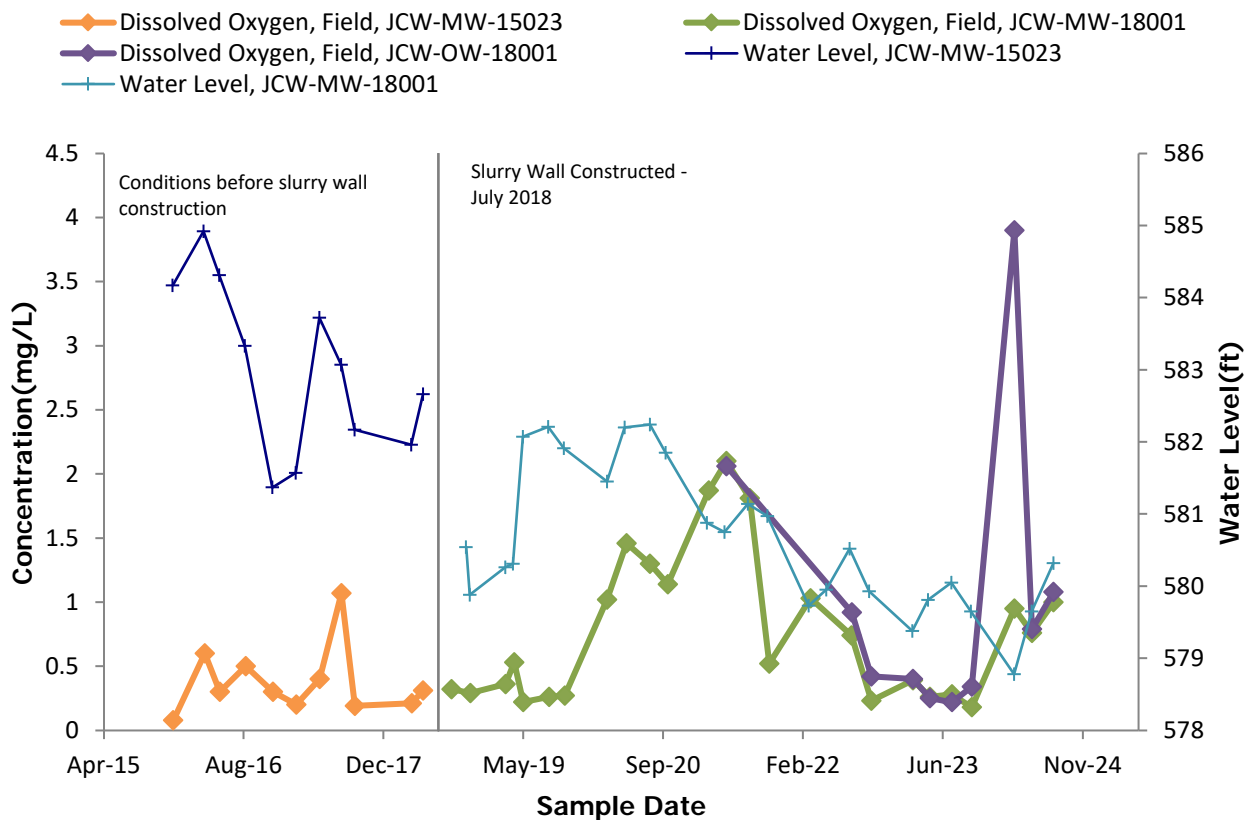
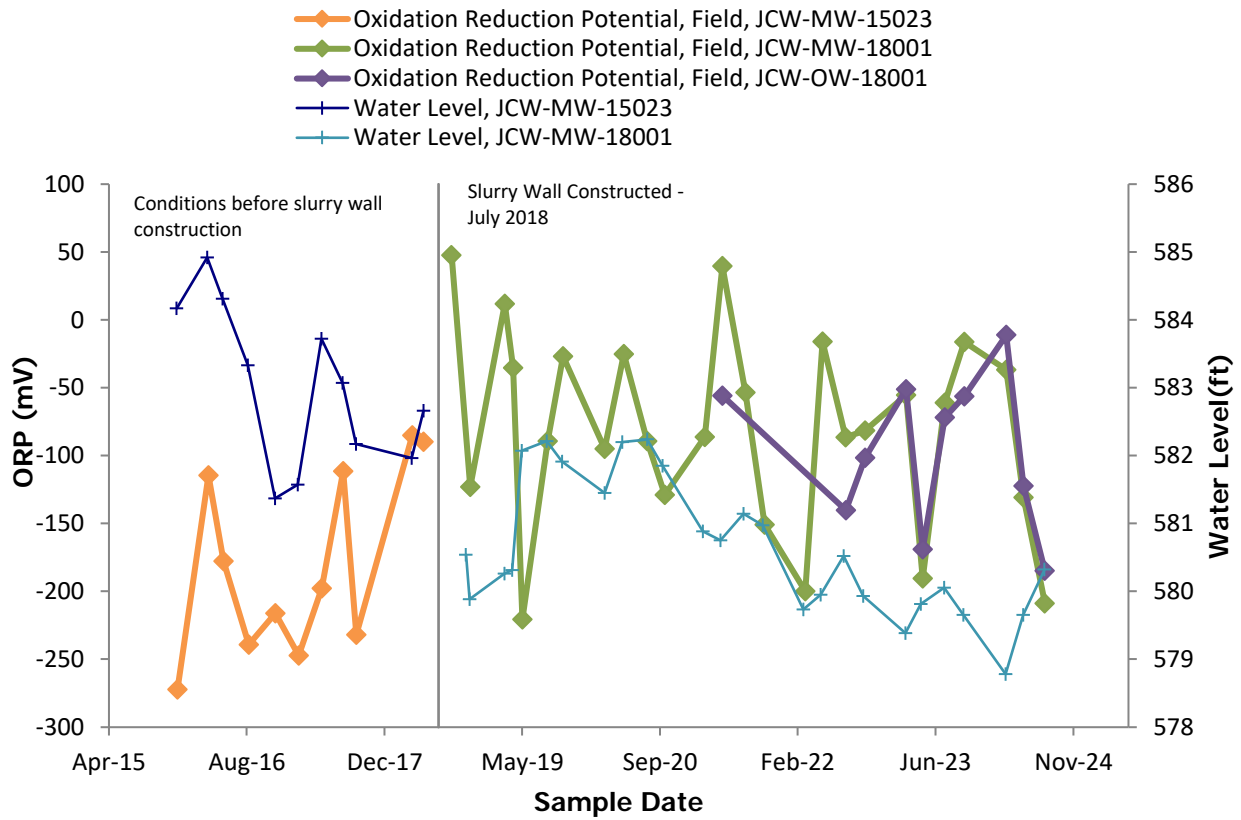
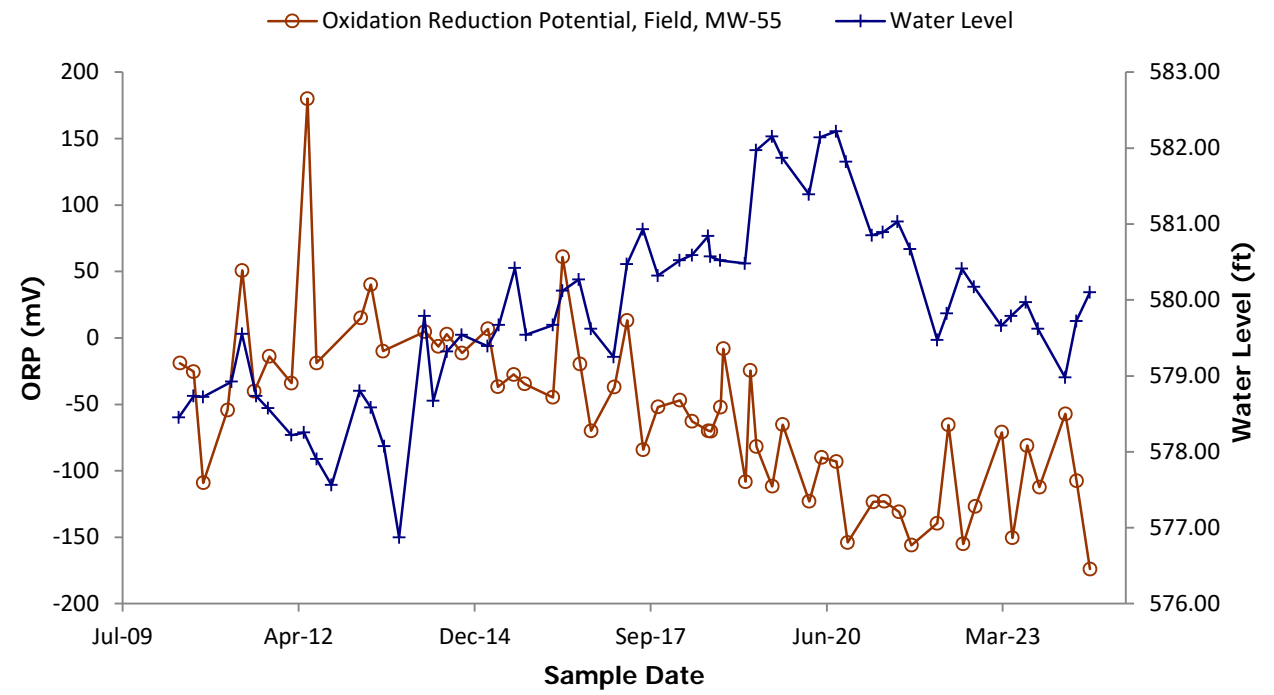
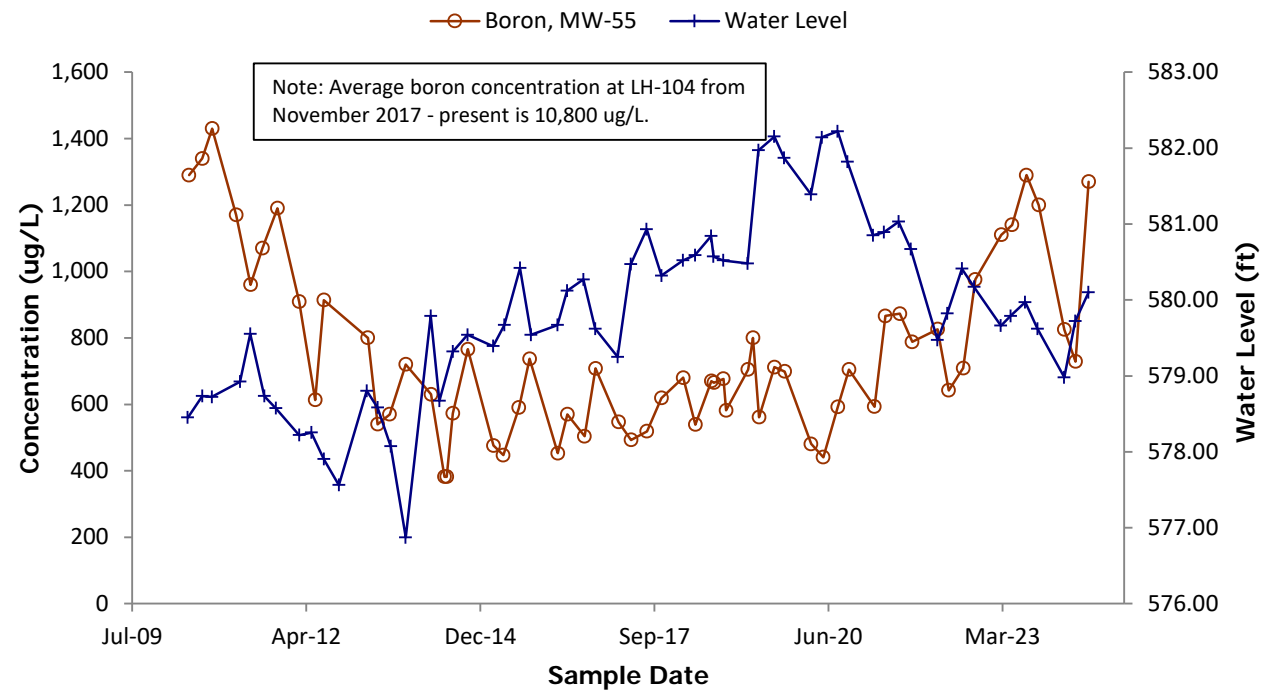
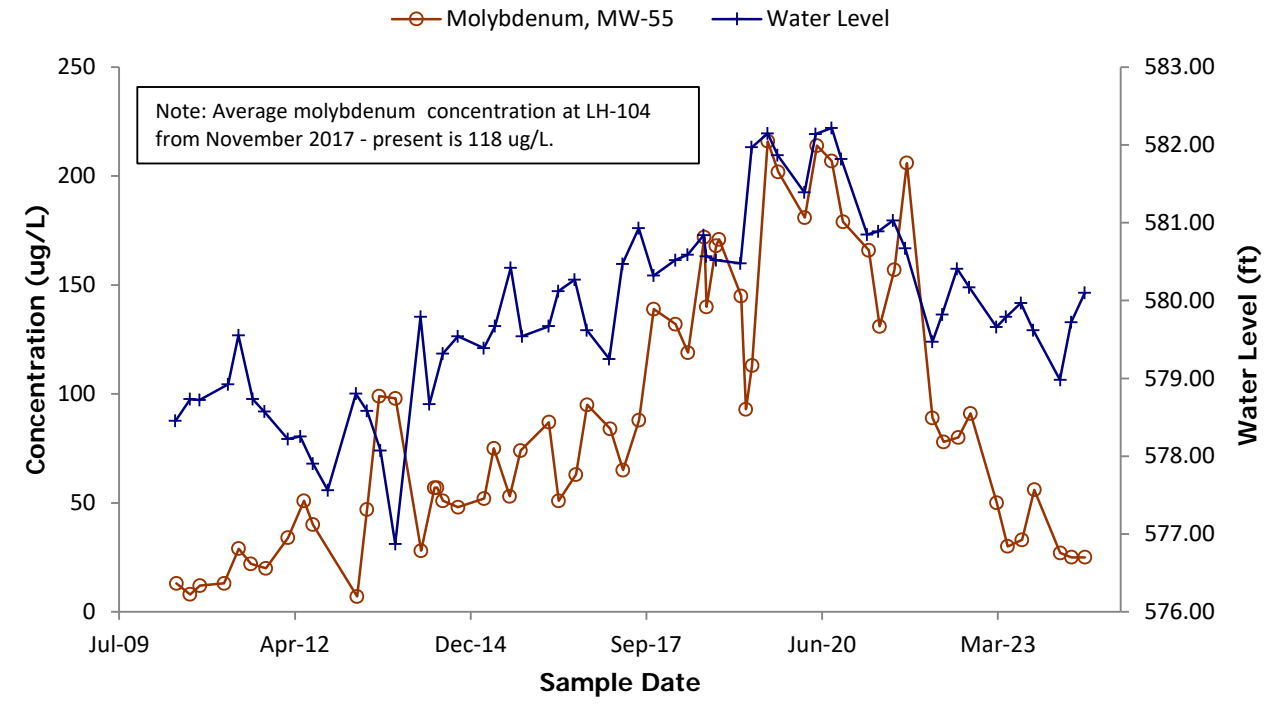
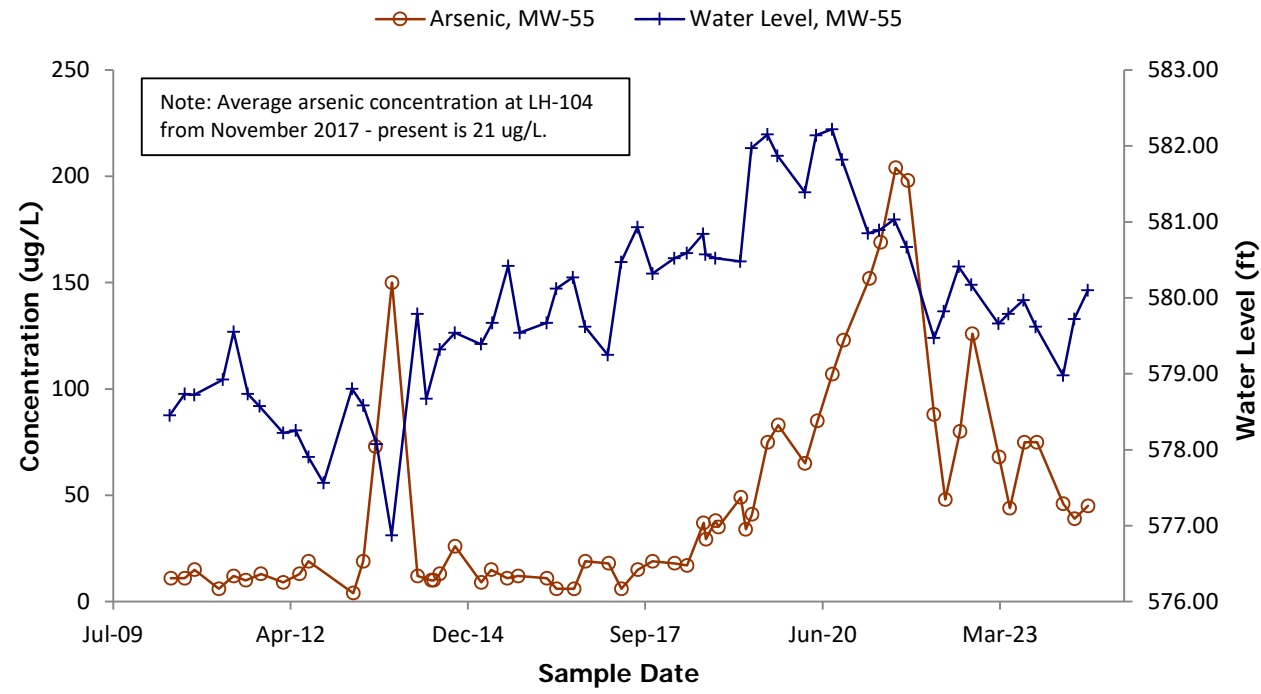


Figure G2: Time Series Plots for MW-55 ASD



Enclosure 5

**2024 Semiannual Groundwater Monitoring Report and Fourth
Quarter 2024 Hydrogeological Monitoring Report, JC
Weadock Solid Waste Disposal Area, Essexville, Michigan.
(TRC, January 30, 2025)**



2024 Semiannual Groundwater Monitoring Report and Fourth Quarter 2024 Hydrogeological Monitoring Report

JC Weadock Solid Waste Disposal Area
Essexville, Michigan

January 2025

A handwritten signature in blue ink that reads "Darby Litz".

Darby Litz
Project Manager/Hydrogeologist

Prepared For:

Consumers Energy
1945 W. Parnall Road
Jackson, MI 49201

Prepared By:

TRC
1540 Eisenhower Place
Ann Arbor, Michigan 48108

A handwritten signature in blue ink that reads "Kristin Lowery".

Kristin Lowery, P.E.
Project Engineer

TABLE OF CONTENTS

1.0	Introduction.....	1
1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1
1.2	Program Summary	2
1.3	Site Overview	3
1.4	Geology/Hydrogeology	3
2.0	Leachate Monitoring.....	5
3.0	Groundwater Monitoring	6
3.1	Monitoring Well Network.....	6
3.2	October 2024 Monitoring Event	7
3.2.1	<i>Data Quality Review.....</i>	<i>8</i>
3.3	Groundwater Flow Rate and Direction	8
3.4	Groundwater Analytical Data and Relevant Screening Criteria	9
3.4.1	<i>Detection Monitoring</i>	<i>10</i>
3.4.2	<i>Assessment Monitoring Data Evaluation</i>	<i>11</i>
3.4.2.1	Establishing Groundwater Protection Standards	11
3.4.2.2	Data Comparison to Groundwater Protection Standards.....	11
3.4.3	<i>GSI Compliance Monitoring</i>	<i>12</i>
3.5	Alternate Source Demonstration.....	14
3.5.1	<i>Monitoring Well JCW-MW-18001: Calcium and Sulfate.....</i>	<i>14</i>
3.5.2	<i>Monitoring Well MW-55: Arsenic</i>	<i>15</i>
4.0	Conclusions and Recommendations	17
5.0	References	18

TABLES

Table 1	Summary of Groundwater Elevation Data
Table 2	Summary of Field Parameters
Table 3	Summary of Groundwater Sampling Results (Analytical): DE Karn & JC Weadock Background
Table 4	Summary of Groundwater Sampling Results (Analytical): JC Weadock Solid Waste Disposal Area
Table 5	Summary of Confidence Interval Evaluation: October 2024
Table 6	EGLE Exceedance Summary Table
Table 7	Leachate Headwell Results

FIGURES

Figure 1	Site Location Map
Figure 2	Site Map
Figure 3	Potentiometric Surface Map – October 2024

APPENDICES

Appendix A	Static Water Level Evaluation
Appendix B	Data Quality Review
Appendix C	Detection Monitoring Statistical Trend Tests
Appendix D	Assessment Monitoring and GSI Statistical Evaluation
Appendix E	Laboratory Analytical Report
Appendix F	Field Records
Appendix G	Alternate Source Demonstration Supporting Information

1.0 Introduction

Consumers Energy implemented a comprehensive compliance monitoring plan documented in the *Revised Hydrogeological Monitoring Plan* (Natural Resource Technology, 2010) for the JC Weadock Solid Waste Disposal Area (Weadock Landfill) as required by Special License Condition 20.b in Solid Waste Disposal Area Operating License No. 9233 issued on October 15, 2009. Since that time, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015 as amended) imposing groundwater monitoring and corrective action requirements that apply to the Weadock Landfill. Subsequently, Michigan amended Part 115 of the Natural Resources and Environmental Protection Act (NREPA) PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management) to provide a basis for establishing a groundwater monitoring system and initiating detection and assessment monitoring to conform requirements for any licensed coal ash impoundment or landfill after December 28, 2018, with Part 115 amendments and the CCR Rule.

On January 15, 2021, Consumers Energy submitted the *Landfill Hydrogeological Monitoring Plan, JC Weadock Power Plant, Essexville, Michigan* (Weadock Landfill HMP), which includes components for Detection Monitoring and Assessment Monitoring, as well as Groundwater Surface Water Interface (GSI) Compliance Monitoring, to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115 and the CCR Rule. The Weadock Landfill HMP (TRC, February 2021) was revised per EGLE comments, submitted, and approved by EGLE on February 19, 2021, and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Fourth Quarter 2024 JC Weadock Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring and reporting requirements during the active life of the coal ash landfill. This Report was prepared in accordance with the items listed in Appendix A (Solid Waste Monitoring Submittal Components) of the May 15, 2015 Michigan Department of Environmental Quality (MDEQ) – Office of Waste Management and Radiological Protection, now the EGLE Materials Management Division (MMD), communication prescribing the format for solid waste disposal facility monitoring submittals as published in OWMRP-115-29, dated July 5, 2013 *Format for Solid Waste Disposal Facility Monitoring Submittals*. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the Weadock Landfill HMP that was approved by the EGLE on February 19, 2021. The Weadock Landfill HMP is compliant with Public Act No. 640 of 2018 (PA 640) to amend the NREPA, also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 Program Summary

This Report provides results and summarizes the monitoring activities completed in the fourth quarter 2024 at the JC Weadock Solid Waste Disposal Area (*i.e.* the Weadock Landfill) located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). This JC Weadock Disposal Area is currently authorized under a permit (Groundwater Discharge Authorization GWE-0005) issued pursuant to Part 31 to discharge to the unusable aquifer directly underlying the solid waste that vents almost immediately to the Saginaw River and Saginaw Bay.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule. Consumers Energy first reported the potential for statistically significant increases (SSIs) for Appendix III constituents in the *Annual Groundwater Monitoring Report JC Weadock Power Plant Bottom Ash Pond CCR Unit* (TRC, January 2018). The statistical evaluation of the Appendix III indicator parameters confirming SSIs over background were as follows:

- Boron at JCW-MW-15011, JCW-MW-15012, JCW-MW-15023; and
- Field pH at JCW-MW-15023 (high).

On April 25, 2018, Consumers Energy entered assessment monitoring upon determining that an Alternate Source Demonstration for the Appendix III constituents was not successful. After subsequent sampling for Appendix IV constituents, Consumers Energy provided notice to the Department on January 14, 2019 that arsenic was detected at statistically significant levels above the federal groundwater protection standards (GWPS) established pursuant to §257.95(h) in one monitoring well at the Weadock Landfill (JCW-MW-15023), which was located downgradient of a 1,600 linear foot vent within the slurry wall enclosing the historical fly ash disposal area. The vent was designed to direct groundwater flow beneath the landfill to the discharge channel immediately upgradient from the National Pollutant Discharge Elimination System (NPDES) external outfall to prevent water from building up within the facility. In July 2018, this vent was closed (Golder, 2018) and the engineering improvement was approved by the Department (MDEQ, 2018). As a part of the vent closure, monitoring wells JCW-MW-15011, JCW-MW-15012, and JCW-MW-15023 were decommissioned by overdrilling, removing the well material, and sealing the borehole to allow for the slurry wall construction as discussed in the *2018 Annual Groundwater Monitoring Report for the JC Weadock Landfill CCR Unit* (TRC, 2019a). Consumers Energy installed an additional nine monitoring wells in August 2018 to supplement the preexisting Michigan Part 115 compliance groundwater well network and provide appropriate coverage for the collection of groundwater levels and water quality data along the perimeter of the Weadock Landfill, as discussed in the Weadock Landfill HMP. Closing the vent and completely encircling the Weadock Landfill with a soil-bentonite slurry wall has demonstrated reduced groundwater flux around the entire perimeter of the landfill.

In March 2019, Consumers Energy submitted a Response Action Plan (Consumers, 2019), which identified interim response activities taken or to be taken to control possible sources of contamination. Consumers Energy further evaluated arsenic in groundwater at the Weadock Landfill as part of the nature and extent analysis and outlined potential remedies in the *Assessment of Corrective Measures* (TRC, 2019b), which was initiated on April 14, 2019, and completed on September 11, 2019, and focused on materials management with an emphasis

on improving source control through the closure plan.

Compliance monitoring is being implemented under the Weadock Landfill HMP dated February 2021 and approved by the EGLE on February 19, 2021. Groundwater data collected in accordance with the Weadock Landfill HMP are used to:

- Assess background groundwater quality for the purposes of establishing and updating GWPS (HMP Section 7.1 Background Determination)
- Perform detection monitoring to assess whether a new release has occurred during operation of the landfill (*i.e.* statistically significant increase (SSI) over background) (HMP Section 7.2 Detection Monitoring)
- Perform assessment monitoring to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the GWPS) (HMP Section 7.3 Assessment Monitoring)
- Assess compliance with the GSI pathway (HMP Section 7.4)

Consumers Energy also continues to execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98 of the CCR Rule, which includes semiannual assessment monitoring in accordance with §257.95 during the second and fourth calendar quarters. Assessment monitoring data collected in accordance with the CCR Rule is used to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (*i.e.* statistically significant level over the Appendix IV GWPS).

1.3 Site Overview

The JC Weadock Solid Waste Disposal Area is located within the former JC Weadock Power Plant (Site), located south of the DE Karn Power Plant, east of the Saginaw River, west of Underwood Drain and Saginaw Bay, and north of Tacey Drain and agricultural land (Figure 1). In addition to the disposal area, the Site consists of the generating facility which retired eight coal-fired generating units and infrastructure and utilities that support electrical transmission. Units 1 to 6 commenced operation in 1940 and retired in 1980 and Units 7 and 8 were added in 1955 and 1958 continued to operate through April 15, 2016.

1.4 Geology/Hydrogeology

The majority of Weadock Landfill area is comprised of surficial CCR and sand fill, as described in the Weadock Landfill HMP. USGS topographic maps and aerial photographs dating back to 1950, in addition to field descriptions of subsurface soil at the Site, indicate that the Site was largely developed by reclaiming low-lands through construction of perimeter dikes and subsequent ash filling (AECOM, 2009).

The surficial fill consists of a mixture of varying percentages of ash, sand, and clay-rich fill ranging from 5 to 15 feet thick. Below the surficial fill, native alluvium and lacustrine soils are present at varying depths. Generally, there is a well graded sand unit present to depths of 10-30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25-75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts, and sands deposited in or on the shores

of glacial lakes) at other areas. Along the perimeter of the landfill, there is a well-graded sand unit present at depths ranging from 10 to 20 ft bgs. The sand is variable in thickness, ranging from <1 to ~6.5 feet, and is discontinuous along the landfill perimeter, as evidenced by the soil boring logs and slurry wall construction documentation.

The alluvium soils pinch out and are not observed in soil borings located south and east of the Weadock Landfill, along the location of the historic shoreline. The non-water-bearing region south of these units extends for at least a mile south and southeast of the Site.

Beneath the surficial fill and sand unit (where present) is 70 to 80 feet of clay till. Along the southern perimeter of the landfill, some of the upper portion of the clay till is sand-rich (generally greater than 20 ft bgs). The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. The sandstone unit, which is part of the Saginaw Formation, is generally encountered at 80-90 ft bgs.

The Weadock Landfill is bounded by several surface water features (Figures 1 and 2): the Saginaw River to the west, a discharge channel and Saginaw Bay (Lake Huron) to the north, Underwood Drain to the east, and Tacey Drain to the south. Groundwater flow in this water bearing zone is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay.

2.0 Leachate Monitoring

The leachate monitoring program consists of an annual laboratory leachate sampling program (Q1) and an annual field leachate sampling program (Q4) per the Weadock Landfill HMP. This program was instituted to maintain the facility under the applicable portions of Part 115, Rule 311 – Leaching tests to evaluate potential for groundwater contamination at unlined industrial waste landfills. Specifically, Subrule (3) states that waste that is disposed of in an industrial waste landfill shall be retested to evaluate potential for groundwater contamination annually or on a more frequent schedule as specified by the solid waste control agency. In addition to field leachate testing conducted annually to evaluate appropriateness of monitored constituents and changes to fate and transport properties, an annual laboratory leachate analysis program was included to better understand what, if any, changes to waste placement may be occurring at the Weadock Landfill based on the addition of air emissions controls and the commingling of air emissions controls residuals (Spray Dry Absorber – SDA) over time. The Weadock Landfill HMP includes the laboratory leachate testing program, consisting of four dry-handled Coal Combustion Residual (CCR) samples commingled with SDA materials collected from each of the disposal silos dedicated to DE Karn Electrical Generating Units 1 and 2. Karn Units 1 & 2 permanently ceased operation on May 31, 2023, so additional CCR and air emissions residuals are not being generated; therefore, there are no results to report for this waste stream. In order for the Weadock Landfill to achieve the final grades as approved in the Revised Final Closure Plan (Golder, March 2022), it is noteworthy that the landfill continues to receive materials in the form of uncontaminated soil from documented sources, and limited contaminated soil that has been authorized for placement in the Weadock Landfill under the Beneficial Use 4 designation as other materials designated for construction at a licensed solid waste disposal facility. These results are maintained with the closure certification documentation.

Additional support for evaluating the potential for groundwater contamination at the unlined industrial waste landfill includes the field leachate monitoring program conducted during the fourth quarter of each year. This program consists of an annual sampling collection from two (2) leachate headwells; LH-103R and LH-104. This program was implemented to determine constituents in the leachate as measured under actual conditions in the field and to assess which constituents have the potential to exceed applicable criteria at the compliance well locations.

Field leachate data for the leachate headwells (2021 through 2024) are shown in Table 7. Field leachate samples were collected from LH-103R and LH-104 in the fourth quarter of 2024. Field leachate data for LH-103R and LH-104 are generally consistent with data collected in previous years. No new constituents have been identified for inclusion in the porewater and GSI monitoring programs.

3.0 Groundwater Monitoring

3.1 Monitoring Well Network

The groundwater monitoring system presented in the Weadock Landfill HMP has been established in accordance with R 299.4906 and the CCR Rule §257.91 and consists of 27 monitoring wells (four background monitoring wells, 12 downgradient monitoring wells, and 11 additional wells used for static water level measurements only) that are screened in the uppermost aquifer. The monitoring well network has been designed to provide appropriate coverage for water level and water quality data collection along the perimeter of the landfill. The monitoring well locations are shown on Figure 2. Monitoring well specifications and purpose (i.e. static water level monitoring, groundwater quality monitoring, or GSI monitoring) are included in Table 1.

The Weadock Landfill HMP groundwater monitoring system consists of the following:

- **Background Groundwater Quality:** Four monitoring wells located southwest of the Weadock Landfill provide data on background groundwater quality that has not been affected by the CCR unit (MW-15002, MW-15008, MW-15016, and MW-15019) and are used to establish groundwater protection standards (GWPSs) for the landfill:
 - MW-15002 – MW-15008 – MW-15016 – MW-15019
- **Downgradient Groundwater Quality:** The twelve downgradient monitoring wells, located on the outside of the perimeter slurry wall include:
 - JCW-MW-18001 – JCW-MW-18004 – JCW-MW-18005 – JCW-MW-18006
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – OW-57R Out
- **Groundwater-Surface Water Interface (GSI) Monitoring:** Monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the monitoring program to meet the requirements of Part 31. Locations and alignments were established in the Phase II Groundwater Discharge Evaluation, Figure: Appendix K (Natural Resource Technology, 2005) as a baseline for monitoring future results. These monitoring wells are screened across the water table of the uppermost aquifer and serve as GSI monitoring wells to determine compliance with generic GSI criteria or site-specific mixing zone-based criteria as appropriate. The eight GSI compliance monitoring wells include:
 - MW-50 – MW-51 – MW-52 – MW-53
 - MW-53R – MW-54R – MW-55 – JCW-MW-18004
- **Static Water Level Measurement Only:** Eleven additional monitoring wells, located on the inside of the perimeter slurry wall at paired locations with several of the downgradient monitoring wells, are used to evaluate the groundwater flux across the slurry wall:
 - JCW-OW-18001 – JCW-OW-18002 – JCW-MW-18003 – JCW-MW-18004
 - JCW-MW-18005 – JCW-MW-18006 – MW-20 – OW-51
 - OW-53 – OW-54 – OW-55 – OW-56R
 - OW-57R IN – OW-61 – OW-63

3.2 October 2024 Monitoring Event

In accordance with the Weadock Landfill HMP, TRC conducted the fourth quarter 2024 monitoring event for the Weadock Landfill by collecting water levels and groundwater samples on September 30 through October 3, 2024. Samples that were collected during this event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan for analysis of total metals and inorganic parameters. Radium analysis was performed by Eurofins Environment Testing in Earth City, Missouri. Semiannual monitoring constituents include:

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents	
Boron	Antimony	Lithium
Calcium	Arsenic	Mercury
Chloride	Barium	Molybdenum
Fluoride	Beryllium	Nickel
Iron	Cadmium	Selenium
pH	Chromium, total	Silver
Sulfate	Cobalt	Thallium
Total Dissolved Solids (TDS)	Copper	Vanadium
	Fluoride	Zinc
	Lead	Radium 226 and 228

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity. Analytical results from the monitoring event are included in the attached laboratory reports (Appendix E).

Static water level measurements were collected at all locations after equilibration to atmospheric pressure. The depth to water was recorded to the nearest 0.01-ft in accordance with the procedures in the Weadock Landfill HMP. Static water elevation data are included in the attached field records (Appendix F).

Groundwater purging and sampling were conducted in accordance with low-flow sampling protocol. Groundwater samples were collected using a peristaltic pump. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Groundwater sample preparation and analyses were performed in accordance with SW-846 “Test Methods for Evaluation Solid Waste – Chemical / Physical Methods,” USEPA (latest revision). TRC followed chain of custody procedures to document the sample handling sequence.

TRC also collected quality assurance/quality control (QA/QC) samples during the groundwater sampling event. The QA/QC samples consisted of two field blanks, one equipment blank, three field duplicates (MW-15008, MW-55, and MW-50), and one field matrix spike/matrix spike

duplicate sample pair (JCW-MW-18001). A field duplicate and field matrix spike/matrix spike duplicate were collected at LH-103R and a field duplicate was collected at LH-104 for low-level mercury analysis.

3.2.1 Data Quality Review

Data were evaluated for completeness, overall quality and usability, method-specified sample holding times, precision and accuracy, and potential sample contamination. The laboratory data were found to be complete and usable for the purposes of the Weadock Landfill HMP. The data quality reviews for the Weadock Landfill network wells are summarized in Appendix B.

3.3 Groundwater Flow Rate and Direction

Potentiometric monitoring in the unusable aquifer beneath the facility includes static water level data collected for development of water table contours and evaluation of the potential for discharge from the facility. The monitoring under this section will be conducted quarterly until closure, as approved by the Director, and semiannually during the 30-year post-closure period. Monitoring will continue until the end of post closure (30 years) or as otherwise approved by the Director.

The measurements for top of casing (TOC) and recorded depth to water (DTW) with corresponding calculated static water level (SWL) is tabulated and presented in Table 1. A potentiometric surface map is provided as Figure 3.

Groundwater elevations measured at the Site in October 2024 are generally within the range of 579 to 592 feet above mean sea level (ft NAVD88). Groundwater elevations in monitoring wells located adjacent to Saginaw Bay and adjoining surface water bodies are typically encountered at a similar or slightly higher elevation relative to surrounding surface water features measured by the NOAA gauging station. A time-series plot included in Appendix A compares the groundwater elevation of at the GSI monitoring wells (MW-50, MW-51, MW-52, MW-53, MW-54R, JCW-MW-18004, and MW-55) to the nearby NOAA staff gauge. Water levels in wells adjacent to surface water bodies (e.g. Saginaw Bay, Tacey Drain) closely mirror the surface water elevation. Such conditions would result in a minimal gradient to potentially a reverse gradient (i.e., toward the landfill) between the well and the drain which would result in minimal to zero mass flux to the drain (Appendix A: Table A1).

The groundwater monitoring system is structured such that there are eleven monitoring well pairs used to evaluate the hydraulic gradient and potential for water flux across the slurry wall. Static water level observations from the paired wells are shown on time series charts in Appendix A. The static water level elevations inside of the Weadock Landfill perimeter slurry wall are generally significantly different (>3 ft) than static water levels outside of the slurry wall, which demonstrates the presence of a low permeability feature between the well pairings inside and outside of the constructed slurry wall. As such, the water level elevations indicate that the slurry wall is performing as designed. The general flow direction observed within the confinement of the slurry wall is similar to that identified in previous monitoring rounds. Due to the potential for radial flow, the downgradient wells are appropriately positioned to detect the presence of detection or assessment parameters that could potentially migrate from the

Weadock Landfill. As shown on Figure 3 and in Appendix A, the static water level outside of the slurry wall is lower than the static water level inside of the wall; therefore, the potential groundwater flux across the slurry wall was calculated and included in Table A2 of Appendix A.

3.4 Groundwater Analytical Data and Relevant Screening Criteria

Groundwater analytical data are evaluated in accordance with the Weadock Landfill HMP to determine the effectiveness of landfill structural and operational enhancement measures on the quality and quantity of groundwater flow beneath the footprint of the facility (Section 3.4.1 Detection Monitoring and Section 3.4.2 Assessment Monitoring). Additionally, analytical results are evaluated in support of GSI compliance. GSI criteria only apply to the designated compliance point as specified in Section 3.4.3 below; however, analytical results and data trends in groundwater collected from the perimeter dike wells are evaluated to identify potential GSI compliance issues. Data are evaluated by using a combination of screening against relevant criteria, as well as utilizing statistical analyses.

Analytical results from the fourth quarter 2024 monitoring event are included in the attached laboratory report (Appendix E). Groundwater analytical data from the fourth quarter 2024 monitoring event are summarized in Table 3 (background monitoring wells) and Table 4 (Weadock Landfill Monitoring Wells), as well as the associated Part 201 generic GSI and site-specific mixing-zone GSI criteria. Field data are summarized in Table 2.

Mixing-zone criteria for arsenic, boron, molybdenum, and selenium are provided for the Karn-Weadock complex in the mixing zone determination, dated October 4, 2024 (EGLE, 2024). As such, arsenic, boron, molybdenum, and selenium are compared to site-specific mixing zone-based GSI criteria, and all other constituents are screened against generic GSI criteria. All data are screened against GSI criteria; however, compliance with GSI criteria is determined at select monitoring locations as noted in Section 3.4.3 below.

The mixing zone determination included both final acute values (FAV) and final chronic values (FCV). If a concentration of a constituent at a groundwater well exceeds the acute criteria, and the exceedances are upgradient of the GSI compliance monitoring wells, Consumers Energy must demonstrate that data from all of the compliance monitoring wells are, and will be, in compliance with acute mixing zone-based GSI criteria for those parameters. Averaging of groundwater data is not allowed for comparison to generic GSI or acute mixing zone-based GSI criteria. Acute mixing zone-based or generic GSI criteria may not be exceeded in any individual GSI compliance monitoring well. If a concentration of a constituent at a well exceeds the chronic criterion, compliance can be demonstrated on a mass-flux basis. The facility can choose to demonstrate compliance by evaluating the total chronic loading based upon the contribution from each compliance well with respect to the total flux observed in the mixing zone.

Table 6 provides a summary of the exceedances over the most recent four quarters in accordance with the EGLE-prescribed format; only well/constituent pairs that exceed the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3) within the last four quarters are included.

3.4.1 Detection Monitoring

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. The potentiometric analysis, as discussed in Section 3.3, demonstrates that the slurry wall is performing as designed.

In addition to the comparison of analytical data to relevant screening criteria (Table 4), statistical trend analyses are used to evaluate groundwater quality each quarter. Consumers Energy manages and evaluates its groundwater data using Sanitas™ Statistical Software. Consumers Energy conducts intrawell trend analyses to examine data for a given well over time to determine if changes in water quality are occurring that may be associated with the landfill and to identify potential GSI compliance issues. Specifically, the Mann-Kendall test for trend was performed at a significance level (α) of 0.025 per tail for each constituent/sampling point dataset to assess trends. Sen's Slope estimator was used to assess the magnitude of the slope and the Mann-Kendall test was used to determine if the trend was statistically significant.

Appendix C includes a table summarizing the results of the trend tests as well as the Sanitas™ output summary statistics and graphs. Data are stable or declining for the majority of the well/constituent pairs, with the following exceptions:

- A new, unconfirmed increasing trend for boron was observed at JCW-MW-18006 in Q4 2024.
- The new increasing trend for boron that was observed at MW-53 in Q2 2024 continued this quarter.
- A new, unconfirmed increasing trend for chloride was observed at MW-53R in Q4 2024.
- A new, unconfirmed increasing trend for fluoride was observed at OW-57R OUT in Q4 2024.
- A new, unconfirmed increasing trend for iron was observed at JCW-MW-18006 in Q4 2024.
- New, unconfirmed increasing trends in pH were observed at monitoring wells JCW-MW-18001, JCW-MW-18004, JCW-MW-18005, and MW-51 in Q4 2024. The new increasing trends for pH that were observed at MW-50 and MW-54R in Q3 2024 was confirmed this quarter. The new increasing trend for pH that was observed at MW-53R in Q2 2024 continued this quarter.
- The confirmed increasing trend for sulfate at JCW-MW-18006 continued in Q4 2024.

Although increasing trends for detection monitoring constituents were observed, individual constituent trends provide a *potential indication* that there may be a release coming from the monitored unit. When these indicator trends are evaluated with other co-monitored conditions and parameters at the Weadock Landfill, the increasing trends for detection monitoring constituents do not appear to be a result of a new release from operation of the landfill. The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill. Several of these recently observed trends, such as those observed for sulfate at JCW-MW-18006 are likely a result of localized geochemical changes influenced by changes in water levels rather than a change in flux from the landfill and will continue to be evaluated. All concentrations remain below the applicable GSI criteria, as

discussed in Section 3.4.3 below.

Consumers is further evaluating possible causes of the increasing boron concentrations at several porewater compliance monitoring wells. Previous studies (NRT, 2005) documented boron at significantly elevated concentrations at the Karn-Weadock Power Generating Complex. Boron was also identified as an SSI over background levels in the 2017 *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit* (TRC, 2018) and was one of the detection monitoring constituents that triggered the initiation of the assessment monitoring program. Statistical significance above the GWPS established for boron has been noted for these monitoring wells per the Part 115 groundwater monitoring program requirements, as discussed in Section 3.4.2.2. Continued monitoring and assessment for potential future actions is warranted at this time; however, observed concentrations of boron in each of the monitoring wells are less than the relevant Part 115 compliance standard – the GSI pathway standard (Section 3.4.3).

3.4.2 Assessment Monitoring Data Evaluation

Assessment monitoring is continuing at the Weadock Landfill in accordance with the Weadock Landfill HMP and §257.95. The assessment monitoring data were statistically evaluated in accordance with the procedures in the Weadock Landfill HMP. The statistical evaluation details are provided in Appendix D. A summary of the confidence interval evaluation is provided in Table 5.

3.4.2.1 Establishing Groundwater Protection Standards

The GWPSs are used to assess constituent concentrations present in groundwater as a result of CCR unit operations by statistically comparing concentrations in the downgradient wells to each of the respective GWPSs for each detection and assessment monitoring constituent. The calculation of the GWPSs in accordance with the Weadock Landfill HMP is documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). The Federal CCR Rule requires establishment of GWPSs for assessment monitoring (Appendix IV) constituents only. Part 115 requires establishment of GWPSs for both detection and assessment monitoring constituents.

3.4.2.2 Data Comparison to Groundwater Protection Standards

Consistent with the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (Unified Guidance) (USEPA, 2009) and the Weadock Landfill HMP, the preferred method for comparisons to a fixed standard are confidence limits. An exceedance of the standard occurs when the 99 percent lower confidence level of the downgradient data exceeds the GWPS.

Detection Monitoring Constituents (Part 115): The fourth quarter 2024 statistical evaluation indicates that boron at MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001 were present at statistically significant levels above the GWPS. The GWPSs for boron, calcium, and sulfate were established based on background

concentrations observed in wells unaffected by the Weadock Landfill or Weadock Bottom Ash Pond. Detection monitoring (i.e., Appendix III) constituents do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Overall, data continue to demonstrate compliance with the applicable criteria, for the following reasons:

- Boron was one of the Appendix III SSIs that originally triggered assessment monitoring. There is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway, as discussed further in Section 3.4.3 below. Boron concentrations have been consistently above the GWPS but less than the chronic-based mixing zone-based GSI criterion of 44,000 ug/L within the Weadock Landfill monitoring well network since monitoring under the Weadock Landfill HMP began in first quarter 2021.
- Calcium at JCW-MW-18001 was present at statistically significant levels above the GWPS beginning in first quarter 2023 resulting from increases in calcium concentration since first quarter 2021. Sulfate was present at JCW-MW-18001 at statistically significant levels above the GWPS for the first time in second quarter 2023 due to increasing concentrations. Consumers is asserting an ASD for the increases in calcium and sulfate at JCW-MW-18001, as detailed in Section 3.5.
- pH at MW-53R indicated an increasing trend in fourth quarter 2024 as discussed in Section 3.4.1. However, the pH level at MW-53R is not at a statistically significant level compared to the upper and lower GWPS.
- Sulfate at JCW-MW-18006 indicated an increasing trend in fourth quarter 2024, as discussed in Section 3.4.1. However, the concentrations of sulfate at JCW-MW-18006 remain below the GWPS.

Assessment Monitoring Constituents (Part 115 and Federal CCR): Based on the fourth quarter 2024 statistical evaluation, there are no assessment monitoring constituents present at statistically significant levels above the GWPSs within the Weadock Landfill groundwater monitoring system. Although concentrations of arsenic at MW-55 observed during individual sampling events are above the GWPS, the elevated concentrations are not a result of a release from the Weadock Landfill, as detailed in Section 3.5. The head differential of 6.84 feet between OW-55 inside the slurry wall and MW-55 outside of the slurry wall also suggests that the integrity of the slurry wall is maintained and groundwater flow from the landfill to the south is impeded by the low permeability of the slurry wall. Groundwater conditions at MW-55 will continue to be monitored.

3.4.3 GSI Compliance Monitoring

The GSI monitoring program consists of the eight monitoring points located along the surface water features:

- | | | | |
|----------|----------|---------|----------------|
| ■ MW-50 | ■ MW-51 | ■ MW-52 | ■ MW-53 |
| ■ MW-53R | ■ MW-54R | ■ MW-55 | ■ JCW-MW-18004 |

Fourth quarter 2024 data from the GSI monitoring points are tabulated in Table 4. As described in the Weadock Landfill HMP, GSI monitoring program constituents were identified as detected constituents that have the potential to exceed the generic GSI criteria at the Weadock Landfill

downgradient monitoring wells. At a minimum, these constituents include the following, identified based on prior groundwater monitoring as noted in the Weadock Landfill HMP:

- Boron
- Iron
- pH
- Sulfate
- Arsenic
- Chromium
- Lithium
- Molybdenum
- Selenium
- Vanadium

Additional constituents will be added to the GSI monitoring program as appropriate if detected above the relevant GSI criteria at the landfill monitoring wells in two consecutive events. Calcium, chloride, and total dissolved solids have been detected above the generic GSI criteria in one or more wells over two consecutive events; however, it is not appropriate to add these constituents to the GSI monitoring program for the following reasons:

- **Calcium:** Calcium has been detected above the generic GSI criterion at JCW-MW-18001. As discussed further in Section 3.5, the concentrations of calcium at JCW-MW-18001 are attributed to localized changes in geochemistry and are not indicative of a new release from the landfill. Concentrations in all other wells remain below the generic GSI criterion, supporting that the detected concentrations are localized to JCW-MW-18001. Given that JCW-MW-18001 is not a GSI compliance monitoring location and the increase in calcium is not attributed to the landfill operation, it is not appropriate to add calcium to the GSI compliance monitoring program.
- **Chloride:** Chloride has been detected above the generic GSI criterion of 50 mg/L in several wells. Chloride is regionally elevated, as evidenced by the calculated background concentration of 2,300 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All chloride concentrations are below the background concentration. Therefore, chloride is determined to be below the applicable level and is not included in the GSI compliance monitoring program.
- **Total Dissolved Solids:** Total dissolved solids (TDS) has been detected above the generic GSI criterion of 500 mg/L in several wells. TDS is regionally elevated, as evidenced by the calculated background concentration of 4,700 mg/L, documented in the *Groundwater Protection Standards* technical memorandum included as Appendix H of the *First Quarter 2021 Hydrogeological Monitoring Report* (TRC, 2021b). Consistent with the *Groundwater-Surface Water Interface Pathway Compliance Options* (MDEQ, 2018a) resource materials, where the background concentration is greater than the risk-based GSI criterion, the background concentration may be substituted for the GSI criterion. All TDS concentrations are below the background concentration. Therefore, TDS is determined to be below the applicable level and is not included in the GSI compliance monitoring program.

The confidence interval calculations are provided in Appendix D. The confidence interval test compares the lower confidence limit to the GSI. Overall, data continue to demonstrate compliance with the applicable GSI criteria.

- **Boron:** The detection monitoring statistical evaluation found that boron concentrations are increasing at MW-53. The assessment monitoring statistical evaluation found that boron was present at statistically significant levels above the GWPS at MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006. Boron is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of boron are less than the recommended mixing-zone based GSI value specified in Table 1 of the *Implementation of a Mixing Zone Request, DE Karn/JC Weadock Complex* (EGLE, 2024) (Appendix D: Table 2).
- **pH:** The detection monitoring statistical evaluation found that pH readings were increasing at MW-50, MW-53R, and MW-54R. The assessment monitoring statistical evaluation found that pH was not present at statistically significant levels above the GWPS at any of the downgradient monitoring wells. pH is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. All observations of pH are within the applicable GSI criteria (Appendix D: Table 2).
- **Sulfate:** The detection monitoring statistical evaluation found that sulfate concentrations were increasing at JCW-MW-18006. The assessment monitoring statistical evaluation found that sulfate was present at statistically significant levels above the GWPS at JCW-MW-18001, while sulfate concentrations at JCW-MW-18006 are below the GWPS. Sulfate is a detection monitoring (i.e. Appendix III) constituent and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. Although JCW-MW-18001 and JCW-MW-18006 are not GSI compliance wells, the concentrations of sulfate at these wells remain below the applicable GSI criterion (Final Acute Value [FAV]). All observations of sulfate at the GSI compliance monitoring wells are also less than the applicable GSI criterion (Appendix D: Table 2).

3.5 Alternate Source Demonstration

At this time, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD), for the following, as detailed below:

- Calcium and sulfate in monitoring well JCW-MW-18001; and
- Arsenic in monitoring well MW-55.

The groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below. The Professional Engineer Certification Statement is included in Appendix G.

3.5.1 Monitoring Well JCW-MW-18001: Calcium and Sulfate

Although confirmed increasing trends were observed at JCW-MW-18001 for calcium (through Q3 2024) and sulfate (through Q2 2024) and concentrations of calcium and sulfate are present at statistically significant levels above the GWPSs at JCW-MW-18001, these trends are not indicative of a new release from the landfill. Calcium and sulfate are two of several constituents

that contribute to the overall TDS concentration and increasing calcium and sulfate concentrations likely contribute to an overall increase in TDS as well. TDS concentrations are not currently exhibiting a statistically significant upward trend; however, TDS concentrations have been increasing in past events and the data are discussed as part of this ASD. Increases of calcium, sulfate, and TDS concentrations at JCW-MW-18001 are attributed to changes occurring outside of the slurry wall as a result of changing water levels, rather than a change in flux from the landfill; therefore, Consumers Energy is continuing to assert an ASD for these constituents. The following lines of evidence as well as additional time series charts included in Appendix G support this ASD:

- The potentiometric analysis demonstrates that the slurry wall is effective in reducing the flux of groundwater from the landfill (Appendix A).
- Concentration data also support that the slurry wall is effective in reducing the flux of groundwater from the landfill, based on the following observations (Appendix G1):
 - JCW-MW-18001 was installed after the 1,600 linear foot gap in the landfill perimeter slurry wall was closed, as discussed in Section 1.2. Prior to the slurry wall expansion in July 2018, monitoring well JCW-MW-15023 was located within the gap of the slurry wall and was sampled between December 2015 and May 2018 as a part of the original Federal CCR program monitoring well network. The groundwater quality data collected from JCW-MW-15023 shows that groundwater in contact with CCR managed within the landfill was high in arsenic, and low in sulfate, calcium, and TDS (Appendix G1).
 - To accommodate the July 2018 slurry wall expansion, JCW-MW-15023 was decommissioned. Once slurry wall construction was completed, JCW-MW-18001 was installed within 10-ft of the location of the former JCW-MW-15023 well, on the discharge channel side of the slurry wall. Additionally, an observation well, JCW-OW-18001, was installed on the landfill side of the slurry wall to monitor water levels to assess the effectiveness of the hydraulic control. Both JCW-MW-18001 (outside) and JCW-OW-18001 (inside) have been sampled recently to assess concentration trends.
 - Concentrations of arsenic are much higher inside of the slurry wall, within the landfill, while arsenic concentration remain low on the outside of the landfill.
 - Concentrations of calcium, sulfate, and TDS are much lower on the inside of the slurry wall and are higher outside of the slurry wall.
- These combined lines of evidence support that increasing concentrations of calcium, sulfate, and TDS are not a result of a change in flux from the landfill and instead are a result of changing groundwater conditions on the outside of the slurry wall.

3.5.2 Monitoring Well MW-55: Arsenic

Additionally, Consumers Energy is continuing to assert an ASD for arsenic at MW-55 indicating elevated levels of constituents at that location are not related to materials management of the Weadock Landfill (*2021 Annual Groundwater Monitoring and Corrective Action Report*; TRC, January 2022). The basis for this ASD is summarized below and updated time series plots in support of this ASD are included in Appendix G (Figure G2).

A targeted groundwater investigation was completed in August 2018 to further evaluate whether arsenic observed in MW-55 is potentially coming from the landfill or from another source. Data collected from the 2018 investigation as well as data collected during routine sampling events for Part 115 and Federal CCR groundwater compliance show the following:

- **Distinct Chemistry from Leachate** – The leachate chemistry from a monitoring well screened at the base of the ash fill (LH-104) is distinctly different from the groundwater chemistry near MW-55 and the temporary monitoring wells installed by TRC in the investigation area, as illustrated Appendix G of the 2019 Annual Groundwater Monitoring and Corrective Action Report (TRC, January 2020). Additionally, concentrations of arsenic and iron are generally much lower, and concentrations of boron are much higher within the landfill (LH-104) than outside of the landfill at MW-55 (Figure G2).
- **Conservative Tracer** – Boron is a metalloid known to be present in coal ash and can be used as a conservative tracer in groundwater. The average concentration of boron in Leachate Headwell LH-104 (11,000 ug/L: November 2017 - October 2024) is significantly higher than concentrations observed at any of the other locations sampled as a part of this monitoring program and approximately an order of magnitude higher than concentration observed at MW-55 (1,130 ug/L in October 2024). Additionally, recently observed boron concentrations at MW-55 are similar to or lower than historical concentrations, which further supports that the water quality at MW-55 is not directly affected by groundwater migrating from the landfill.
- **Changes in Geochemistry Related to Water Level Changes** – Water levels observed at MW-55, as shown in Appendices A and G, increased over 4-ft between 2010 and 2020. The oxidation-reduction potential (ORP) at MW-55 has generally decreased (i.e., is more reducing) since 2010, while pH has generally increased. These changes in field indicator parameters over time as a result of changes in water levels have affected the geochemical conditions in the vicinity of MW-55, resulting in changes in the solubility of both arsenic and iron. Since 2021, water levels have been generally decreasing, resulting in a slight increase in ORP (i.e., is less reducing) and decreases in pH and concentrations of both arsenic and iron, which further illustrates the relationship between groundwater elevations, redox state, and concentration of arsenic and molybdenum in groundwater.

4.0 Conclusions and Recommendations

Detection monitoring is continuing through the active life of the Weadock Landfill to monitor for new releases from landfill operations. The detection monitoring program consists of potentiometric analysis and groundwater quality analysis. Evaluation of the fourth quarter 2024 data demonstrate that the slurry wall is functioning as designed.

The Weadock Landfill is currently in assessment monitoring pursuant to the CCR Rule, as discussed in the *2023 Annual Groundwater Monitoring and Corrective Action Report*, due to observed groundwater concentrations that are indicative of impact from past landfill operations. Evaluation of the fourth quarter 2024 data in accordance with the Weadock Landfill HMP demonstrate that boron, calcium, and sulfate are present at concentrations above the GWPSs. Boron, calcium, and sulfate are detection monitoring (i.e., Appendix III) constituents that do not have associated health-based criteria and there is not a complete drinking water pathway on-site. As such, the relevant Part 115 compliance pathway is the GSI pathway. The statistical evaluation in fourth quarter 2024 found that no constituents were present at statistically significant levels above applicable GSI criteria.

Therefore, Consumers Energy will continue with the detection and assessment monitoring as required by the CCR rule as well as the monitoring program relative to the implementation of the site-specific mixing zone authorization at the Weadock Landfill unit in conformance with the JC Weadock Landfill HMP. The first quarter monitoring event for is scheduled for March 2025.

5.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. JC Weadock Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. November 6.
- Consumers Energy Company. 2015. *Hydrogeological Monitoring Plan Rev. 2: JC Weadock Solid Waste Disposal Area*. June 9.
- Consumers Energy. 2019. *JC Weadock Landfill Response Action Plan Submittal, JC Weadock Generating Facility (WDS# 395457), Essexville, Michigan*. March 15.
- Golder Associates, Inc. 2018. *J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report*. October 30.
- Golder Associates, Inc. 2022. *Weadock Landfill 2022 Closure Plan, Type III Dry Ash Landfill, ID 395457*. March.
- Michigan Department of Natural Resources (MDNR). 1986. *Determination of Permit Exemption No. GWE-0005*. August 25.
- Michigan Department of Environmental Quality (MDEQ). 2015. *Implementation of a Mixing Zone Request Consumers Energy DE Karn/JC Weadock Complex*. December 23.
- MDEQ. 2018a. *Groundwater-Surface Water Interface Pathway Compliance Options*. April.
- MDEQ. 2018b. *Slurry Wall Construction Certification; JC Weadock Landfill, Bay County, Michigan, Waste Data System Number 395457*. December 19.
- Michigan Department of Environment, Great Lakes, and Energy (EGLE). 2020. *Closure Certification, Consumers Weadock Complex (Weadock) Bottom Ash Pond, Bay County, Waste Data System No. 395457*. November 30. [Letter]
- EGLE. 2024. *Implementation of a Mixing Zone Reauthorization Request, DE Karn/JC Weadock Complex; Waste Data System No. 395457*. October 4.
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation, Final Report.
- Natural Resource Technology. 2010. Revised Hydrogeological Monitoring Plan – JC Weadock Solid Waste Disposal Area. TRC. 2018. Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit. Prepared for Consumers Energy Company. January.
- TRC. 2018. *Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit*. Prepared for Consumers Energy Company.
- TRC. 2019a. *2018 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company*. January.

-
- TRC. 2019b. *Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units*. Prepared for Consumers Energy Company. September.
- TRC. 2020. *2019 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit*. Prepared for Consumers Energy Company. January.
- TRC. 2021. *Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan*. Prepared for Consumers Energy Company. February.
- TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.
- TRC. 2022. *2021 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- TRC. 2022. *2022 Semiannual Groundwater Monitoring Report and Second Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. July.
- TRC. 2023. *2022 Semiannual Groundwater Monitoring Report and Fourth Quarter 2022 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. January.
- TRC. 2024. *2023 Annual Groundwater Monitoring and Corrective Action Report – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units*. Prepared for Consumers Energy Company. January.
- USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

Tables

Table 1
 Summary of Groundwater Elevation Data
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Static Water Level Monitoring	Groundwater Quality Monitoring	GSI Monitoring	Leachage Analysis Program	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)	September 30, 2024		
								Depth to Water (ft BTOC)	Groundwater Elevation (ft)	
Background Monitoring Wells										
MW-15002	✓	✓	--	--	587.71	Sand	580.9 to 570.9	8.54	579.17	
MW-15008	✓	✓	--	--	585.36	Sand with clay	578.7 to 568.7	5.30	580.06	
MW-15016	✓	✓	--	--	586.49	Sand	581.2 to 578.2	5.70	580.79	
MW-15019	✓	✓	--	--	586.17	Sand and Sand/Clay	579.5 to 569.5	6.38	579.79	
Former Bottom Ash Pond: Downgradient Monitoring Wells										
JCW-MW-15007	✓	--	--	--	587.40	Sand	582.7 to 579.2	5.73	581.67	
JCW-MW-15009	✓	--	--	--	589.64	Sand	581.9 to 576.9	9.79	579.85	
JCW-MW-15010	✓	--	--	--	597.76	Sand	579.7 to 578.2	17.13	580.63	
JCW-MW-15028	✓	--	--	--	589.64	Sand	567.7 to 564.7	9.52	580.12	
Landfill: Downgradient Monitoring Wells (outside slurry wall)										
JCW-MW-18001	✓	✓	--	--	596.73	Sand and Sandy Clay	578.3 to 573.3	16.58	580.15	
JCW-MW-18004	✓	✓	✓	--	593.04	Sandy Clay	583.9 to 578.9	12.65	580.39	
JCW-MW-18005	✓	✓	--	--	590.89	Sand and Sandy Clay	580.0 to 575.0	10.33	580.56	
JCW-MW-18006	✓	✓	--	--	600.72	Fly Ash and Sandy Clay	582.8 to 577.8	15.50	585.22	
MW-50	✓	✓	✓	--	593.36	Sand	577.8 to 574.8	13.45	579.91	
MW-51	✓	✓	✓	--	594.29	Sand and Clay	577.8 to 574.8	14.30	579.99	
MW-52	✓	✓	✓	--	594.90	Sand	579.3 to 576.3	14.94	579.96	
MW-53	✓	✓	✓	--	593.68	Sand and Clay	579.1 to 576.1	13.76	579.92	
MW-53R	✓	✓	✓	--	594.25	Sand and Clay	580.4 to 575.4	14.35	579.90	
MW-54R	✓	✓	✓	--	593.89	Clay and Sand	581.3 to 576.3	14.05	579.84	
MW-55	✓	✓	✓	--	593.82	Sand	581.5 to 578.5	13.92	579.90	
OW-57R OUT	✓	✓	--	--	591.00	Sandy Clay	577.0 to 572.0	9.58	581.42	

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G

(Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

--: Not Applicable

NR: Not Recorded

NU: Not Used; anomalous measurement

(1) Anomalous measurement outside range of historical data at JCW-OW-18002.

Table 1
 Summary of Groundwater Elevation Data
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Static Water Level Monitoring	Groundwater Quality Monitoring	GSI Monitoring	Leachage Analysis Program	TOC Elevation (ft)	Geologic Unit of Screen Interval	Screen Interval Elevation (ft)		September 30, 2024		
									Depth to Water (ft BTOC)	Groundwater Elevation (ft)	
Landfill: Static Water Level Only (inside slurry wall)											
JCW-OW-18001	✓	--	--	--	595.84	Fly Ash and Sand	581.1	to	576.1	8.53	587.31
JCW-OW-18002	✓	--	--	--	593.63	Sand	578.9	to	573.9	NU ⁽¹⁾	NU ⁽¹⁾
JCW-OW-18003	✓	--	--	--	593.99	Sand and Clay	580.5	to	575.5	10.10	583.89
JCW-OW-18004	✓	--	--	--	594.19	Sandy Clay	584.6	to	579.6	7.73	586.46
JCW-OW-18006	✓	--	--	--	600.61	Fly Ash and Clay with Sand	582.9	to	577.9	10.18	590.43
MW-20	✓	--	--	--	592.73	NR	~581.1	to	~578.1	8.50	584.23
MW-58	✓	--	--	--	586.25	Sand	579.7		569.7	6.00	580.25
OW-51	✓	--	--	--	593.62	Clay and Sand	578.9	to	575.9	9.05	584.57
OW-53	✓	--	--	--	593.64	Clay and Sand	579.0	to	576.0	9.95	583.69
OW-54	✓	--	--	--	594.10	Clay and Sand	580.0	to	577.0	7.73	586.37
OW-55	✓	--	--	--	594.67	Clay (or Sand and Clay)	580.9	to	577.9	7.93	586.74
OW-56R	✓	--	--	--	592.01	Ash and Sand	577.5	to	572.5	7.36	584.65
OW-57R IN	✓	--	--	--	590.86	Sandy Clay	575.7	to	570.7	6.18	584.68
OW-61	✓	--	--	--	602.15	Ash and Sand	588.0	to	585.0	10.58	591.57
Landfill: Leachate Headwells											
LH-103R	✓	--	--	✓	612.70	Fly Ash	30.2	to	33.2	21.50	591.20
LH-104	✓	--	--	✓	596.56	Fly Ash	8.0	to	11.0	9.64	586.92

Notes:

Survey data from: Rowe Professional Services Company (Nov. 2015) and Consumers Energy Company drawings: SG-21733, Sheet 1, Rev. G

(Karn, 11/27/18); and SG-21733, Sheet 2, Rev. C (Weadock, 11/27/18).

Elevation in feet relative to North American Vertical Datum 1988 (NAVD 88).

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

--: Not Applicable

NR: Not Recorded

NU: Not Used; anomalous measurement

(1) Anomalous measurement outside range of historical data at JCW-OW-18002.

Table 2
 Summary of Field Parameters
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature (°C)	Turbidity (NTU)
DE Karn & JC Weadock Background							
MW-15002	10/3/2024	0.91	-148	6.9	8,940	13.9	3.3
MW-15008	10/2/2024	0.98	-190	7.3	1,845	15.9	4.0
MW-15016	10/3/2024	0.89	-150	6.9	1,940	17.3	3.0
MW-15019	10/2/2024	1.17	-168	7.1	2,087	15.0	4.2
JC Weadock Solid Waste Disposal Area							
JCW-MW-18001	10/1/2024	1.00	-218	7.0	3,508	15.3	5.0
JCW-MW-18004	10/2/2024	6.70	-115	7.0	1,385	13.5	5.0
JCW-MW-18005	10/2/2024	1.25	-178	7.2	1,283	15.5	8.0
JCW-MW-18006	10/2/2024	1.15	-183	7.2	1,199	13.4	3.8
MW-50	10/1/2024	1.19	-205	7.6	1,479	15.4	3.9
MW-51	10/1/2024	1.10	-228	7.7	1,328	16.4	4.7
MW-52	10/1/2024	1.20	-193	7.1	1,743	15.9	5.0
MW-53	10/1/2024	1.10	-236	7.8	955	15.9	4.5
MW-53R	10/1/2024	1.10	-210	7.3	1,365	15.4	6.0
MW-54R	10/2/2024	1.29	-175	7.0	1,267	13.9	5.8
MW-55	10/2/2024	1.10	-180	7.2	1,186	15.6	7.0
OW-57ROUT	10/2/2024	1.15	-210	7.2	1,245	15.1	4.0

Notes:

- mg/L - Milligrams per Liter.
- mV - Millivolts.
- SU - Standard Units.
- umhos/cm - Micromhos per centimeter.
- °C - Degrees Celsius.
- NTU - Nephelometric Turbidity Unit.

Table 3
 Summary of Groundwater Sampling Results (Analytical)
 DE Karn and JC Weadock Background - Hydrogeological Monitoring Program
 Essexville, Michigan

Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^	Sample Location:	MW-15002	MW-15008	MW-15016	MW-15019
						Sample Date:	10/3/2024	10/2/2024	10/3/2024	10/2/2024
Appendix III⁽¹⁾										
Boron	ug/L	NC	500	500	4,000		223	129	610	276
Calcium	mg/L	NC	NC	NC	500 ^{EE}		269	94.2	260	184
Chloride	mg/L	250**	250^E	250^E	50		3,020	423	214	365
Fluoride	ug/L	4,000	NC	NC	NC		< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}		35.4	2.38	129	121
Total Dissolved Solids	mg/L	500**	500^E	500^E	500		5,620	1,030	1,300	1,260
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0		6.9	7.3	6.9	7.1
Appendix IV⁽¹⁾										
Antimony	ug/L	6	6.0	6.0	2.0		< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10		< 1	< 1	23	< 1
Barium	ug/L	2,000	2,000	2,000	1,200		885	71	219	337
Beryllium	ug/L	4	4.0	4.0	33		< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5		< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11		< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100		< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC		< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14		< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440		24	15	34	13
Mercury	ug/L	2	2.0	2.0	0.20#		< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120		< 5	< 5	< 5	< 5
Radium-226	pCi/L	NC	NC	NC	NC		1.13	0.439	0.280	0.614
Radium-228	pCi/L	NC	NC	NC	NC		1.80	< 0.821	< 0.753	< 0.771
Radium-226/228	pCi/L	5	NC	NC	NC		2.93	0.978	< 0.753	1.24
Selenium	ug/L	50	50	50	5.0		< 1	< 1	< 1	< 1
Thallium	ug/L	2	2.0	2.0	2.0		< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾										
Iron	ug/L	300**	300^E	300^E	500,000 ^{EE}		28,900	12,800	20,500	19,000
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20		3	10	2	3
Nickel	ug/L	NC	100	100	120		6	2	8	4
Silver	ug/L	100**	34	98	0.2		< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27		18	11	3	3
Zinc	ug/L	5,000**	2,400	5,000 ^E	260		< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April 2012.

NC - no criteria.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

E - Criterion is the aesthetic drinking water value per footnote (E).

EE - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

		Sample Location:				JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
		Sample Date:				10/1/2024	10/2/2024	10/2/2024	10/2/2024	10/1/2024	10/1/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^						
Appendix III⁽¹⁾											
Boron	ug/L	NC	500	500	4,000	1,310	412	1,930	3,240	2,550	1,070
Calcium	mg/L	NC	NC	NC	500 ^{EE}	474	207	162	126	184	134
Chloride	mg/L	250**	250 ^E	250 ^E	50	50.3	14.1	51.8	61.6	33.9	78.8
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	1,400	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	1,770	444	142	65.4	423	285
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	3,210	1,080	866	732	1,100	916
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.0	7.0	7.2	7.2	7.6	7.7
Appendix IV⁽¹⁾											
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	2	< 1	2	27	5	27
Barium	ug/L	2,000	2,000	2,000	1,200	66	34	71	468	211	130
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	2	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	1,400	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	90	46	31	48	56	25
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	< 5	6	< 5
Radium-226	pCi/L	NC	NC	NC	NC	0.158	0.120	0.169	0.520	0.355	0.223
Radium-228	pCi/L	NC	NC	NC	NC	< 0.430	< 0.656	< 0.640	0.768	< 0.773	1.40
Radium-226/228	pCi/L	5	NC	NC	NC	< 0.430	< 0.656	< 0.640	1.29	1.10	1.62
Selenium	ug/L	50	50	50	5.0	2	1	2	2	2	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾											
Iron	ug/L	300**	300 ^E	300 ^E	500,000 ^{EE}	1,540	36	1,930	9,050	1,930	2,740
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	2	2	< 1	2	1	1
Nickel	ug/L	NC	100	100	120	5	< 2	7	4	3	4
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	< 2	4	< 2	2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

E - Criterion is the aesthetic drinking water value per footnote (E).

EE - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4
 Summary of Groundwater Sampling Results (Analytical)
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

		Sample Location:				MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57ROUT
		Sample Date:				10/1/2024	10/1/2024	10/1/2024	10/2/2024	10/2/2024	10/2/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non-Residential*	MI GSI^						
Appendix III⁽¹⁾											
Boron	ug/L	NC	500	500	4,000	1,220	6,380	2,830	8,080	1,130	2,070
Calcium	mg/L	NC	NC	NC	500 ^{EE}	251	100	181	177	150	138
Chloride	mg/L	250**	250 ^E	250 ^E	50	37.2	61.6	42.5	86.2	23	73.3
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	1,230	< 1,000	1,510
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	522	25.9	126	79.8	117	83.4
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	1,330	588	890	826	756	762
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.1	7.8	7.3	7.0	7.2	7.2
Appendix IV⁽¹⁾											
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	< 1	1	16	2	54	2
Barium	ug/L	2,000	2,000	2,000	1,200	93	386	128	100	222	83
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	1,230	< 1,000	1,510
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	27	40	56	83	25	24
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	< 5	< 5	< 5	17	44	7
Radium-226	pCi/L	NC	NC	NC	NC	0.149	0.572	0.184	0.213	0.274	0.163
Radium-228	pCi/L	NC	NC	NC	NC	0.706	0.913	< 0.632	< 0.588	< 0.899	< 0.543
Radium-226/228	pCi/L	5	NC	NC	NC	0.855	1.48	0.702	0.639	< 0.899	0.570
Selenium	ug/L	50	50	50	5.0	3	3	2	5	1	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 115⁽²⁾											
Iron	ug/L	300**	300 ^E	300 ^E	500,000 ^{EE}	8,450	518	975	137	12,600	67
Copper	ug/L	1,000**	1,000 ^E	1,000 ^E	20	3	< 1	1	2	< 1	2
Nickel	ug/L	NC	100	100	120	< 2	< 2	< 2	3	4	15
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter; mg/L - milligrams per liter.

pCi/L - picocuries per liter; SU - standard units; pH is a field parameter.

MCL - Maximum Contaminant Level, EPA Drinking Water Standards and Health Advisories, April, 2012.

NC - no criteria.

* - Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.

** - Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.

^ - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote (H). GSI criterion is protective for surface water used as a drinking water source as described in footnote (X). GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote (FF)

- If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.

E - Criterion is the aesthetic drinking water value per footnote (E).

EE - Criterion is based on the total dissolved solids GSI value per footnote (EE).

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendment - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

BOLD value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 5
 Summary of Confidence Interval Evaluation: Fourth Quarter 2024
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Assessment Monitoring Statistical Evaluation																								
Constituent	Units	GWPS	MW-50		MW-51		MW-52		MW-53		MW-53R		MW-54R		MW-55		OW-57R OUT		JCW-MW-18001		JCW-MW-18005		JCW-MW-18006	
			LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron ⁽¹⁾	ug/L	560	1,800	2,300	870	1,300	900	1,100	4,900	8,900	2,000	2,600	5,200	7,100	870	1,300	1,700	2,100	1,300	1,500	890	1,600	2,000	3,000
Calcium	mg/L	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	490	560	160	300	--	--
Sulfate	mg/L	780	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1,700	1,900	--	--	--	--
Arsenic	ug/L	21	--	--	7.5	21	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13	29

Notes:

ug/L - micrograms per Liter

mg/L - milligrams per Liter

-- - Not Applicable; well/parameter pair did not directly exceed the applicable criterion and was not included in further analysis.

GWPS - Groundwater Protection Standard as established in TRC's Technical Memorandum dated April 23, 2021

UCL - Upper Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

LCL - Lower Confidence Limit ($\alpha = 0.01$) of the downgradient data set.

1,300	Indicates a statistically significant exceedance of the GWPS (detection monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
--------------	---

1,300	Indicates a statistically significant exceedance of the GWPS (assessment monitoring constituent). An exceedance occurs when the LCL is greater than the criterion.
--------------	--

(1) Boron concentrations were confirmed as a statistically significant increase (SSI) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

(2) The concentrations of arsenic and molybdenum at MW-55 are not a result of a release from the unit, as detailed in the Alternate Source Demonstration (2021 Annual Groundwater Monitoring and Corrective Action Report, TRC, January 2022); therefore, confidence intervals were not calculated for comparison to GWPSs.

Table 6
 EGLE Exceedance Summary Table
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
 SUMMARY OF STATISTICAL EXCEEDANCES

Data is in	(X) ug/L	or
	() mg/L	
unless otherwise stated		

Facility: JC Weadock – WDS# 395457

Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	4 Qtr. 2024 (bold >201)	3 Qtr. 2024 (bold >201)	2 Qtr. 2024 (bold >201)	1 Qtr. 2024 (bold >201)
No Exceedances at Compliance Locations								

Table 7
 Leachate Headwell Results
 JC Weadock Solid Waste Disposal Area - Hydrogeological Monitoring Program
 Essexville, Michigan

Parameter	Reporting Limit	Units	2024 Field Leachate		2023 Field Leachate		2022 Field Leachate			2021 Field Leachate
			LH-103R	LH-104	LH-103R	LH-104	LH-103R	LH-104	LH-103R ⁽¹⁾	LH-104
			10/1/2024		10/4/2023		10/5/2022		3/10/2022	10/7/2021
Indicator Parameters										
Alkalinity, Bicarbonate	10,000	ug/L	1,150,000	648,000	899,000	338,000	1,100,000	547,000	1,200,000	351,000
Dissolved Oxygen	0.1	mg/L	1.10	1.62	1.60	0.50	0.10	1.95	1.16	0.49
O.R.P.	1	mV	-254	-220	-167.0	-89.3	-114	-86	-121.6	-119.6
pH	0.05	S.U.	7.52	7.83	7.04	7.46	6.75	7.35	6.95	7.47
Specific Conductance	1	uS/cm	4,055	1,594	3,113.5	1,089	2,095	1,489	2,498	1,715
Metals										
Antimony	1	ug/L	< 1	< 1	< 1	< 1	< 1	1	< 1	2
Arsenic	1	ug/L	48	64	21	44	41	16	87	26
Barium	5	ug/L	111	194	180	181	369	225	589	266
Beryllium	1	ug/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Boron	20	ug/L	6,450	13,000	6,270	12,100	8,040	10,800	8,240	11,200
Cadmium	0.2	ug/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	1	ug/L	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1
Cobalt	15	ug/L	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Copper	1	ug/L	2	1	2	1	< 1	< 1	2	1
Iron	20	ug/L	511	1,280	8,110	817	12,300	196	17,800	285
Lead	1	ug/L	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	10	ug/L	78	69	97	63	139	45	188	58
Mercury (low-level)	0.5	ng/L	0.50	0.52	1.01	< 0.5	< 0.5	0.54	2.25	0.58
Molybdenum	5	ug/L	11	52	88	128	< 5	67	12	40
Nickel	2	ug/L	6	6	5	4	7	6	18	8
Selenium	1	ug/L	15	5	4	2	< 1	< 1	21	5
Silver	0.2	ug/L	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Sodium	1,000	ug/L	706,000	71,600	583,000	62,000	111,000	77,900	156,000	80,500
Sulfate	1,000	ug/L	946,000	302,000	984,000	352,000	36,400	202,000	94,800	178,000
Thallium	2	ug/L	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Vanadium	2	ug/L	8	3	5	< 2	4	16	5	28
Zinc	10	ug/L	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

mg/L = milligrams per liter

ug/L = micrograms per liter

ng/L = nanograms per liter

mV = millivolts

S.U. = standard units

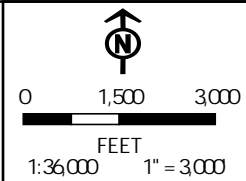
uS/cm = microSiemens per centimeter

O.R.P. = oxidation-reduction potential

(1) In 2021, leachate headwell LH-103 was damaged, therefore, a sample could not be collected. Leachate headwell LH-103 was replaced with LH-103R in March 2022.

Figures

COORDINATE SYSTEM: NAD 1983 STATEPLANE MICHIGAN SOUTH FIPS 2113 FEET, MAP ROTATION: 0
 - SAVED BY: W.DAVIS ON 12/20/2024, 09:16:34 AM - FILE PATH: T:\H-PROJECTS\CONSUMERS ENERGY\464096 WEADOCK\APR-WEADOCK-APR-4024-001



PROJECT: CONSUMERS ENERGY COMPANY
 DE KARN AND JC WEADOCK POWER PLANTS
 ESSEXVILLE, MICHIGAN

TITLE: SITE LOCATION MAP

DRAWN BY: H. DAVIS	PROJ. NO.: 553828 0000
CHECKED BY: J. KRENZ	FIGURE 1
APPROVED BY: D. LITZ	
DATE: JANUARY 2025	

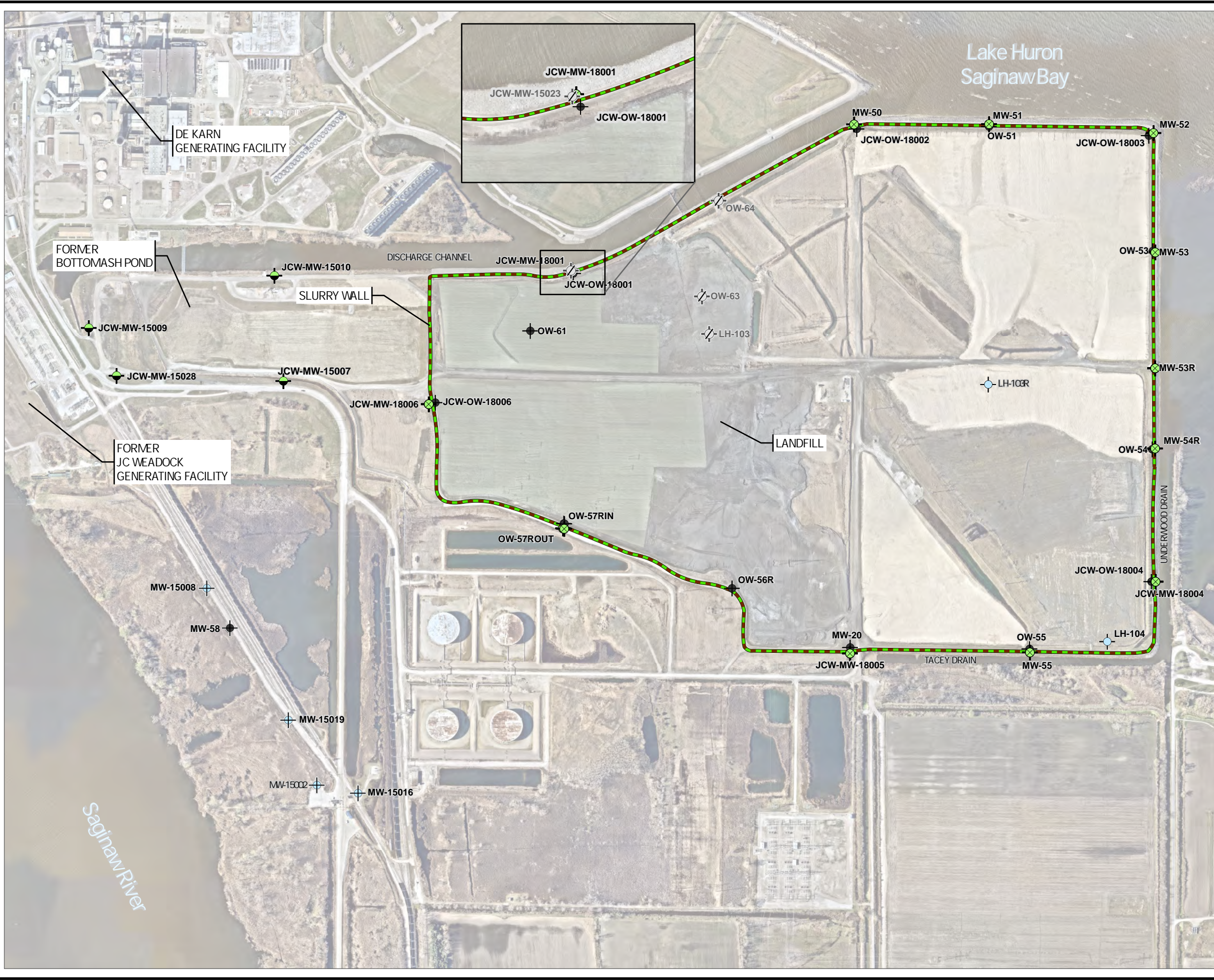


1540 EISENHOWER PLACE
 ANN ARBOR, MI 48108-3284
 PHONE: 734.971.7080

BASE MAP: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES.

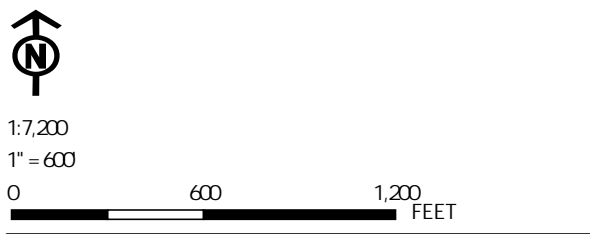
FILE: 464096 WEADOCK

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0
 Saved By: WDAVIS on 12/20/2024, 09:16:34 AM. File Path: T:\PROJECTS\Consumers_Energy\46-0096_Weadock\2-APR\T1-PROJECTS\Consumers_Energy\46-0096_Weadock.aprx. Layout Name: 653828-0204-002



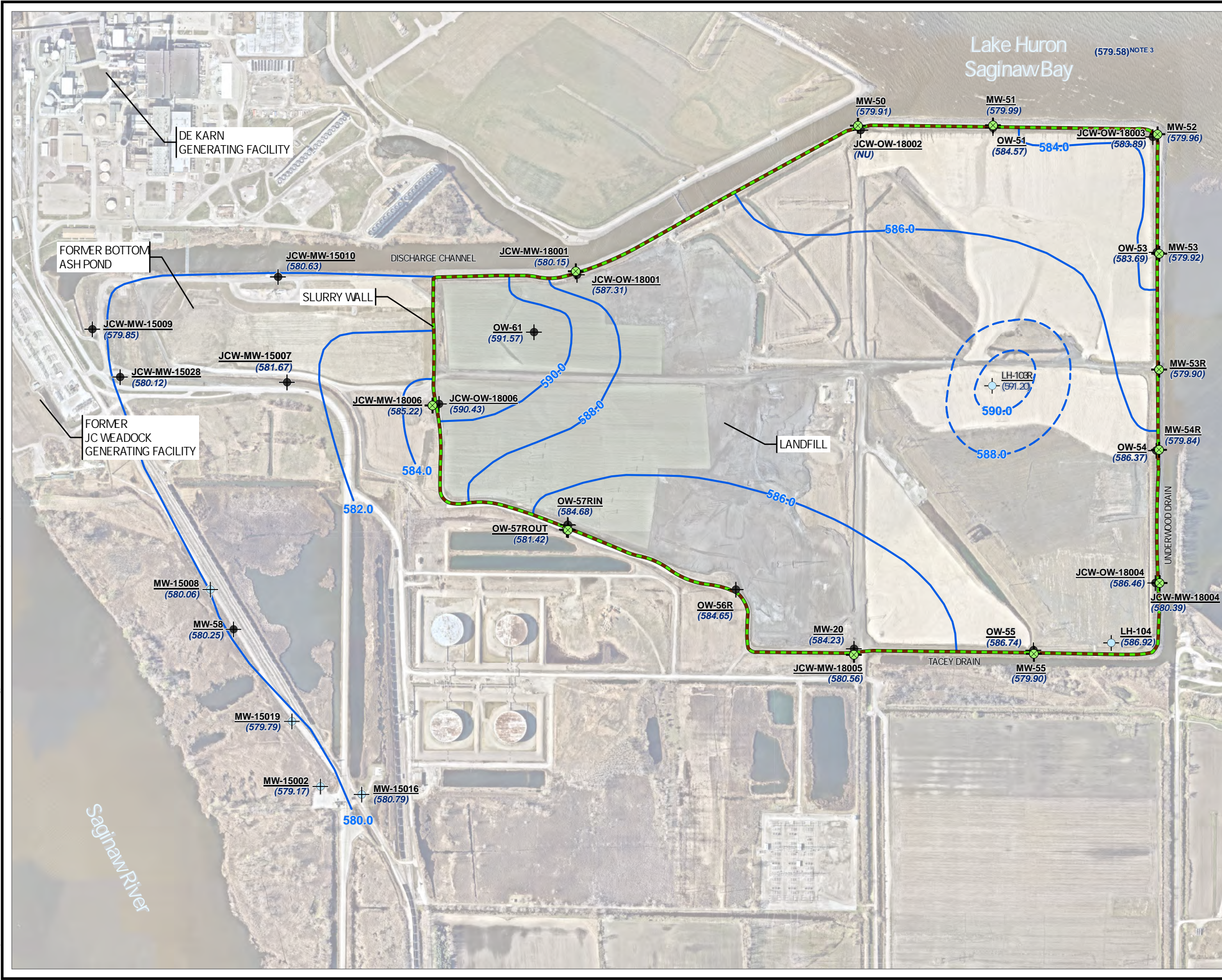
- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOMASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - DECOMMISSIONED WELL
 - SLURRY WALL (APPROXIMATE)

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018
 3. NOAA NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, M (ID: 9075035).



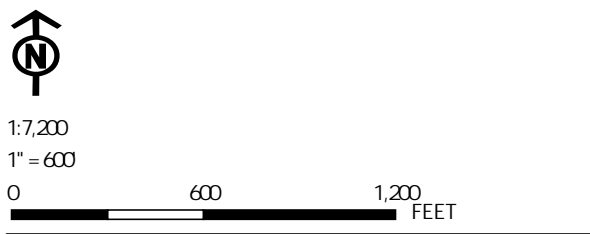
PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: SITE MAP	
DRAWN BY: H. DAVIS	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 2
APPROVED BY: D. LITZ	
DATE: JANUARY 2025	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096_Weadock.aprx

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl. Map Rotation: 0
 - Saved By: WDAVIS on 12/20/2024, 09:16:34 AM. File Path: T:\PROJECTS\Consumers_Energy\46-0086_Weadock\2-APR\T1-PROJECTS\Consumers_Energy\46-0086_Weadock.aprx. Layout Name: 553828-0204-003



- LEGEND**
- BACKGROUND MONITORING WELL
 - JCW BOTTOM ASH POND MONITORING WELL
 - JCW LANDFILL HMP WELL
 - MONITORING WELL (STATIC WATER LEVEL ONLY)
 - LEACHATE HEADWELL
 - DECOMMISSIONED WELL
 - SLURRY WALL (APPROXIMATE)
 - GROUNDWATER ELEVATION CONTOUR (2 INTERVAL, DASHED WHERE INFERRED)
 - (590.51)** GROUNDWATER ELEVATION (FEET)
 - (NU)** NOT USED TO DEVELOP CONTOURS

- NOTES**
1. BASE MAP IMAGERY FROM NEARMAP, (5/4/2022).
 2. MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018
 3. NOAA NATIONAL OCEANIC SERVICE GREAT LAKES GAUGING STATION, ESSEXVILLE, MI (ID: 9075035).
 4. GROUNDWATER ELEVATIONS DISPLAYED IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.



PROJECT: CONSUMERS ENERGY COMPANY JC WEADOCK POWER PLANT ESSEXVILLE, MICHIGAN	
TITLE: POTENTIOMETRIC SURFACE MAP OCTOBER 2024	
DRAWN BY: H. DAVIS	PROJ. NO.: 553828.0000
CHECKED BY: J. KRENZ	FIGURE 3
APPROVED BY: D. LITZ	
DATE: JANUARY 2025	
1540 EISENHOWER PLACE ANN ARBOR, MI 48108-3284 PHONE: 734.971.7080	
FILE:	464096_Weadock.aprx

Appendix A

Static Water Level Evaluation

Table A1
 Static Water Levels for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Well Location	Date Measured	Groundwater Water Elevation (GWE) (ft)	Saginaw Bay Surface Water Elevation (SWE) (ft)	Elevation Difference (GWE-SWE) ⁽¹⁾
MW-50	9/30/2024	579.91	579.56	0.35
MW-51	9/30/2024	579.99		0.43
MW-52	9/30/2024	579.96		0.40
MW-53	9/30/2024	579.92		0.36
MW-53R	9/30/2024	579.90		0.34
MW-54R	9/30/2024	579.84		0.28
MW-55	9/30/2024	579.90		0.34
JCW-MW-18004	9/30/2024	580.39		0.83
Average:		579.98		

Notes:

Elevation in feet above North American Vertical Datum 1988 (NAVD 88)

TOC: top of well casing

ft BTOC: feet below top of well casing

(1) Positive elevation difference indicates flow toward the surface water body.

Table A2
Slurry Wall Gradient and Flux
 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program
 Essexville, Michigan

Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Discharge Channel													
JCW-OW-18001	587.31		22.4	3.20E-01	2.00	2.88	1,010	2.30E-08	0.32	2,904	6.06E-02	0.45	165
JCW-MW-18001		580.15			3.75								
JCW-OW-18002 MW-50			NA										
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Adjacent Zone													
OW-51 MW-51	584.57		14.4	3.18E-01	4.00 4.69	4.35	1,850	2.30E-08	0.32	8,038	1.67E-01	1.25	456
JCW-OW-18003 MW-52	583.89		33.9	1.16E-01	3.50 4.17	3.84	740						
OW-53 MW-53	583.69		20.1	1.87E-01	1.25 2.08	1.66	730						
Monitoring Well Pair	SWL Obs Well (ft NAVD 88)	SWL MW (ft NAVD 88)	x_{wells} (ft)	i (ft/ft)	Saturated Thickness (ft)	Mean Thickness (ft)	Section Length (ft)	K (cm/sec)	i (ft/ft)	Area (ft ²)	Flow ft ³ /day	Flow Gal/day	Flow Gal/yr
Non-Adjacent Zone													
OW-54 MW-54R	586.37		21.2	3.08E-01	2.00 2.50	2.25	510	2.30E-08	0.31	1,148	2.30E-02	0.17	63
JCW-OW-18004 JCW-MW-18004	586.46		26.6	2.28E-01	8.00 0.49	4.25	820						
OW-55 MW-55	586.74		24	2.86E-01	2.00 1.90	1.95	1,220						
MW-20 JCW-MW-18005	584.23		40.9	8.97E-02	1.50 1.25	1.38	1,120						

Calculated Groundwater Discharge from JC Weadock (gal per day) = 2.93
(cubic ft per day) = 0.39
(cubic ft per min) = 2.7E-04

Calculated Groundwater Discharge from JC Weadock (gal per yr) = 1,070
(cubic ft per yr) = 143

Calculated Groundwater Discharge from JC Weadock (gal per year per linear foot of dike) = 0.12
(cubic feet per year per linear foot of dike) = 1.64E-02

Notes:

Water level data collected on September 30, 2024 are shown by yellow cells:

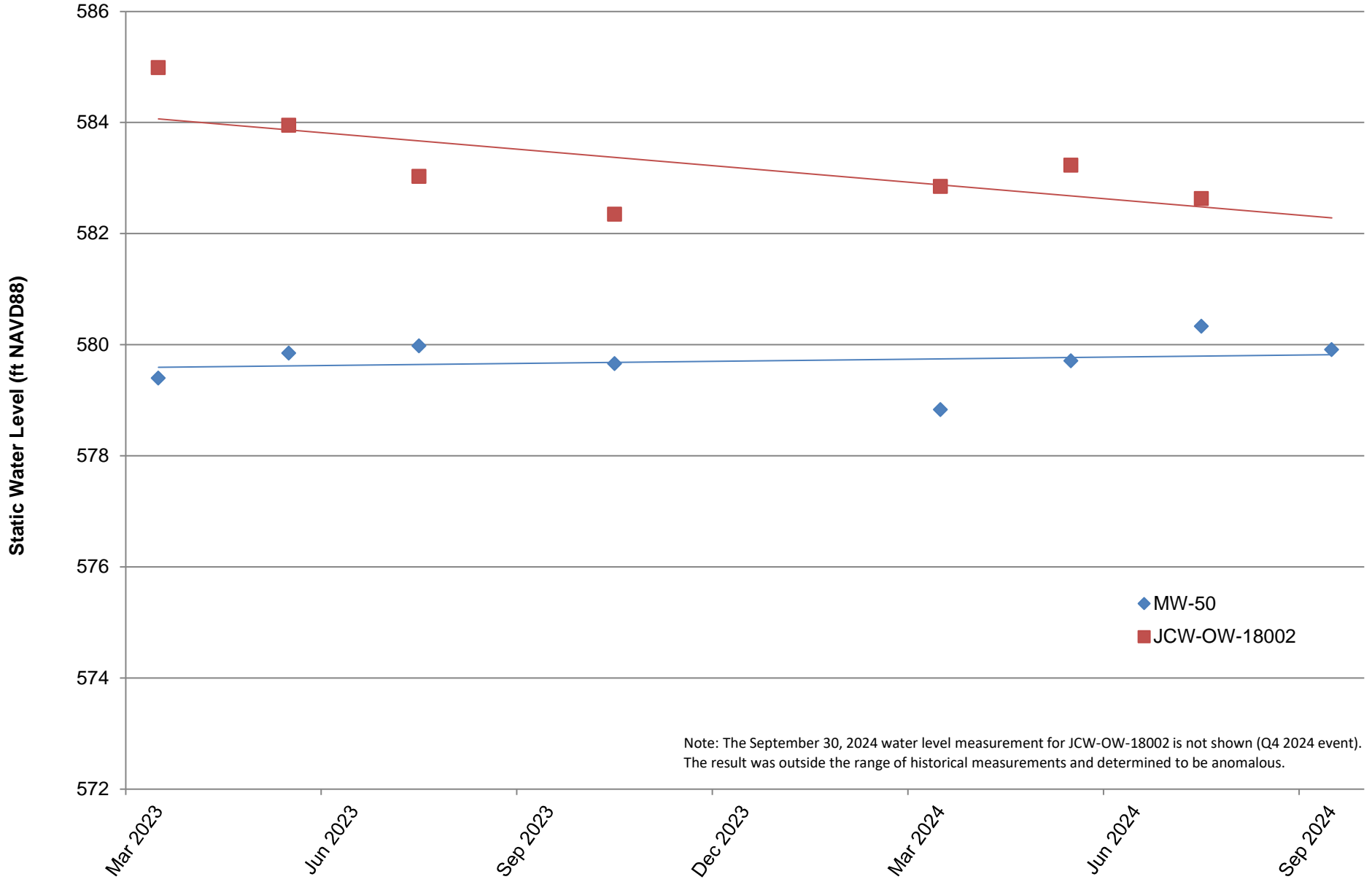
587.31

- Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- Saturated thickness will be the thickness of the sand unit when the observed SWL is above the top of the sand unit, or the measured saturated thickness of the sand unit if the SWL is below the top of the sand unit.
- Hydraulic conductivity taken as harmonic mean of laboratory tests done on in-place slurry wall from NTH Certified Quality Assurance Report, Appendix E, April 24, 2009
- Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- If Obs well SWL < MW SWL calculated flow will be zero.

SWL = Static Water Level; Obs Well = Observation Well; MW= Monitoring Well; ft NAVD 88 = feet above North American Vertical Datum 1988
 ft/ft = feet per foot; cm/sec = centimeters per second; ft² = square feet; ft³/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year
 i = hydraulic gradient; K = hydraulic conductivity; x_{wells} = distance between well pairs
 NA = Not Applicable, unable to calculate hydraulic gradient due to anomalous measurement outside range of historical data at JCW-OW-18002.

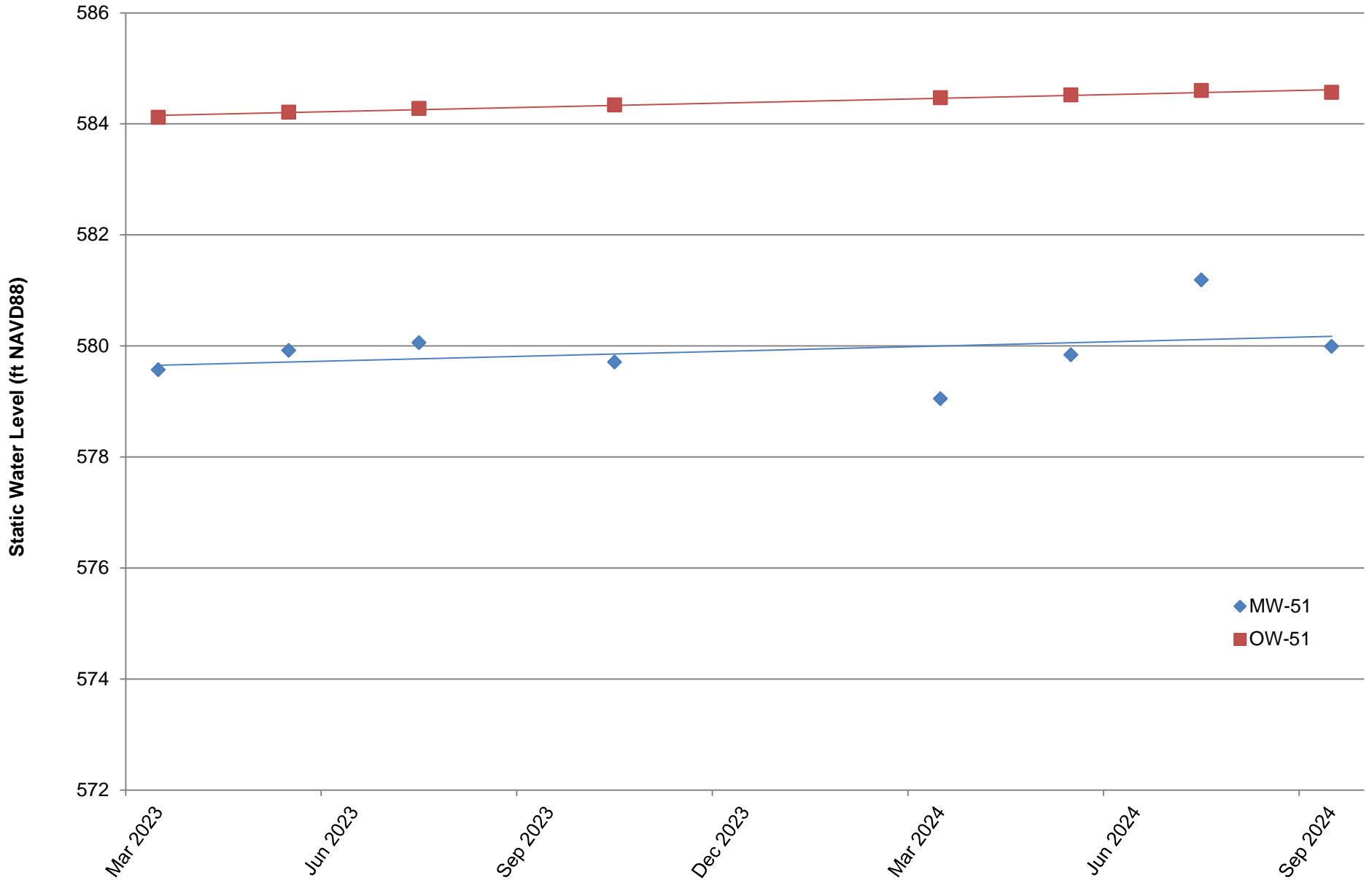
Appendix A

Static Water Level for MW-50 and JCW-OW-18002



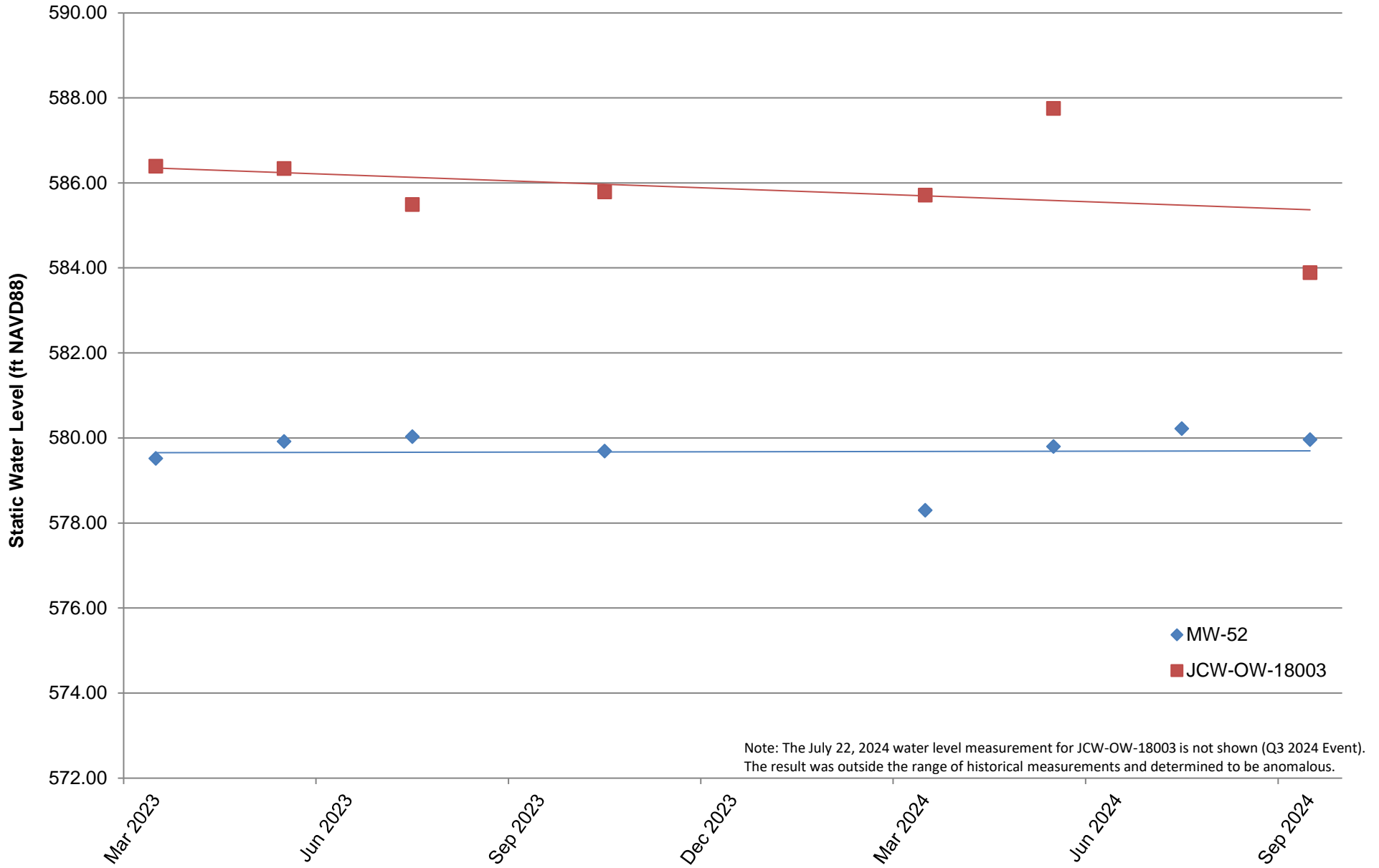
Appendix A

Static Water Level for MW-51 and OW-51



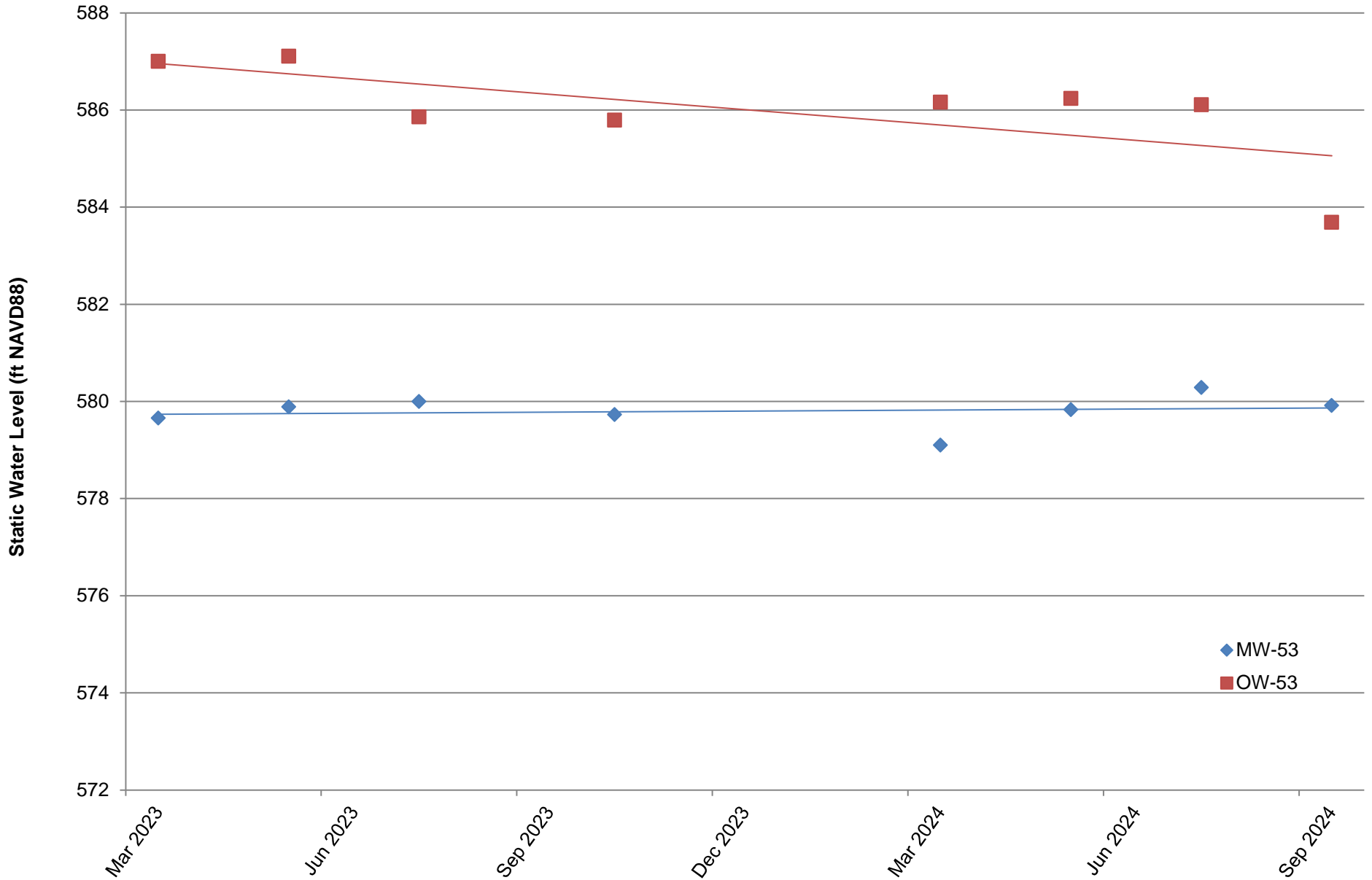
Appendix A

Static Water Level for MW-52 and JCW-OW-18003



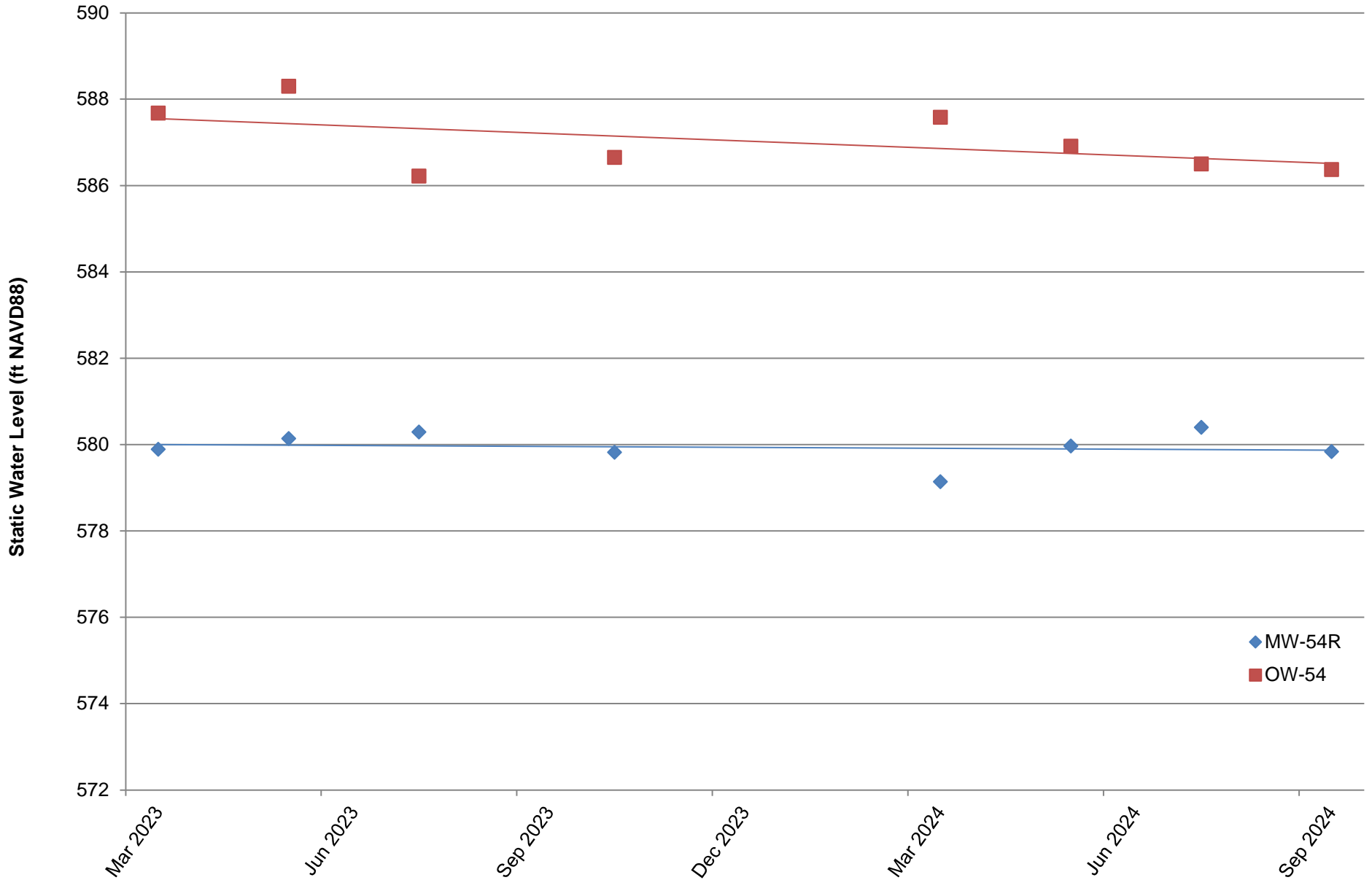
Appendix A

Static Water Level for MW-53 and OW-53



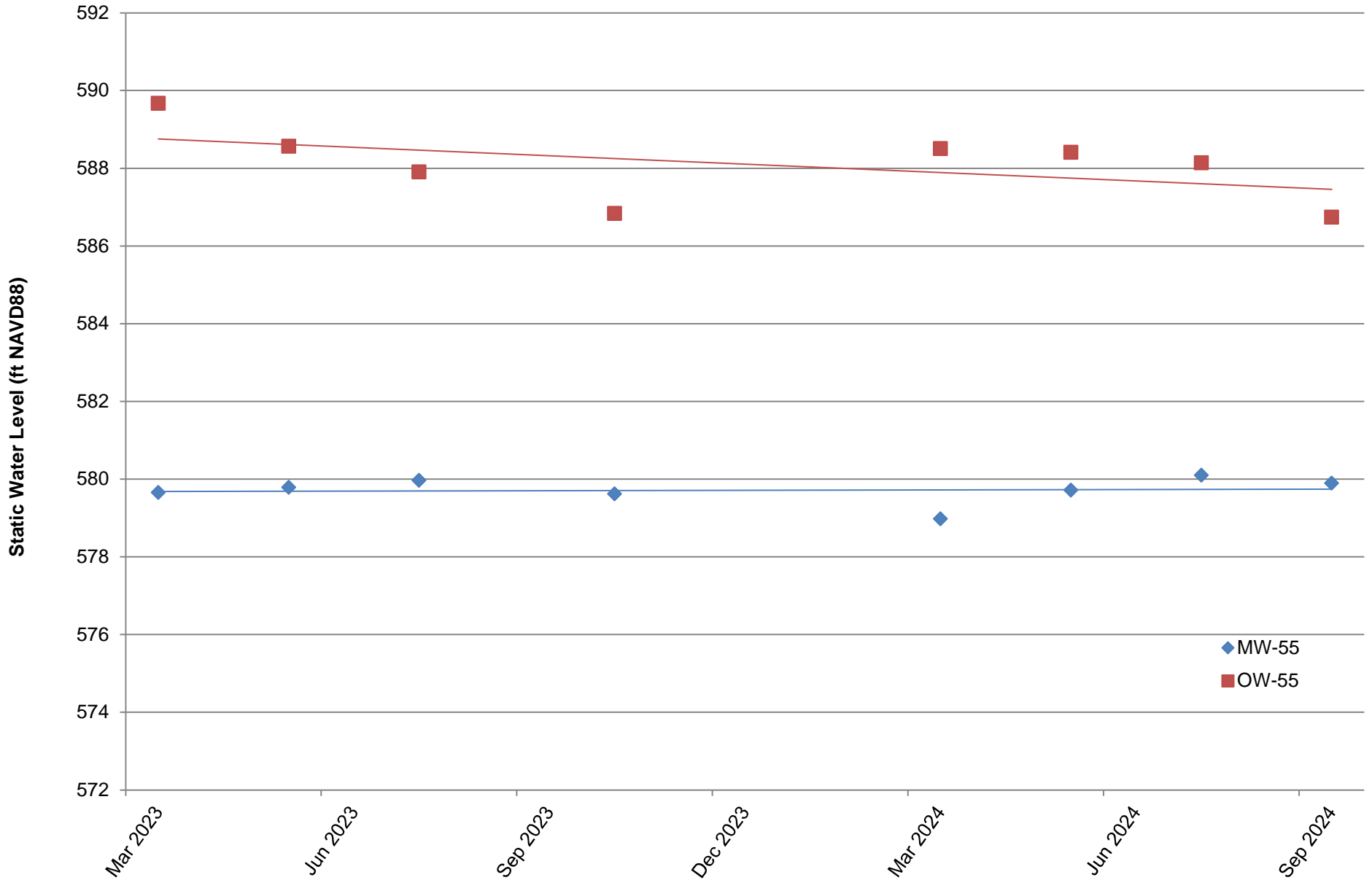
Appendix A

Static Water Level for MW-54R and OW-54



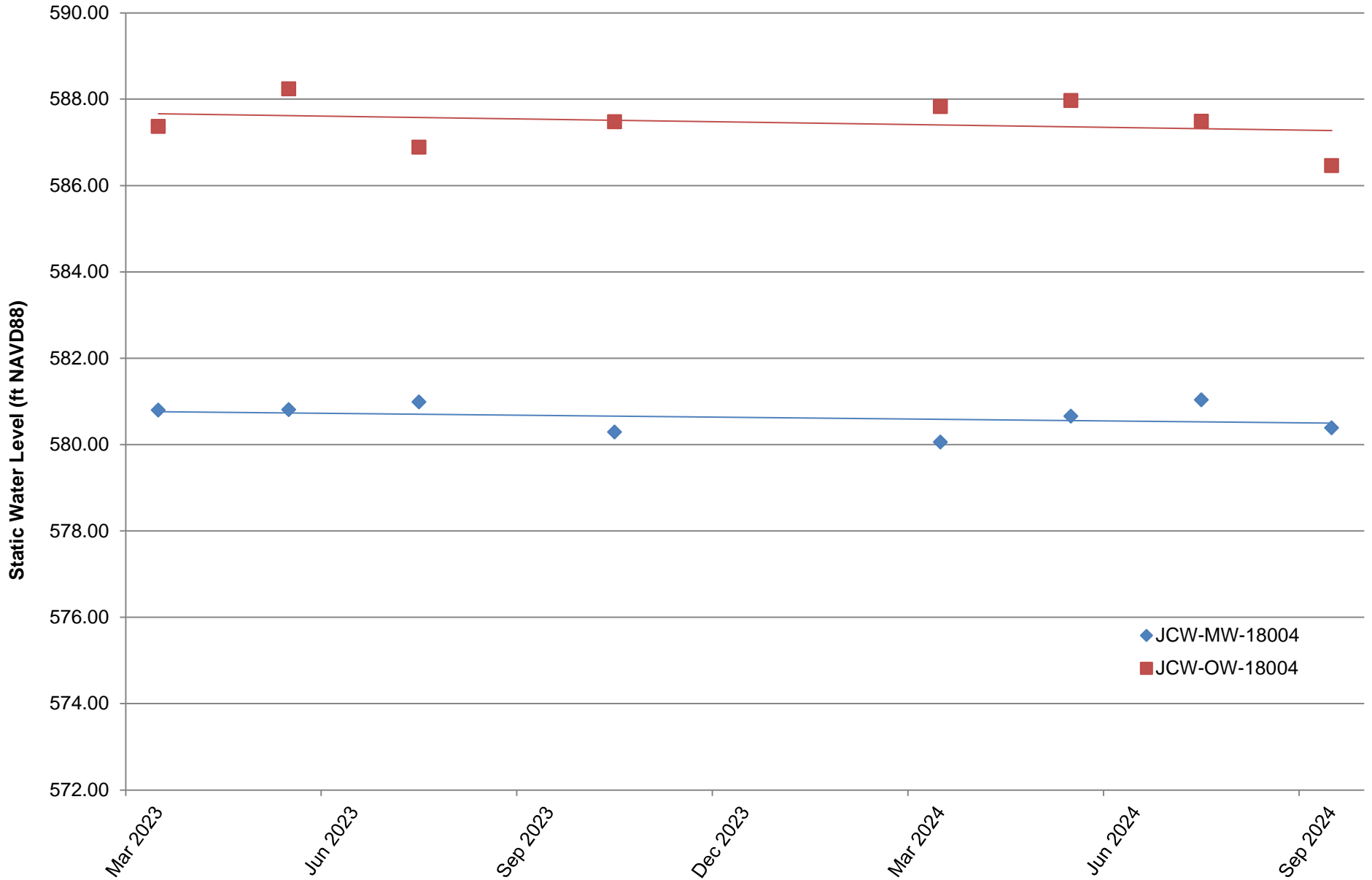
Appendix A

Static Water Level for MW-55 and OW-55



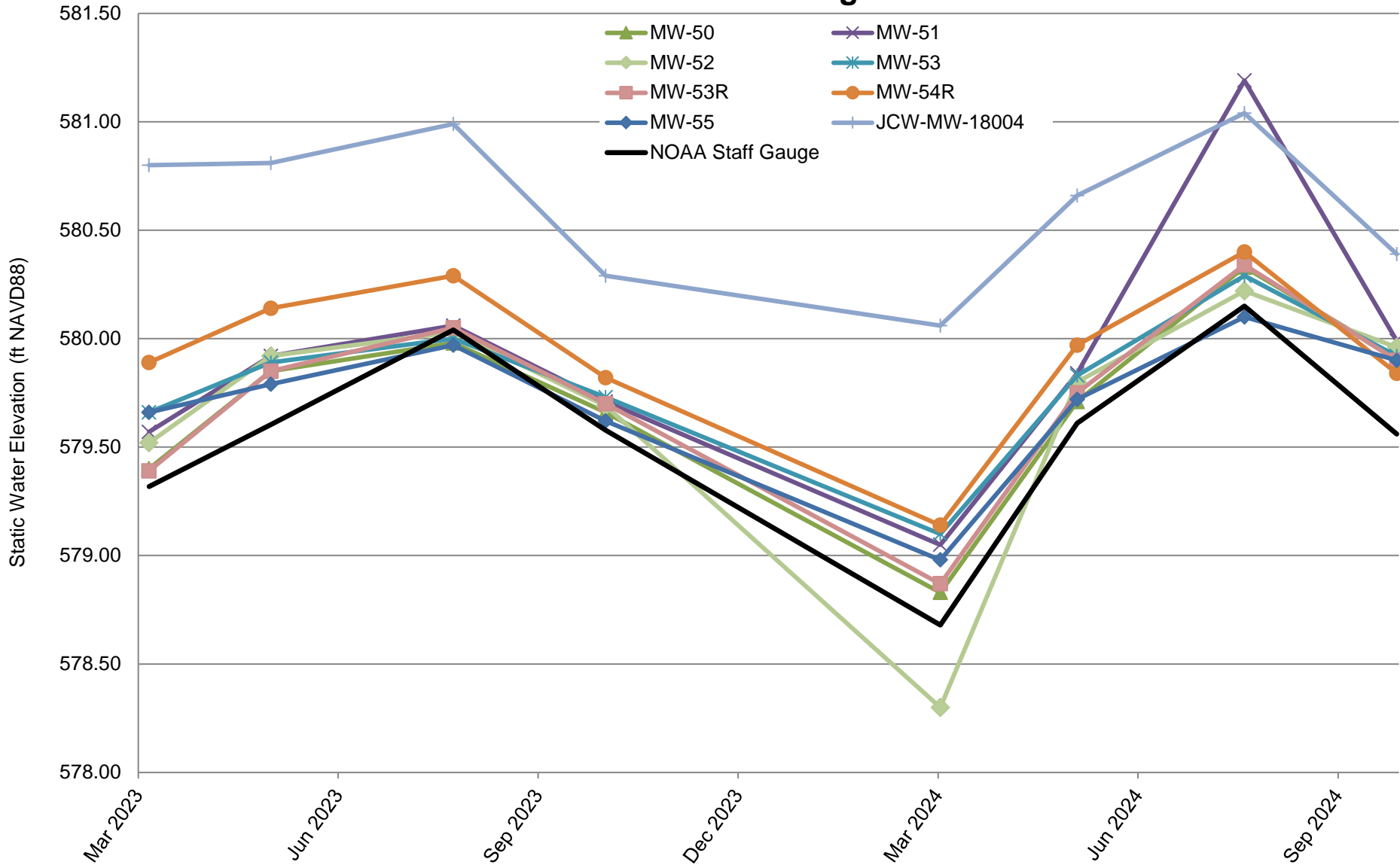
Appendix A

Static Water Level for JCW-MW-18004 and JCW-OW-18004



Appendix A

Static Water Elevations for Select Perimeter Dike Monitoring Wells and NOAA Staff Gauge



Appendix B

Data Quality Review

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock/DE Karn Background

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for total metals, anions, and total dissolved solids by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0805.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative;
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, and TDS analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, and additional Part 115 constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-Background) was collected. Target analytes were not detected above the RL in this blank sample.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.
- Samples DUP-Background/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met with the following exception.
 - Copper was detected in one of the two samples at a concentration <5x the RL and the absolute difference was greater than the RL. Therefore, the positive results for copper should be considered potentially uncertain (i.e., estimated) in all groundwater samples in this data set, as summarized in the attached table, Attachment A.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 DE Karn and JCW Weadock Background Wells
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
MW-15002	10/3/2024	Copper	Field duplicate variability (one result <5x the reporting limit and absolute difference above criteria); potential uncertainty exists for the listed results.
MW-15008	10/2/2024		
MW-15016	10/3/2024		
MW-15019	10/2/2024		
DUP-Background	10/2/2024		

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock Landfill

Porewater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, and/or alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0806.

During the October 2024 sampling event, a porewater sample was collected from each of the following wells:

- JCW-MW-18001
- JCW-MW-18004
- JCW-MW-18005
- JCW-MW-18006
- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- MW-58
- OW-57ROUT

Each sample was analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;

- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals, anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents will be utilized for the purposes of the detection, assessment, and groundwater-surface water interface (GSI) monitoring programs.
- Data are usable for the purposes of the monitoring programs.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-01) and one equipment blank (EB-01) were collected. Target analytes were not detected in these blank samples.
- MS and MSD analyses were performed on sample JCW-MW-18001 for select total metals and anions. The recoveries were within the acceptance limits. Relative percent differences were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- Laboratory duplicate analyses were not performed on a sample from this data set.

- Samples DUP-JCW-LF-02/MW-55 and DUP-JCW-LF-01/MW-50 were submitted as the field duplicate pairs with this data set; all criteria were met.

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock Landfill

Groundwater samples were collected by TRC for the October 2024 sampling event. The samples were analyzed for total metals, total and/or dissolved low-level mercury, anions, total dissolved solids, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 24-0808.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

- LH-103R
- LH-104

The samples were analyzed for one or more of the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Total and/or Dissolved Low-Level Mercury	EPA 1631E
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA, 2020). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, field blanks, and trip blanks. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures and trip blanks are used to assess potential contamination arising during shipment to the laboratory;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;

- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

It should be noted that results for method blanks and LCSs were not provided for review by CE Laboratory Services. Therefore, potential contamination arising from laboratory sample preparation and/or analytical procedures and the accuracy of the analytical method using a clean matrix could not be evaluated for the metals (including total and dissolved low-level mercury), anions, TDS, and alkalinity analyses.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed Appendix III, IV, optional Piper Diagram analyses, and additional Part 115 constituents, as well as low-level mercury, will be utilized for the purposes of the assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-02), one trip blank (TB-01), and two equipment blanks (EB-02 and EB-03) were collected. Low-level mercury was not detected in these blank samples. It was noted that the RL for low-level mercury in these blank samples (0.2 ng/L) was lower than the field samples (0.5 ng/L); the laboratory was not contacted about this issue.
- MS and MSD analyses were performed on sample LH-103R for total low-level mercury. The recoveries were within the acceptance limits. Relative percent differences were not provided by the laboratory and therefore were not evaluated; further, MS/MSD concentrations were not provided by the laboratory. However, since all recoveries were within the acceptance limits, there is no impact on data usability due to this issue.
- Laboratory duplicate analyses were not performed on a sample from this data set.

- Samples LH-103R Dup/LH-103R and LH-104 Dup/LH-104 were submitted as the field duplicate pairs with this data set for total low-level mercury only; all criteria were met.

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock/Karn DEK Background

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for radium by Eurofins - St. Louis, in Earth City, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-212370-1.

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

- MW-15002
- MW-15008
- MW-15016
- MW-15019

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- Samples MW-15008, MW-15016, MW-15019, DUP-BACKGROUND, and EQ-BACKGROUND were reported without a 21-day waiting period for radium-226 to ensure that short-lived alpha-emitting radium isotopes (e.g. Ra-224) decayed out. The positive radium-226 reflects the total alpha radium such that the radium-226 (where detected) and associated combined radium results should be considered potentially biased high in these samples, as summarized in the attached table. It should be noted that these results were below the MCL for combined Radium 226/228 (5.0 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- One equipment blank (EQ-BACKGROUND) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on a sample from this data set.
- Samples DUP-BACKGROUND/MW-15008 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 DE Karn and JC Weadock Background
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
MW-15008	10/2/2024	Radium-226	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The results are well below the applicable screening criteria and are therefore deemed usable as reported.
MW-15016	10/3/2024		
MW-15019	10/2/2024		
DUP-BACKGROUND	10/3/2024		
MW-15008	10/2/2024	Combined radium	
MW-15019	10/2/2024		

Laboratory Data Quality Review Groundwater Monitoring Event October 2024 JC Weadock Landfill

Groundwater samples were collected by TRC for the October 2024 sampling event. Samples were analyzed for radium by Eurofins - St. Louis, in Earth City, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-212371-1

During the October 2024 sampling event, a groundwater sample was collected from each of the following wells:

- JCW-MW-18001 ■ JCW-MW-18004 ■ JCW-MW-18005
- JCW-MW-18006 ■ MW-50 ■ MW-51
- MW-52 ■ MW-53 ■ MW-53R
- MW-54R ■ MW-55 ■ OW-57ROUT

Each sample was analyzed for the following constituents:

Analyte Group	Method
Radium (Ra-226, Ra-228, Combined Ra-226 & Ra-228)	EPA 903.0, EPA 904.0

TRC reviewed the laboratory data to assess data usability. The following sections summarize the data review procedure and the results of the review.

Data Usability Review Procedure

The analytical data were reviewed using the Department of Energy Evaluation of Radiochemical Data Usability (USDOE, 1997). The following items were included in the evaluation of the data:

- Sample receipt, as noted in the cover page or case narrative
- Technical holding times for analyses;
- Reporting limits (RLs) compared to project-required RLs;
- Data for method blanks, equipment blanks, and field blanks, where applicable. Method blanks are used to assess potential contamination arising from laboratory sample preparation and/or analytical procedures. Field and equipment blanks are used to assess potential contamination arising from field procedures;
- Data for laboratory control samples (LCSs) and laboratory control sample duplicates (LCSDs), when performed. The LCSs and/or LCSDs are used to assess the accuracy of the analytical method using a clean matrix;
- Percent recoveries for matrix spike (MS) and matrix spike duplicates (MSD), when performed on project samples. Percent recoveries are calculated for each analyte spiked and used to assess bias due to sample matrix effects;
- Percent recoveries for carriers, where applicable, for radiochemistry only. Carriers are used to assess the chemical yield for the preparation and/or instrument efficiency;

- Data for laboratory duplicates, when performed on project samples. The laboratory duplicates are replicate analyses of one sample and are used to assess the precision of the analytical method;
- Data for blind field duplicates. Field duplicate samples are used to assess variability introduced by the sampling and analytical processes; and
- Overall usability of the data.

This data usability report addresses the following items:

- Usability of the data if quality control (QC) results suggest potential problems with all or some of the data;
- Actions regarding specific QC criteria exceedances.

Review Summary

The data quality objectives and laboratory completeness goals for the project were met, and the data are usable for their intended purpose. A summary of the data quality review, including non-conformances and issues identified in this evaluation, are noted below.

- The reviewed constituents will be utilized for the purposes of an assessment monitoring program.
- Data are usable for the purposes of the assessment monitoring program.
- When the data are evaluated through an assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- All samples in this data set were reported without a 21-day waiting for radium-226 period to ensure that short-lived alpha-emitting radium isotopes (e.g. Ra-224) decayed out. The positive radium-226 reflects the total alpha radium such that the radium-226 (where detected) and associated combined radium results should be considered to be potentially biased high, as summarized in the attached table. It should be noted that the radium-226 and combined radium sample results were below the MCL for combined Radium 226/228 (5.0 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- One equipment blank (EB-1) was collected. Target analytes were not detected in the equipment blank sample.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD analyses were not performed on a sample from this data set.
- Laboratory duplicate analyses were performed on samples JCW-MW-18001 and MW-53 for radium-226 and radium-228; all criteria were met.
- Samples DUP-01/MW-50 were submitted as the field duplicate pairs with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A
 Summary of Data Non-Conformances for Groundwater Analytical Data
 JC Weadock Landfill
 Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
JCW-MW-18001	10/1/2024	Radium-226	Result is potentially biased high due to not undergoing 21-day waiting period prior to analysis. The results are well below the applicable screening criteria and are therefore deemed usable as reported.
JCW-MW-18004	10/2/2024		
JCW-MW-18005	10/2/2024		
MW-55	10/2/2024		
JCW-MW-18006	10/2/2024	Radium-226, Combined Radium 226 and 228	
MW-50	10/1/2024		
MW-51	10/1/2024		
MW-52	10/1/2024		
MW-53	10/1/2024		
MW-53R	10/1/2024		
MW-54R	10/2/2024		
OW-57ROUT	10/2/2024		
DUP-01	10/1/2024		

Appendix C

Detection Monitoring Statistical Trend Tests

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 Fourth Quarter 2024
 Data from March 2023 to October 2024

Porewater Monitoring Points						
Constituent	JCW-MW-18001	JCW-MW-18004	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51
Boron ⁽¹⁾	O	O	O	↑*	O	↓
Calcium	O	O	O	O	O	↓
Chloride	O	O	O	↓	O	↓
Fluoride	O*	O*	O*	O*	O*	O*
Iron	O	O	O	↑*	O	O
pH/Corrosivity ⁽¹⁾	↑*	↑*	↑*	O	↑	↑*
Sulfate	O	O	O	↑	O	O
Total Dissolved Solids	O	↓*	O	O	O	↓

Notes:

- O* = Non-detect (70%)
- O = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ (red) = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new

(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

Appendix C
 Detection Monitoring Statistical Summary for JC Weadock Facility
 Fourth Quarter 2024
 Data from March 2023 to October 2024

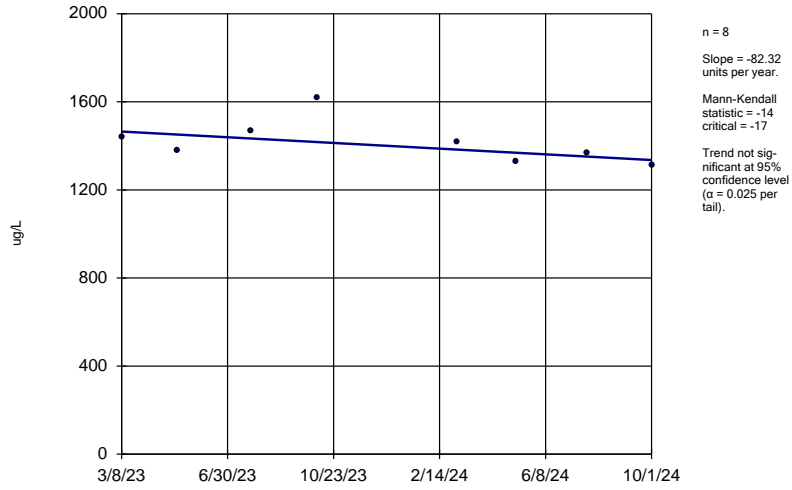
Porewater Monitoring Points						
Constituent	MW-52	MW-53	MW-53R	MW-54R	MW-55	OW-57R OUT
Boron ⁽¹⁾	O	↑	O	O	O	O
Calcium	O	O	O	O	O	O
Chloride	O	O	↑*	O	O	O
Fluoride	O*	O*	O*	O*	O*	↑*
Iron	O	O	↓*	O	↓	O
pH/Corrosivity ⁽¹⁾	O	O	↑	↑	O	O
Sulfate	↓	O	O	O	O	O
Total Dissolved Solids	O	O	O	O	O	O

Notes:

- O* = Non-detect (70%)
- O = No trend
- ↑ = Upward trend, continuous
- ↑* = Upward trend, new
- ↑ (red) = Upward trend, confirmed
- ↓ = Downward trend, continuous
- ↓* = Downward trend, new

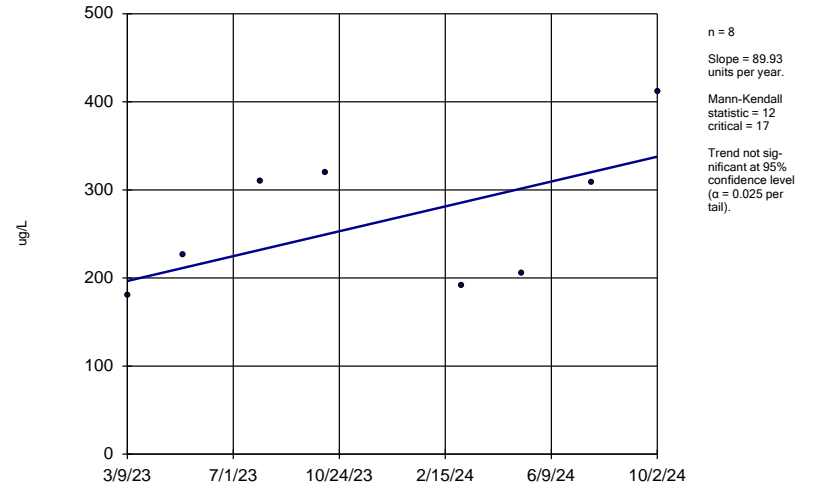
(1) Boron concentrations and pH levels were confirmed as statistically significant increases (SSIs) over background levels and triggered assessment monitoring (2017 Annual Groundwater Monitoring Report – JC Weadock Power Plant, Landfill CCR Unit, TRC, 2018).

Boron, Total JCW-MW-18001



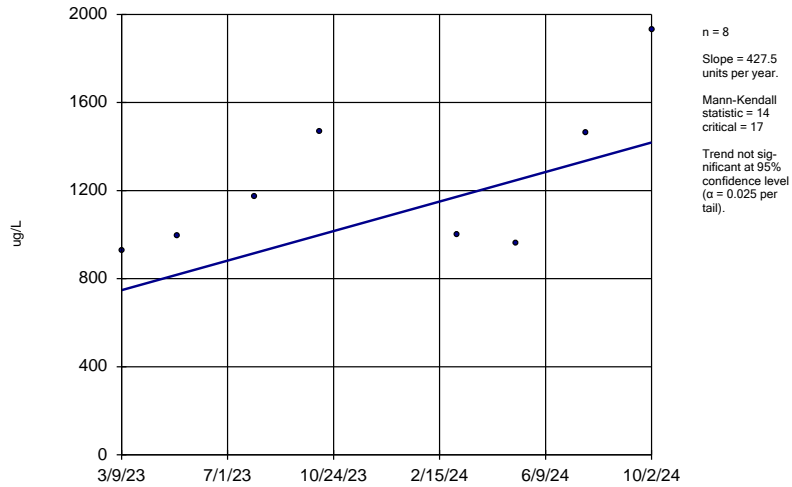
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total JCW-MW-18004



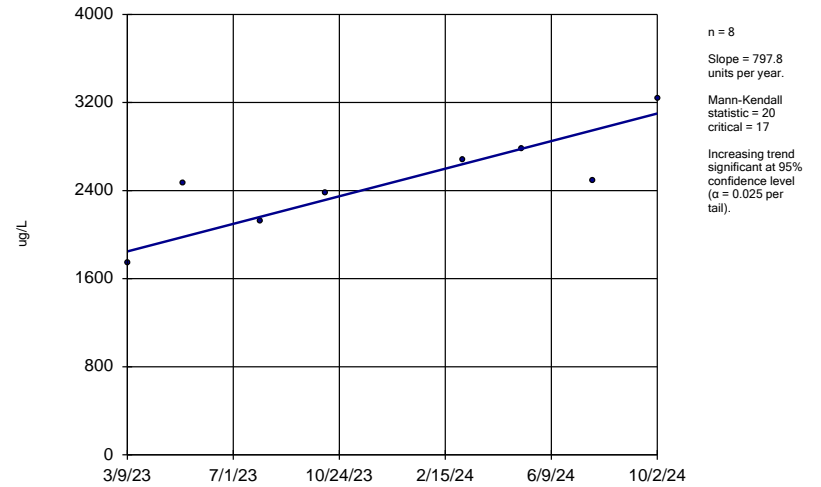
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total JCW-MW-18005



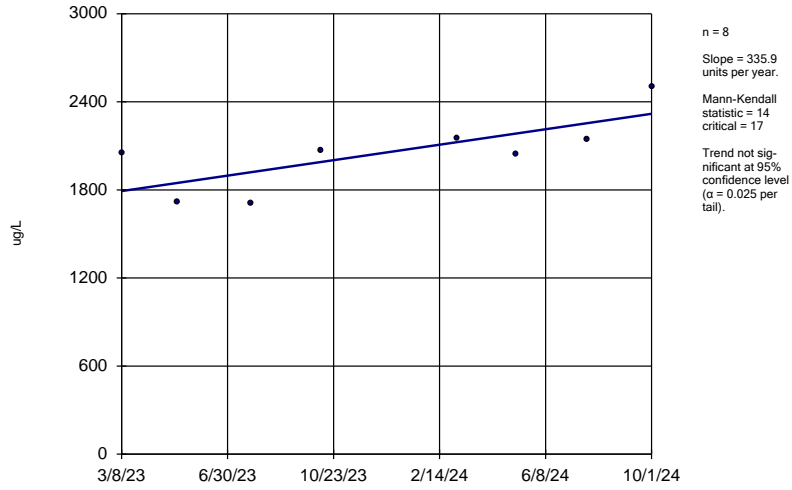
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total JCW-MW-18006



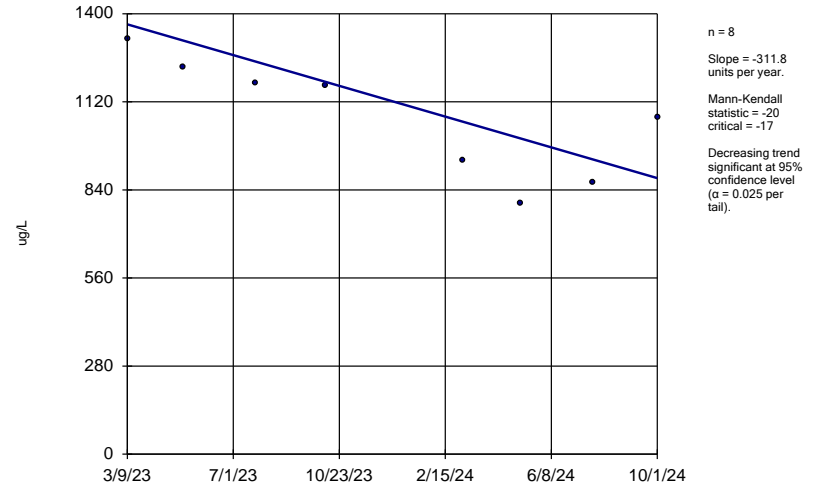
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-50



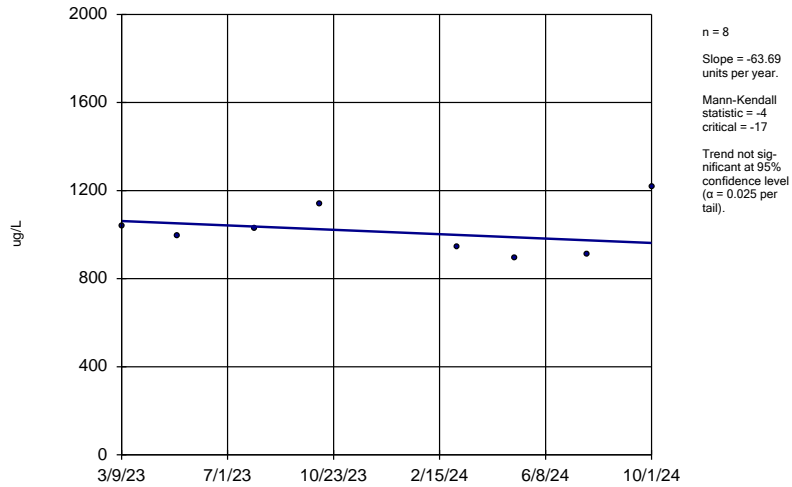
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-51



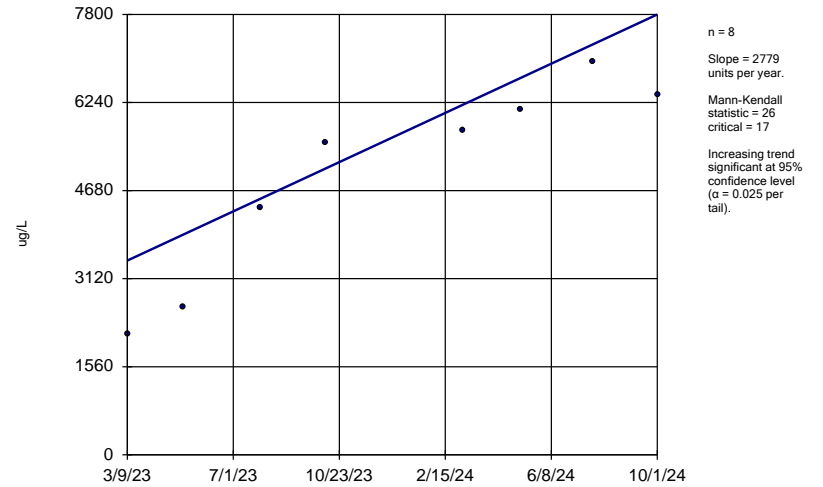
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-52



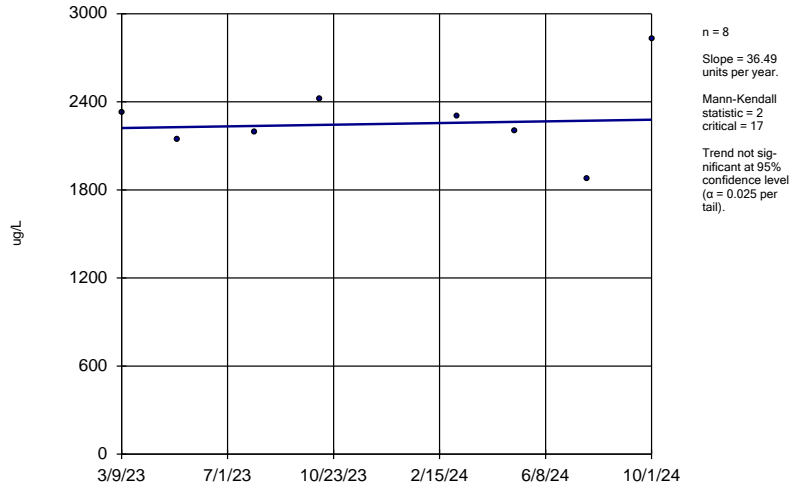
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-53



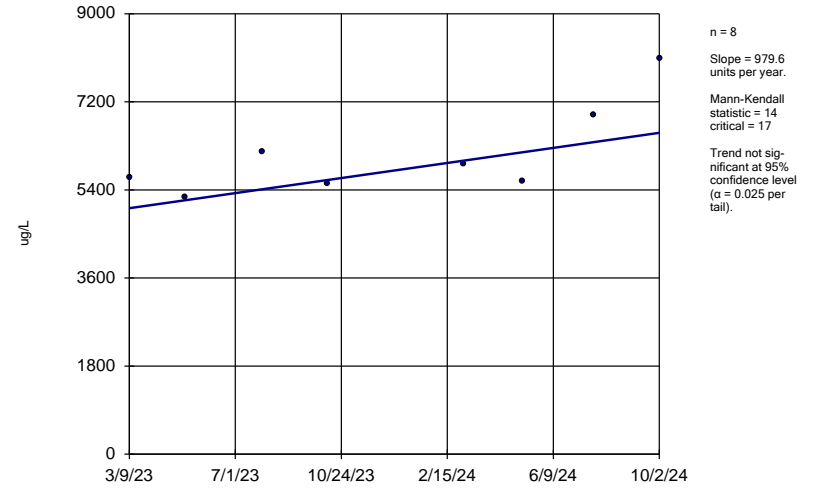
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-53R



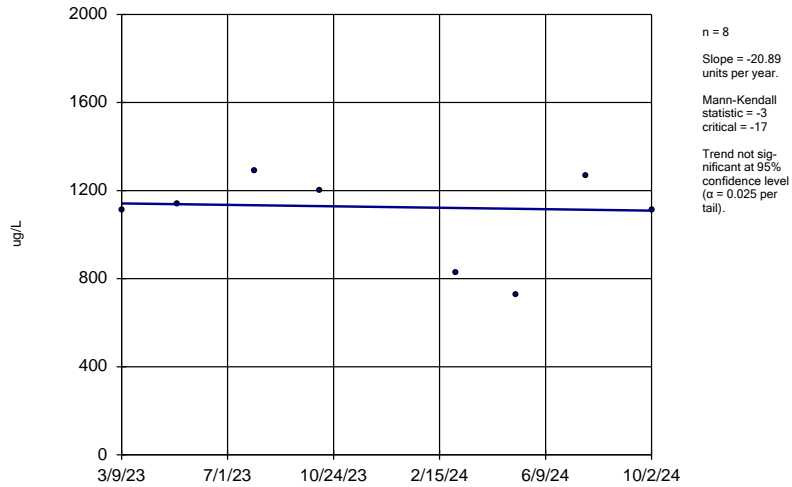
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-54R



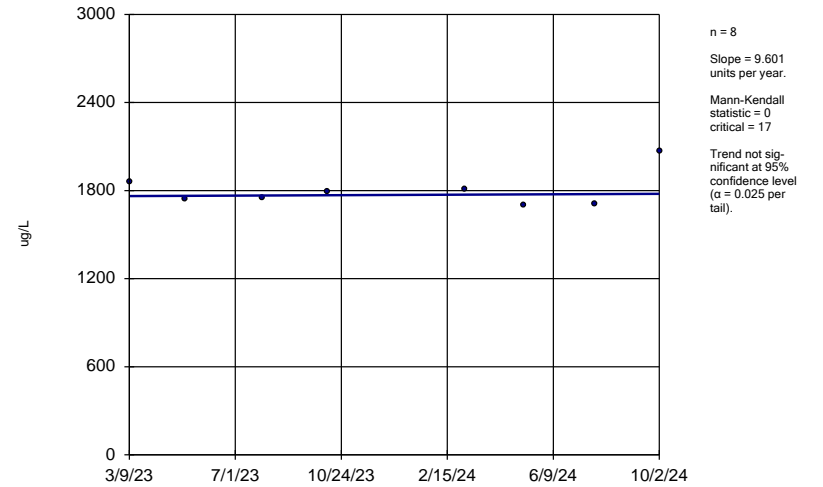
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-55



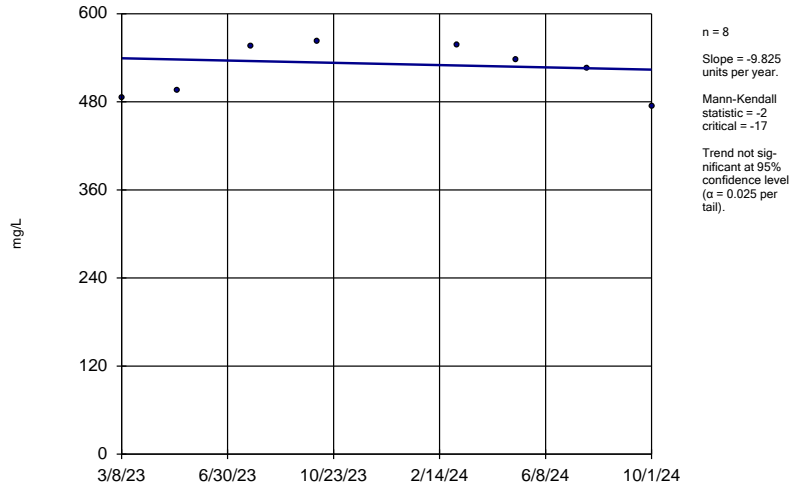
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total OW-57ROUT



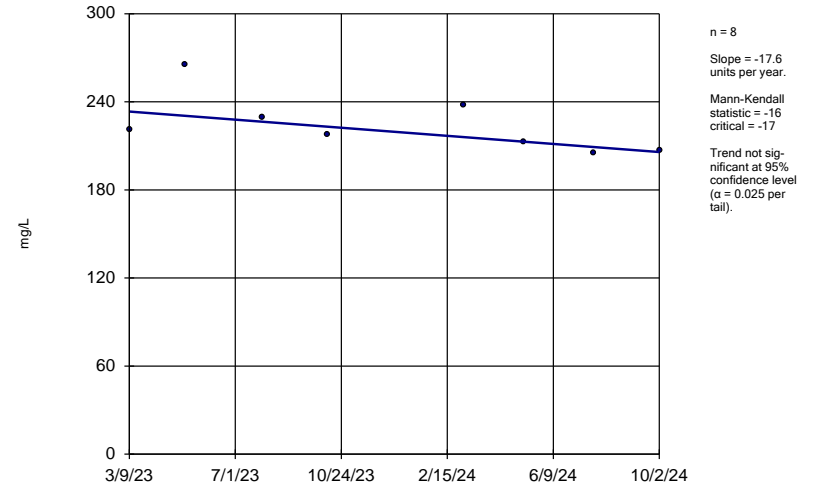
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
JCW-MW-18001



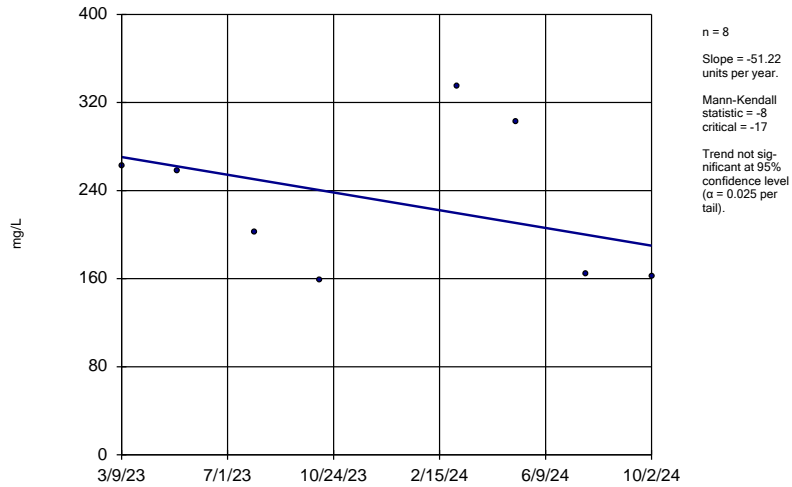
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
JCW-MW-18004



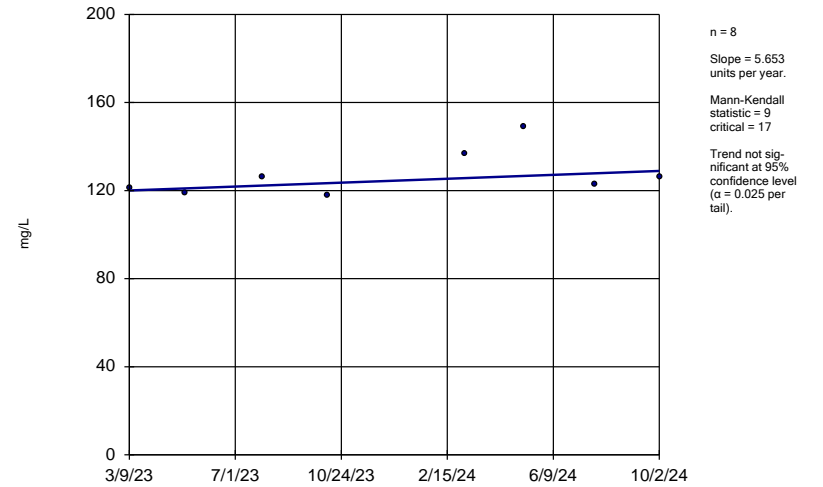
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
JCW-MW-18005



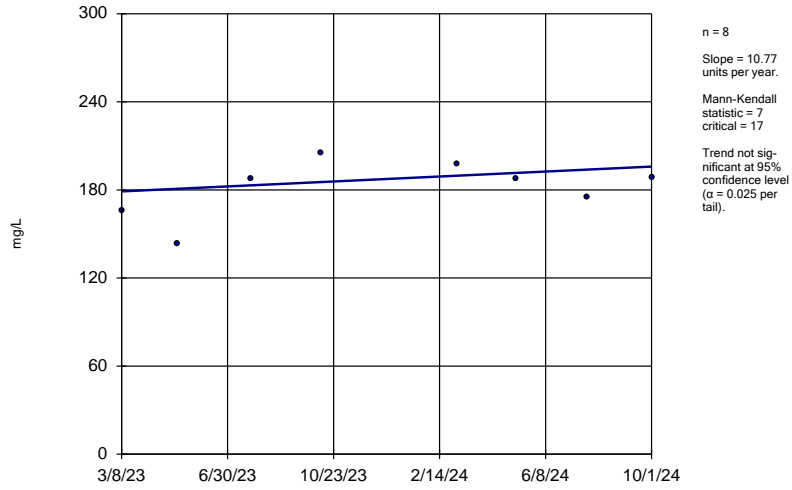
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
JCW-MW-18006



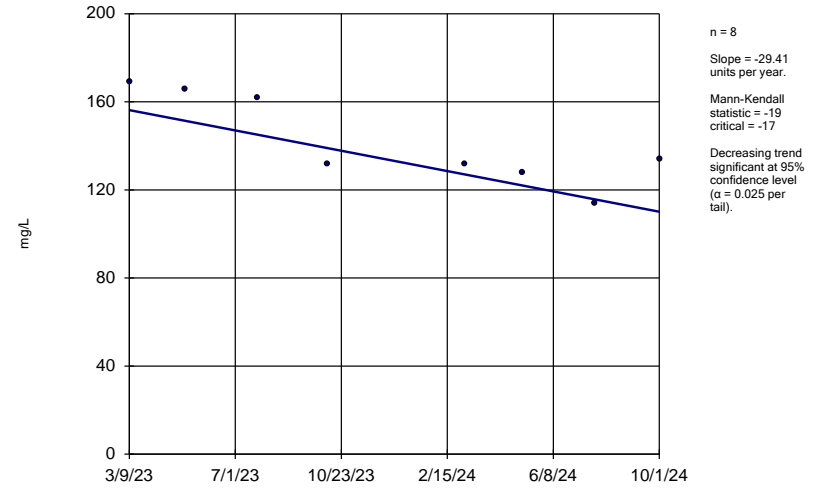
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-50



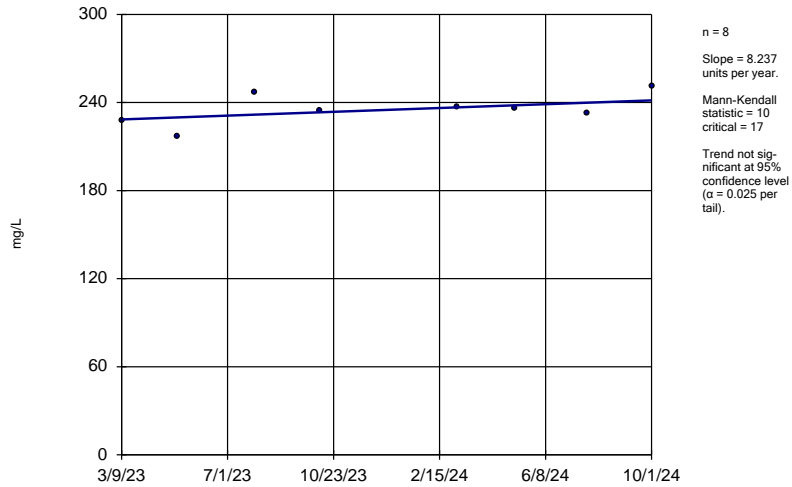
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-51



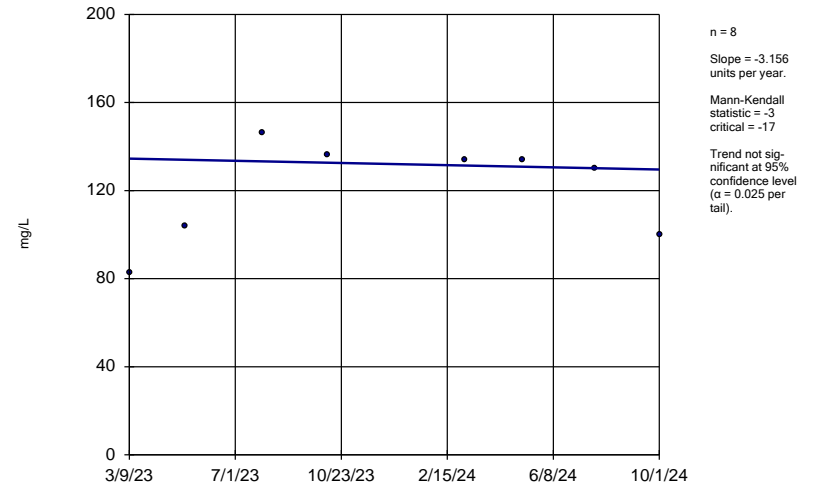
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-52



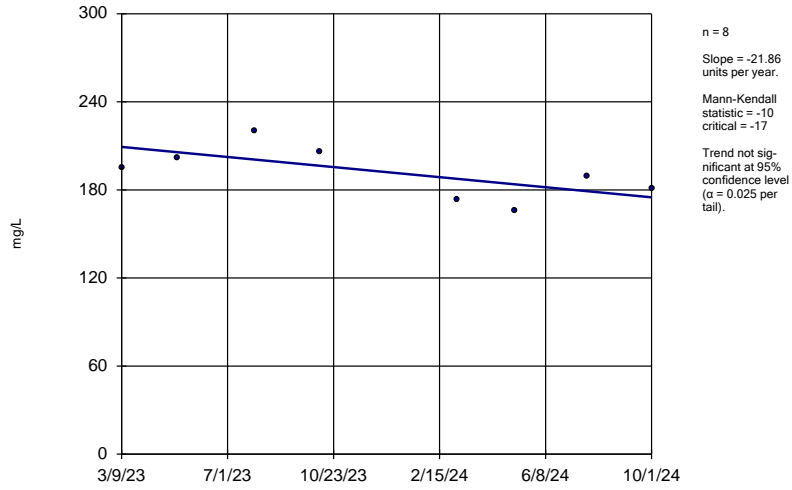
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-53



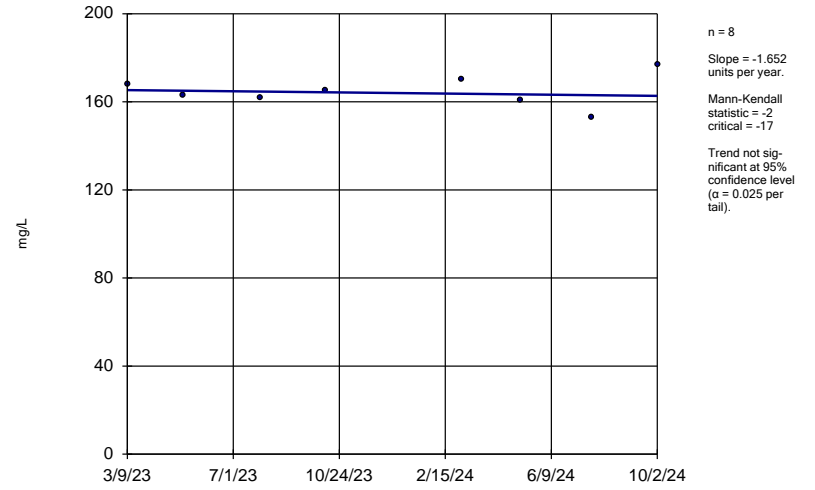
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-53R



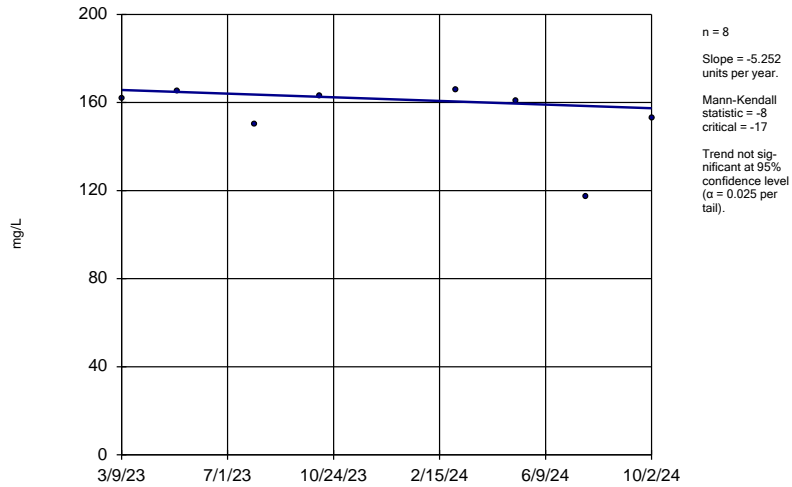
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-54R



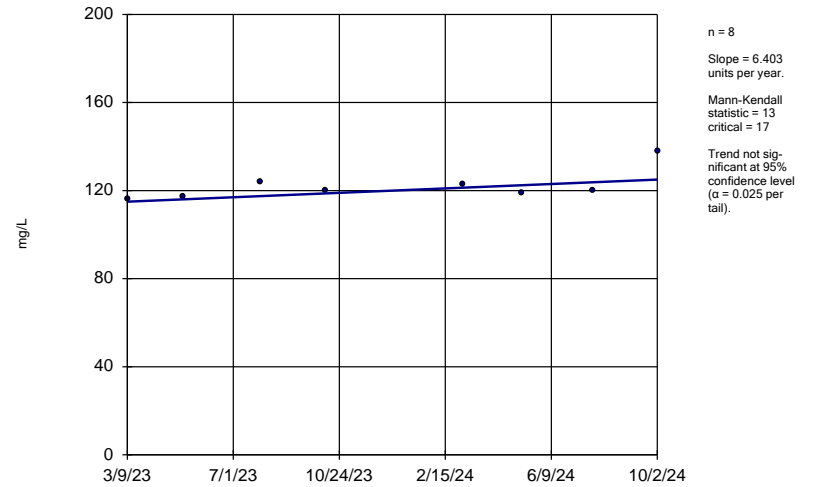
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total
MW-55

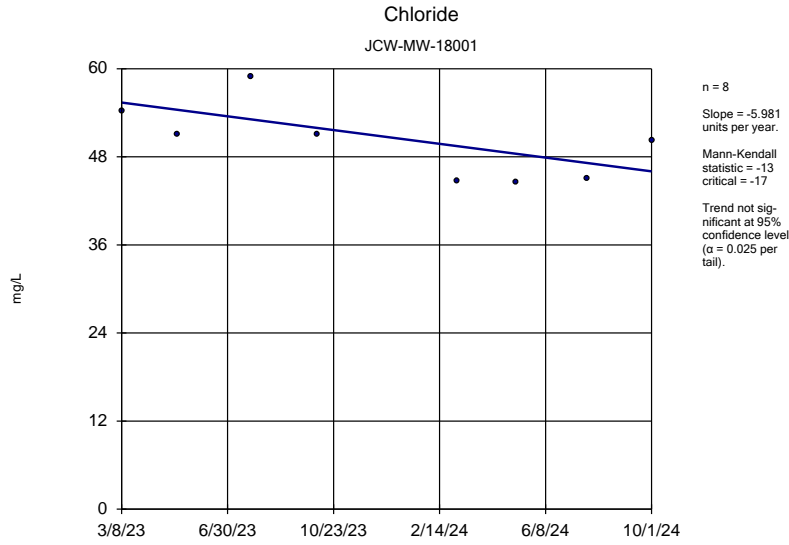


Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

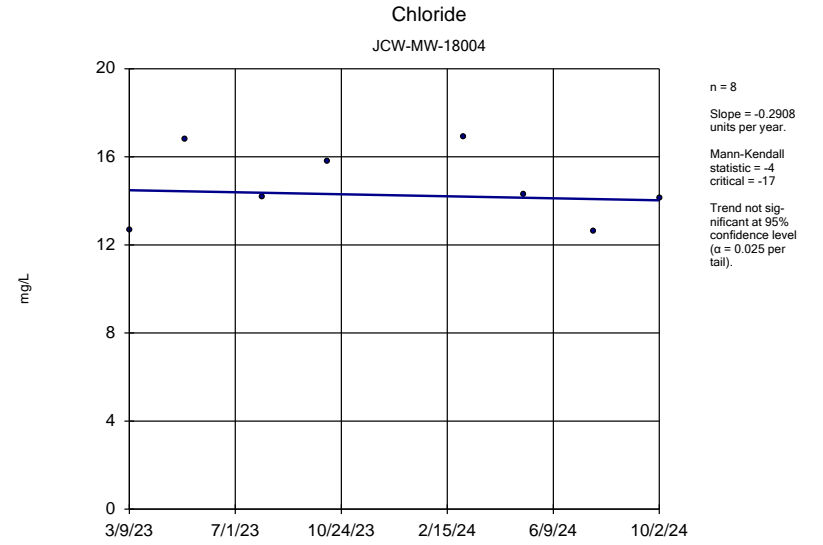
Calcium, Total
OW-57ROUT



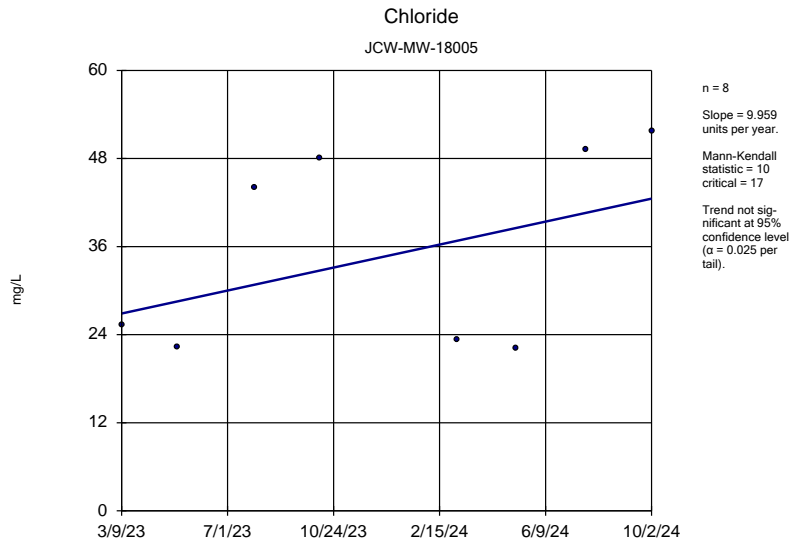
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



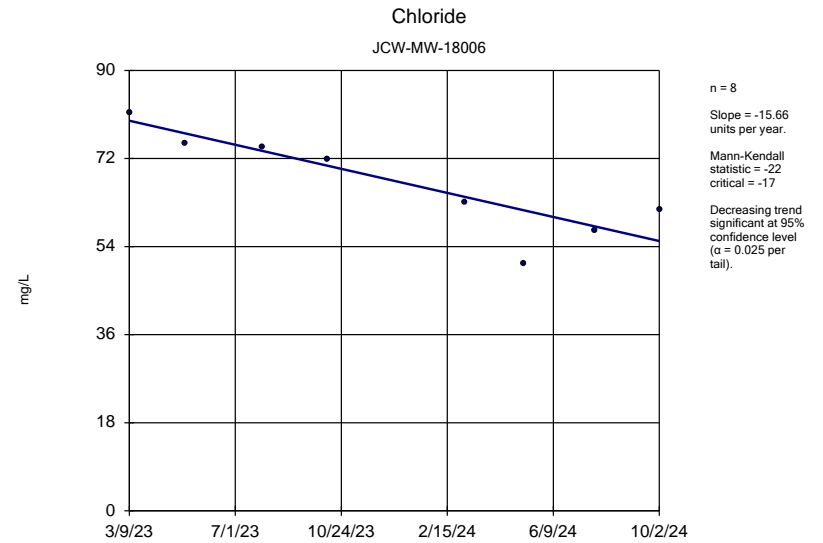
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



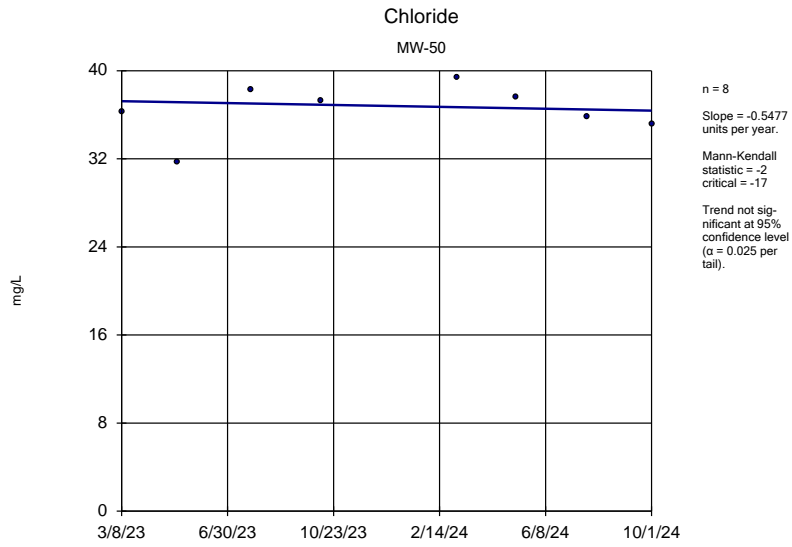
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



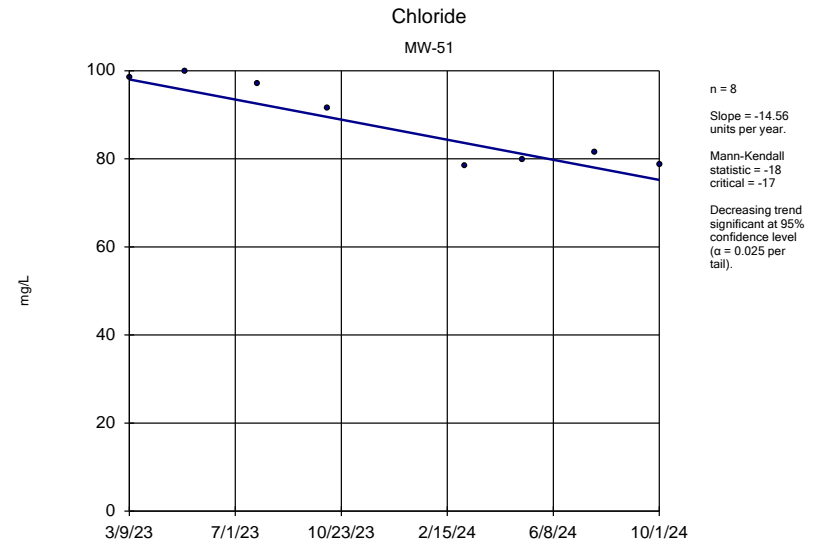
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



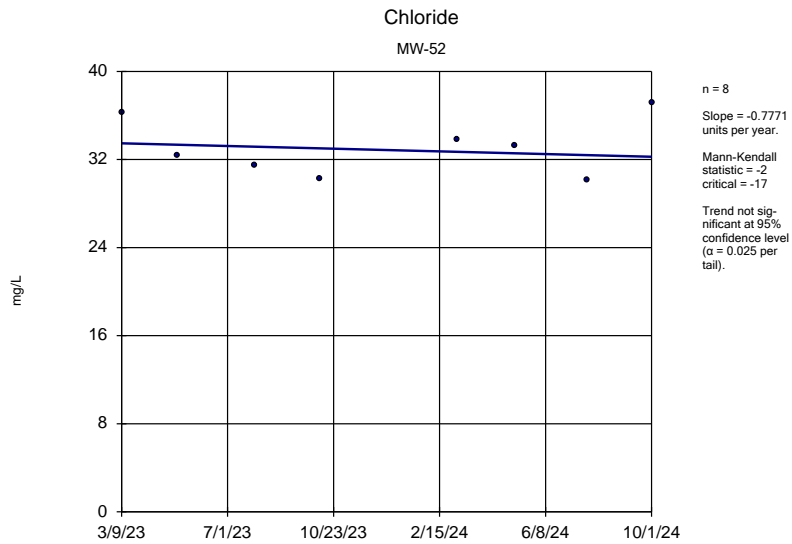
Sen's Slope Estimator Analysis Run 11/17/2024 5:55 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



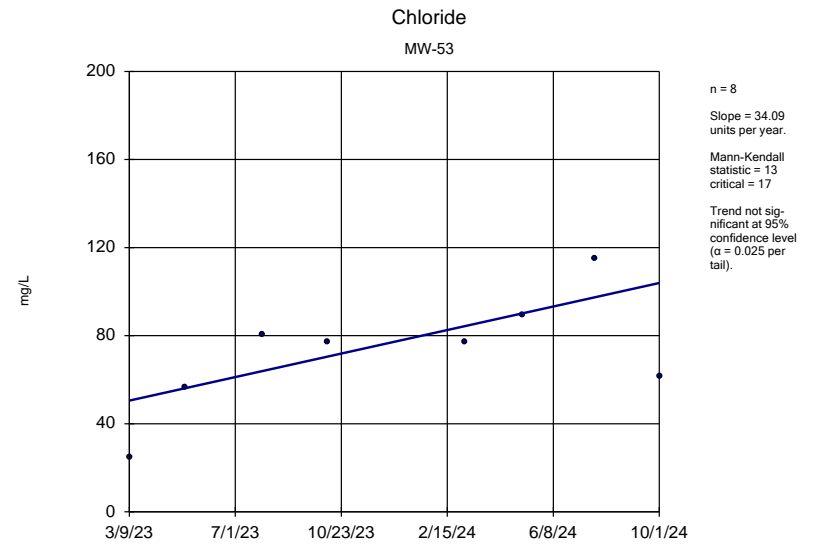
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

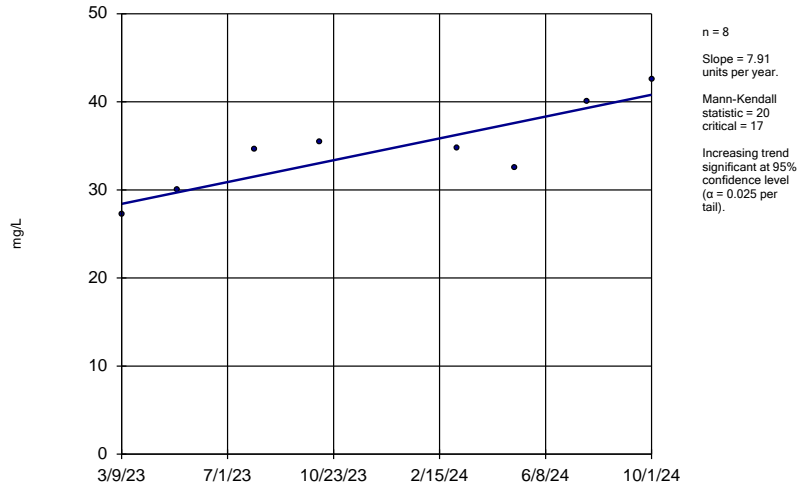


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



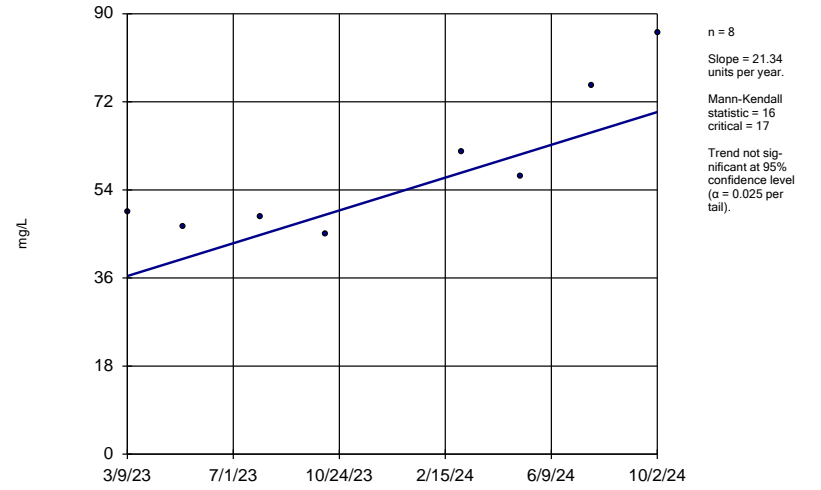
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Chloride MW-53R



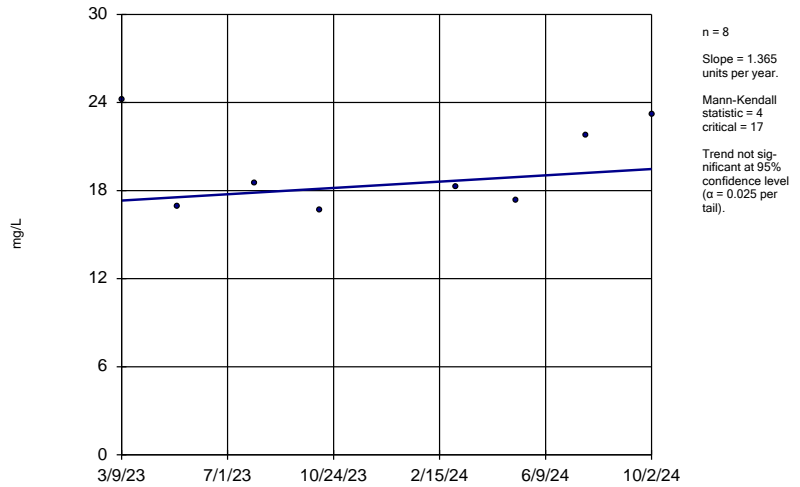
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Chloride MW-54R



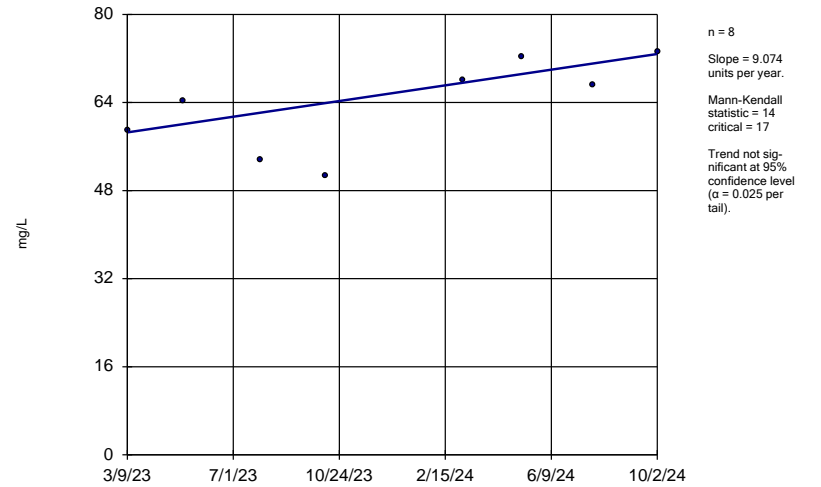
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Chloride MW-55

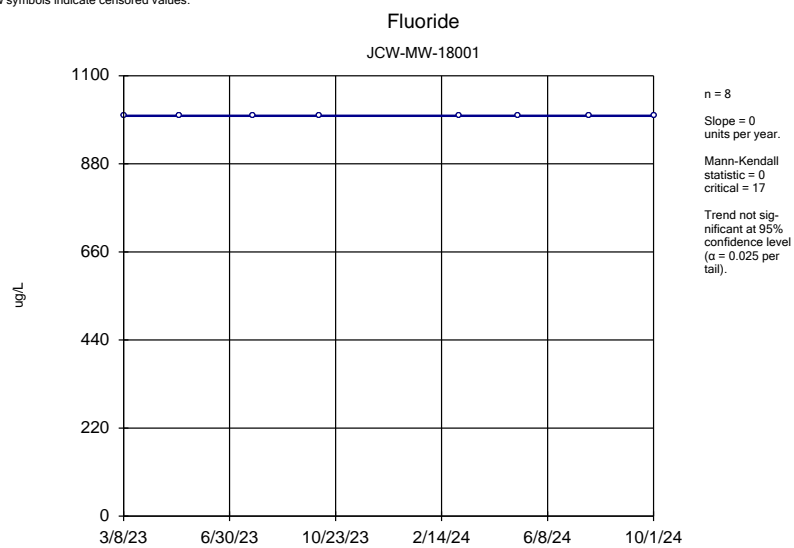


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

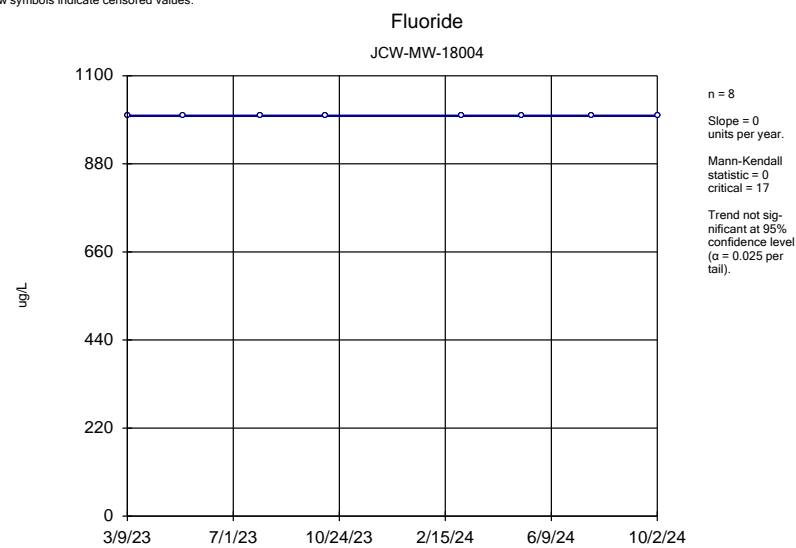
Chloride OW-57ROUT



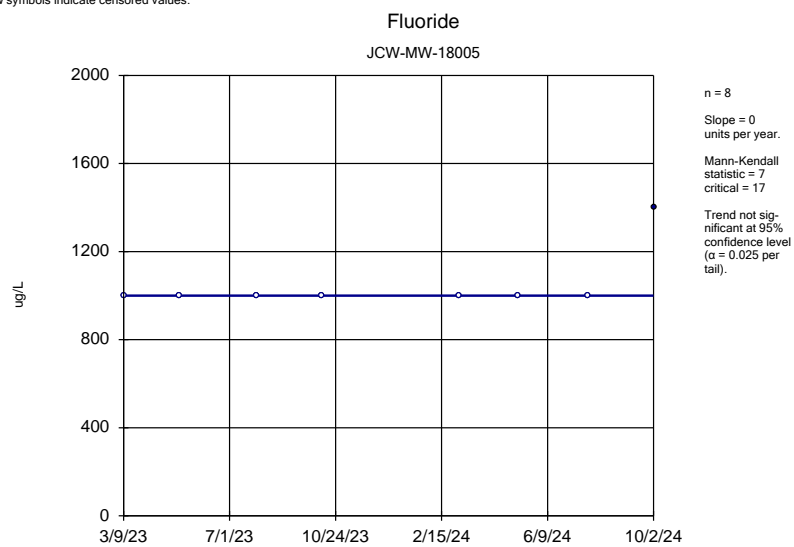
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



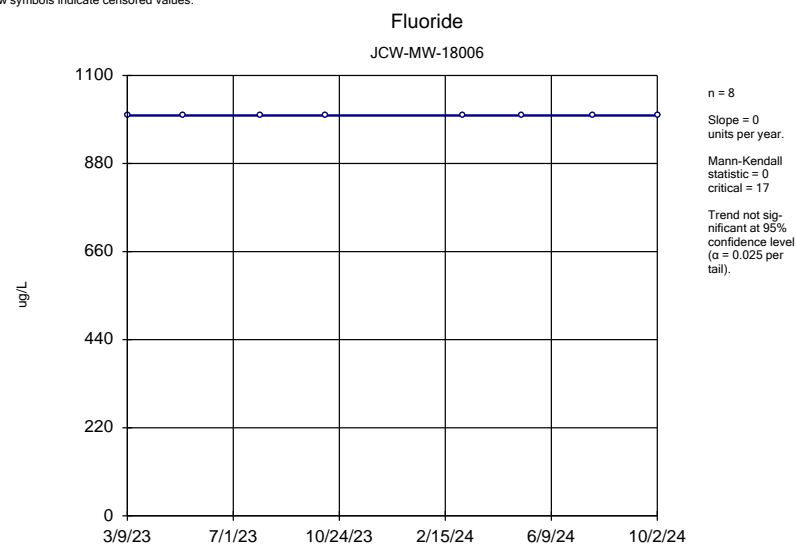
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



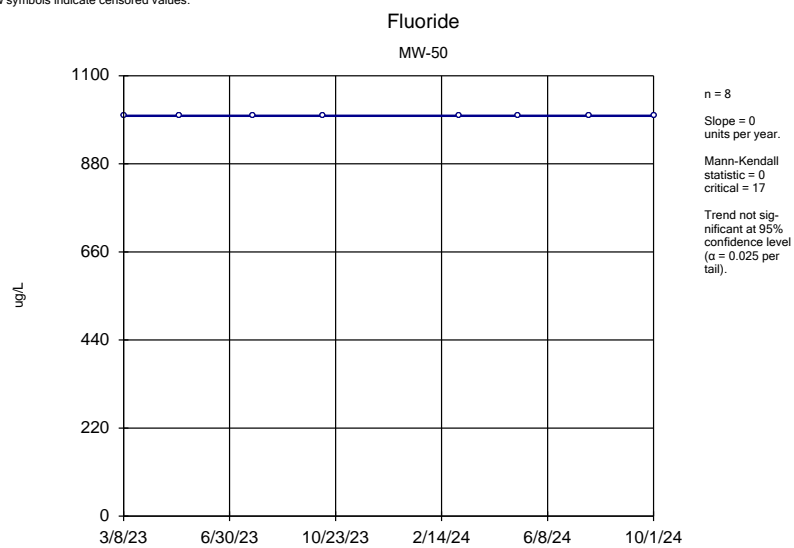
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



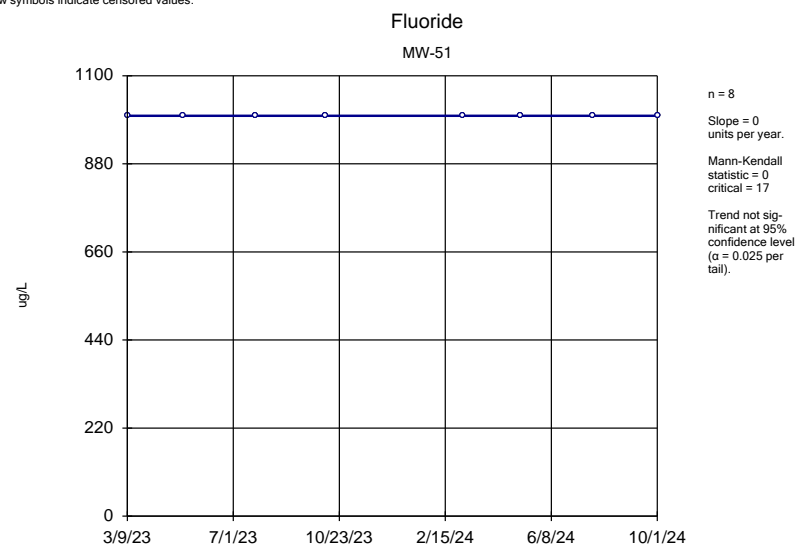
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



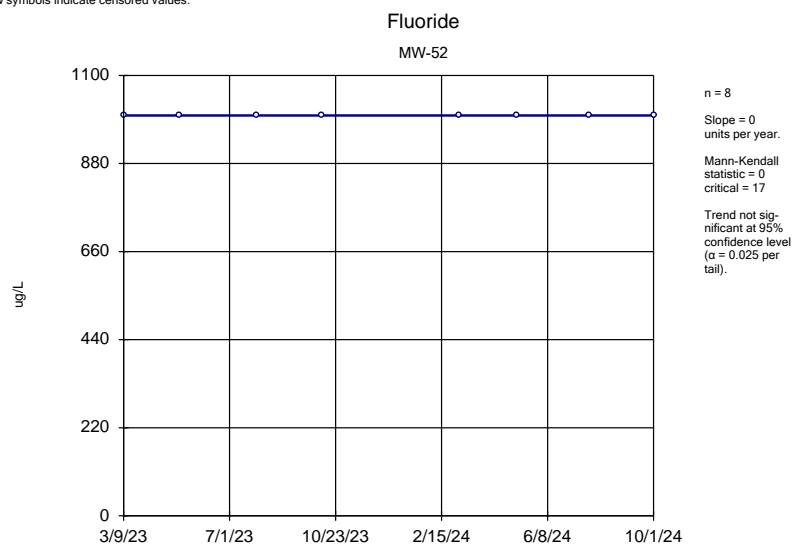
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



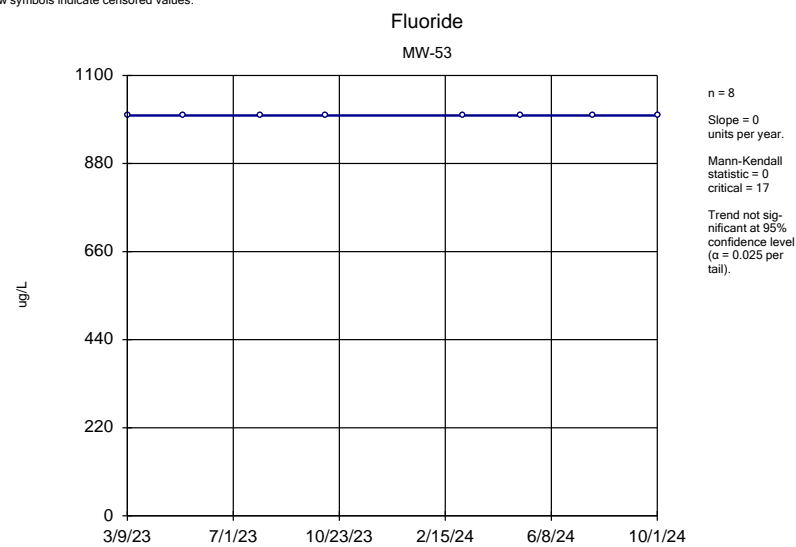
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



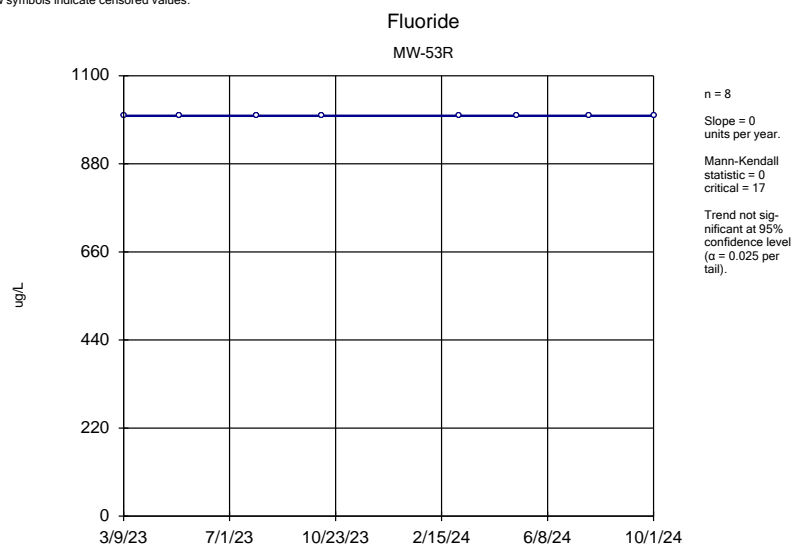
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



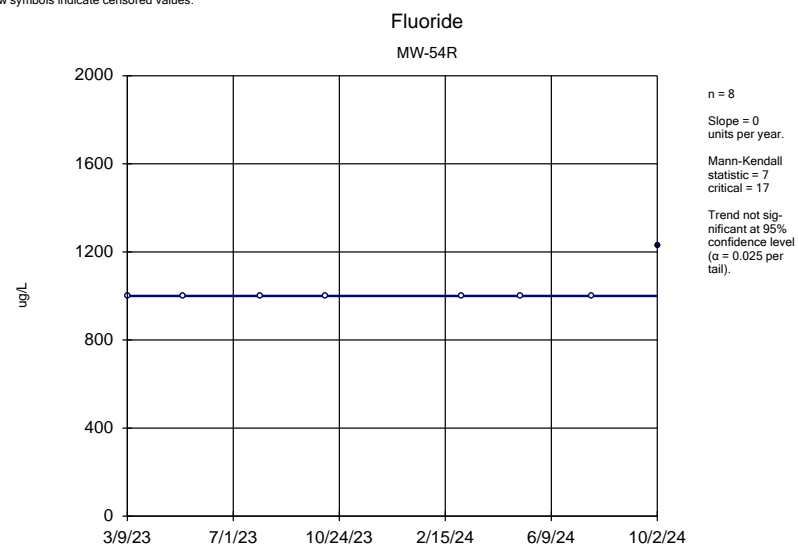
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



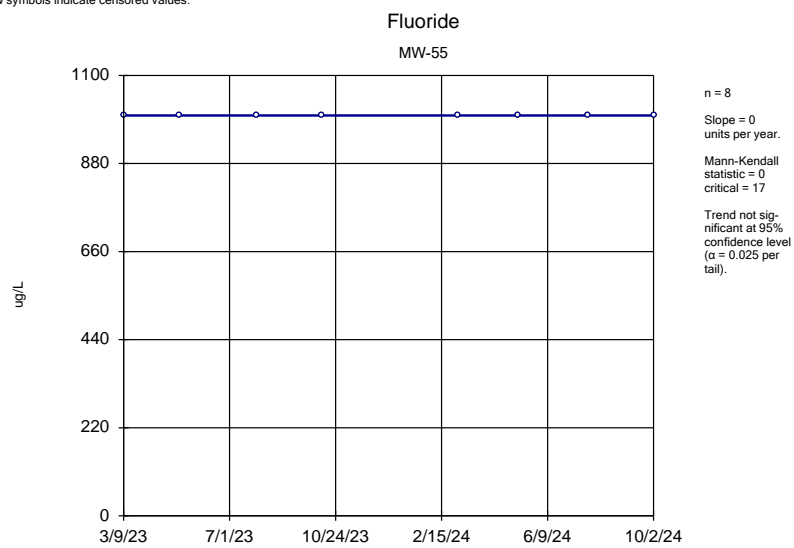
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



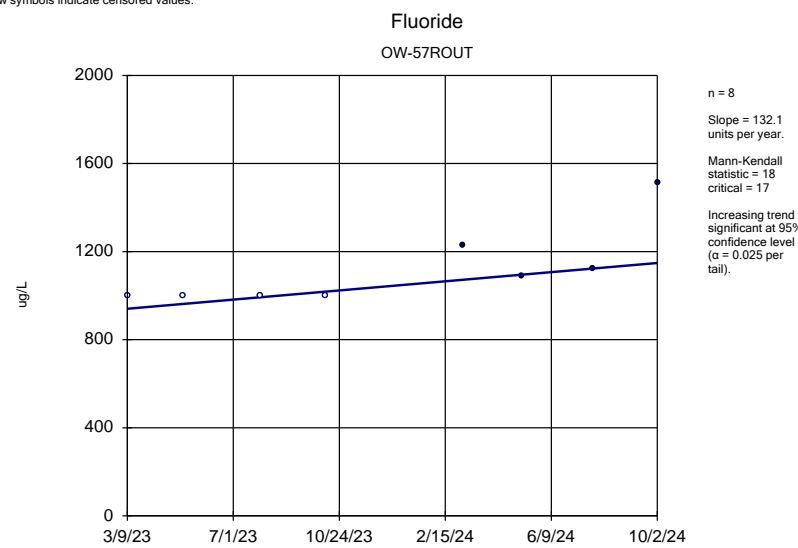
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



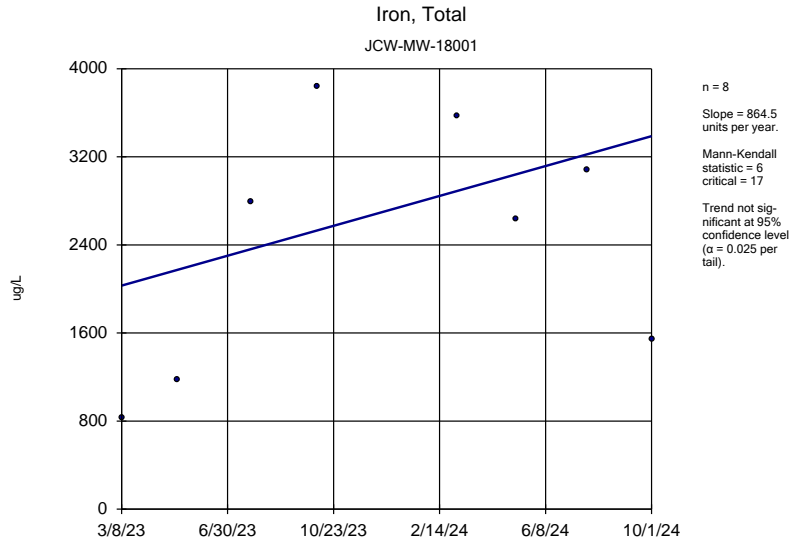
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



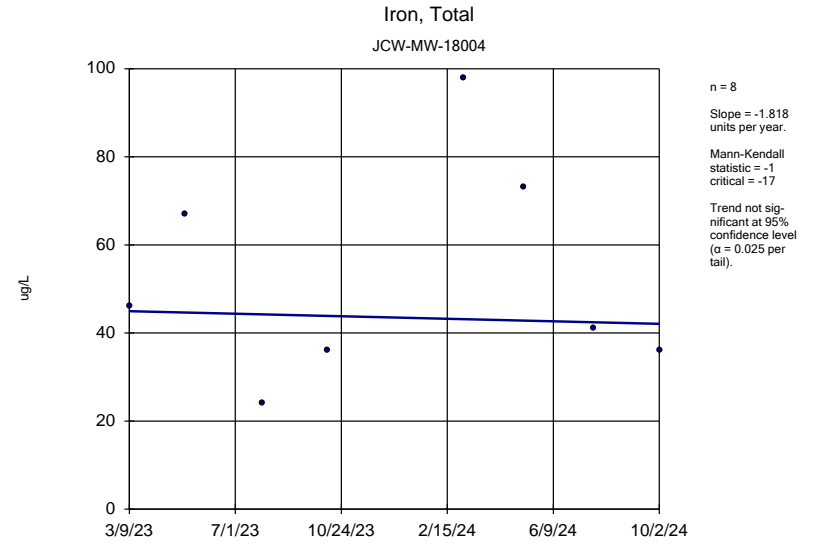
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



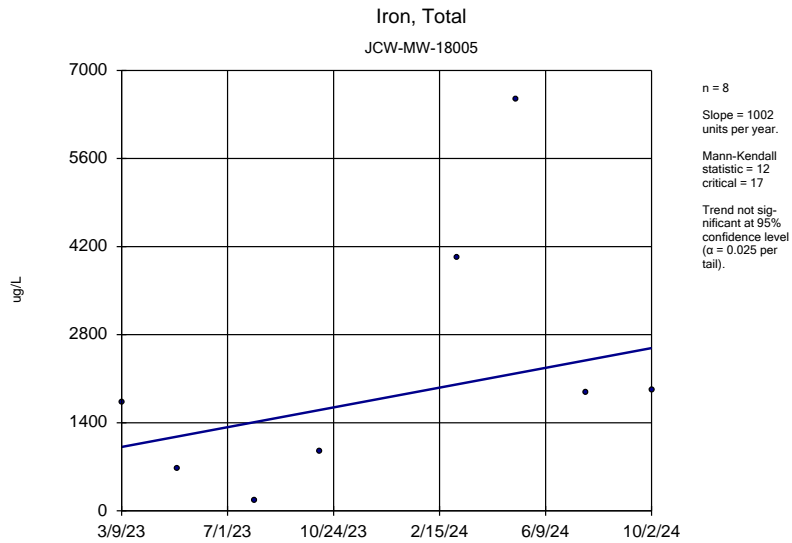
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



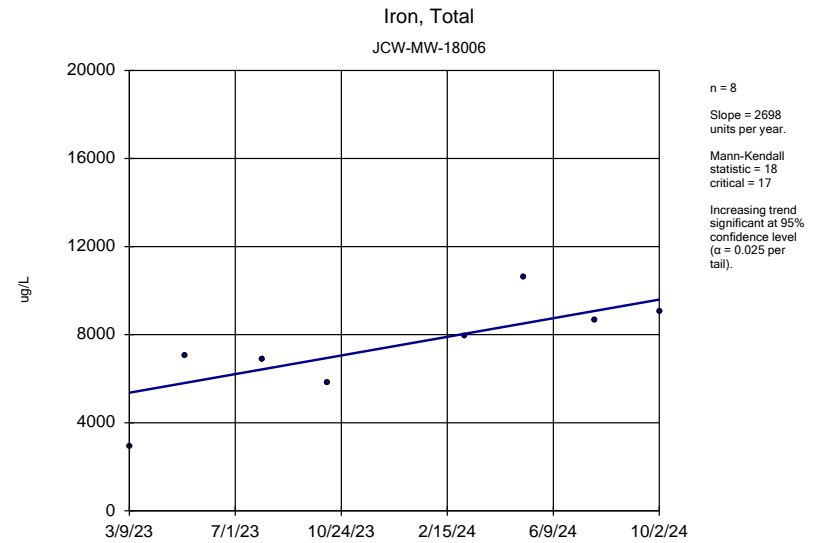
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

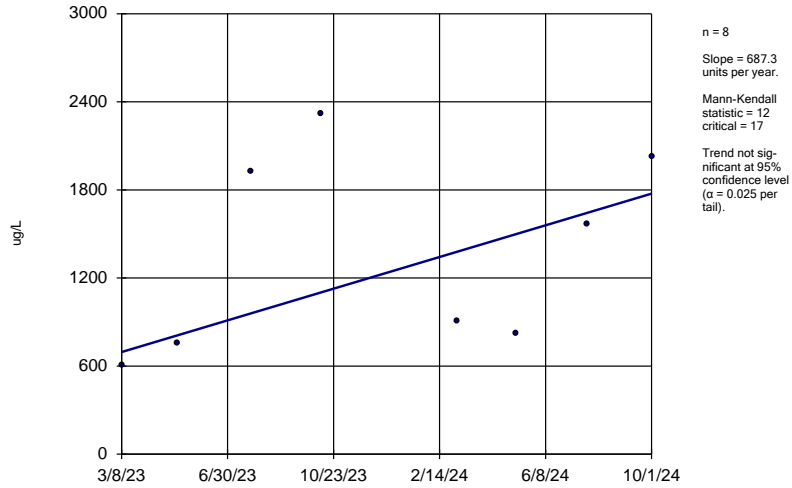


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



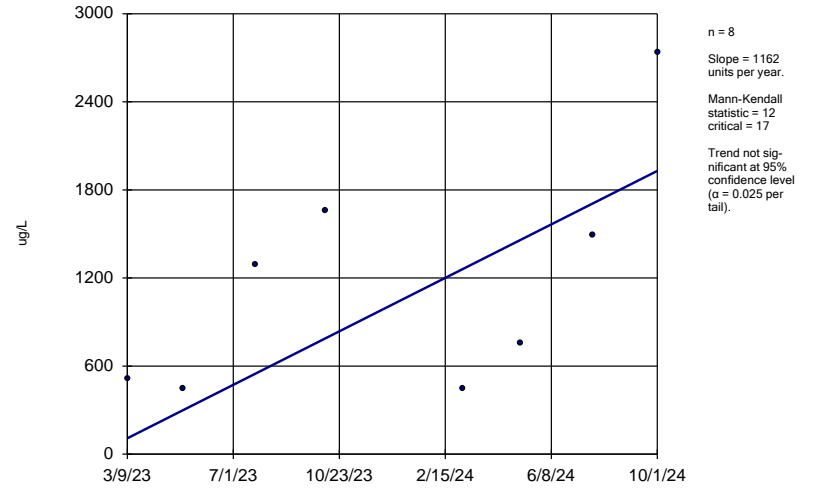
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Iron, Total MW-50



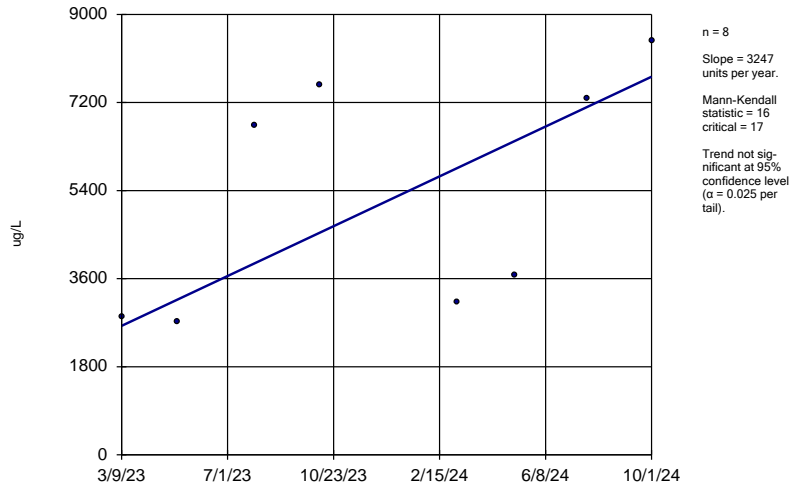
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Iron, Total MW-51



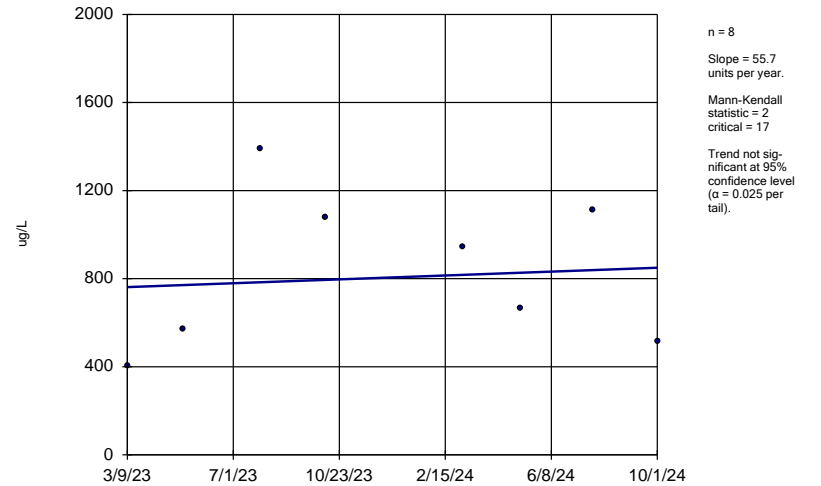
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Iron, Total MW-52



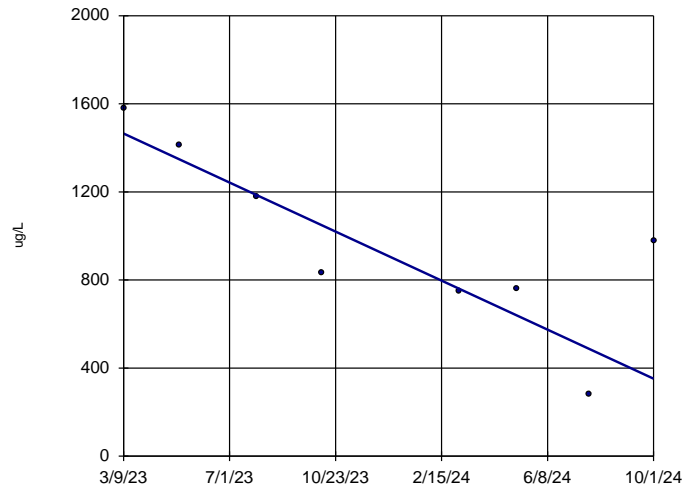
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Iron, Total MW-53



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

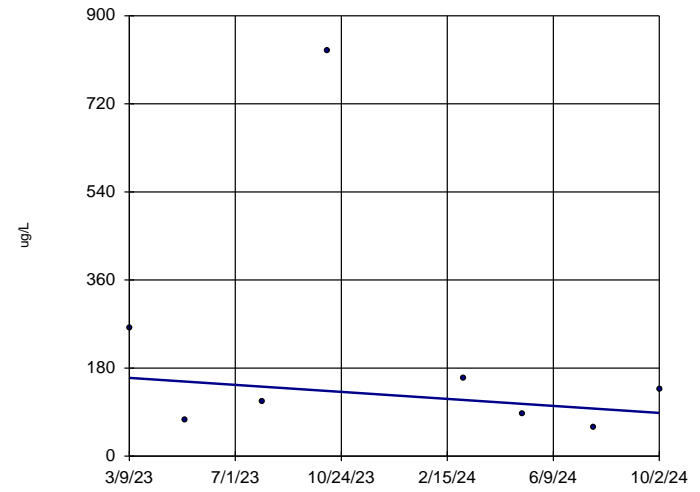
Iron, Total MW-53R



n = 8
 Slope = -710 units per year.
 Mann-Kendall statistic = -18
 critical = -17
 Decreasing trend significant at 95% confidence level ($\alpha = 0.025$ per tail).

Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

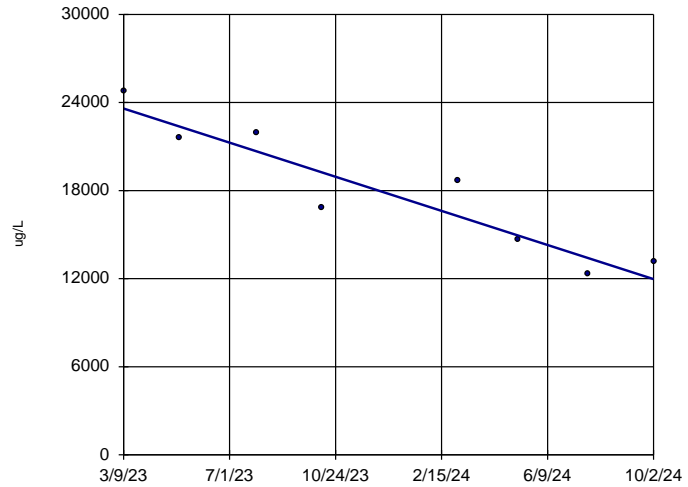
Iron, Total MW-54R



n = 8
 Slope = -45.54 units per year.
 Mann-Kendall statistic = -6
 critical = -17
 Trend not significant at 95% confidence level ($\alpha = 0.025$ per tail).

Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

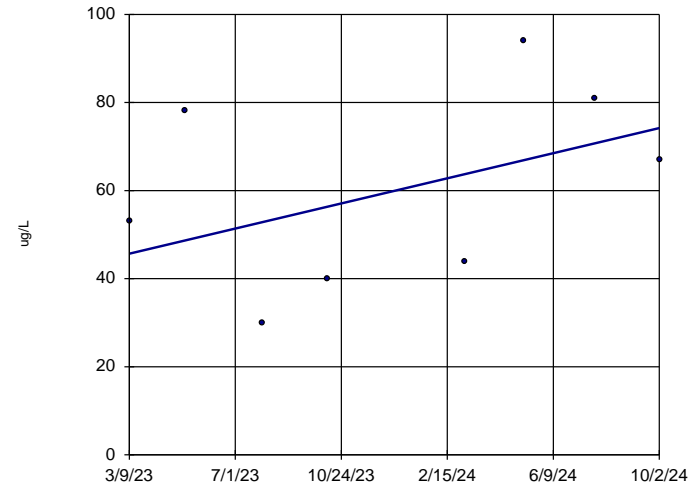
Iron, Total MW-55



n = 8
 Slope = -7396 units per year.
 Mann-Kendall statistic = -22
 critical = -17
 Decreasing trend significant at 95% confidence level ($\alpha = 0.025$ per tail).

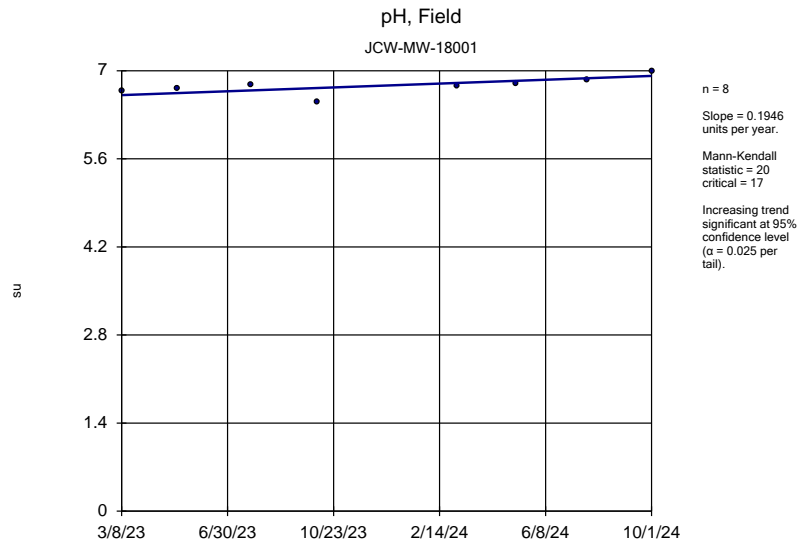
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Iron, Total OW-57ROUT

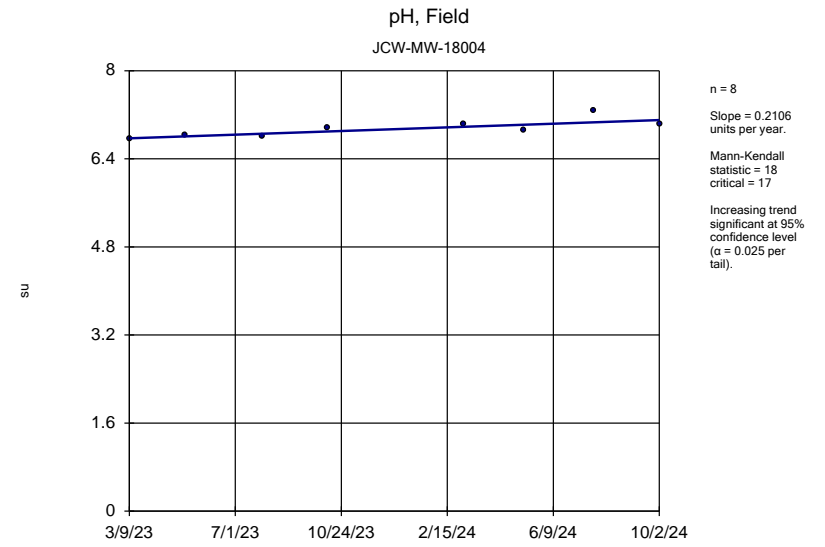


n = 8
 Slope = 18.16 units per year.
 Mann-Kendall statistic = 8
 critical = 17
 Trend not significant at 95% confidence level ($\alpha = 0.025$ per tail).

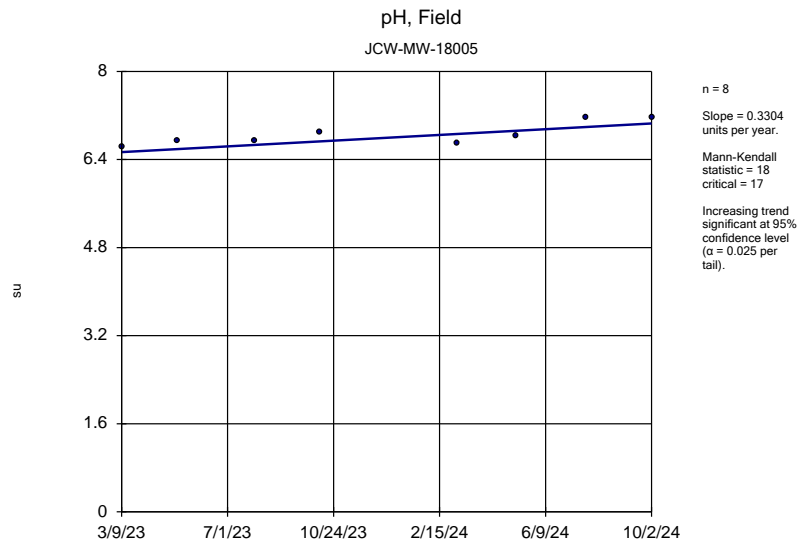
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



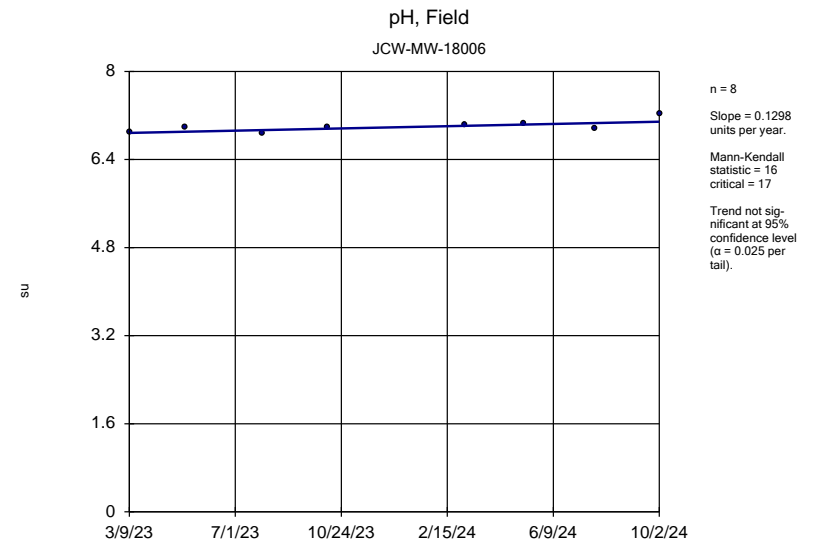
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

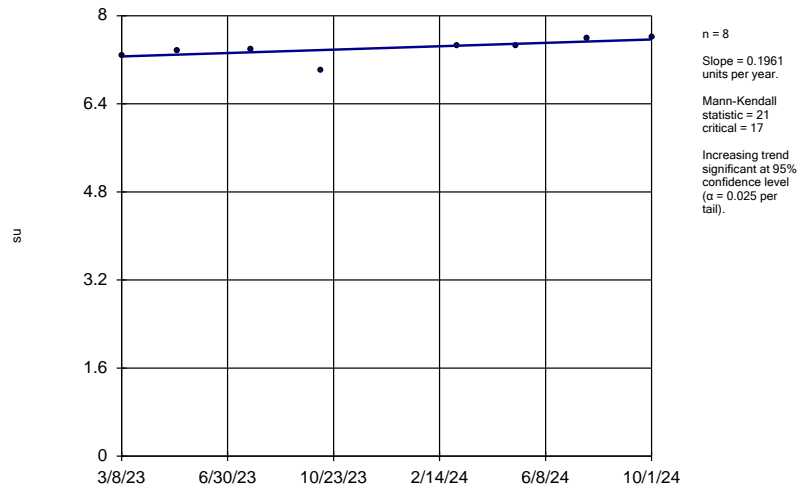


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



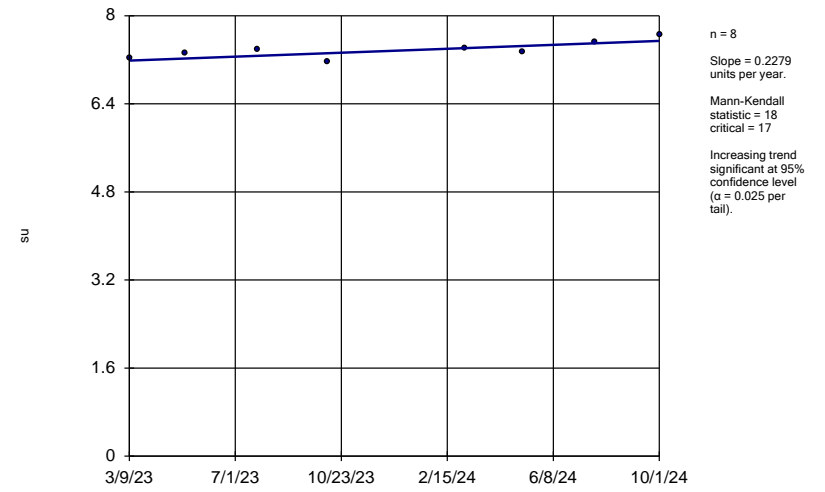
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-50



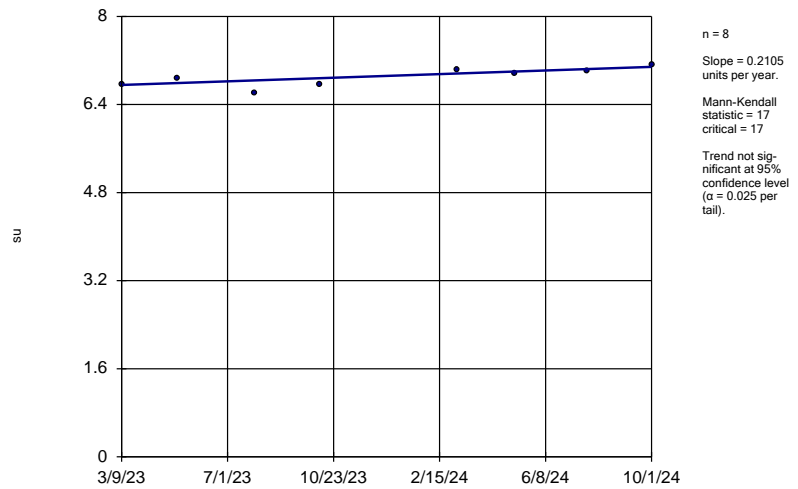
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-51



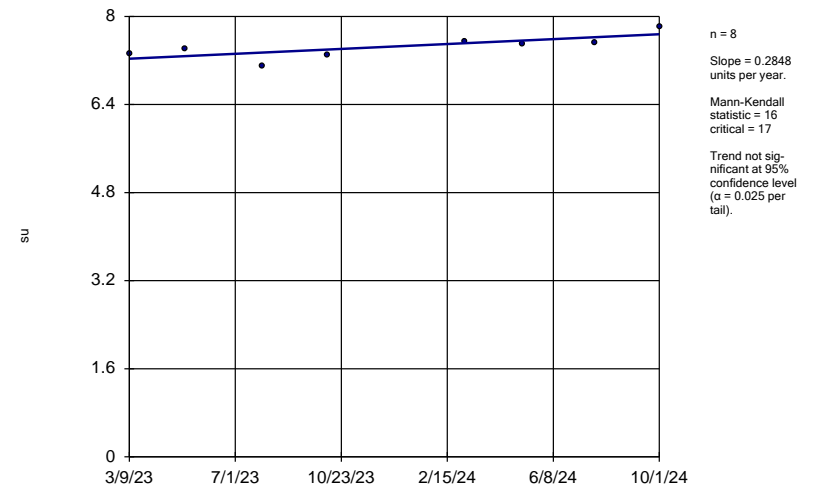
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-52



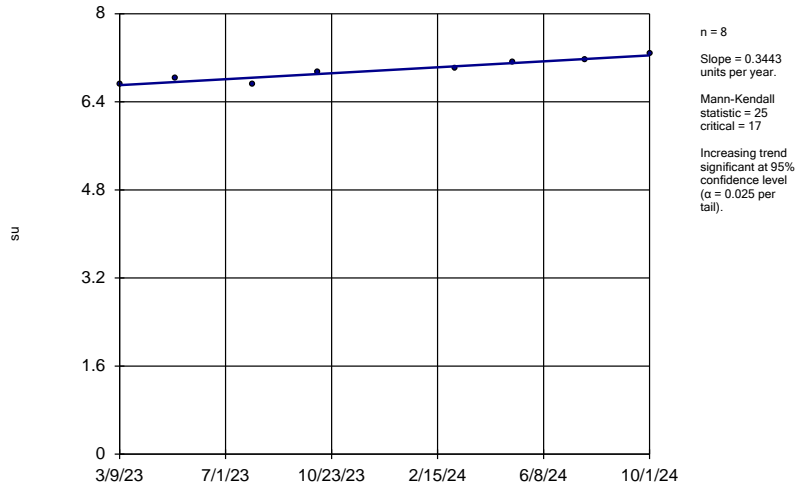
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-53



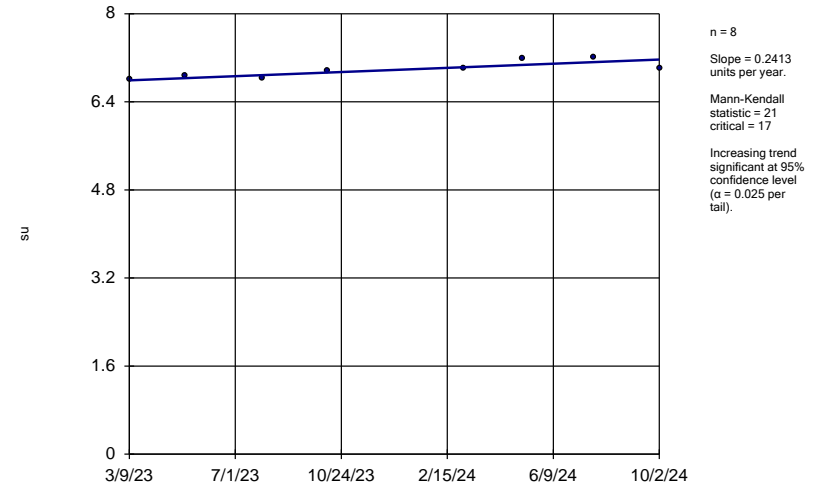
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-53R



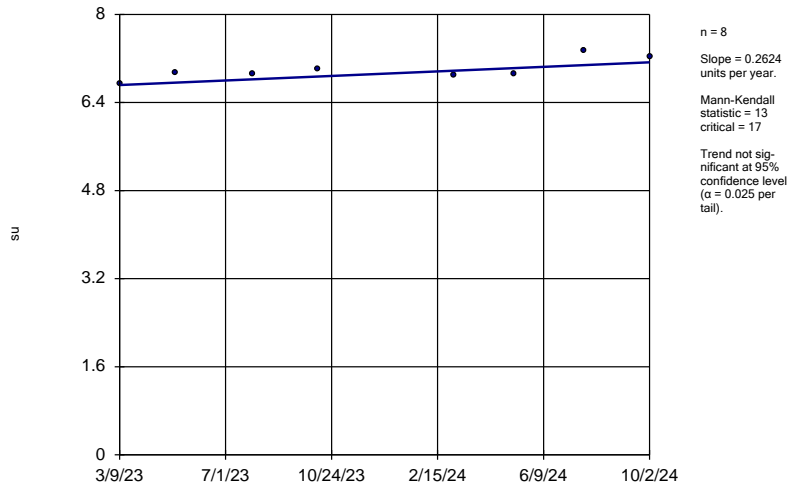
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-54R



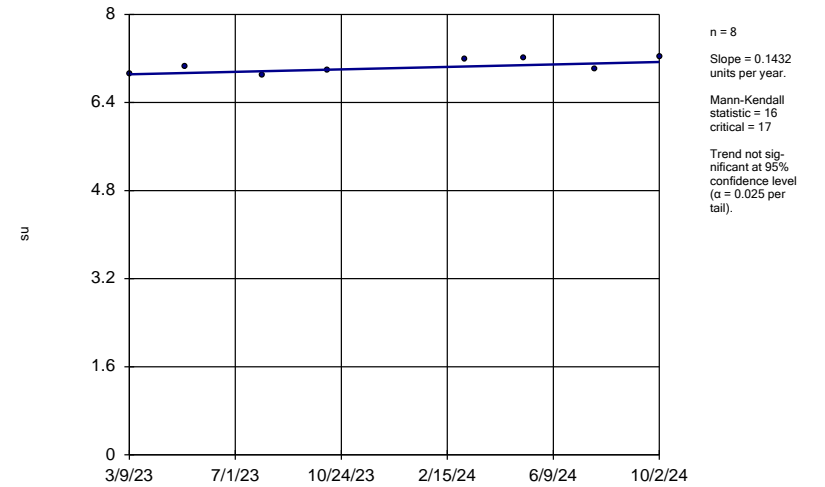
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

pH, Field MW-55

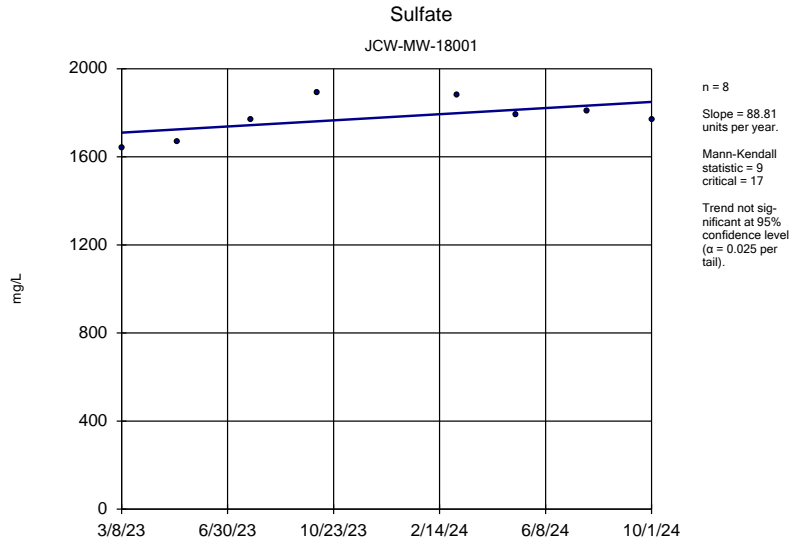


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

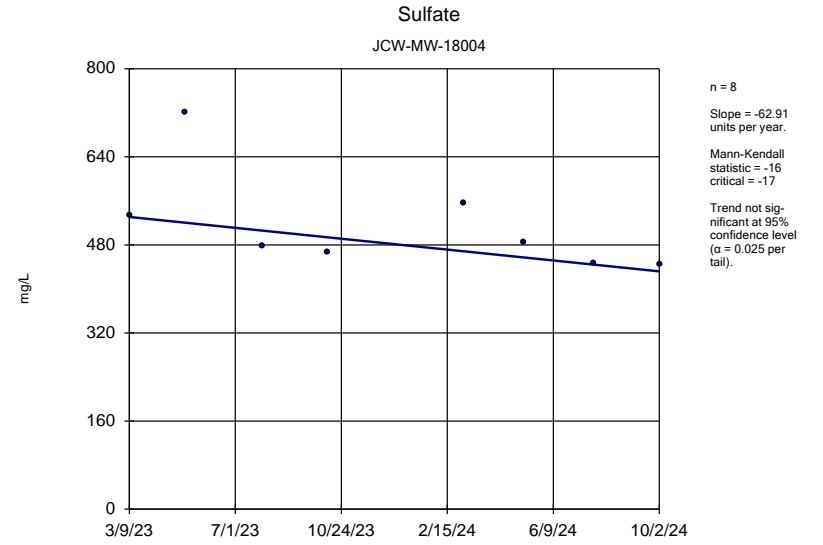
pH, Field OW-57ROUT



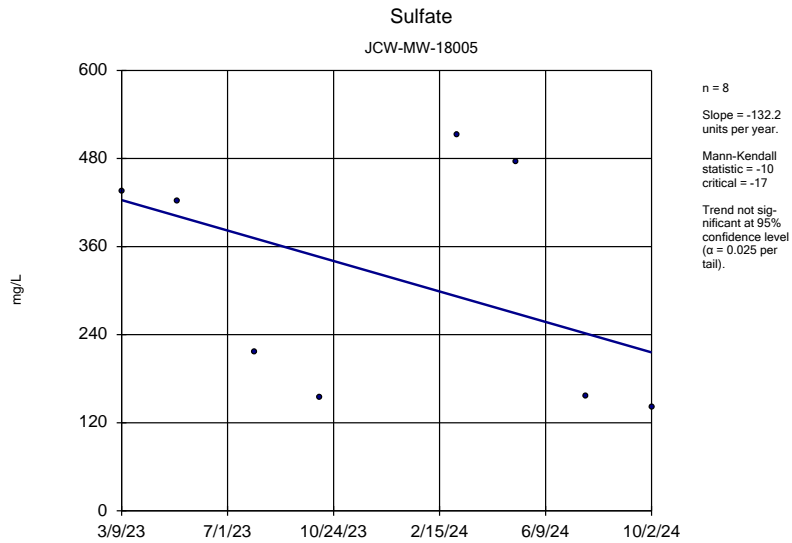
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



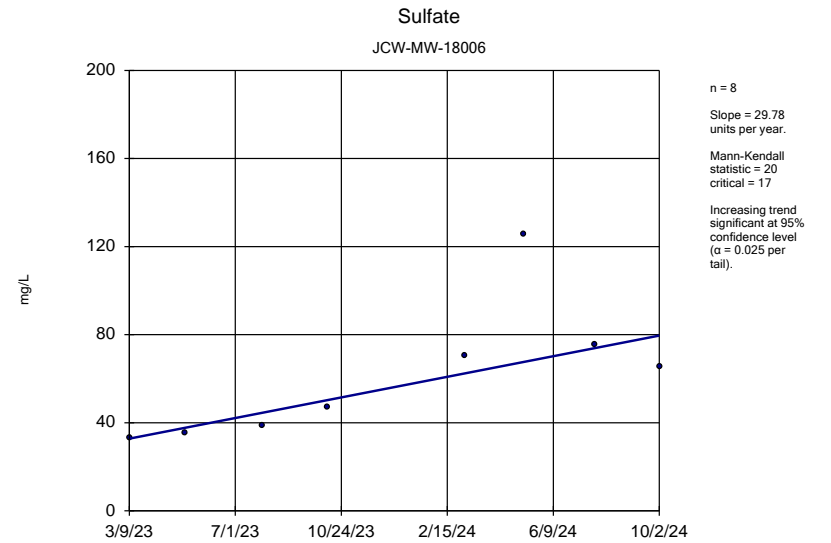
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

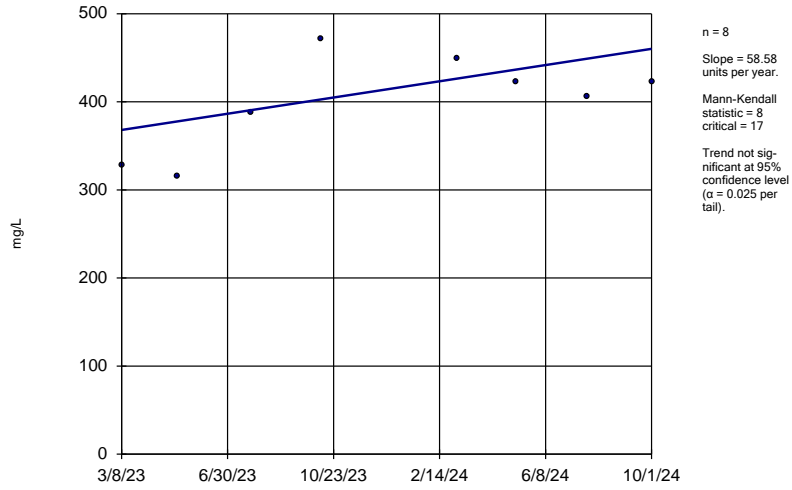


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



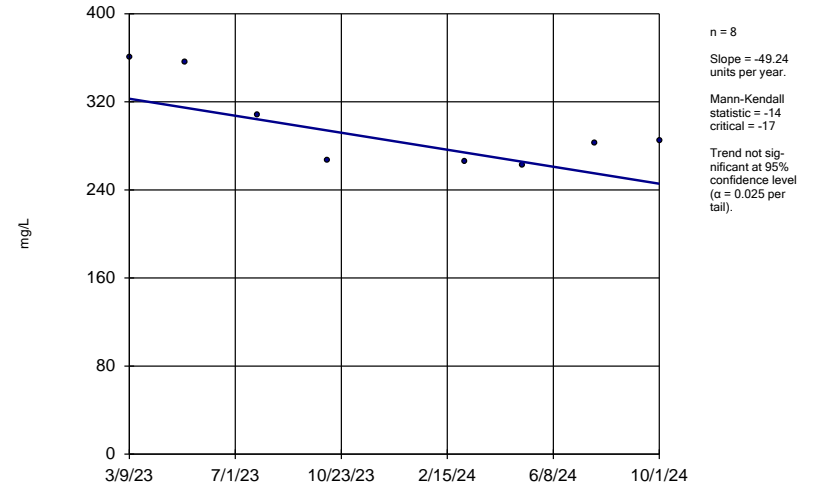
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Sulfate MW-50



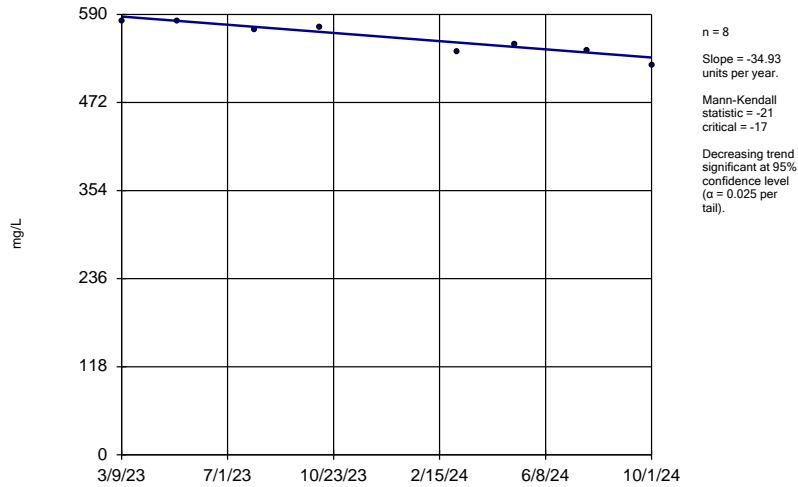
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Sulfate MW-51



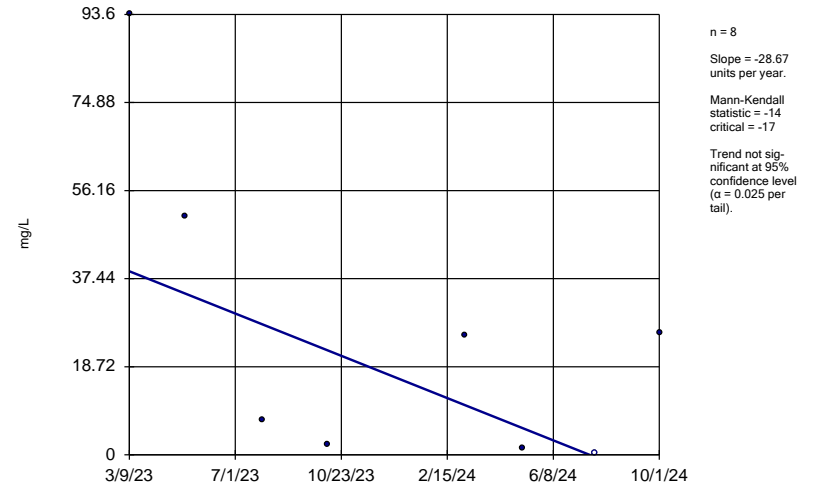
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Sulfate MW-52

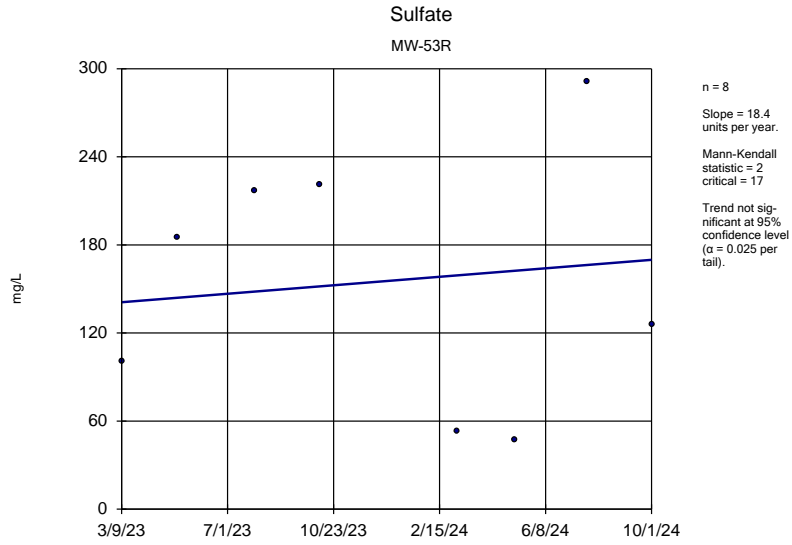


Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

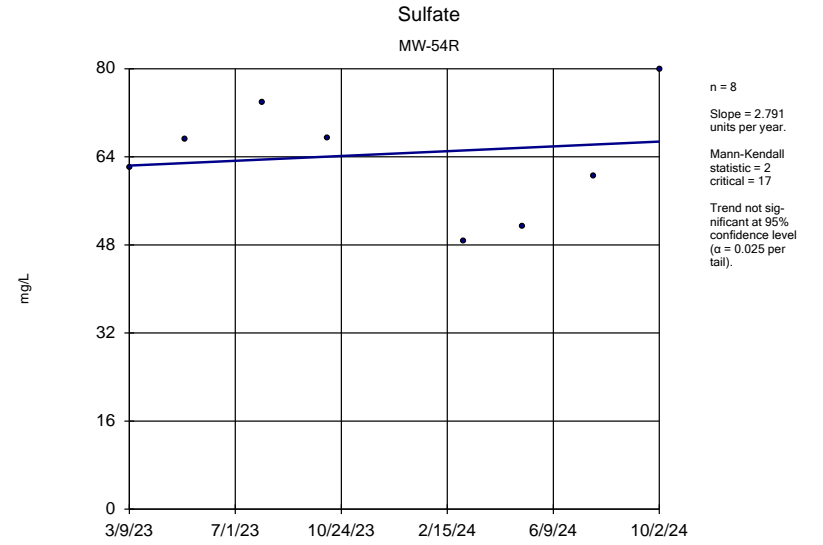
Sulfate MW-53



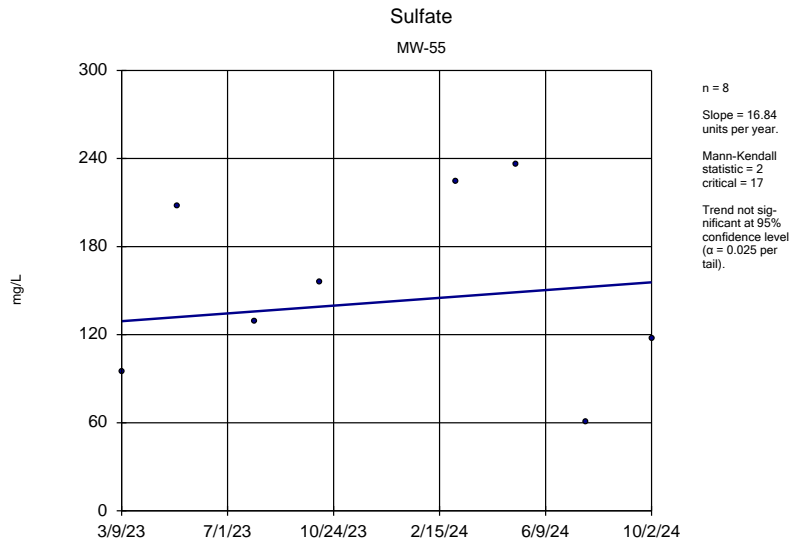
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



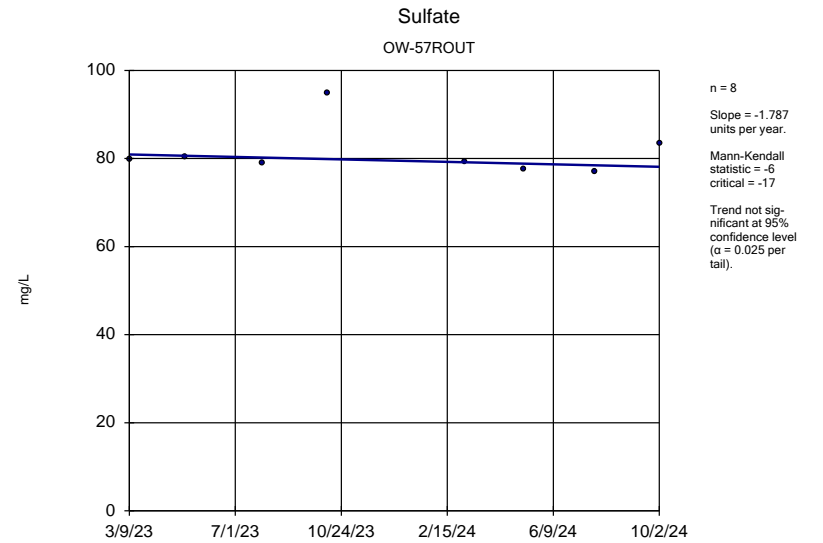
Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:56 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



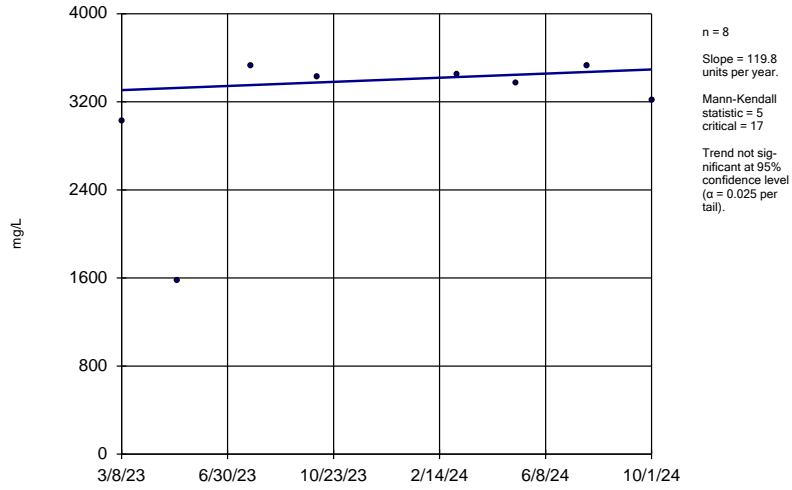
Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

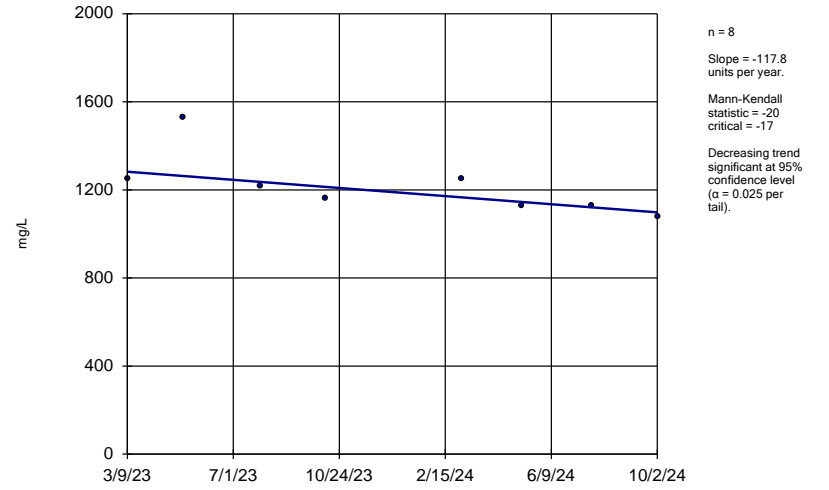
JCW-MW-18001



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

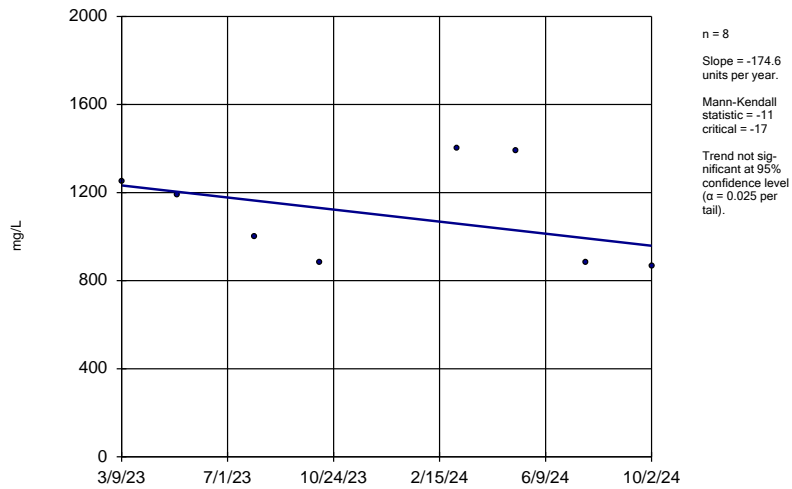
JCW-MW-18004



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

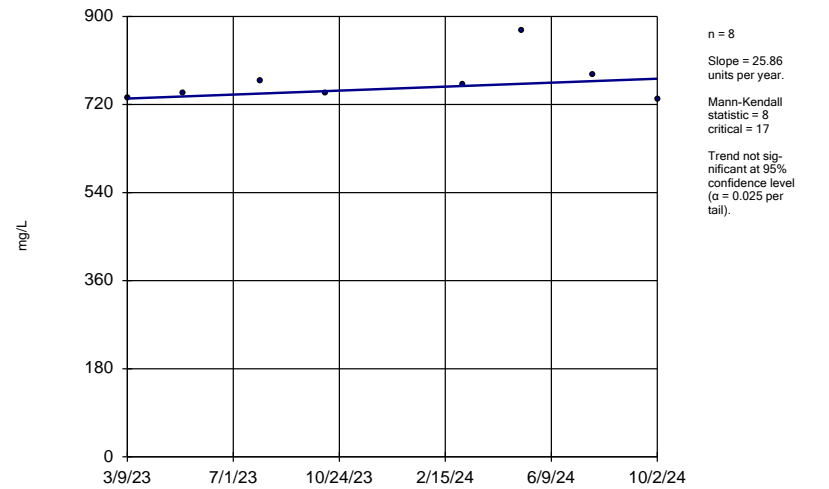
JCW-MW-18005



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

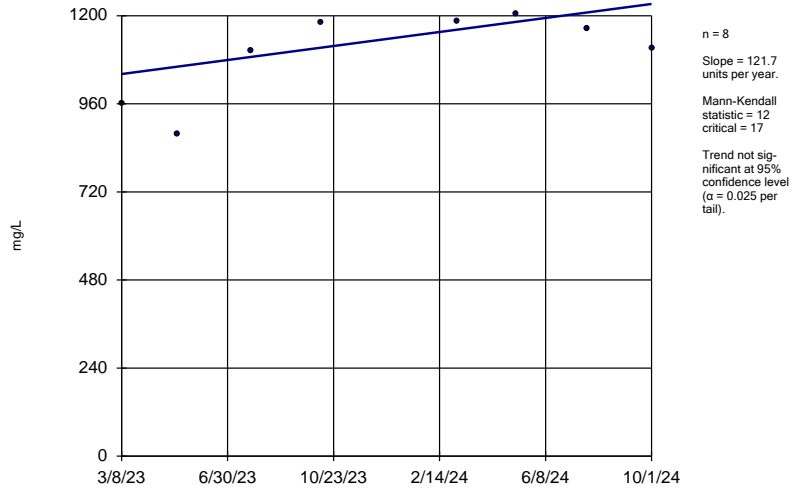
JCW-MW-18006



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

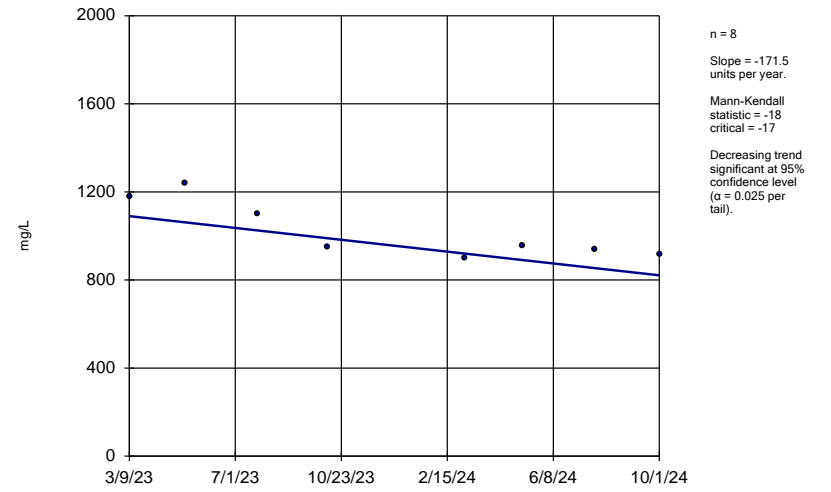
MW-50



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

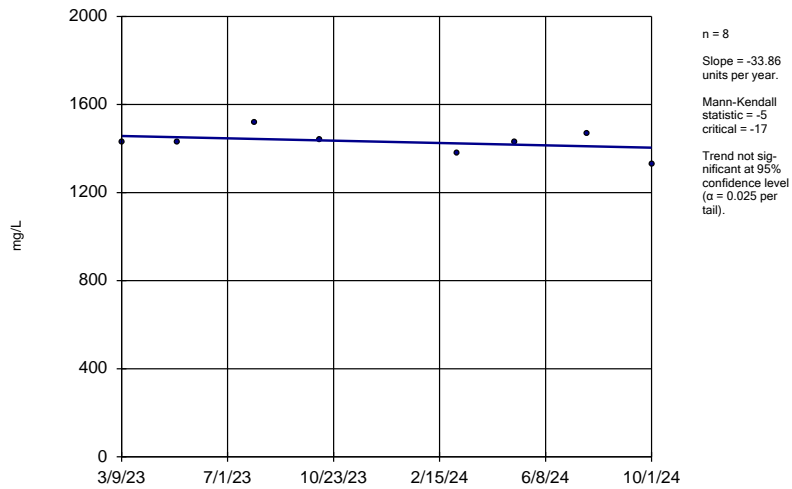
MW-51



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

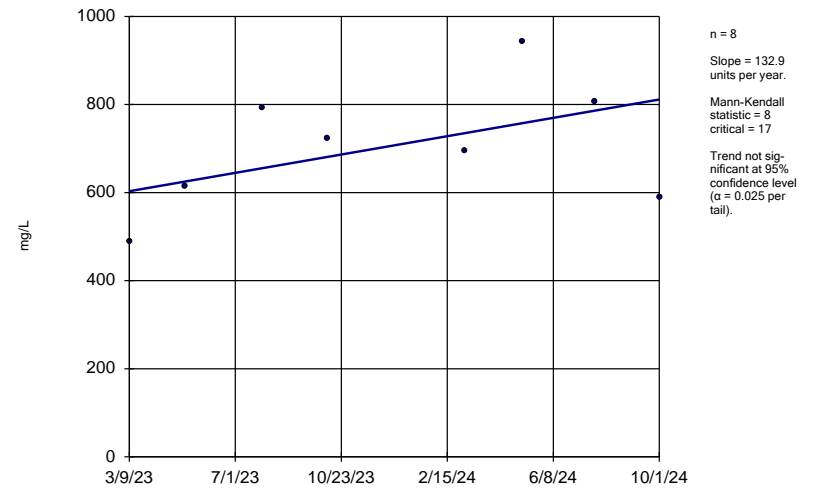
MW-52



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

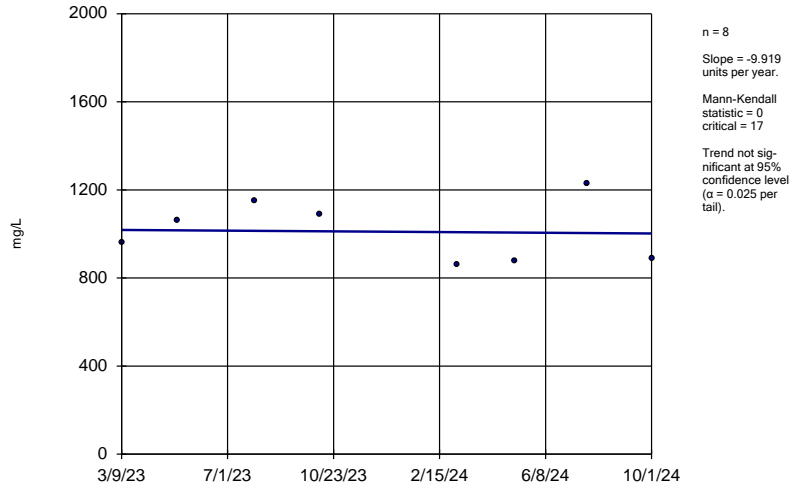
MW-53



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

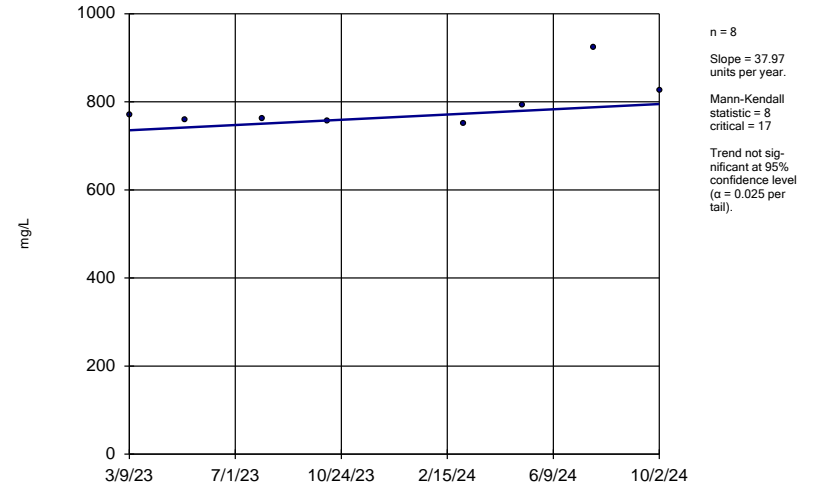
MW-53R



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

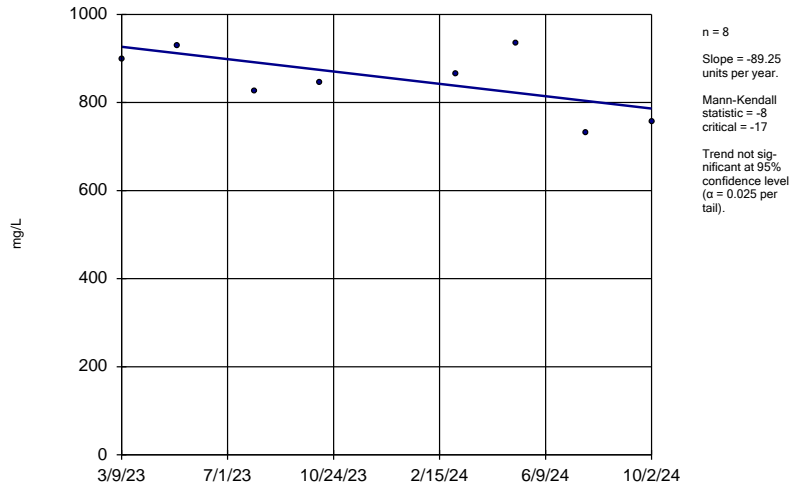
MW-54R



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

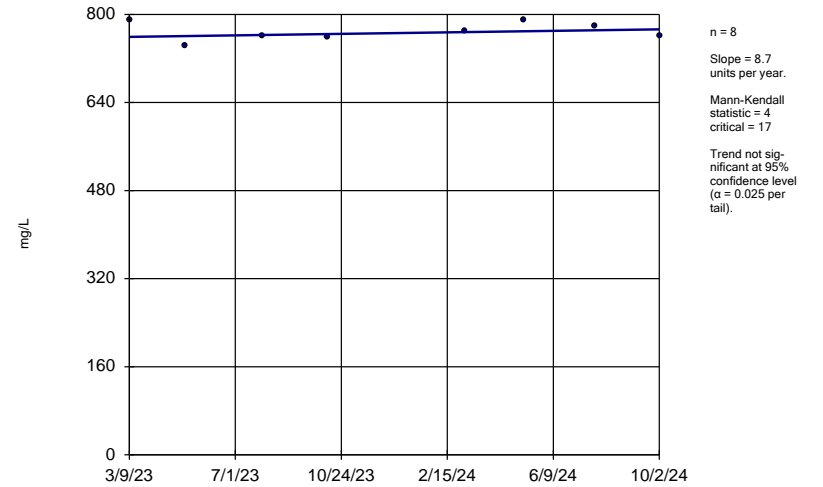
MW-55



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Total Dissolved Solids

OW-57ROUT



Sen's Slope Estimator Analysis Run 11/17/2024 5:57 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Appendix D

Assessment Monitoring and GSI Statistical Evaluation

Technical Memorandum

Date: January 30, 2025

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC
Kristin Lowery, TRC

Project No.: 553828.0000 Phase 002, Task 002

Subject: Assessment Monitoring and GSI Statistical Evaluation of the Fourth Quarter 2024 Sampling Event
JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan

During the statistical evaluation of the initial assessment monitoring event (May 2018) for the JC Weadock Power Plant Landfill, arsenic was present in one or more downgradient monitoring wells at statistically significant levels exceeding the Groundwater Protection Standards (GWPSs). Therefore, Consumers Energy Company (Consumers Energy) initiated an Assessment of Corrective Measures (ACM) within 90 days from when the Appendix IV exceedance was determined. The ACM was completed on September 11, 2019.

Currently, Consumers Energy is continuing semiannual assessment monitoring in accordance with §257.95 of the CCR Rule¹ at the JC Weadock Power Plant Landfill and quarterly groundwater monitoring in accordance with the February 2021 Weadock Landfill Hydrogeological Monitoring Plan (HMP). The fourth quarter 2024 monitoring event was conducted on September 30 through October 3, 2024. In accordance with §257.95 and the HMP, the assessment monitoring data must be compared to GWPSs to determine whether or not Appendix III and Appendix IV constituents, and additional Michigan Part 115 (as amended by PA 640) Section 11511a(3) and Section 11519b(2) constituents, are detected at statistically significant levels above the GWPSs. GWPSs were established in accordance with §257.95(h) and Part 115, as detailed in the April 23, 2021 Groundwater Protection Standards technical memorandum, which was also included in the First Quarter 2021 Hydrogeological Monitoring Report². In accordance with the HMP, groundwater monitoring data from the designated groundwater-surface water interface (GSI) monitoring wells must be also compared to the GSI criteria to determine whether or not the GSI monitoring constituents are detected at statistically significant levels above the GSI criteria.

The evaluation of the initial semiannual assessment monitoring event data (May 2018) indicated that arsenic was present at statistically significant levels above the GWPS at one of the three former downgradient wells. The three downgradient wells were located within a vent (e.g., opening) of the

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended per Phase One, Part One of the CCR Rule (83 FR 36435).

² TRC. 2021. *First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan*. Prepared for Consumers Energy Company. April.

Technical Memorandum

perimeter soil/bentonite slurry wall to assess the quality of groundwater passing the waste boundary. As discussed in detail in the HMP, in July 2018, the vent in the perimeter soil/bentonite slurry wall was closed and the slurry wall is now continuous along the entire perimeter of the Weadock Landfill. As a result, the groundwater monitoring system was revised, as documented in the HMP. The monitoring well network now consists of twelve (12) downgradient monitoring wells and eight (8) GSI monitoring wells.

The statistical evaluation of the fourth quarter 2024 assessment monitoring event data indicates that the following constituents are present at statistically significant levels above the GWPSs in downgradient monitoring wells at the Weadock Landfill:

Constituent	GWPS	#Downgradient Wells Exceeded
Boron	560 µg/L	11 of 12
Calcium	280 mg/L	1 of 12
Sulfate	780 mg/L	1 of 12

Corrective action has been triggered as a result of data collected during the initial assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and execute the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

The statistical evaluation found that no constituents were present at statistically significant levels exceeding the site-specific GSI criteria.

Statistical Evaluation Procedures

Following each quarterly sampling event, compliance well data for the Weadock Landfill are evaluated in accordance with the Assessment Monitoring Statistical Data Evaluation and GSI Data Evaluation procedures in the HMP. The assessment monitoring and GSI monitoring programs were developed to evaluate concentrations of constituents present in the uppermost aquifer relative to acceptable levels (i.e., GWPSs or GSI criteria). To evaluate whether or not a criterion exceedance is statistically significant, the difference in concentration observed at the downgradient wells during a given monitoring event compared to the applicable criterion must be large enough, after accounting for variability in the sample data, that the result is unlikely to have occurred merely by chance. Consistent with the Unified Guidance³, the preferred method for comparisons to a fixed standard is confidence limits. Based on the number of historical observations in the representative sample population, the sample mean, the sample standard deviation, and a selected confidence level (i.e., 99 percent), an upper and lower confidence limit is calculated. The true concentration, with 99 percent confidence, will fall between the lower and upper confidence limits.

The concentrations observed in the downgradient wells are deemed to be a statistically significant exceedance when the 99 percent lower confidence limit of the downgradient data exceeds the criterion. If the confidence interval straddles the criterion (i.e., the lower confidence level is below the criterion, but the upper confidence level is above), the statistical test result indicates that there is insufficient

³ USEPA. 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. Office of Conservation and Recovery. EPA 530/R-09-007.

Technical Memorandum

confidence that the measured concentrations are different from the criterion and thus no compelling evidence that the measured concentration is a result of a release from the CCR unit versus the inherent variability of the sample data. This statistical approach is consistent with the statistical methods for assessment monitoring presented in §257.93(f) and (g). Statistical evaluation methodologies built into the CCR Rule and Part 115 and numerous other federal rules are key in determining whether or not individually measured data points represent a concentration increase over the baseline or a fixed standard (such as a GWPS in an assessment monitoring program).

For each detected constituent, the concentrations for each well were first compared directly to the GWPS, as shown on Table 1, or the GSI criteria, as shown on Table 2. Parameter-well combinations that included a direct exceedance of the criteria within the most recent two years of sampling events (eight quarterly sampling events, March 2023 through October 2024) were retained for further analysis.

Groundwater data were evaluated utilizing Sanitas™ statistical software. Sanitas™ is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas™ statistical program, confidence limits were used to perform the statistical comparison of compliance data to a fixed standard. Parametric and non-parametric confidence intervals were calculated for each parameter with a direct exceedance using a per test⁴ 99 percent confidence level, i.e., a significance level (α) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas™ output files are included as an attachment.

The statistical data evaluation included the following steps:

- Review of data quality checklists for the data sets;
- Graphical representation of the monitoring data as time versus concentration by well/constituent pair;
- Outlier testing of individual data points that appear from the graphical representations as potential outliers;
- Evaluation of visual trends apparent in the graphical representations for statistical significance;
- Evaluation of percentage of non-detects for each well-constituent pair;
- Distribution of the data; and
- Calculation of the confidence intervals for each cumulative dataset.

The results of these evaluations are presented and discussed below.

Data from each round were evaluated for completeness, overall quality, and usability and were deemed appropriate for the purposes of the assessment and GSI monitoring programs. Initially, the results were observed visually for potential outliers. No outliers were identified in the data set.

The Sanitas™ software was then used to test compliance at the downgradient monitoring wells using the confidence interval method for the most recent eight sampling events. The tests were run with a per-test significance of $\alpha = 0.01$. Non-detect data was handled in accordance with the HMP for the purposes of calculating the confidence intervals.

⁴ Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the parametric or non-parametric confidence intervals for each well along with notes data transformations, as appropriate.

Assessment Monitoring Statistical Evaluation

The assessment monitoring statistical evaluation is performed on the downgradient monitoring wells in accordance with the HMP. The downgradient monitoring wells include:

- JCW-MW-18001 ■ JCW-MW-18004 ■ JCW-MW-18005 ■ JCW-MW-18006
- MW-50 ■ MW-51 ■ MW-52 ■ MW-53
- MW-53R ■ MW-54R ■ MW-55 ■ OW-57R Out

The concentrations from each well were first compared directly to the GWPS, as shown on Table 1. Constituent-well combinations that included a direct exceedance of the GWPS within the past eight monitoring events were retained for further analysis (Attachment 1). Direct comparison GWPS exceedances include the following constituent well combinations:

- Boron in MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, OW-57R OUT, JCW-MW-18001, JCW-MW-18005, and JCW-MW-18006;
- Calcium in JCW-MW-18001 and JCW-MW-18005;
- Sulfate in JCW-MW-18001; and
- Arsenic in MW-55, JCW-MW-18006, and MW-51.

The purpose of assessment monitoring is to assess whether constituent concentrations in groundwater from prior operations are above a risk-based standard (i.e. GWPS). As detailed in the Alternate Source Demonstration (Fourth Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2025), the arsenic concentrations at MW-55 are not the result of a release from the unit; therefore, comparison of these concentrations to the GWPS is not appropriate and assessment monitoring confidence intervals were not calculated.

The software outputs for the assessment monitoring data evaluation are included in Attachment 1 along with data reports showing the values used for the evaluation. The percentage of non-detect observations are also included in Attachment 1. Visual trends were apparent in multiple wells for arsenic, boron, calcium, and sulfate. These data sets were tested further in Sanitas™ utilizing Sen's Slope to estimate the average rate of change in concentration over time and utilizing the Mann-Kendall trend test to test for significance of the trend at the 98% confidence level. The trend tests show that the trend for boron at MW-53 is statistically significant (Attachment 1). The trend is causing the confidence interval to widen. Calculating a confidence interval around a trending data set incorporates not only variability present naturally in the underlying dataset, but also incorporates variability due to the trend itself. Based on the observed trend, confidence bands were selected as a more appropriate assessment for boron at MW-53. Confidence bands are selected by the Unified Guidance as the appropriate method for calculating confidence intervals on trending data. A confidence band calculates upper and lower confidence limits at each point along the trend to reduce variability and create a narrower confidence interval.

Technical Memorandum

The Sanitas™ software generates an output that includes graphs of the confidence bands and parametric or non-parametric confidence intervals for each well along with notes on data transformations, as appropriate. The data distributions are as follows:

Distribution	Constituent-Well Combinations
Normal	Boron at JCW-MW-18001, JCW-MW-18006, MW-50, MW-51, MW-52, MW-53R, and MW-55 Calcium at JCW-MW-18005 and JCW-MW-18001 Arsenic at JCW-MW-18006 and MW-51 Sulfate at JCW-MW-18001
Normalized by power transformation	Boron at JCW-MW-18005 and MW-54R (Square Root)
Not normal (non-parametric test used)	Boron at OW-57ROUT
Not Applicable – confidence bands used	Boron at MW-53

The confidence bands and interval tests compare the lower confidence limit to the GWPS. Arsenic concentrations at JCW-MW-18006 were previously considered statistically significant; however, the lower confidence limit has been at or below the GWPS since the second quarter 2021. Calcium concentrations at MW-51 were previously considered statistically significant; however, calcium concentrations are generally decreasing, the lower confidence limit has been below the GWPS since the first quarter 2022, and concentrations have been below the GWPS by direct comparison since first quarter 2022. Concentration trends will continue to be monitored.

Statistically significant exceedances of the GWPS were noted for boron at JCW-MW-18001, JCW-MW-18005, JCW-MW-18006, MW-50, MW-51, MW-52, MW-53, MW-53R, MW-54R, MW-55, and OW-57R OUT, calcium at JCW-MW-18001, and sulfate at JCW-MW-18001. Boron concentrations have been consistently above the GWPS since monitoring under the Weadock Landfill HMP began in first quarter 2021. Calcium at JCW-MW-18001 was a confirmed GWPS exceedance in first quarter 2023 resulting from increases in calcium concentration beginning in first quarter 2021. No trend in calcium concentrations was observed at JCW-MW-18001 as of second quarter 2024. Sulfate at JCW-MW-18001 was a confirmed GWPS exceedance in second quarter 2023 resulting from increases in sulfate concentrations. As noted in the Alternate Source Demonstration (Fourth Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2025), multiple lines of evidence indicate that the increases in calcium and sulfate concentrations are not a result of a change in flux from the landfill and is instead the result of changing groundwater conditions outside the slurry wall.

Corrective action has been triggered for the site as a result of data collected during the initial May 2018 assessment monitoring event. Consumers Energy will continue to evaluate corrective measures per §257.96 and §257.97 and will continue executing the self-implementing groundwater compliance schedule in conformance with §257.90 - §257.98.

GSI Statistical Evaluation

Eight monitoring wells located along the surface water features adjacent to the Weadock Landfill are included in the GSI monitoring program to meet the requirements of Part 31:

Technical Memorandum

- MW-50
- MW-51
- MW-52
- MW-53
- MW-53R
- MW-54R
- MW-55
- JCW-MW-18004

The concentrations from each well were first compared directly to the GSI criteria, as shown on Table 2. Constituent-well combinations that included a direct exceedance of the GSI criteria within the past eight monitoring events were retained for further analysis (Attachment 2). There are no direct comparison GSI criteria exceedances as of fourth quarter 2024. Therefore, confidence intervals were not calculated.

Attachments

Table 1 Comparison of Groundwater Sampling Results to Groundwater Protection Standards

Table 2 Comparison of Groundwater Sampling Results to GSI

Attachment 1 Assessment Monitoring Sanitas™ Output Files

Tables

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-50															
Sample Date:			3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024	7/23/2024	7/23/2024	10/1/2024	10/1/2024
Constituent	Unit	GWPS		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																		
Boron	ug/L	560	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020	2,100	2,180	2,550	2,450
Calcium	mg/L	280	152	--	142	144	188	187	205	206	199	196	184	191	175	175	184	193
Chloride	mg/L	2,300	35.9	36.7	31.5	31.9	37.4	39.1	37.6	37	40.1	38.6	37.1	38.1	34.9	36.7	33.9	36.4
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	341	315	314	316	392	385	470	472	449	448	425	421	403	410	423	422
Total Dissolved Solids	mg/L	4,700	939	984	878	880	1,100	1,110	1,170	1,190	1,180	1,190	1,250	1,160	1,190	1,140	1,100	1,120
pH, Field	SU	6.5 - 8.5	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--	7.6	--	7.6	--
Appendix IV⁽¹⁾																		
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	2	2	2	2	3	3	3	3	3	3	3	3	4	4	5	5
Barium	ug/L	2,000	89	92	114	87	114	113	135	136	187	179	176	180	188	192	211	215
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	65	65	55	54	58	59	59	59	69	68	61	62	62	61	56	58
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5	5	6	6	6	6
Radium-226	pCi/L	NA	--	--	0.155	0.144	--	--	0.291	0.320	--	--	0.270	0.349	--	--	0.355	0.353
Radium-228	pCi/L	NA	--	--	0.686	< 0.606	--	--	1.15	1.46	--	--	1.47	1.38	--	--	< 0.773	1.41
Radium-226/228	pCi/L	5.0	--	--	0.841	0.633	--	--	1.44	1.78	--	--	1.20	1.03	--	--	1.10	1.77
Selenium	ug/L	50	1	1	1	2	1	1	< 1	2	3	3	1	2	1	2	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																		
Iron	ug/L	28,000	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817	1,530	1,610	1,930	2,120
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	2	2	1	1	1	1	2	2	2	3	1	< 1
Nickel	ug/L	100	< 2	< 2	3	< 2	2	< 2	< 2	2	8	8	< 2	< 2	7	8	3	3
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-51							
Sample Date:			3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,320	1,230	1,180	1,170	935	798	862	1,070
Calcium	mg/L	280	169	166	162	132	132	128	114	134
Chloride	mg/L	2,300	98.4	99.9	97	91.6	78.3	79.9	81.5	78.8
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	360	356	308	267	266	262	283	285
Total Dissolved Solids	mg/L	4,700	1,180	1,240	1,100	952	902	958	940	916
pH, Field	SU	6.5 - 8.5	7.2	7.3	7.4	7.2	7.4	7.4	7.5	7.7
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	10	8	10	18	10	13	19	27
Barium	ug/L	2,000	178	180	141	141	127	117	123	130
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	2	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	46	40	40	34	31	28	28	25
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.143	--	0.285	--	0.181	--	0.223
Radium-228	pCi/L	NA	--	1.01	--	1.23	--	0.863	--	1.40
Radium-226/228	pCi/L	5.0	--	1.15	--	1.52	--	0.681	--	1.62
Selenium	ug/L	50	2	1	< 1	< 1	1	< 1	1	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	514	450	1,290	1,660	446	760	1,490	2,740
Copper	ug/L	1,000	< 1	1	3	2	1	1	1	1
Nickel	ug/L	100	< 2	3	4	< 2	< 2	3	6	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	2	2	2	2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-52							
Sample Date:			3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,040	993	1,030	1,140	945	895	909	1,220
Calcium	mg/L	280	228	217	247	234	237	236	233	251
Chloride	mg/L	2,300	36.3	32.4	31.5	30.2	33.8	33.3	30.1	37.2
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	581	581	569	572	540	550	542	522
Total Dissolved Solids	mg/L	4,700	1,430	1,430	1,520	1,440	1,380	1,430	1,470	1,330
pH, Field	SU	6.5 - 8.5	6.8	6.9	6.6	6.8	7.0	7.0	7.0	7.1
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	102	95	99	108	94	91	88	93
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	27	23	27	27	27	29	29	27
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.128	--	0.444	--	0.162	--	0.149
Radium-228	pCi/L	NA	--	< 0.594	--	1.64	--	1.19	--	0.706
Radium-226/228	pCi/L	5.0	--	< 0.594	--	2.08	--	1.03	--	0.855
Selenium	ug/L	50	1	< 1	< 1	< 1	2	1	1	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	2,820	2,720	6,720	7,560	3,120	3,680	7,290	8,450
Copper	ug/L	1,000	1	1	2	1	2	2	2	3
Nickel	ug/L	100	< 2	< 2	< 2	< 2	< 2	< 2	6	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53							
Sample Date:			3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	2,150	2,620	4,370	5,530	5,740	6,110	6,960	6,380
Calcium	mg/L	280	82.5	104	146	136	134	134	130	100
Chloride	mg/L	2,300	24.8	56.5	80.3	77.4	77.4	89.3	115	61.6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	93.6	50.8	7.39	2.28	25.4	1.53	< 1	25.9
Total Dissolved Solids	mg/L	4,700	489	613	792	722	694	942	806	588
pH, Field	SU	6.5 - 8.5	7.3	7.4	7.1	7.3	7.5	7.5	7.5	7.8
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	1	1	1	2	1
Barium	ug/L	2,000	202	272	692	719	654	582	581	386
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	33	34	44	42	50	50	57	40
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	7	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.198	--	0.679	--	0.561	--	0.572
Radium-228	pCi/L	NA	--	< 0.518	--	1.72	--	1.81	--	0.913
Radium-226/228	pCi/L	5.0	--	0.700	--	2.40	--	1.25	--	1.48
Selenium	ug/L	50	1	2	2	2	3	2	4	3
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	403	569	1,390	1,080	947	665	1,110	518
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	1	2	1	< 1
Nickel	ug/L	100	< 2	< 2	< 2	< 2	< 2	< 2	6	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	2	< 2	2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-53R							
Sample Date:			3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	2,330	2,140	2,190	2,420	2,300	2,200	1,880	2,830
Calcium	mg/L	280	195	202	220	206	173	166	189	181
Chloride	mg/L	2,300	27.2	30	34.6	35.5	34.7	32.5	40	42.5
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	101	185	217	221	53.2	47.6	291	126
Total Dissolved Solids	mg/L	4,700	960	1,060	1,150	1,090	862	880	1,230	890
pH, Field	SU	6.5 - 8.5	6.7	6.8	6.7	7.0	7.0	7.1	7.2	7.3
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	17	14	17	16	9	10	8	16
Barium	ug/L	2,000	179	174	144	110	165	164	132	128
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	1	< 1	< 1
Lithium	ug/L	180	59	56	62	61	56	53	62	56
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.275	--	0.174	--	0.155	--	0.184
Radium-228	pCi/L	NA	--	0.490	--	0.968	--	0.674	--	< 0.632
Radium-226/228	pCi/L	5.0	--	0.765	--	1.14	--	0.567	--	0.702
Selenium	ug/L	50	1	1	2	1	2	1	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,580	1,410	1,180	834	752	761	280	975
Copper	ug/L	1,000	1	1	1	1	2	1	2	1
Nickel	ug/L	100	< 2	< 2	< 2	< 2	< 2	< 2	8	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-54R							
Sample Date:			3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/2/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	5,660	5,240	6,170	5,520	5,940	5,580	6,930	8,080
Calcium	mg/L	280	168	163	162	165	170	161	153	177
Chloride	mg/L	2,300	49.6	46.5	48.5	45	61.7	56.9	75.4	86.2
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230
Sulfate	mg/L	780	62	67.2	73.8	67.4	48.6	51.3	60.4	79.8
Total Dissolved Solids	mg/L	4,700	770	759	761	756	752	792	924	826
pH, Field	SU	6.5 - 8.5	6.8	6.9	6.8	7.0	7.0	7.2	7.2	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	1	< 1	< 1	1	1	1	1	2
Barium	ug/L	2,000	126	98	106	113	97	83	90	100
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	71	65	75	70	76	73	83	83
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	15	13	15	17	15	18	17	17
Radium-226	pCi/L	NA	--	< 0.141	--	0.160	--	0.180	--	0.213
Radium-228	pCi/L	NA	--	< 0.836	--	1.38	--	0.829	--	< 0.588
Radium-226/228	pCi/L	5.0	--	< 0.836	--	1.54	--	0.829	--	0.639
Selenium	ug/L	50	1	1	1	1	3	2	4	5
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	262	74	111	829	159	87	59	137
Copper	ug/L	1,000	2	1	6	2	2	3	2	2
Nickel	ug/L	100	< 2	< 2	< 2	2	< 2	< 2	7	3
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			MW-55								
Sample Date:			3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024	10/2/2024	10/2/2024
Constituent	Unit	GWPS									Field Dup
Appendix III⁽¹⁾											
Boron	ug/L	560	1,110	1,140	1,290	1,200	825	729	1,270	1,130	1,090
Calcium	mg/L	280	162	165	150	163	166	161	117	150	156
Chloride	mg/L	2,300	24.2	16.9	18.5	16.7	18.3	17.3	21.8	23	23.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	94.6	208	129	156	224	236	60.2	117	117
Total Dissolved Solids	mg/L	4,700	898	929	827	846	866	934	730	756	758
pH, Field	SU	6.5 - 8.5	6.8	6.9	6.9	7.0	6.9	6.9	7.4	7.2	--
Appendix IV⁽¹⁾											
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	68	44	75	75	46	39	45	54	56
Barium	ug/L	2,000	287	267	240	248	260	235	186	222	218
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	27	24	27	26	26	26	29	25	26
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	50	30	33	56	27	25	25	44	44
Radium-226	pCi/L	NA	--	0.276	--	0.406	--	0.137	--	0.274	--
Radium-228	pCi/L	NA	--	< 0.916	--	1.26	--	1.11	--	< 0.899	--
Radium-226/228	pCi/L	5.0	--	< 0.916	--	1.67	--	0.971	--	< 0.899	--
Selenium	ug/L	50	3	< 1	1	1	1	4	1	1	< 1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾											
Iron	ug/L	28,000	24,800	21,600	21,900	16,800	18,700	14,700	12,300	12,600	13,800
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	1	1	1	< 1	< 1
Nickel	ug/L	100	4	5	22	3	< 2	6	4	4	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			OW-57R OUT								
Sample Date:			3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024	7/24/2024	7/24/2024	10/2/2024
Constituent	Unit	GWPS								Field Dup	
Appendix III⁽¹⁾											
Boron	ug/L	560	1,860	1,740	1,750	1,790	1,810	1,700	1,690	1,730	2,070
Calcium	mg/L	280	116	117	124	120	123	119	120	120	138
Chloride	mg/L	2,300	59	64.2	53.7	50.6	68.1	72.3	65.9	68.6	73.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090	1,100	1,140	1,510
Sulfate	mg/L	780	79.7	80.5	79	94.8	79.3	77.6	75.5	78.3	83.4
Total Dissolved Solids	mg/L	4,700	790	743	762	758	770	790	760	796	762
pH, Field	SU	6.5 - 8.5	6.9	7.1	6.9	7.0	7.2	7.2	7.0	--	7.2
Appendix IV⁽¹⁾											
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	1	1	2	2	2
Barium	ug/L	2,000	75	72	72	77	81	75	78	77	83
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	4	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	1,230	1,090	1,100	1,140	1,510
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	26	23	24	23	28	26	25	25	24
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	6	6	7	6	6	7	7	7
Radium-226	pCi/L	NA	--	0.149	--	< 0.155	--	0.115	--	--	0.163
Radium-228	pCi/L	NA	--	< 0.663	--	0.586	--	0.845	--	--	< 0.543
Radium-226/228	pCi/L	5.0	--	< 0.663	--	0.680	--	0.731	--	--	0.570
Selenium	ug/L	50	2	2	1	< 1	< 1	1	1	2	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾											
Iron	ug/L	28,000	53	78	30	40	44	94	77	85	67
Copper	ug/L	1,000	1	1	1	2	2	2	2	2	2
Nickel	ug/L	100	15	15	13	15	12	15	18	17	15
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 pCi/L - picocuries per liter.
 -- - not analyzed.
 GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.
Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18001							
Sample Date:			3/8/2023	5/8/2023	7/26/2023	10/5/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	1,440	1,380	1,470	1,620	1,420	1,330	1,370	1,310
Calcium	mg/L	280	486	496	555	562	557	537	526	474
Chloride	mg/L	2,300	54.2	51.1	58.9	51.1	44.7	44.5	45	50.3
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	1,640	1,670	1,770	1,890	1,880	1,790	1,810	1,770
Total Dissolved Solids	mg/L	4,700	3,030	1,580	3,530	3,430	3,450	3,370	3,530	3,210
pH, Field	SU	6.5 - 8.5	6.7	6.7	6.8	6.5	6.8	6.8	6.9	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	1	< 1	2	2	2
Barium	ug/L	2,000	47	50	49	48	49	46	50	66
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	91	83	102	110	106	102	107	90
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.122	--	< 0.139	--	0.124	--	0.158
Radium-228	pCi/L	NA	--	< 0.547	--	0.783	--	0.525	--	< 0.430
Radium-226/228	pCi/L	5.0	--	< 0.547	--	0.886	--	0.506	--	< 0.430
Selenium	ug/L	50	2	2	2	1	2	2	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	830	1,180	2,790	3,840	3,570	2,630	3,080	1,540
Copper	ug/L	1,000	2	3	2	2	3	4	5	2
Nickel	ug/L	100	< 2	< 2	41	3	14	4	13	5
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	2	< 2	3	2	2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18004							
Sample Date:			3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024	10/2/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	180	227	310	319	192	206	308	412
Calcium	mg/L	280	221	265	229	218	238	213	205	207
Chloride	mg/L	2,300	12.7	16.8	14.2	15.8	16.9	14.3	12.6	14.1
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	533	722	478	466	557	484	446	444
Total Dissolved Solids	mg/L	4,700	1,250	1,530	1,220	1,160	1,250	1,130	1,130	1,080
pH, Field	SU	6.5 - 8.5	6.8	6.8	6.8	7.0	7.0	6.9	7.3	7.0
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Barium	ug/L	2,000	24	28	30	34	26	26	29	34
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	1	< 1	< 1	2
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	39	42	50	49	43	43	50	46
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	< 0.131	--	< 0.155	--	0.102	--	0.120
Radium-228	pCi/L	NA	--	< 0.600	--	1.24	--	0.672	--	< 0.656
Radium-226/228	pCi/L	5.0	--	< 0.600	--	1.30	--	0.672	--	< 0.656
Selenium	ug/L	50	11	2	2	< 1	4	4	< 1	1
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	46	67	24	36	98	73	41	36
Copper	ug/L	1,000	1	2	2	2	2	2	2	2
Nickel	ug/L	100	< 2	< 2	< 2	< 2	< 2	< 2	4	< 2
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18005							
Sample Date:			3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/6/2024	5/8/2024	7/23/2024	10/2/2024
Constituent	Unit	GWPS								
Appendix III⁽¹⁾										
Boron	ug/L	560	930	992	1,170	1,470	1,000	960	1,460	1,930
Calcium	mg/L	280	262	258	202	159	335	302	164	162
Chloride	mg/L	2,300	25.4	22.3	44.1	48.1	23.3	22.1	49.2	51.8
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,400
Sulfate	mg/L	780	435	422	216	154	512	475	156	142
Total Dissolved Solids	mg/L	4,700	1,250	1,190	1,000	884	1,400	1,390	884	866
pH, Field	SU	6.5 - 8.5	6.6	6.8	6.8	6.9	6.7	6.8	7.2	7.2
Appendix IV⁽¹⁾										
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	4	2	< 1	1	3	4	2	2
Barium	ug/L	2,000	115	105	76	74	136	127	67	71
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	1,400
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	36	33	33	32	43	41	34	31
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	6	5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	0.134	--	0.221	--	0.165	--	0.169
Radium-228	pCi/L	NA	--	< 0.573	--	1.17	--	1.23	--	< 0.640
Radium-226/228	pCi/L	5.0	--	< 0.573	--	1.39	--	1.07	--	< 0.640
Selenium	ug/L	50	3	2	2	1	2	< 1	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾										
Iron	ug/L	28,000	1,720	676	171	948	4,020	6,550	1,890	1,930
Copper	ug/L	1,000	1	< 1	2	1	7	2	2	< 1
Nickel	ug/L	100	< 2	9	8	9	< 2	< 2	11	7
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 1
 Comparison of Groundwater Sampling Results to Groundwater Protection Standards
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:			JCW-MW-18006													
Sample Date:			3/9/2023	3/9/2023	5/9/2023	5/9/2023	7/31/2023	7/31/2023	10/9/2023	10/9/2023	3/6/2024	3/6/2024	5/8/2024	5/8/2024	7/24/2024	10/2/2024
Constituent	Unit	GWPS		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																
Boron	ug/L	560	1,730	1,760	2,450	2,480	2,100	2,140	2,280	2,470	2,650	2,700	2,740	2,830	2,490	3,240
Calcium	mg/L	280	121	121	118	120	126	126	117	119	137	136	148	150	123	126
Chloride	mg/L	2,300	79.9	82.8	73.6	76.6	73	75.9	72.3	71.1	61.3	64.7	49.2	52	57.3	61.6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	780	32.5	33.9	34.2	36.1	39.4	37.9	46.9	47.6	69.7	71.6	122	129	75.5	65.4
Total Dissolved Solids	mg/L	4,700	715	753	734	751	765	770	738	748	748	776	864	878	782	732
pH, Field	SU	6.5 - 8.5	6.9	--	7.0	--	6.9	--	7.0	--	7.0	--	7.1	--	7.0	7.2
Appendix IV⁽¹⁾																
Antimony	ug/L	6.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Arsenic	ug/L	21	5	5	23	23	18	19	17	18	22	23	29	29	23	27
Barium	ug/L	2,000	232	238	464	465	354	346	342	381	445	464	390	387	412	468
Beryllium	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	15	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	4.0	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	180	21	23	45	47	36	36	37	39	52	54	59	61	49	48
Mercury	ug/L	2.0	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	73	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Radium-226	pCi/L	NA	--	--	0.337	< 0.192	--	--	0.506	0.431	--	--	0.218	0.280	--	0.520
Radium-228	pCi/L	NA	--	--	0.746	< 0.816	--	--	0.783	1.39	--	--	0.919	0.528	--	0.768
Radium-226/228	pCi/L	5.0	--	--	1.08	< 0.816	--	--	1.29	1.82	--	--	0.919	0.528	--	1.29
Selenium	ug/L	50	2	2	1	2	2	2	< 1	1	3	3	< 1	1	2	2
Thallium	ug/L	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
MI Part 115 Parameters⁽²⁾																
Iron	ug/L	28,000	2,930	2,910	6,890	7,210	6,910	6,860	5,660	5,930	7,970	7,890	10,400	10,800	8,650	9,050
Copper	ug/L	1,000	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	2	2	1	1	1	2
Nickel	ug/L	100	< 2	< 2	4	< 2	< 2	< 2	< 2	3	5	9	6	6	5	4
Silver	ug/L	34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	6.0	< 2	2	2	3	3	3	2	2	4	4	3	3	3	4
Zinc	ug/L	2,400	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

-- - not analyzed.

GWPS - Groundwater Protection Standard. GWPS is the higher of the MCL/RSL, applicable Michigan Part 201 criteria, and UTL as established in TRC's Technical Memorandum dated April 23, 2021.

Bold value indicates an exceedance of the GWPS. Data from downgradient monitoring wells are screened against the GWPS for evaluation purposes only. Confidence intervals will be used to determine compliance per the CCR rules and the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituents (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-50															
Sample Date:						3/8/2023	3/8/2023	5/8/2023	5/8/2023	7/26/2023	7/26/2023	10/9/2023	10/9/2023	3/5/2024	3/5/2024	5/7/2024	5/7/2024	7/23/2024	7/23/2024	10/1/2024	10/1/2024
Constituent	Unit	Generic GSI ^A	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Appendix III⁽¹⁾																					
Boron	ug/L	4,000	44,000	69,000	44,000	2,020	2,080	1,720	1,720	1,720	1,690	2,070	2,060	2,170	2,140	2,070	2,020	2,100	2,180	2,550	2,450
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	341	315	314	316	392	385	470	472	449	448	425	421	403	410	423	422
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.3	--	7.4	--	7.4	--	7.0	--	7.5	--	7.5	--	7.6	--	7.6	--
Appendix IV⁽¹⁾																					
Arsenic	ug/L	10	100	680	100	2	2	2	2	3	3	3	3	3	3	3	3	4	4	5	5
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1	1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	65	65	55	54	58	59	59	59	69	68	61	62	62	61	56	58
Molybdenum	ug/L	120	1,320	NC	1,320	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	6	6	5	5	6	6	6	6
Selenium	ug/L	5.0	55	120	55	1	1	1	2	1	1	< 1	2	3	3	1	2	1	2	2	2
MI Part 115 Parameters⁽²⁾																					
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	604	601	755	756	1,960	1,900	2,300	2,340	889	930	834	817	1,530	1,610	1,930	2,120
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:
 ug/L - micrograms per liter.
 mg/L - milligrams per liter.
 SU - standard units; pH is a field parameter.
 NC - no criteria.
 -- - not analyzed.
^A - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).
^{*} - Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.
^{**} - GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.
^F - Criterion is the Final Acute Value (FAV).
^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).
^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).
Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.
 All metals were analyzed as total unless otherwise specified.
 (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
 (2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-51							
Sample Date:						3/9/2023	5/8/2023	7/26/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,320	1,230	1,180	1,170	935	798	862	1,070
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	360	356	308	267	266	262	283	285
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.2	7.3	7.4	7.2	7.4	7.4	7.5	7.7
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	10	8	10	18	10	13	19	27
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	2	< 1	1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	46	40	40	34	31	28	28	25
Molybdenum	ug/L	120	1,320	NC	1,320	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	2	1	< 1	< 1	1	< 1	1	< 1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	514	450	1,290	1,660	446	760	1,490	2,740
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	2	2	2	2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-52							
Sample Date:						3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	1,040	993	1,030	1,140	945	895	909	1,220
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	581	581	569	572	540	550	542	522
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.9	6.6	6.8	7.0	7.0	7.0	7.1
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	27	23	27	27	27	29	29	27
Molybdenum	ug/L	120	1,320	NC	1,320	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	< 1	< 1	< 1	2	1	1	3
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	2,820	2,720	6,720	7,560	3,120	3,680	7,290	8,450
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53							
Sample Date:						3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	2,150	2,620	4,370	5,530	5,740	6,110	6,960	6,380
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	93.6	50.8	7.39	2.28	25.4	1.53	< 1	25.9
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	7.3	7.4	7.1	7.3	7.5	7.5	7.5	7.8
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	1	1	1	1	2	1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	33	34	44	42	50	50	57	40
Molybdenum	ug/L	120	1,320	NC	1,320	7	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	2	2	2	3	2	4	3
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	403	569	1,390	1,080	947	665	1,110	518
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	2	< 2	2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-53R							
Sample Date:						3/9/2023	5/8/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/1/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	2,330	2,140	2,190	2,420	2,300	2,200	1,880	2,830
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	101	185	217	221	53.2	47.6	291	126
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.7	6.8	6.7	7.0	7.0	7.1	7.2	7.3
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	17	14	17	16	9	10	8	16
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	59	56	62	61	56	53	62	56
Molybdenum	ug/L	120	1,320	NC	1,320	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	1	1	2	1	2	1	2	2
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	1,580	1,410	1,180	834	752	761	280	975
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-54R							
Sample Date:						3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/7/2024	7/23/2024	10/2/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	5,660	5,240	6,170	5,520	5,940	5,580	6,930	8,080
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	62	67.2	73.8	67.4	48.6	51.3	60.4	79.8
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.9	6.8	7.0	7.0	7.2	7.2	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	1	< 1	< 1	1	1	1	1	2
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	1	< 1	1	< 1
Lithium	ug/L	440	NC	NC	440	71	65	75	70	76	73	83	83
Molybdenum	ug/L	120	1,320	NC	1,320	15	13	15	17	15	18	17	17
Selenium	ug/L	5.0	55	120	55	1	1	1	1	3	2	4	5
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	262	74	111	829	159	87	59	137
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						MW-55								
Sample Date:						3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024	10/2/2024	10/2/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**									
Appendix III⁽¹⁾														
Boron	ug/L	4,000	44,000	69,000	44,000	1,110	1,140	1,290	1,200	825	729	1,270	1,130	1,090
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	94.6	208	129	156	224	236	60.2	117	117
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.9	6.9	7.0	6.9	6.9	7.4	7.2	--
Appendix IV⁽¹⁾														
Arsenic	ug/L	10	100	680	100	68	44	75	75	46	39	45	54	56
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	440	NC	NC	440	27	24	27	26	26	26	29	25	26
Molybdenum	ug/L	120	1,320	NC	1,320	50	30	33	56	27	25	25	44	44
Selenium	ug/L	5.0	55	120	55	3	< 1	1	1	1	4	1	1	< 1
MI Part 115 Parameters⁽²⁾														
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	24,800	21,600	21,900	16,800	18,700	14,700	12,300	12,600	13,800
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

Table 2
 Comparison of Groundwater Sampling Results to GSI
 JC Weadock Landfill – Hydrogeological Monitoring Program
 Essexville, Michigan

Sample Location:						JCW-MW-18004							
Sample Date:						3/9/2023	5/9/2023	7/31/2023	10/9/2023	3/5/2024	5/8/2024	7/23/2024	10/2/2024
Constituent	Unit	Generic GSI [^]	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**								
Appendix III⁽¹⁾													
Boron	ug/L	4,000	44,000	69,000	44,000	180	227	310	319	192	206	308	412
Sulfate	mg/L	1,200 ^F	NC	NC	1,200	533	722	478	466	557	484	446	444
pH, Field	SU	6.5-9.0	NC	NC	6.5-9.0	6.8	6.8	6.8	7.0	7.0	6.9	7.3	7.0
Appendix IV⁽¹⁾													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 ^H	NC	NC	11	< 1	< 1	< 1	< 1	1	< 1	< 1	2
Lithium	ug/L	440	NC	NC	440	39	42	50	49	43	43	50	46
Molybdenum	ug/L	120	1,320	NC	1,320	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Selenium	ug/L	5.0	55	120	55	11	2	2	< 1	4	4	< 1	1
MI Part 115 Parameters⁽²⁾													
Iron	ug/L	500,000 ^{EE}	NC	NC	500,000	46	67	24	36	98	73	41	36
Vanadium	ug/L	27	NC	NC	27	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2

Notes:

ug/L - micrograms per liter.

mg/L - milligrams per liter.

SU - standard units; pH is a field parameter.

NC - no criteria.

-- - not analyzed.

[^] - Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO₃/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote (G) of Michigan Part 201 criteria tables. GSI criterion is protective for surface water used as a drinking water source as described in footnote (X).

* Mixing Zone GSI Criteria from Michigan Department of Environmental, Great Lakes, and Energy (EGLE) approval letter dated October 4, 2024.

** GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

^F - Criterion is the Final Acute Value (FAV).

^H - Chromium GSI criterion based on hexavalent chromium per footnote (H).

^{EE} - Criterion is based on the total dissolved solids GSI value per footnote (EE).

Bold value indicates an exceedance of the GSI. Data from downgradient monitoring wells are screened against the GSI for evaluation purposes only. Confidence intervals will be used to determine compliance per the HMP.

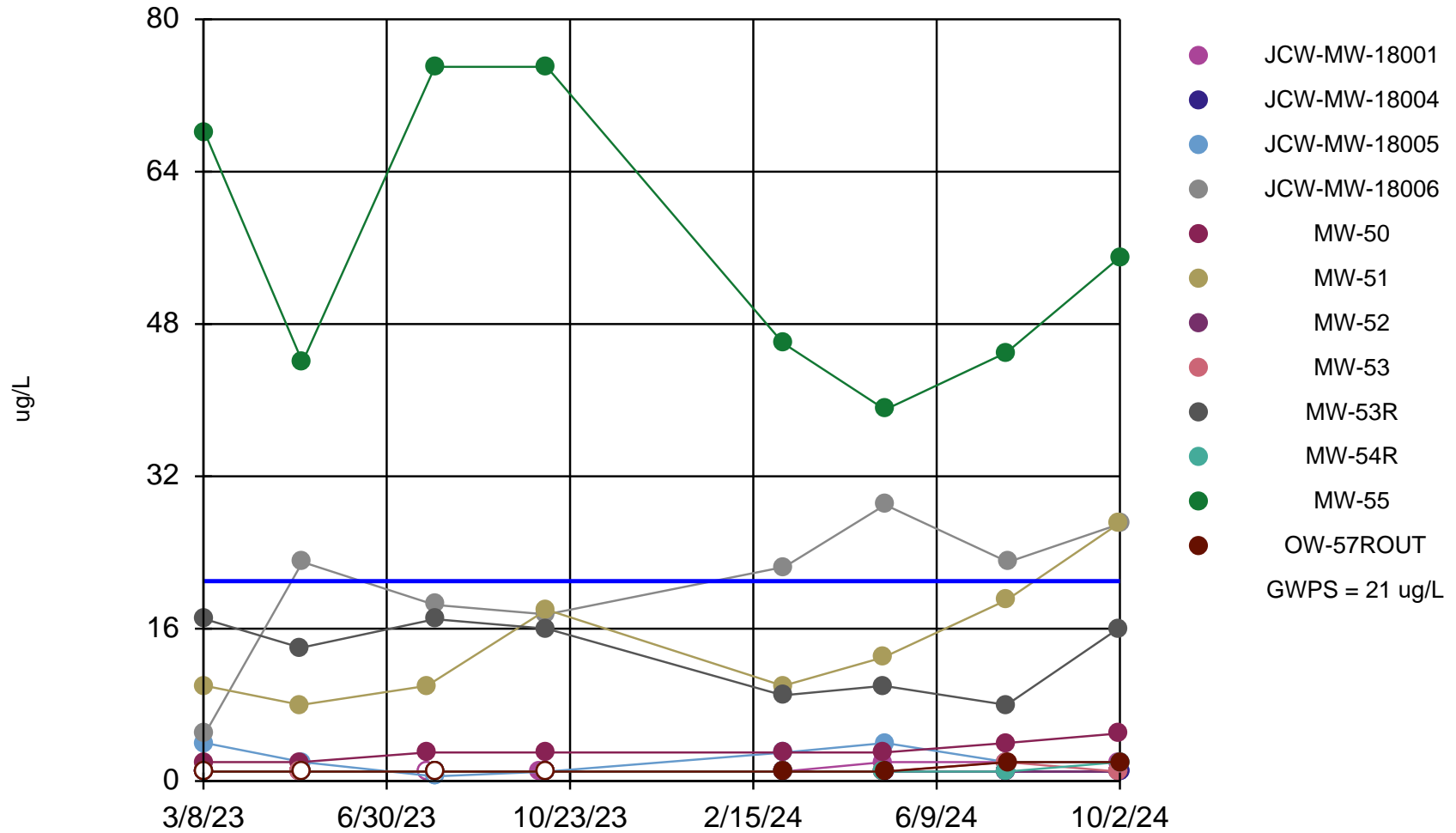
All metals were analyzed as total unless otherwise specified.

(1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.

(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) additional assessment monitoring constituents (vanadium and zinc) are reported.

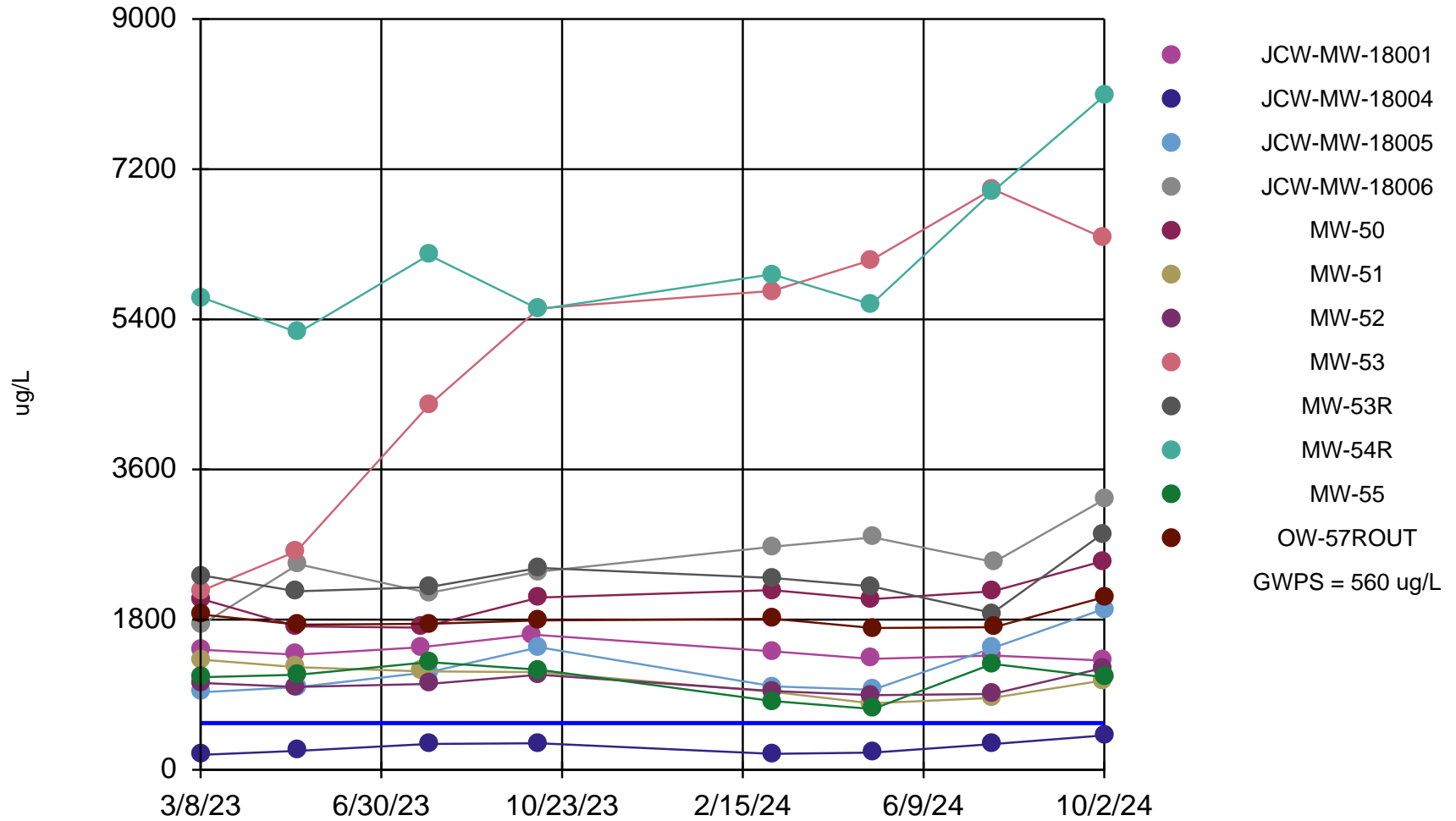
Attachment 1
Assessment Monitoring Sanitas™ Output Files

Arsenic Comparison to GWPS



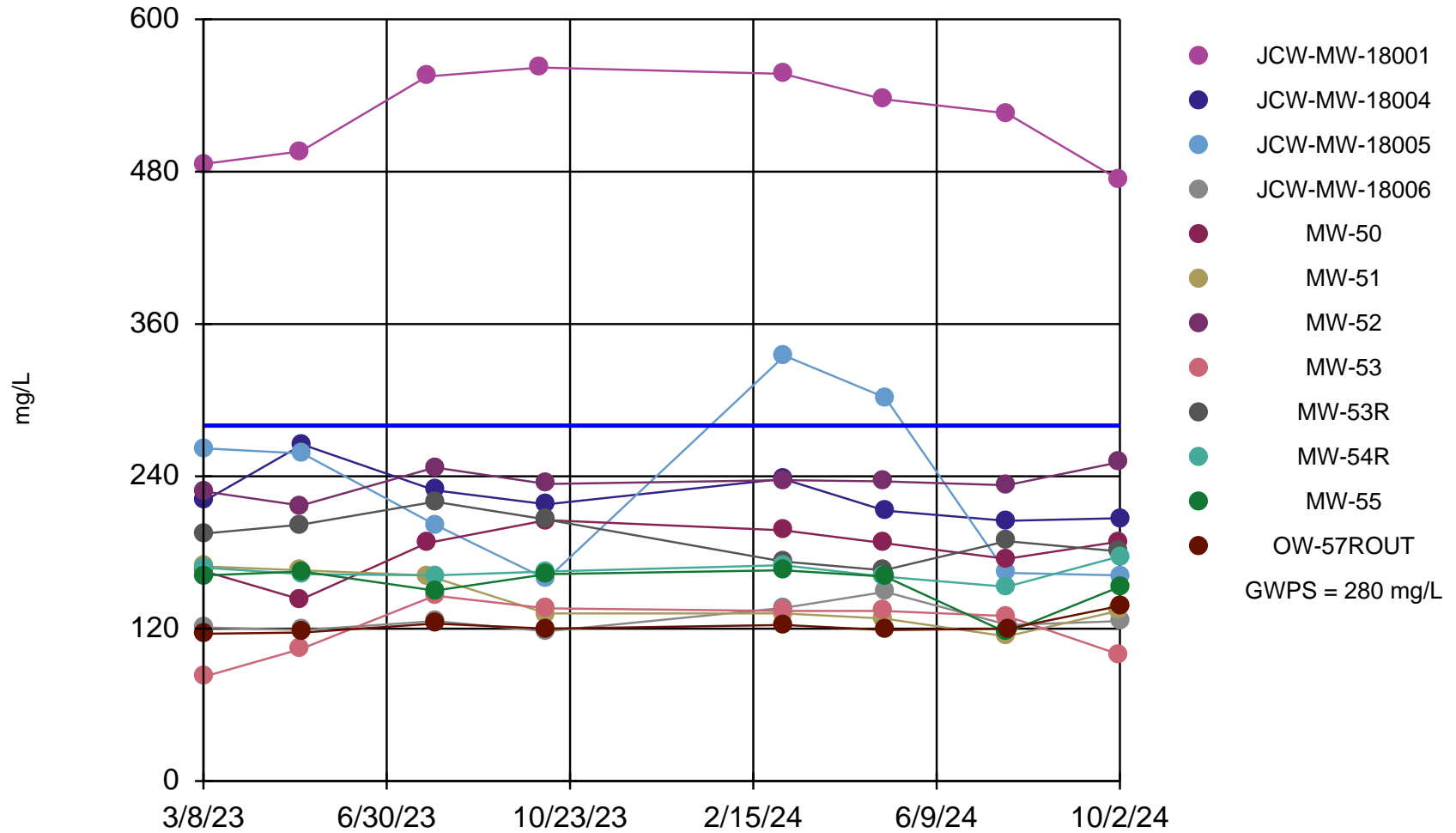
Time Series Analysis Run 11/15/2024 2:13 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron Comparison to GWPS



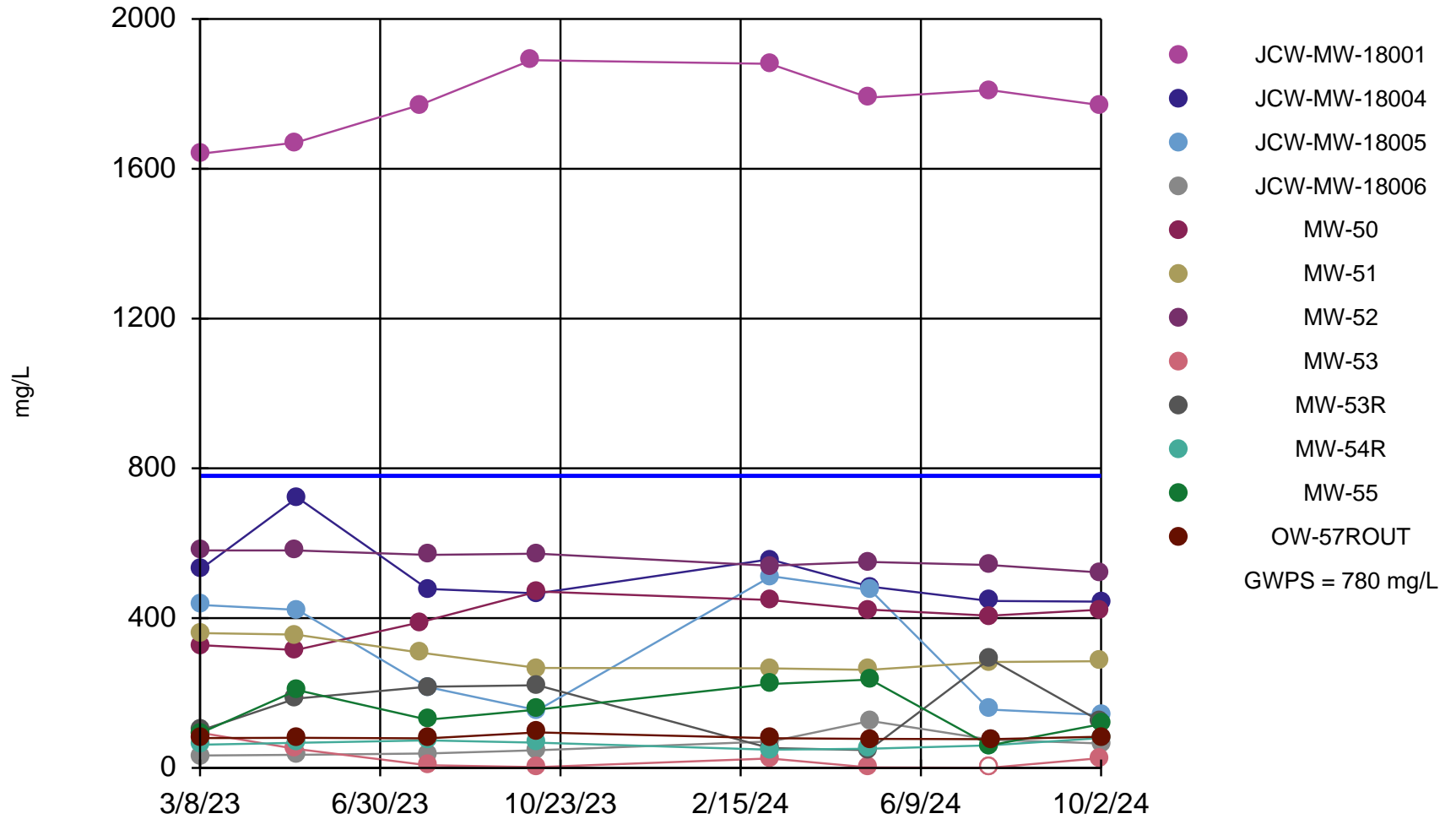
Time Series Analysis Run 11/15/2024 2:47 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium Comparison to GWPS



Time Series Analysis Run 11/15/2024 2:49 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Sulfate Comparison to GWPS



Time Series Analysis Run 11/15/2024 3:05 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Summary Report

Constituent: Boron, Total Analysis Run 11/18/2024 3:09 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

For observations made between 3/8/2023 and 10/2/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 180
 Maximum Value = 8080
 Mean Value = 2154
 Median Value = 1703
 Standard Deviation = 1758
 Coefficient of Variation = 0.8162
 Skewness = 1.622

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1310	1620	1418	1400	97.94	0.0691	1.038
JCW-MW-18004	8	0%	180	412	269.3	267.5	80.83	0.3002	0.4793
JCW-MW-18005	8	0%	930	1930	1239	1085	353.7	0.2855	0.9412
JCW-MW-18006	8	0%	1745	3240	2487	2478	445.5	0.1792	0.002111
MW-50	8	0%	1705	2500	2048	2058	253.5	0.1238	0.1818
MW-51	8	0%	798	1320	1071	1120	187.3	0.175	-0.2321
MW-52	8	0%	895	1220	1022	1012	112.9	0.1105	0.5919
MW-53	8	0%	2150	6960	4983	5635	1772	0.3557	-0.6487
MW-53R	8	0%	1880	2830	2286	2250	272.2	0.1191	0.6929
MW-54R	8	0%	5240	8080	6140	5800	938.6	0.1529	1.207
MW-55	8	0%	729	1290	1084	1125	202.9	0.1871	-0.8301
OW-57ROUT	8	0%	1700	2070	1804	1770	120	0.06652	1.476

Summary Report

Constituent: Calcium, Total Analysis Run 11/18/2024 3:09 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

For observations made between 3/8/2023 and 10/2/2024, a summary of the selected data set:

Observations = 96
 NDs = 0%
 Wells = 12
 Minimum Value = 82.5
 Maximum Value = 562
 Mean Value = 201.6
 Median Value = 166
 Standard Deviation = 108.5
 Coefficient of Variation = 0.5385
 Skewness = 2.184

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	474	562	524.1	531.5	34.63	0.06607	-0.3021
JCW-MW-18004	8	0%	205	265	224.5	219.5	19.7	0.08774	1.086
JCW-MW-18005	8	0%	159	335	230.5	230	68.47	0.2971	0.2638
JCW-MW-18006	8	0%	118	149	127.3	124.5	10.5	0.08251	1.22
MW-50	8	0%	143	205.5	181.3	187.5	19.76	0.109	-0.8056
MW-51	8	0%	114	169	142.1	133	20.52	0.1444	0.233
MW-52	8	0%	217	251	235.4	235	10.57	0.0449	-0.1593
MW-53	8	0%	82.5	146	120.8	132	22.3	0.1846	-0.6219
MW-53R	8	0%	166	220	191.5	192	17.94	0.0937	0.08754
MW-54R	8	0%	153	177	164.9	164	7.08	0.04294	0.07944
MW-55	8	0%	117	166	154.6	161.5	16.22	0.1049	-1.772
OW-57ROUT	8	0%	116	138	122.1	120	6.958	0.05697	1.629

Summary Report

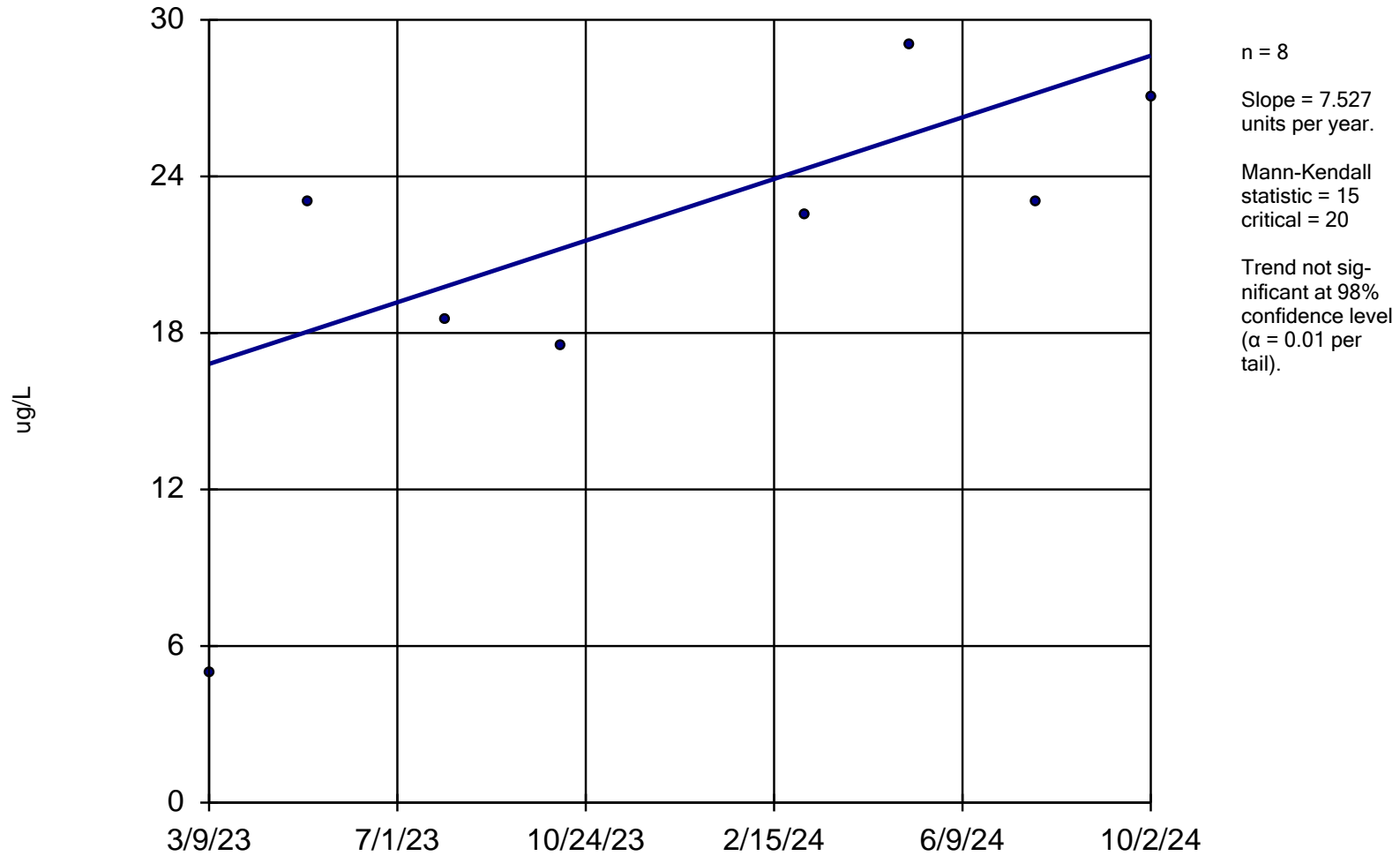
Constituent: Sulfate Analysis Run 11/18/2024 3:09 PM
 Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

For observations made between 3/8/2023 and 10/2/2024, a summary of the selected data set:

Observations = 96
 NDs = 1%
 Wells = 12
 Minimum Value = 0.5
 Maximum Value = 1890
 Mean Value = 367
 Median Value = 219
 Standard Deviation = 466.5
 Coefficient of Variation = 1.271
 Skewness = 2.251

<u>Well</u>	<u>#Obs.</u>	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	<u>Std.Dev.</u>	<u>CV</u>	<u>Skewness</u>
JCW-MW-18001	8	0%	1640	1890	1778	1780	88.6	0.04985	-0.2867
JCW-MW-18004	8	0%	444	722	516.3	481	92.16	0.1785	1.53
JCW-MW-18005	8	0%	142	512	314	319	160.9	0.5124	0.0329
JCW-MW-18006	8	0%	33.2	125.5	61.41	56.33	30.73	0.5004	1.114
MW-50	8	0%	315	471	400.4	414.5	54.79	0.1368	-0.4799
MW-51	8	0%	262	360	298.4	284	39.61	0.1327	0.7552
MW-52	8	0%	522	581	557.1	559.5	21.74	0.03902	-0.2971
MW-53	8	12%	0.5	93.6	25.93	16.4	32.39	1.249	1.235
MW-53R	8	0%	47.6	291	155.2	155.5	87.22	0.5619	0.1281
MW-54R	8	0%	48.6	79.8	63.81	64.6	10.57	0.1657	-0.04618
MW-55	8	0%	60.2	236	153.1	142.5	64.21	0.4194	0.0165
OW-57ROUT	8	0%	76.9	94.8	81.4	79.5	5.758	0.07074	1.791

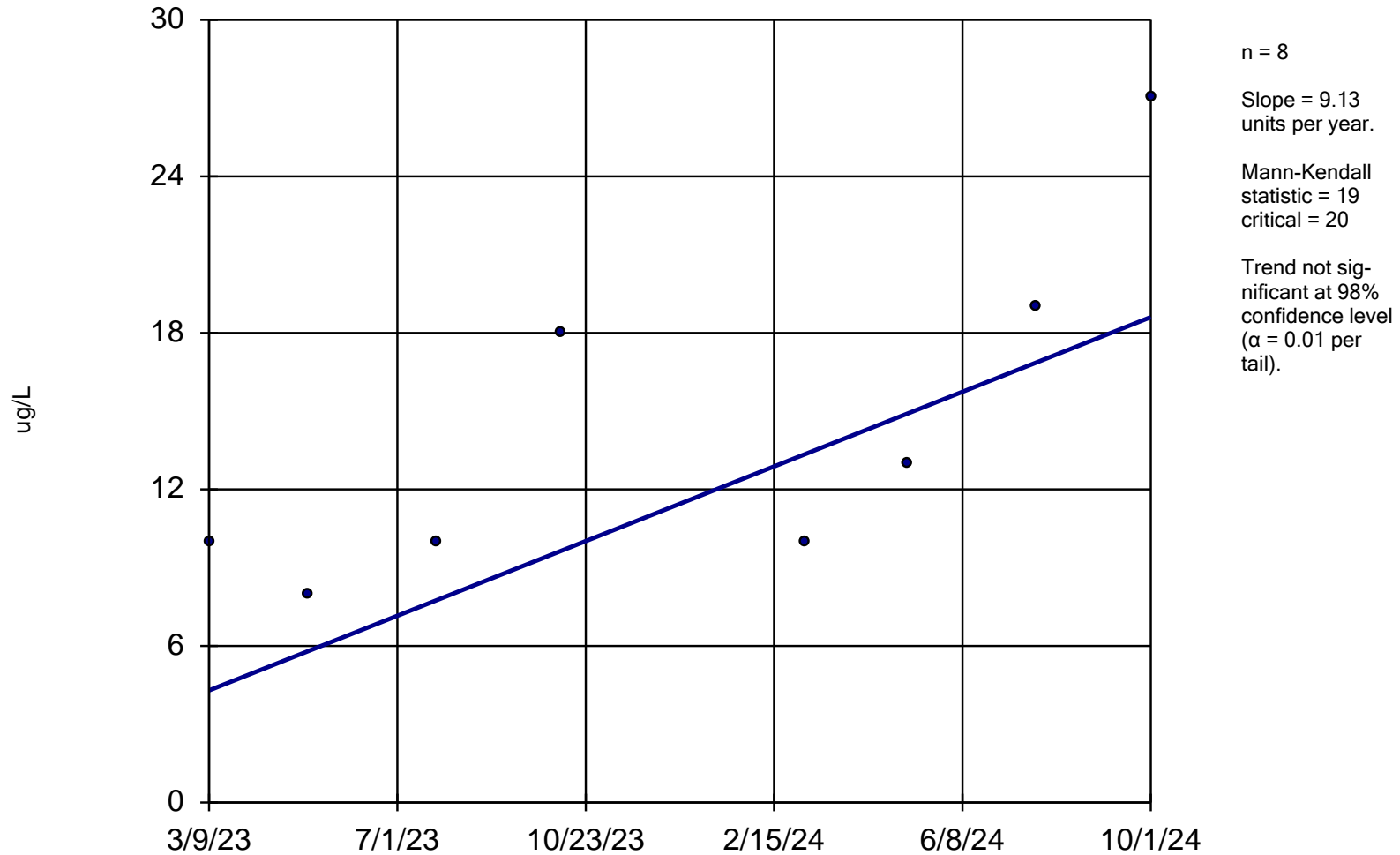
Arsenic, Total JCW-MW-18006



Sen's Slope Estimator Analysis Run 11/15/2024 3:26 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Arsenic, Total

MW-51

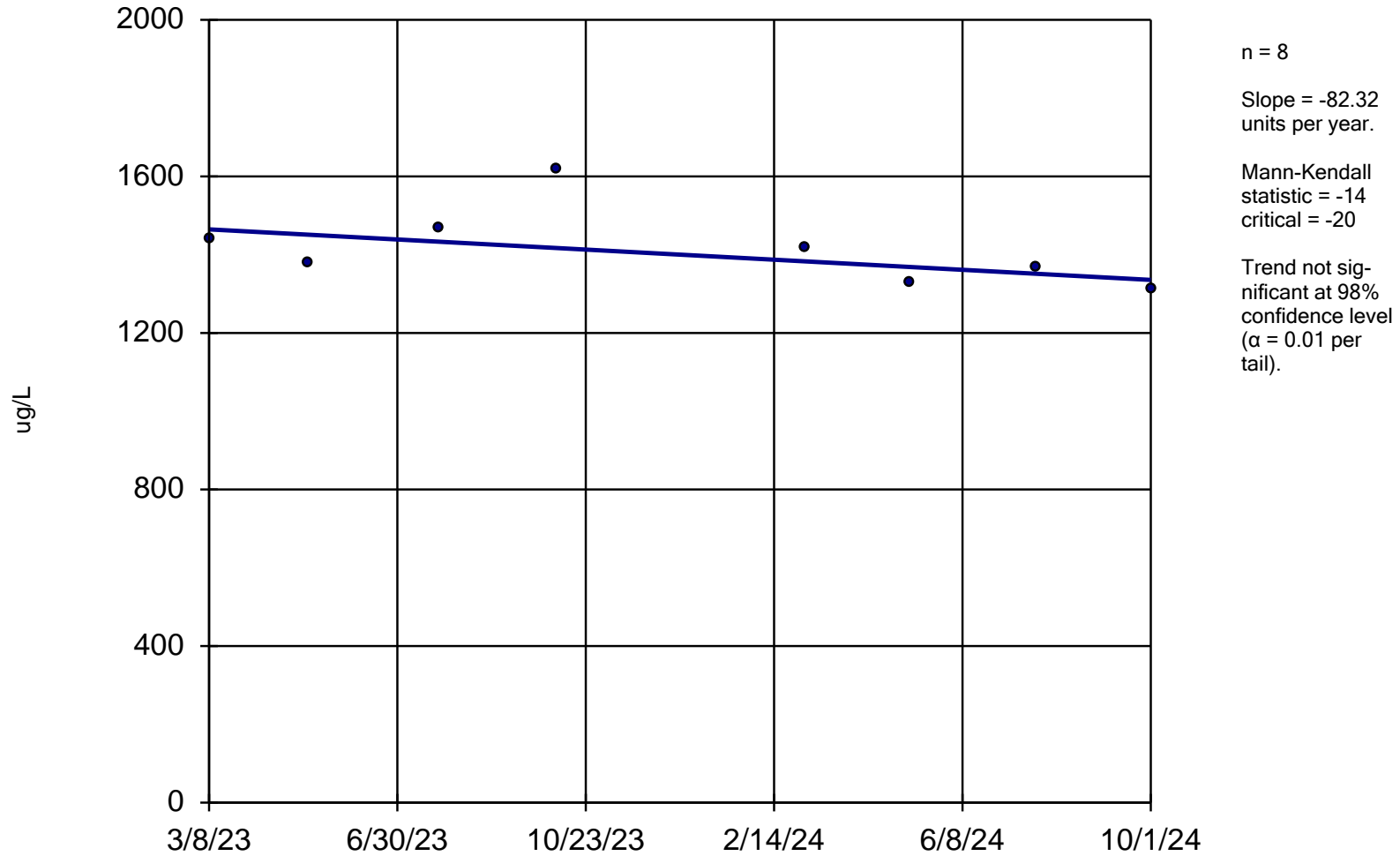


Sen's Slope and 98% Confidence Band Analysis Run 11/18/2024 11:02 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

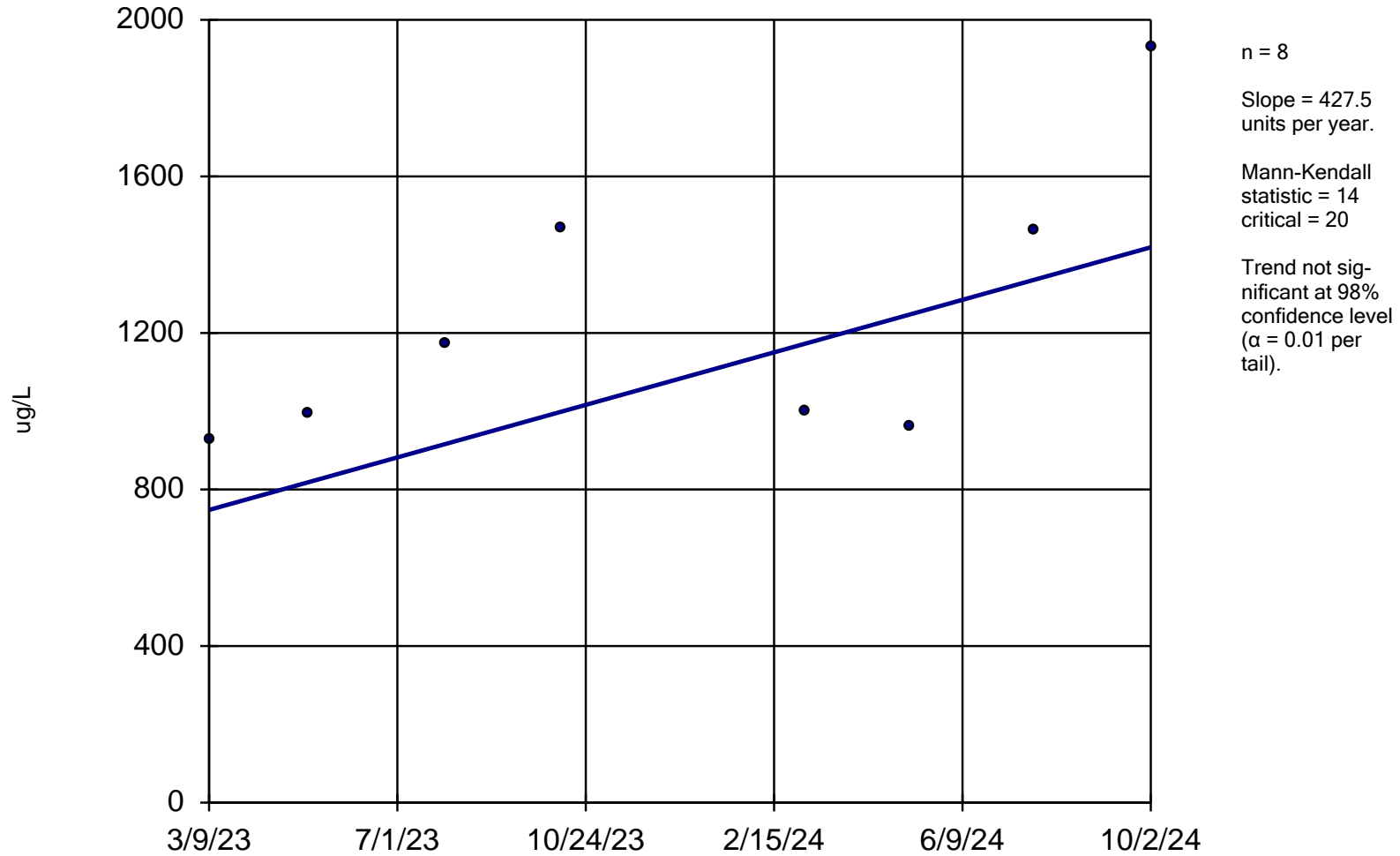
JCW-MW-18001



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:46 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

JCW-MW-18005

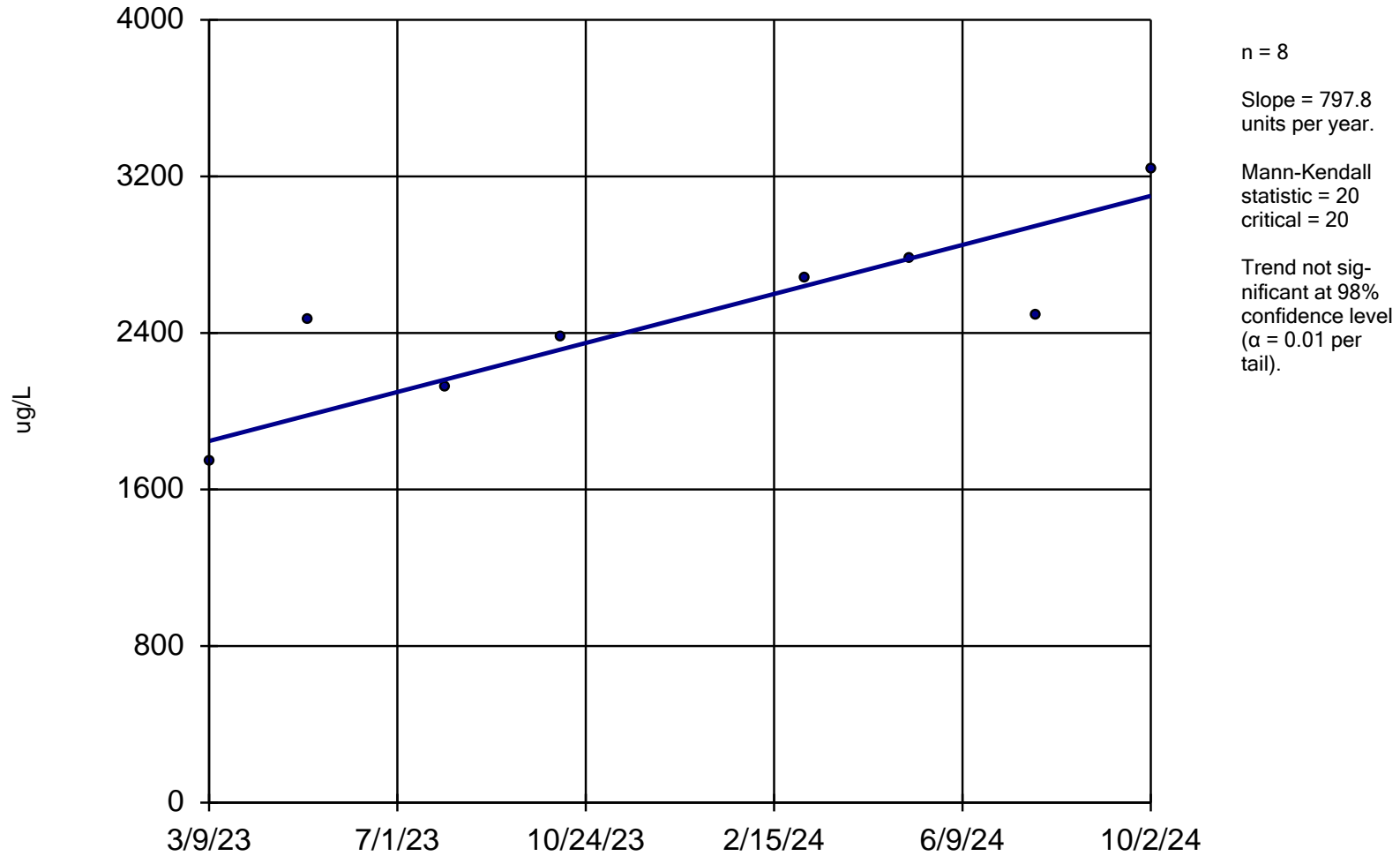


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:46 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

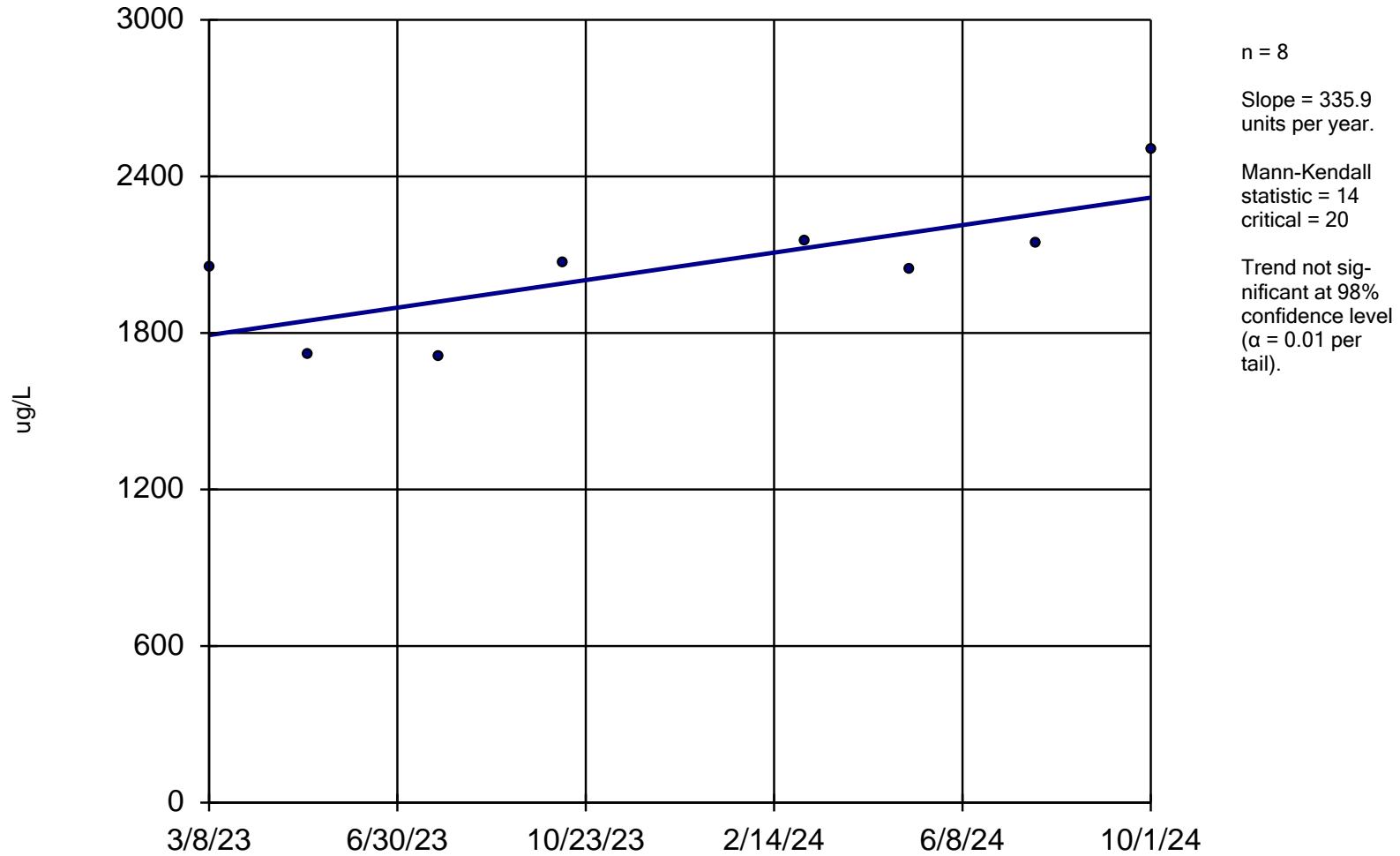
JCW-MW-18006



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:46 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

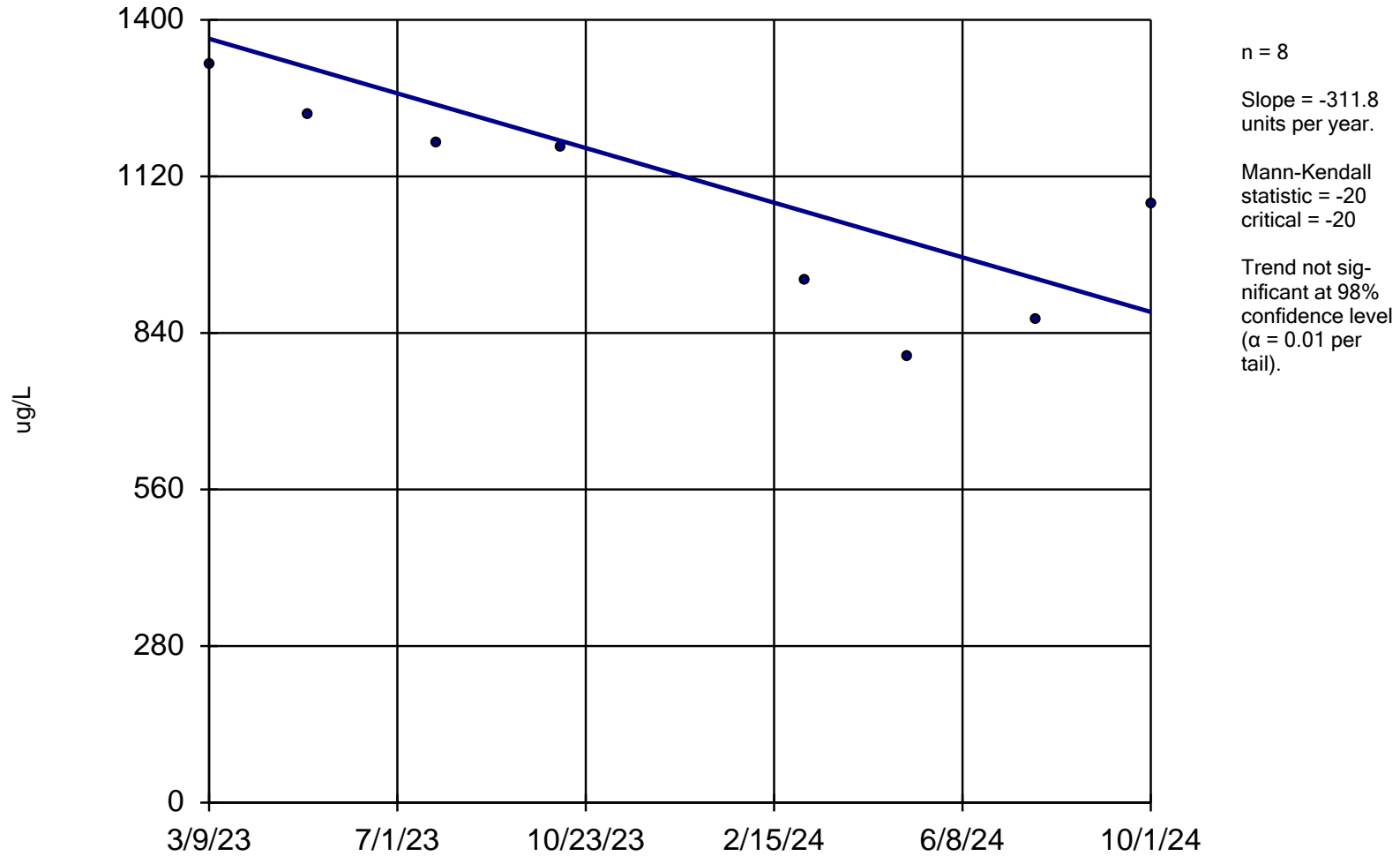
MW-50



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:46 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total MW-51

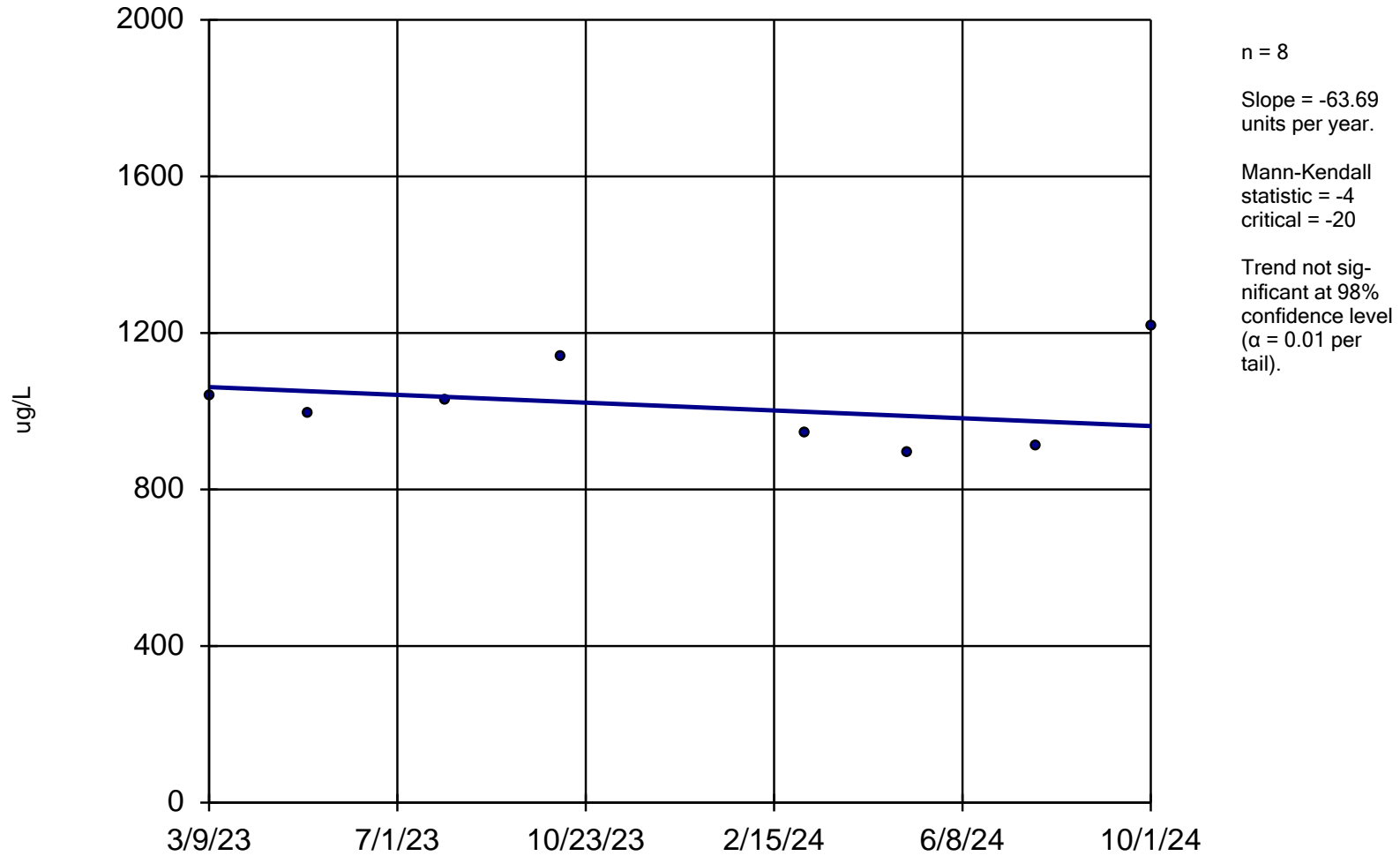


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

MW-52

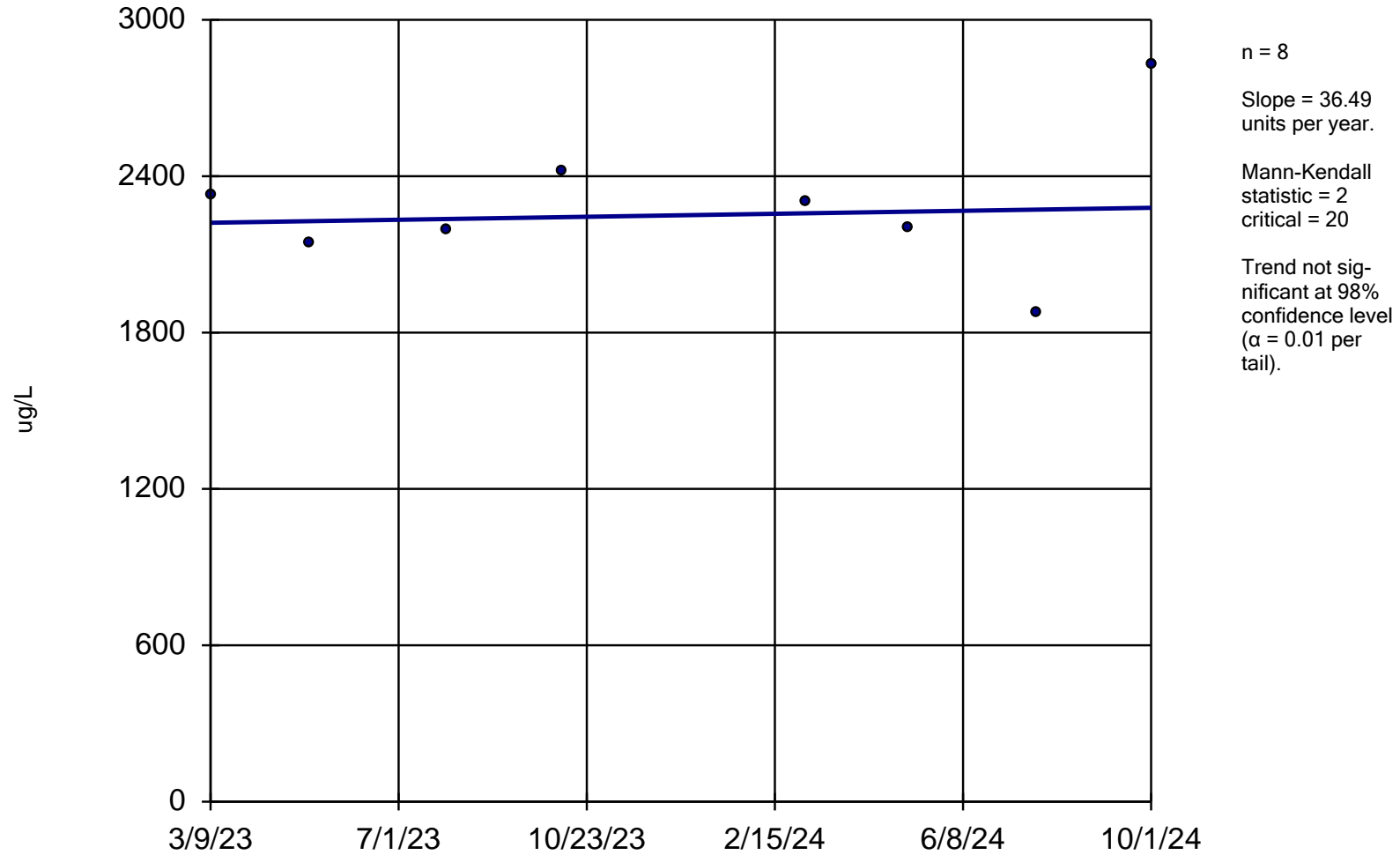


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

MW-53R

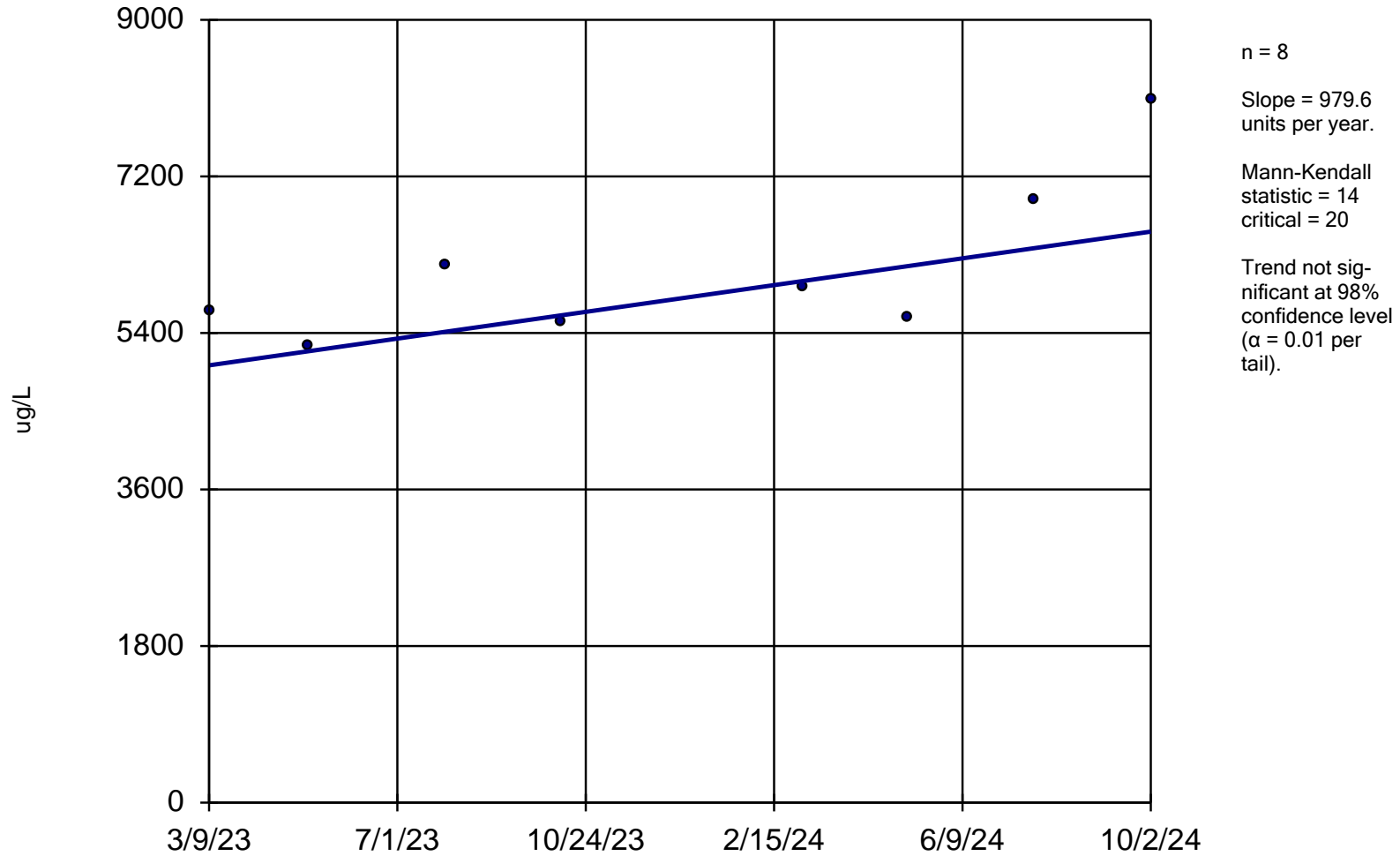


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

MW-54R

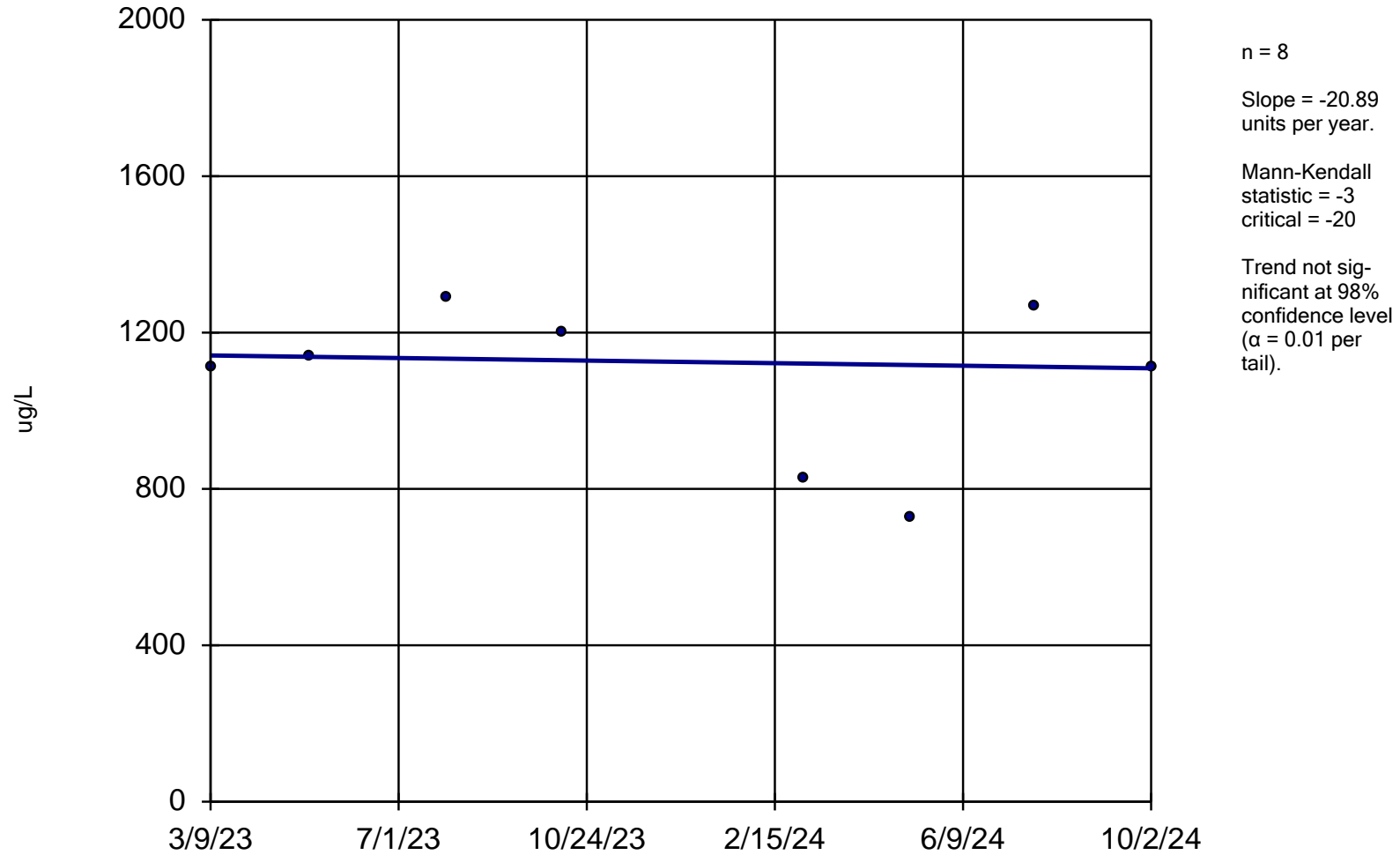


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

MW-55

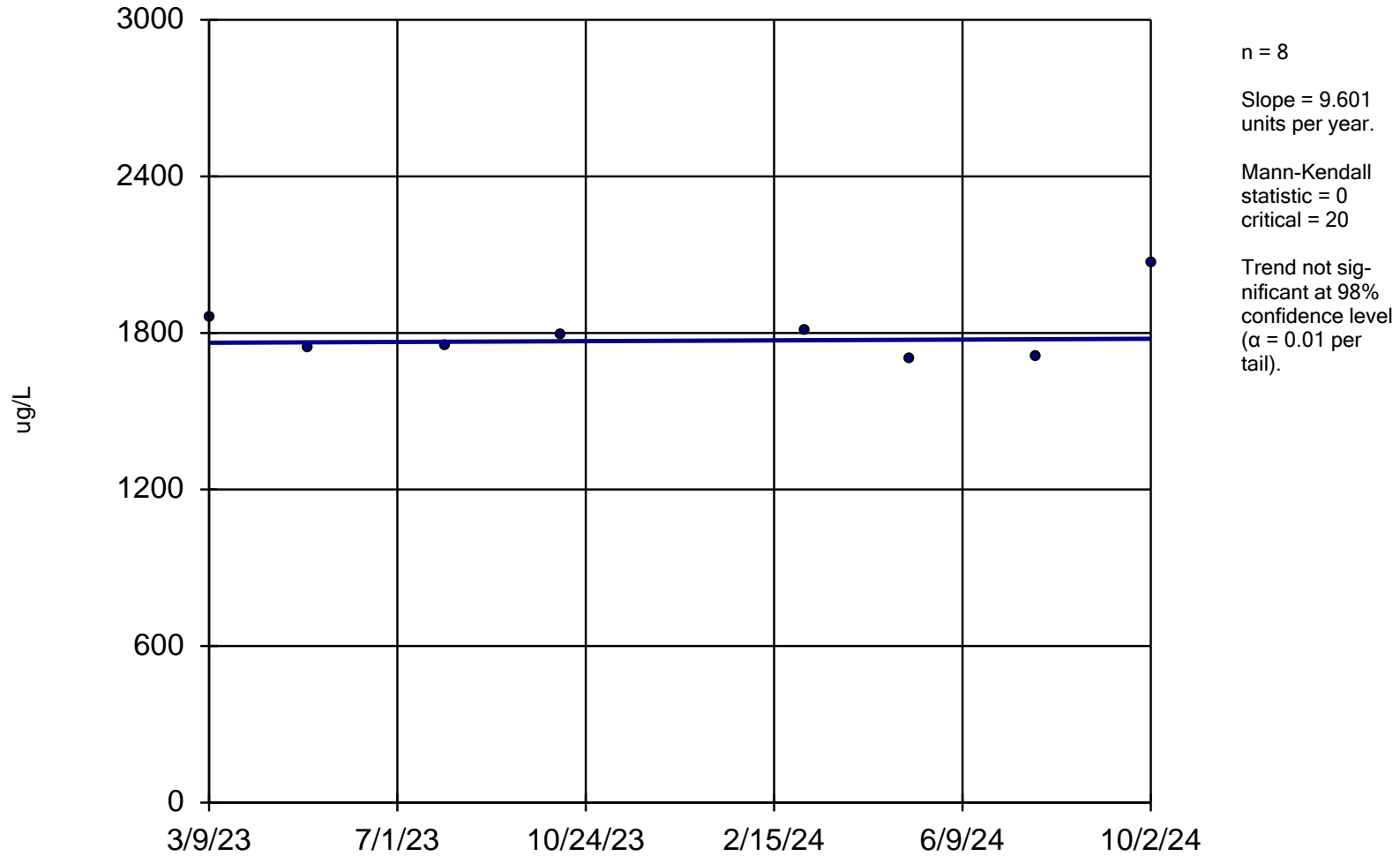


Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Boron, Total

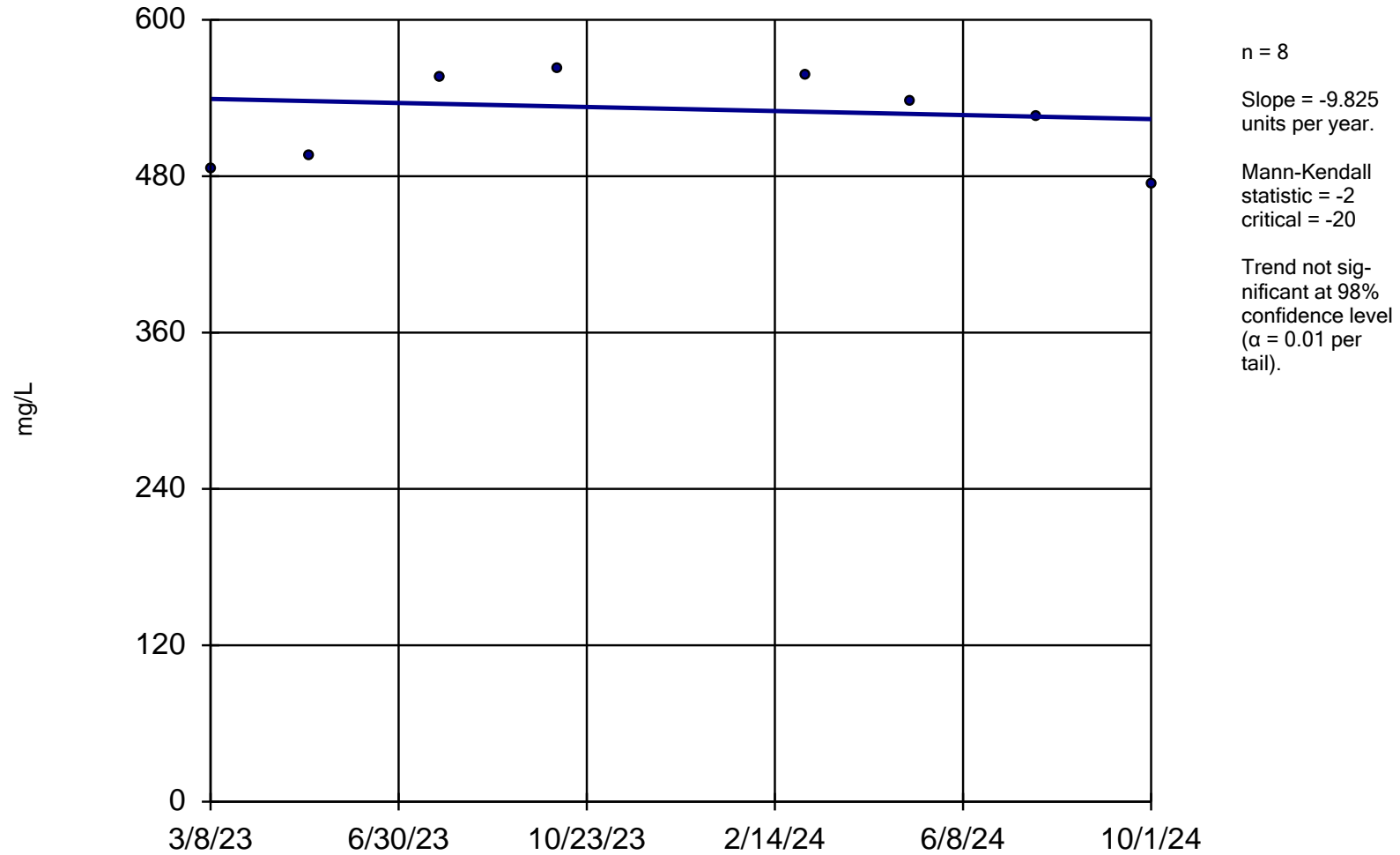
OW-57ROUT



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

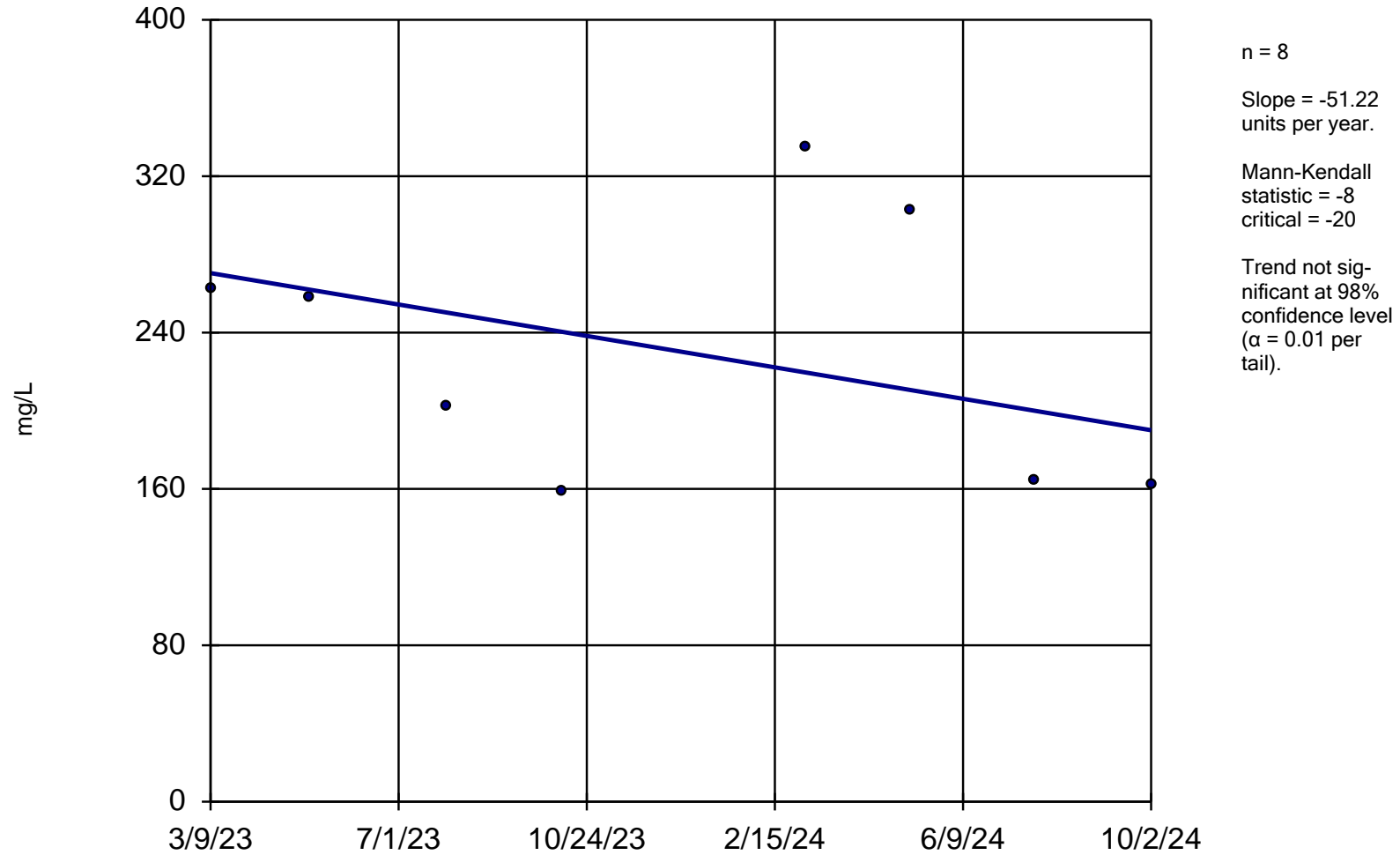
Calcium, Total JCW-MW-18001



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:49 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Calcium, Total JCW-MW-18005

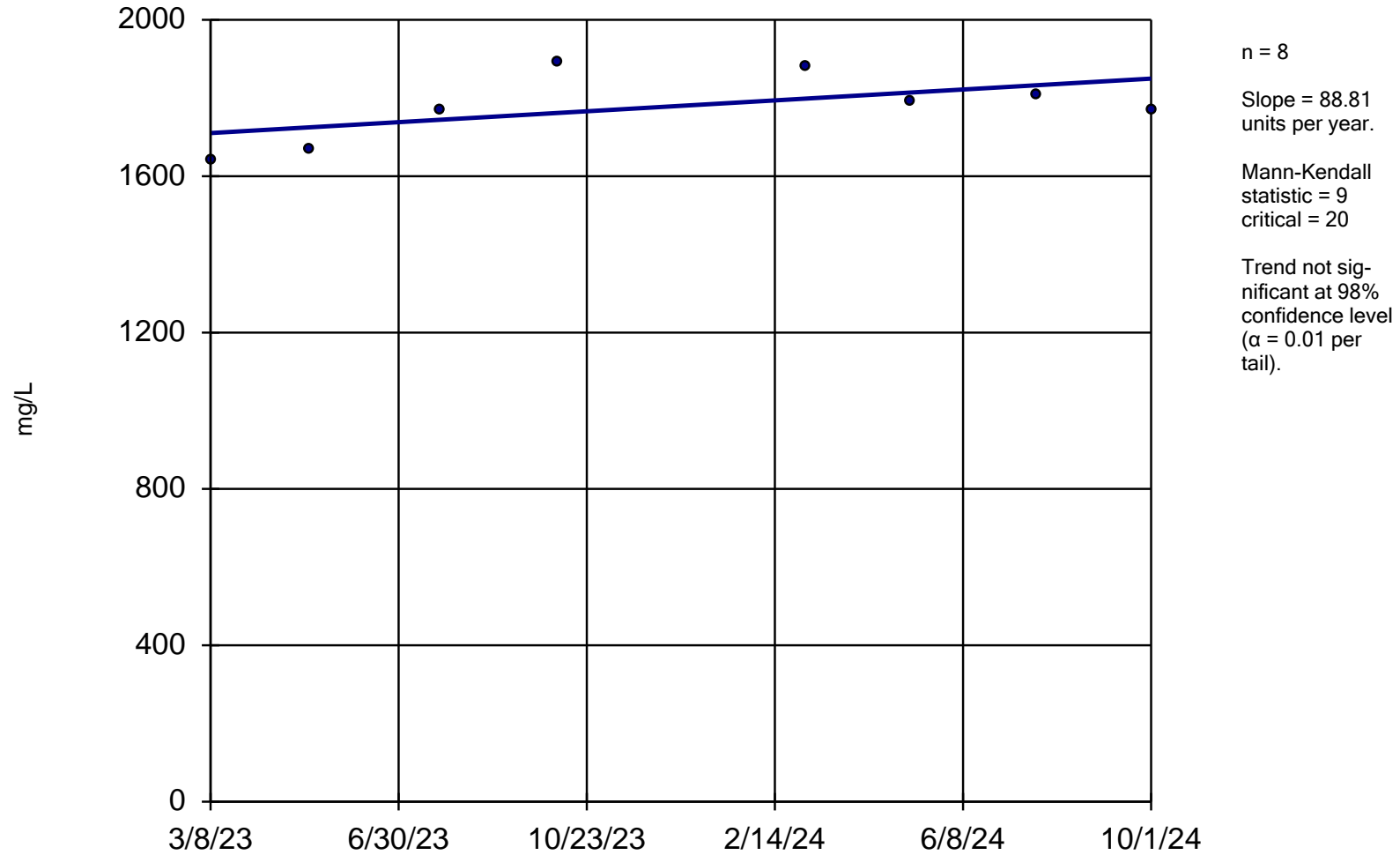


Sen's Slope and 98% Confidence Band Analysis Run 11/18/2024 3:49 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Sulfate

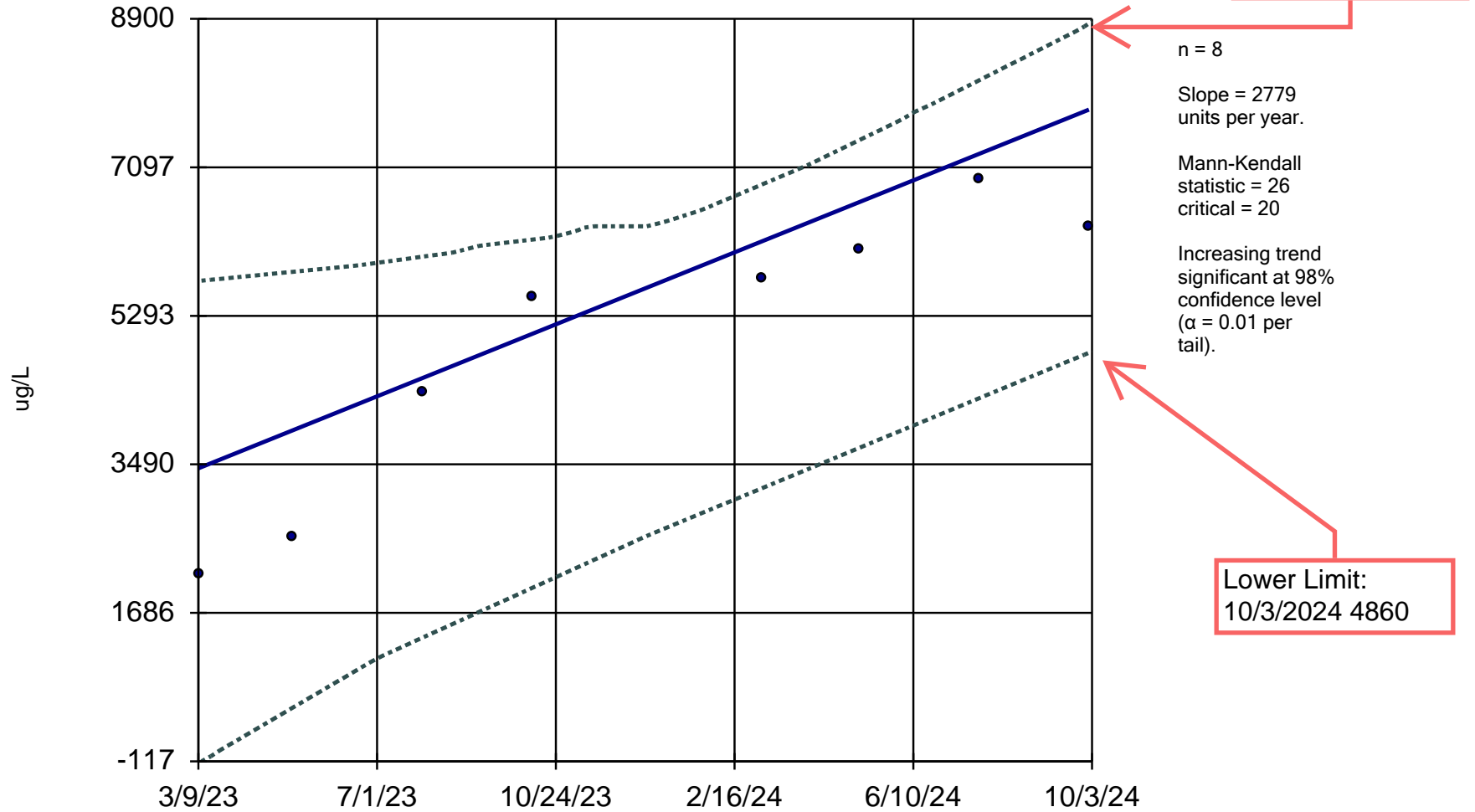
JCW-MW-18001



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 4:14 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

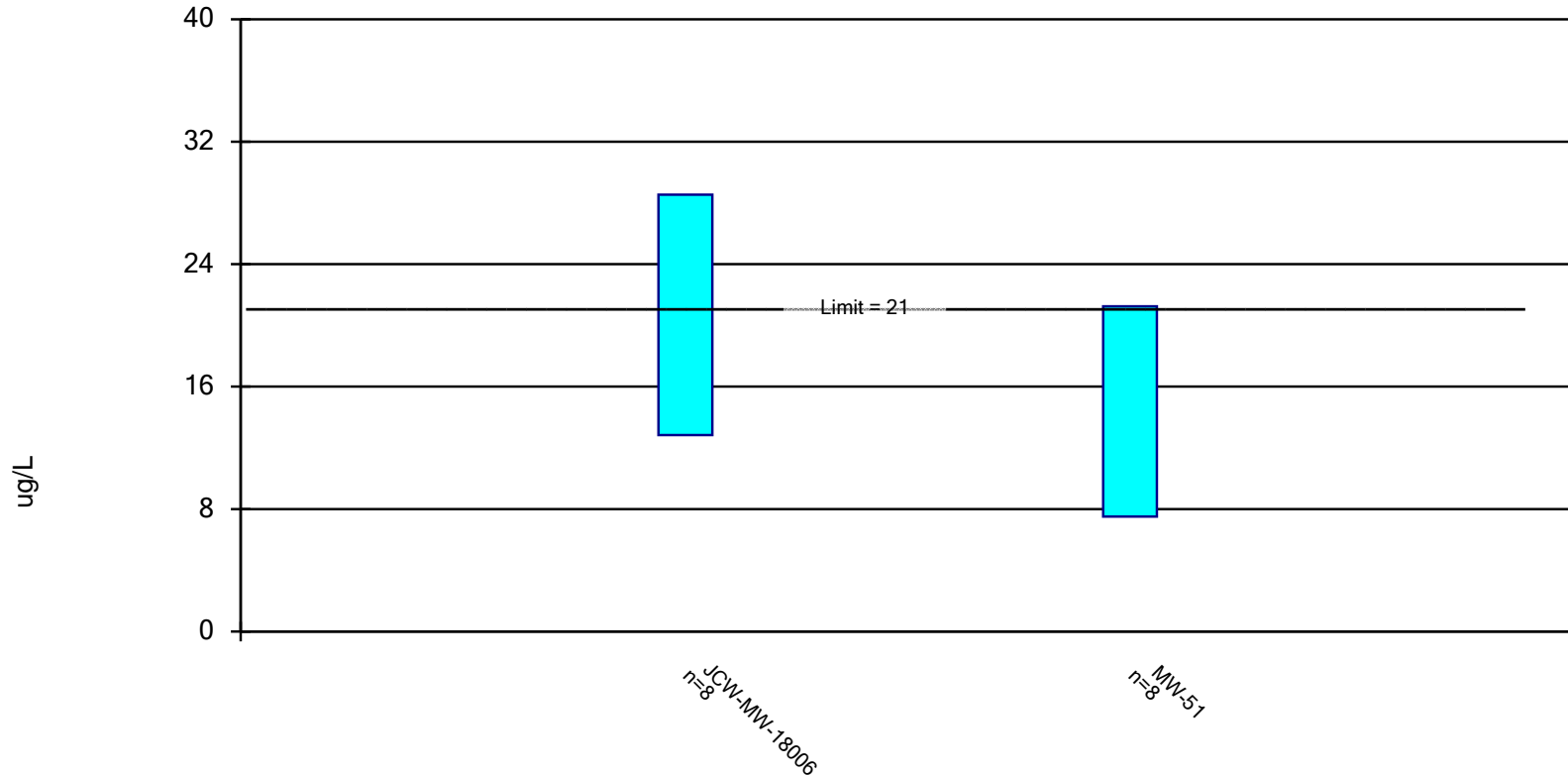
Boron, Total MW-53



Sen's Slope and 98% Confidence Band Analysis Run 11/15/2024 3:47 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Parametric Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic, Total Analysis Run 11/19/2024 11:15 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Confidence Interval

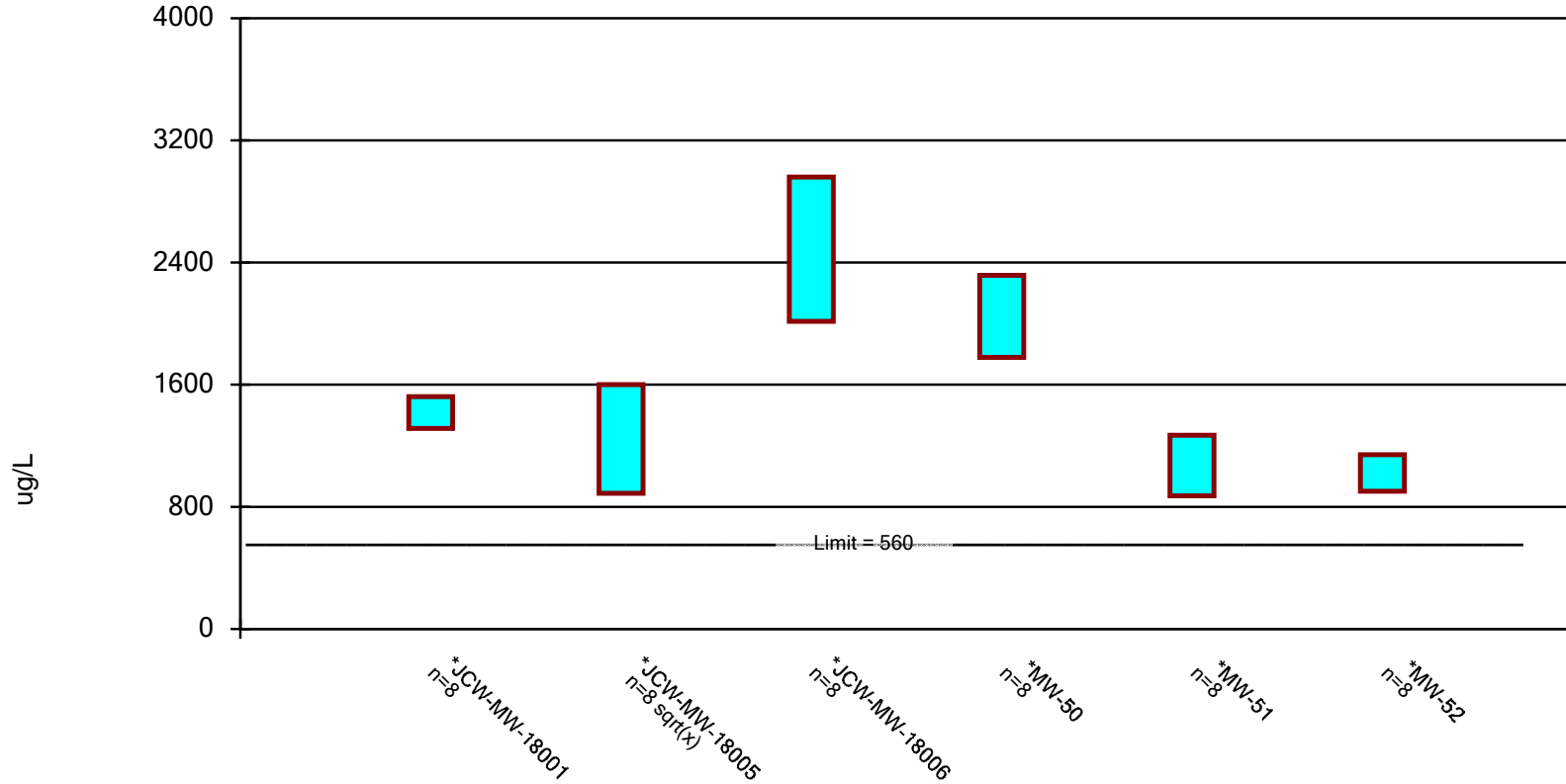
Constituent: Arsenic, Total (ug/L) Analysis Run 11/19/2024 11:15 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

	JCW-MW-18006	MW-51
3/9/2023	5 (D)	10 (D)
5/8/2023		8 (D)
5/9/2023	23 (D)	
7/26/2023		10 (D)
7/31/2023	18.5 (D)	
10/9/2023	17.5 (D)	18 (D)
3/5/2024		10 (D)
3/6/2024	22.5 (D)	
5/7/2024		13 (D)
5/8/2024	29 (D)	
7/23/2024		19 (D)
7/24/2024	23 (D)	
10/1/2024		27 (D)
10/2/2024	27 (D)	
Mean	20.69	14.38
Std. Dev.	7.406	6.479
Upper Lim.	28.54	21.24
Lower Lim.	12.84	7.507

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 11/15/2024 4:41 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Confidence Interval

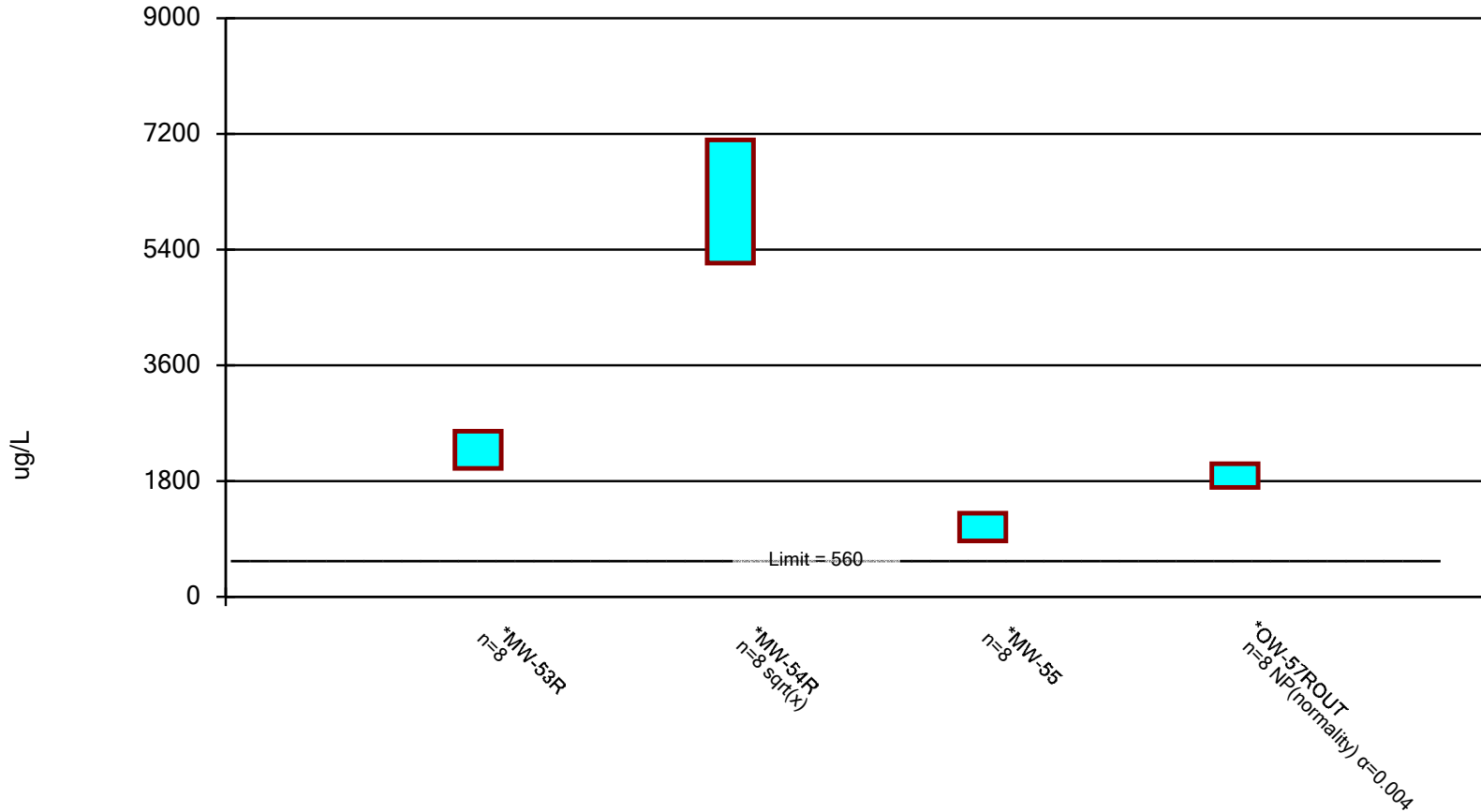
Constituent: Boron, Total (ug/L) Analysis Run 11/15/2024 4:42 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

	JCW-MW-18001	JCW-MW-18005	JCW-MW-18006	MW-50	MW-51	MW-52
3/8/2023	1440 (D)			2050 (D)		
3/9/2023		930 (D)	1745 (D)		1320 (D)	1040 (D)
5/8/2023	1380 (D)			1720 (D)	1230 (D)	993 (D)
5/9/2023		992 (D)	2465 (D)			
7/26/2023	1470 (D)			1705 (D)	1180 (D)	
7/31/2023		1170 (D)	2120 (D)			1030 (D)
10/5/2023	1620 (D)					
10/9/2023		1470 (D)	2375 (D)	2065 (D)	1170 (D)	1140 (D)
3/5/2024	1420 (D)			2155 (D)	935 (D)	945 (D)
3/6/2024		1000 (D)	2675 (D)			
5/7/2024	1330 (D)			2045 (D)	798 (D)	895 (D)
5/8/2024		960 (D)	2785 (D)			
7/23/2024	1370 (D)	1460 (D)		2140 (D)	862 (D)	909 (D)
7/24/2024			2490 (D)			
10/1/2024	1310 (D)			2500 (D)	1070 (D)	1220 (D)
10/2/2024		1930 (D)	3240 (D)			
Mean	1418	1239	2487	2048	1071	1022
Std. Dev.	97.94	353.7	445.5	253.5	187.3	112.9
Upper Lim.	1521	1601	2959	2316	1269	1141
Lower Lim.	1314	888.8	2015	1779	872.1	901.9

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Boron, Total Analysis Run 11/15/2024 4:41 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Confidence Interval

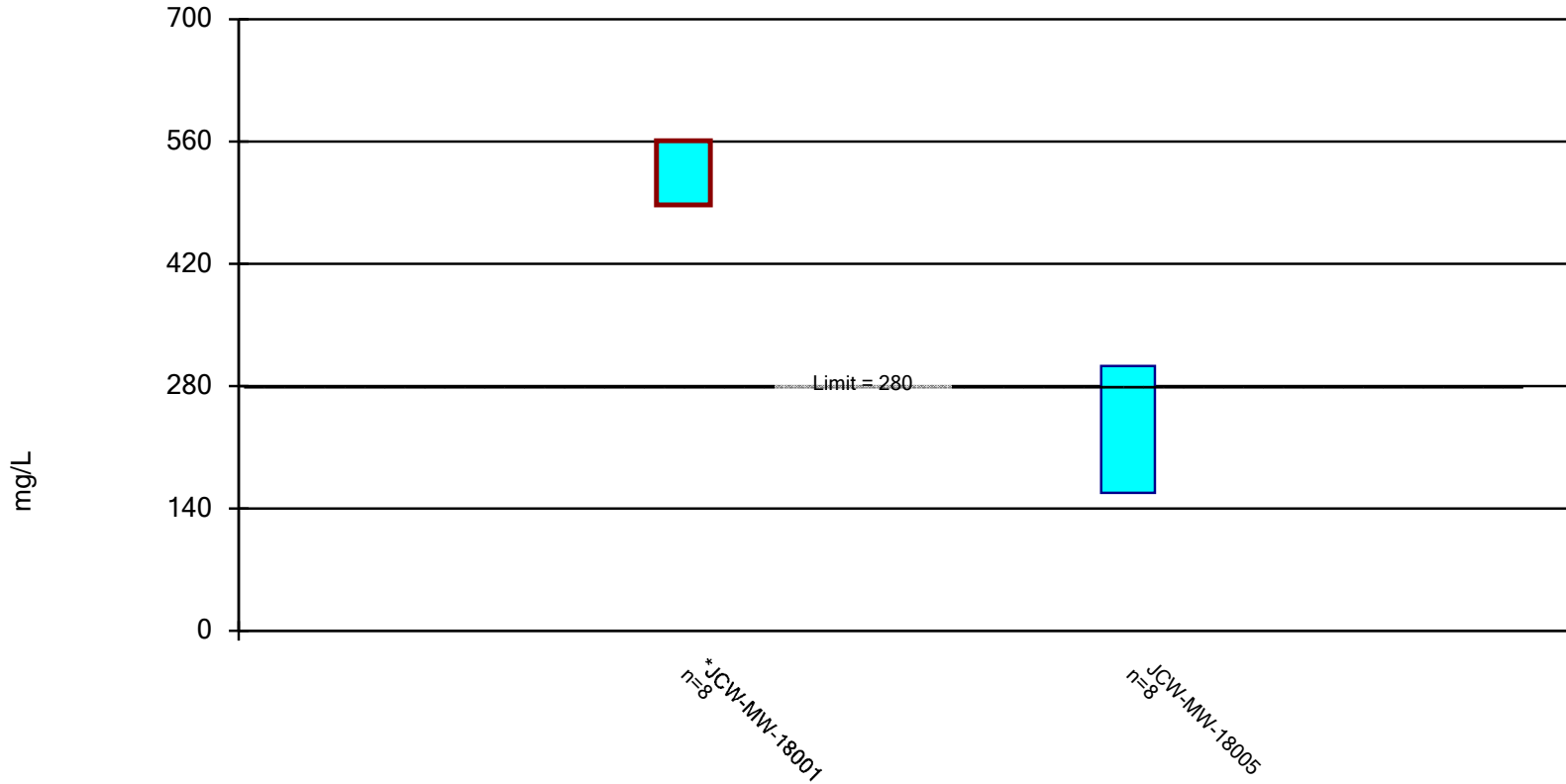
Constituent: Boron, Total (ug/L) Analysis Run 11/15/2024 4:42 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

	MW-53R	MW-54R	MW-55	OW-57ROUT
3/9/2023	2330 (D)	5660 (D)	1110 (D)	1860 (D)
5/8/2023	2140 (D)			
5/9/2023		5240 (D)	1140 (D)	1740 (D)
7/31/2023	2190 (D)	6170 (D)	1290 (D)	1750 (D)
10/9/2023	2420 (D)	5520 (D)	1200 (D)	1790 (D)
3/5/2024	2300 (D)	5940 (D)	825 (D)	
3/6/2024				1810 (D)
5/7/2024	2200 (D)	5580 (D)		
5/8/2024			729 (D)	1700 (D)
7/23/2024	1880 (D)	6930 (D)	1270 (D)	
7/24/2024				1710 (D)
10/1/2024	2830 (D)			
10/2/2024		8080 (D)	1110 (D)	2070 (D)
Mean	2286	6140	1084	1804
Std. Dev.	272.2	938.6	202.9	120
Upper Lim.	2575	7106	1299	2070
Lower Lim.	1998	5191	869.2	1700

Parametric Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Calcium, Total Analysis Run 11/15/2024 4:49 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Confidence Interval

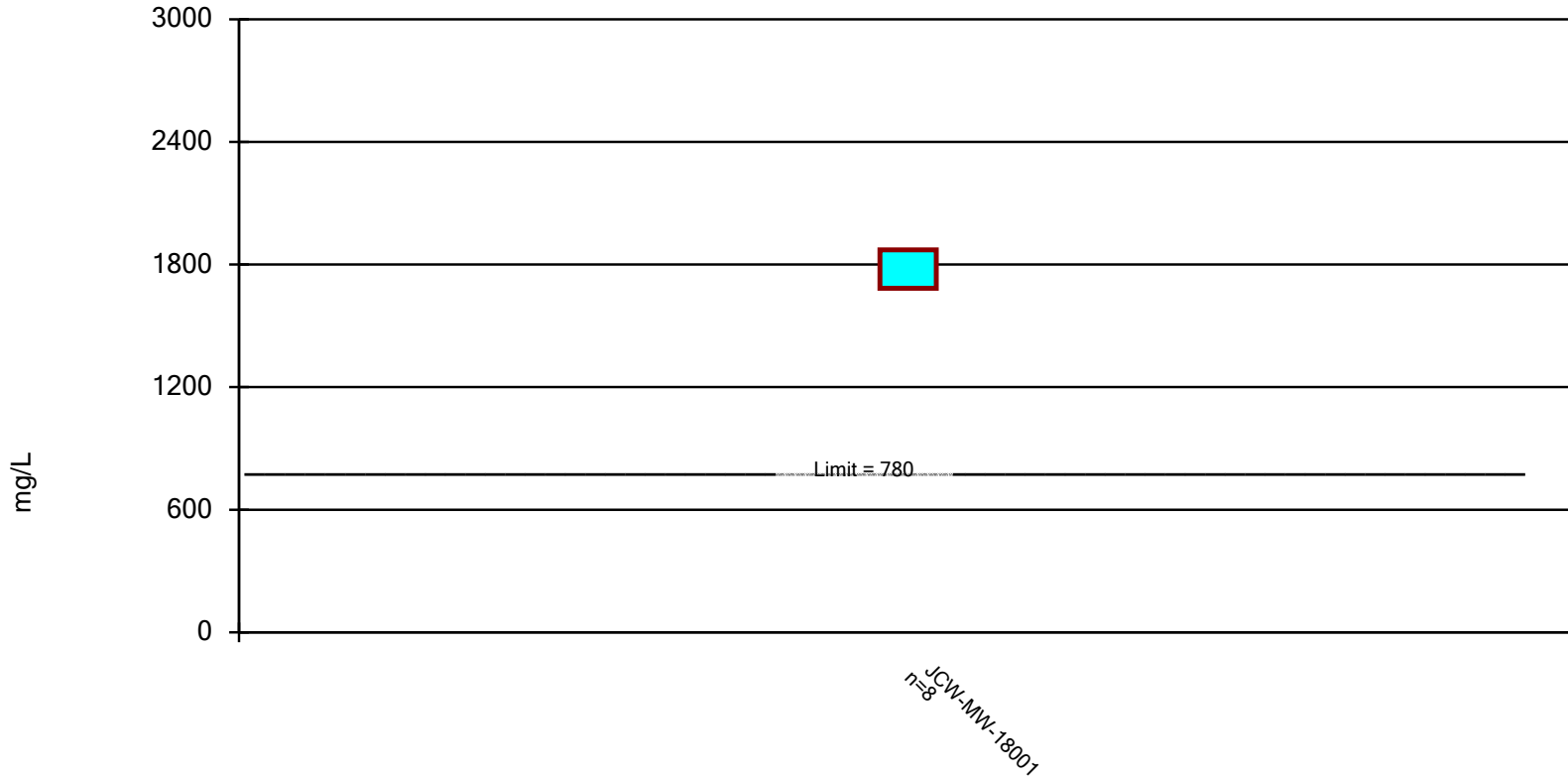
Constituent: Calcium, Total (mg/L) Analysis Run 11/15/2024 4:50 PM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

	JCW-MW-18001	JCW-MW-18005
3/8/2023	486 (D)	
3/9/2023		262 (D)
5/8/2023	496 (D)	
5/9/2023		258 (D)
7/26/2023	555 (D)	
7/31/2023		202 (D)
10/5/2023	562 (D)	
10/9/2023		159 (D)
3/5/2024	557 (D)	
3/6/2024		335 (D)
5/7/2024	537 (D)	
5/8/2024		302 (D)
7/23/2024	526 (D)	164 (D)
10/1/2024	474 (D)	
10/2/2024		162 (D)
Mean	524.1	230.5
Std. Dev.	34.63	68.47
Upper Lim.	560.8	303.1
Lower Lim.	487.4	157.9

Parametric Confidence Interval

Compliance limit is exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Sulfate Analysis Run 11/15/2024 4:51 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Confidence Interval

Constituent: Sulfate (mg/L) Analysis Run 11/15/2024 4:52 PM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

JCW-MW-18001

3/8/2023	1640
5/8/2023	1670
7/26/2023	1770
10/5/2023	1890
3/5/2024	1880
5/7/2024	1790
7/23/2024	1810
10/1/2024	1770
Mean	1778
Std. Dev.	88.6
Upper Lim.	1871
Lower Lim.	1684

Appendix E

Laboratory Analytical Report

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: RCRA GROUNDWATER MONITORING – DEK-JCW BACKGROUND WELLS – 2024 Q4

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0805

TRC Environmental, Inc. conducted groundwater monitoring at the Karn/Weadock Background Wells area during the week of 10/01/2024 for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/03/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section, when applicable; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q4-2024 DEK-JCW Background Wells
Date Received: 10/3/2024
Chemistry Project: 24-0805

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0805-01	MW-15002	Groundwater	10/03/2024 07:00	DEK JCW Background
24-0805-02	MW-15008	Groundwater	10/02/2024 14:05	DEK JCW Background
24-0805-03	MW-15016	Groundwater	10/03/2024 06:05	DEK JCW Background
24-0805-04	MW-15019	Groundwater	10/02/2024 14:52	DEK JCW Background
24-0805-05	DUP-Background	Groundwater	10/02/2024 00:00	DEK JCW Background
24-0805-06	FB- Background	Water	10/03/2024 07:25	DEK JCW Background

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15002**
 Lab Sample ID: 24-0805-01
 Matrix: Groundwater

Laboratory Project: **24-0805**
 Collect Date: 10/03/2024
 Collect Time: 07:00 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0805-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0805-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	885		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	223		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	269000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	3		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	28900		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	24		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	6		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	18		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0805-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	3020000		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	35400		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	5620		mg/L	10.0	10/07/2024	AB24-1007-04

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15008**
 Lab Sample ID: 24-0805-02
 Matrix: Groundwater

Laboratory Project: **24-0805**
 Collect Date: 10/02/2024
 Collect Time: 02:05 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0805-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0805-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	71		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	129		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	94200		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	10		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	12800		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	15		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	2		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	11		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0805-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	423000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	2380		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0805-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1030		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15016**
 Lab Sample ID: 24-0805-03
 Matrix: Groundwater

Laboratory Project: **24-0805**
 Collect Date: 10/03/2024
 Collect Time: 06:05 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0805-03-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0805-03-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	23		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	219		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	610		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	260000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	2		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	20500		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	34		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	8		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	3		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0805-03-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	214000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	129000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0805-03-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1300		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **MW-15019**
 Lab Sample ID: 24-0805-04
 Matrix: Groundwater

Laboratory Project: **24-0805**
 Collect Date: 10/02/2024
 Collect Time: 02:52 PM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0805-04-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0805-04-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	337		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	276		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	184000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	3		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	19000		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	13		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	4		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	3		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0805-04-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	365000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	121000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-04-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1260		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **DUP-Background**
 Lab Sample ID: 24-0805-05
 Matrix: Groundwater

Laboratory Project: **24-0805**
 Collect Date: 10/02/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0805-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0805-05-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	68		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	129		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	94600		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	1		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	12500		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	14		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	2		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	9		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0805-05-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	424000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	2340		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0805-05-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1010		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background**
 Field Sample ID: **FB- Background**
 Lab Sample ID: 24-0805-06
 Matrix: Water

Laboratory Project: **24-0805**
 Collect Date: 10/03/2024
 Collect Time: 07:25 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0805-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0805-06-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	ND		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	ND		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	ND		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	ND		ug/L	10.0	10/14/2024	AB24-1014-02
Molybdenum	ND		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Selenium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0805 Inspection Date: 10-03-24 Inspection By: EB

Sample Origin/Project Name: 24-2024 JMW-DEK Background Wells

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____
Tracking Number: _____ Other Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____
Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____
Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed _____ N/A

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 5.6 - 6.0 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723 / 06.27.25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>11</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>5</u>	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 02-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q4-2024 JCW-DEK Background Wells			PROJECT NUMBER: 24-0805			SAP CC or WO#: REQUESTER: Harold Register				ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																																					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																																																
SEND REPORT TO: Joseph Firlit			email:			phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">TDS</th> <th colspan="7"></th> </tr> <tr> <th></th><th></th><th></th><th></th><th></th><th></th><th></th> </tr> </thead> <tbody> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table>				Total Metals	Anions	TDS																																				REMARKS
Total Metals	Anions	TDS																																																	
COPY TO: Harold Register		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		CONTAINERS																																															
TRC		FIELD SAMPLE ID / LOCATION		PRESERVATIVE																																															
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX			TOTAL #	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																																						
	DATE	TIME																																																	
24-0805-01	10/3/24	0700	GW		MW-15002	3	2	1							x	x	x																																		
-02	10/3/24	1405	GW		MW-15008	3	2	1							x	x	x																																		
-03	10/3/24	0605	GW		MW-15016	3	2	1							x	x	x																																		
-04	10/3/24	1455	GW		MW-15019	3	2	1							x	x	x																																		
-05	10/3/24	—	GW		DUP-Background	3	2	1							x	x	x																																		
-06	10/3/24	0725	W		FB- Background	1									x																																				

RELINQUISHED BY:	DATE/TIME: 10/3/24 1300	RECEIVED BY:
------------------	-------------------------	--------------

COMMENTS:

Received on Ice? Yes No M&TE #: LS027723

RELINQUISHED BY:	DATE/TIME:	RECEIVED BY:
------------------	------------	--------------

Temperature: 5.6-6.0 °C Cal. Due Date: 06-27-25

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: HMP GROUNDWATER MONITORING – JCW POREWATER – 2024 Q4

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0806

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 10/01/2024 for the 4th Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/03/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q4-2024 Weadock Porewater Wells
Date Received: 10/3/2024
Chemistry Project: 24-0806

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0806-01	JCW-MW-18001	Groundwater	10/01/2024 06:25	JCW Solid Waste Disposal Area, Porewater
24-0806-02	JCW-MW-18004	Groundwater	10/02/2024 07:15	JCW Solid Waste Disposal Area, Porewater
24-0806-03	JCW-MW-18005	Groundwater	10/02/2024 09:54	JCW Solid Waste Disposal Area, Porewater
24-0806-04	JCW-MW-18006	Groundwater	10/02/2024 11:45	JCW Solid Waste Disposal Area, Porewater
24-0806-05	MW-50	Groundwater	10/01/2024 08:04	JCW Solid Waste Disposal Area, Porewater
24-0806-06	MW-51	Groundwater	10/01/2024 12:15	JCW Solid Waste Disposal Area, Porewater
24-0806-07	MW-52	Groundwater	10/01/2024 13:10	JCW Solid Waste Disposal Area, Porewater
24-0806-08	MW-53	Groundwater	10/01/2024 13:50	JCW Solid Waste Disposal Area, Porewater
24-0806-09	MW-53R	Groundwater	10/01/2024 14:35	JCW Solid Waste Disposal Area, Porewater
24-0806-10	MW-54R	Groundwater	10/02/2024 06:22	JCW Solid Waste Disposal Area, Porewater
24-0806-11	MW-55	Groundwater	10/02/2024 08:33	JCW Solid Waste Disposal Area, Porewater
24-0806-12	OW-57ROUT	Groundwater	10/02/2024 10:47	JCW Solid Waste Disposal Area, Porewater
24-0806-13	MW-58	Groundwater	10/02/2024 13:08	JCW Solid Waste Disposal Area, Porewater
24-0806-14	DUP-JCW-LF-01	Groundwater	10/01/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0806-15	DUP-JCW-LF-02	Groundwater	10/02/2024 00:00	JCW Solid Waste Disposal Area, Porewater
24-0806-16	JCW-MW-18001 MS	Groundwater	10/01/2024 06:25	JCW Solid Waste Disposal Area, Porewater
24-0806-17	JCW-MW-18001 MSD	Groundwater	10/01/2024 06:25	JCW Solid Waste Disposal Area, Porewater
24-0806-18	FB-01	Water	10/02/2024 13:30	JCW Solid Waste Disposal Area, Porewater
24-0806-19	EB-01	Water	10/02/2024 13:25	JCW Solid Waste Disposal Area, Porewater

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001**
 Lab Sample ID: 24-0806-01
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 06:25 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0806-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0806-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	2		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	66		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1310		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	474000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	2		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	1540		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	90		ug/L	10.0	10/10/2024	AB24-1010-02
Magnesium	123000		ug/L	1000.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	5		ug/L	2.0	10/10/2024	AB24-1010-02
Potassium	19700		ug/L	100.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Sodium	268000		ug/L	1000.0	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0806-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	50300		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	1770000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0806-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	3210		mg/L	10.0	10/04/2024	AB24-1004-01



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
Field Sample ID: **JCW-MW-18001**
Lab Sample ID: 24-0806-01
Matrix: Groundwater

Laboratory Project: **24-0806**
Collect Date: 10/01/2024
Collect Time: 06:25 AM

Alkalinity by SM 2320B

Aliquot #: 24-0806-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	712000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	712000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18004**
 Lab Sample ID: 24-0806-02
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 07:15 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	34		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	412		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	207000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	2		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	36		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	46		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	1		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	14100		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	444000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1080		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18005**
 Lab Sample ID: 24-0806-03
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 09:54 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-03-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	2		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	71		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1930		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	162000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	1930		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	31		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	7		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-03-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	51800		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	1400		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	142000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-03-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	866		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18006**
 Lab Sample ID: 24-0806-04
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 11:45 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-04-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-04-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	27		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	468		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	3240		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	126000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	2		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	9050		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	48		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	4		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	4		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-04-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61600		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	65400		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-04-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	732		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-50**
 Lab Sample ID: 24-0806-05
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 08:04 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-05-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	5		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	211		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2550		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	184000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	1		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	1930		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	56		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	6		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	3		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-05-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	33900		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	423000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-05-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1100		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-51**
 Lab Sample ID: 24-0806-06
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 12:15 PM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0806-06-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0806-06-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	27		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	130		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1070		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	134000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	1		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	2740		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	25		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	4		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	2		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0806-06-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	78800		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	285000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0806-06-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	916		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-52**
 Lab Sample ID: 24-0806-07
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 01:10 PM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0806-07-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0806-07-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	93		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1220		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	251000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	3		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	8450		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	27		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	3		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0806-07-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	37200		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	522000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0806-07-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1330		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53**
 Lab Sample ID: 24-0806-08
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 01:50 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-08-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-08-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	1		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	386		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	6380		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	100000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	518		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	40		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	3		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-08-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61600		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	25900		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-08-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	588		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-53R**
 Lab Sample ID: 24-0806-09
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 02:35 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-09-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-09-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	16		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	128		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2830		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	181000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	1		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	975		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	56		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-09-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	42500		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	126000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-09-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	890		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-54R**
 Lab Sample ID: 24-0806-10
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 06:22 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-10-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-10-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	2		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	100		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	8080		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	177000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	2		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	137		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	83		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	17		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	3		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	5		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-10-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	86200		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	1230		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	79800		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-10-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	826		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-55**
 Lab Sample ID: 24-0806-11
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 08:33 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0806-11-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0806-11-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	54		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	222		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1130		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	150000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	12600		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	25		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	44		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	4		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	1		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0806-11-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	23000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	117000		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0806-11-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	756		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **OW-57ROUT**
 Lab Sample ID: 24-0806-12
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 10:47 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-12-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-12-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	2		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	83		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2070		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	138000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	2		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	67		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	24		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	7		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	15		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	1		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-12-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	73300		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	1510		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	83400		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-12-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	762		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **MW-58**
 Lab Sample ID: 24-0806-13
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 01:08 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-13-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-13-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	126		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	170		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	92100		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	1		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	12100		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	19		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	372		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	9		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-13-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	546000		ug/L	1000.0	10/08/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/08/2024	AB24-1007-05
Sulfate	8380		ug/L	1000.0	10/08/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-13-C03-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	618		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-01**
 Lab Sample ID: 24-0806-14
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0806-14-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0806-14-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	5		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	215		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2450		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	193000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	2120		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	58		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	6		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	3		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0806-14-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	36400		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	422000		ug/L	1000.0	10/09/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0806-14-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1120		mg/L	10.0	10/04/2024	AB24-1004-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **DUP-JCW-LF-02**
 Lab Sample ID: 24-0806-15
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 12:00 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-15-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-15-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	56		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	218		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	1090		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	156000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	13800		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	26		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	44		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	4		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-15-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	23300		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	117000		ug/L	1000.0	10/09/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0806-15-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	758		mg/L	10.0	10/04/2024	AB24-1004-04

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MS**
 Lab Sample ID: 24-0806-16
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 06:25 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-16-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	96.0		%	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-16-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	99		%	1.0	10/10/2024	AB24-1010-02
Arsenic	107		%	1.0	10/10/2024	AB24-1010-02
Barium	112		%	5.0	10/10/2024	AB24-1010-02
Beryllium	82		%	1.0	10/10/2024	AB24-1010-02
Boron	98		%	20.0	10/10/2024	AB24-1010-02
Cadmium	96.2		%	0.2	10/10/2024	AB24-1010-02
Calcium	92.4		%	1000.0	10/10/2024	AB24-1010-02
Chromium	92		%	1.0	10/10/2024	AB24-1010-02
Cobalt	95		%	6.0	10/10/2024	AB24-1010-02
Copper	86		%	1.0	10/10/2024	AB24-1010-02
Iron	111		%	20.0	10/10/2024	AB24-1010-02
Lead	89		%	1.0	10/10/2024	AB24-1010-02
Lithium	81		%	10.0	10/10/2024	AB24-1010-02
Molybdenum	111		%	5.0	10/10/2024	AB24-1010-02
Nickel	90		%	2.0	10/10/2024	AB24-1010-02
Selenium	112		%	1.0	10/10/2024	AB24-1010-02
Silver	94.2		%	0.2	10/10/2024	AB24-1010-02
Thallium	89		%	2.0	10/10/2024	AB24-1010-02
Vanadium	99		%	2.0	10/10/2024	AB24-1010-02
Zinc	89		%	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-16-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	112		%	1000.0	10/09/2024	AB24-1007-05
Fluoride	96		%	1000.0	10/09/2024	AB24-1007-05
Sulfate	97		%	1000.0	10/09/2024	AB24-1007-05

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **JCW-MW-18001 MSD**
 Lab Sample ID: 24-0806-17
 Matrix: Groundwater

Laboratory Project: **24-0806**
 Collect Date: 10/01/2024
 Collect Time: 06:25 AM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-17-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	97.0		%	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-17-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	99		%	1.0	10/10/2024	AB24-1010-02
Arsenic	109		%	1.0	10/10/2024	AB24-1010-02
Barium	114		%	5.0	10/10/2024	AB24-1010-02
Beryllium	82		%	1.0	10/10/2024	AB24-1010-02
Boron	98		%	20.0	10/10/2024	AB24-1010-02
Cadmium	96.6		%	0.2	10/10/2024	AB24-1010-02
Calcium	121		%	1000.0	10/10/2024	AB24-1010-02
Chromium	91		%	1.0	10/10/2024	AB24-1010-02
Cobalt	90		%	6.0	10/10/2024	AB24-1010-02
Copper	82		%	1.0	10/10/2024	AB24-1010-02
Iron	106		%	20.0	10/10/2024	AB24-1010-02
Lead	88		%	1.0	10/10/2024	AB24-1010-02
Lithium	81		%	10.0	10/10/2024	AB24-1010-02
Molybdenum	113		%	5.0	10/10/2024	AB24-1010-02
Nickel	85		%	2.0	10/10/2024	AB24-1010-02
Selenium	108		%	1.0	10/10/2024	AB24-1010-02
Silver	92.3		%	0.2	10/10/2024	AB24-1010-02
Thallium	89		%	2.0	10/10/2024	AB24-1010-02
Vanadium	97		%	2.0	10/10/2024	AB24-1010-02
Zinc	86		%	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-17-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	111		%	1000.0	10/09/2024	AB24-1007-05
Fluoride	96		%	1000.0	10/09/2024	AB24-1007-05
Sulfate	97		%	1000.0	10/09/2024	AB24-1007-05

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **FB-01**
 Lab Sample ID: 24-0806-18
 Matrix: Water

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 01:30 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-18-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-18-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	ND		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	ND		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	ND		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	ND		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-18-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	ND		ug/L	1000.0	10/09/2024	AB24-1007-05

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area, Porewater (395457)**
 Field Sample ID: **EB-01**
 Lab Sample ID: 24-0806-19
 Matrix: Water

Laboratory Project: **24-0806**
 Collect Date: 10/02/2024
 Collect Time: 01:25 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0806-19-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/08/2024	AB24-1008-10

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0806-19-C01-A02

Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	ND		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	ND		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	ND		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	ND		ug/L	10.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Selenium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0806-19-C02-A01

Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	ND		ug/L	1000.0	10/09/2024	AB24-1007-05



Analytical Report

Report Date: 10/18/24

Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0806 Inspection Date: 10-03-24 Inspection By: EB

Sample Origin/Project Name: Q4-2024 JCW Porewater

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____
Tracking Number: _____ Other Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____
Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____
Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed _____ N/A

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 5.9 - 6.0 °C Samples Received on Ice: Yes No _____
M&TE # and Expiration LS027723 / 06-27-24 ^{EB100324}

Number and Type of Containers: Enter the type and total number of sample containers received.

<u>Container Type</u>	<u>Water</u>	<u>Soil</u>	<u>Other</u>	<u>Broken</u>	<u>Leaking</u>
VOA (40mL or <u>60mL</u>)	<u>2</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>38</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>15</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 02-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0806			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____					
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			SEND REPORT TO: Joseph Firlit email: _____ phone: _____												
COPY TO: Harold Register		TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste			CONTAINERS			Total Metals Anions TDS Alkalinity				REMARKS				
LAB SAMPLE ID		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION		TOTAL #		PRESERVATIVE										
		DATE TIME				None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other												
24-0806-01	10/1/24	0625	GW	JCW-MW-18001	5	4	1						x	x	x	x		
-02	10/2/24	0715	GW	JCW-MW-18004	3	2	1							x	x	x		
-03	10/2/24	0954	GW	JCW-MW-18005	3	2	1							x	x	x		
-04	10/2/24	1145	GW	JCW-MW-18006	3	2	1							x	x	x		
-05	10/1/24	0804	GW	MW-50	3	2	1							x	x	x		
-06	10/1/24	1215	GW	MW-51	3	2	1							x	x	x		
-07	10/1/24	1316	GW	MW-52	3	2	1							x	x	x		
-08	10/1/24	1350	GW	MW-53	3	2	1							x	x	x		
-09	10/1/24	1435	GW	MW-53R	3	2	1							x	x	x		
-10	10/2/24	0622	GW	MW-54R	3	2	1							x	x	x		
-11	10/2/24	0833	GW	MW-55	3	2	1							x	x	x		
-12	10/2/24	1047	GW	OW-57ROUT	3	2	1							x	x	x		

RELINQUISHED BY: _____ DATE/TIME: 10/3/24 1340

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: RECEIVED BY: _____

COMMENTS:

Received on Ice? Yes No M&TE #: LS027723

Temperature: 5.9-60 °C Cal. Due Date: 06-27-25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0806			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____							
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																	
SEND REPORT TO: Caleb Batts		email:		phone:																
COPY TO: Harold Register		TRC		MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste			CONTAINERS													
LAB SAMPLE ID		SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION			TOTAL #	PRESERVATIVE							Total Metals	Anions	TDS	Alkalinity	REMARKS
		DATE	TIME						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other					
24-0806-13	10/2/24	1308	GW	MW-58	3	2	1							x	x	x				
-14	10/1/24	—	GW	DUP-JCW-LF-01	3	2	1							x	x	x				
-15	10/2/24	—	GW	DUP-JCW-LF-02	3	2	1							x	x	x				
-16	10/1/24	0620	GW	JCW-MW-18001 MS	2	1	1							x	x					
-17	10/1/24	0625	GW	JCW-MW-18001 MSD	2	1	1							x	x					
-18	10/2/24	1322	W	FB-01	2	1	1							x	x					
-19	10/2/24	1325	W	EB-01	2	1	1							x	x					

RELINQUISHED BY:	DATE/TIME: 10/2/24 1300	RECEIVED BY:	COMMENTS:
RELINQUISHED BY:	DATE/TIME: 10/2/24 1300	RECEIVED BY:	Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>LS022723</u> Temperature: <u>5.9-6.0</u> °C Cal. Due Date: <u>06-27-28</u>

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: HMP GROUNDWATER MONITORING – JCWEADOCK ASD – 2024 Q4

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Environmental Corporation
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0807

TRC Environmental, Inc. conducted groundwater monitoring at the JCWeadock site during the week of 10/01/2024 for the 4th Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The sample was received for analysis by the Chemistry department of Laboratory Services on 10/03/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative, or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, latest edition.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI Analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Customer Name: Karn/Weadock Complex
Work Order ID: Q4-2024 Weadock ASD
Date Received: 10/3/2024
Chemistry Project: 24-0807

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0807-01	JCW-OW-18001	Groundwater	10/01/2024 07:24	JC Weadock ASD
24-0807-02	JCW-OW-18006	Groundwater	10/02/2024 12:25	JC Weadock ASD

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18001**
 Lab Sample ID: 24-0807-01
 Matrix: Groundwater

Laboratory Project: **24-0807**
 Collect Date: 10/01/2024
 Collect Time: 07:24 AM

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0807-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0807-01-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	166		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	89		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2160		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	215000		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	1		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	9130		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	53		ug/L	10.0	10/10/2024	AB24-1010-02
Magnesium	48700		ug/L	1000.0	10/10/2024	AB24-1010-02
Molybdenum	ND		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	5		ug/L	2.0	10/10/2024	AB24-1010-02
Potassium	12400		ug/L	100.0	10/10/2024	AB24-1010-02
Selenium	4		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Sodium	79500		ug/L	1000.0	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0807-01-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	80500		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	419000		ug/L	1000.0	10/09/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C Aliquot #: 24-0807-01-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1110		mg/L	10.0	10/04/2024	AB24-1004-04



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18001**
Lab Sample ID: 24-0807-01
Matrix: Groundwater

Laboratory Project: **24-0807**
Collect Date: 10/01/2024
Collect Time: 07:24 AM

Alkalinity by SM 2320B

Aliquot #: 24-0807-01-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	410000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	410000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
 Field Sample ID: **JCW-OW-18006**
 Lab Sample ID: 24-0807-02
 Matrix: Groundwater

Laboratory Project: **24-0807**
 Collect Date: 10/02/2024
 Collect Time: 12:25 PM

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0807-02-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0807-02-C01-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Arsenic	224		ug/L	1.0	10/10/2024	AB24-1010-02
Barium	171		ug/L	5.0	10/10/2024	AB24-1010-02
Beryllium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Boron	2390		ug/L	20.0	10/10/2024	AB24-1010-02
Cadmium	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Calcium	11800		ug/L	1000.0	10/10/2024	AB24-1010-02
Chromium	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Cobalt	ND		ug/L	6.0	10/10/2024	AB24-1010-02
Copper	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Iron	ND		ug/L	20.0	10/10/2024	AB24-1010-02
Lead	ND		ug/L	1.0	10/10/2024	AB24-1010-02
Lithium	16		ug/L	10.0	10/10/2024	AB24-1010-02
Magnesium	2150		ug/L	1000.0	10/10/2024	AB24-1010-02
Molybdenum	84		ug/L	5.0	10/10/2024	AB24-1010-02
Nickel	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Potassium	28200		ug/L	100.0	10/10/2024	AB24-1010-02
Selenium	2		ug/L	1.0	10/10/2024	AB24-1010-02
Silver	ND		ug/L	0.2	10/10/2024	AB24-1010-02
Sodium	116000		ug/L	1000.0	10/10/2024	AB24-1010-02
Thallium	ND		ug/L	2.0	10/10/2024	AB24-1010-02
Vanadium	6		ug/L	2.0	10/10/2024	AB24-1010-02
Zinc	ND		ug/L	10.0	10/10/2024	AB24-1010-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0807-02-C02-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	86800		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	6130		ug/L	1000.0	10/09/2024	AB24-1007-05

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0807-02-C03-A01 Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	412		mg/L	10.0	10/04/2024	AB24-1004-04



Analytical Report

Report Date: 10/18/24

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **JC Weadock ASD**
Field Sample ID: **JCW-OW-18006**
Lab Sample ID: 24-0807-02
Matrix: Groundwater

Laboratory Project: **24-0807**
Collect Date: 10/02/2024
Collect Time: 12:25 PM

Alkalinity by SM 2320B

Aliquot #: 24-0807-02-C04-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	236000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	172000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	64100		ug/L	10000.0	10/10/2024	AB24-1010-01



Analytical Report

Report Date: 10/18/24

Laboratory Services
A CENTURY OF EXCELLENCE

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0807 Inspection Date: 10-03-24 Inspection By: EB

Sample Origin/Project Name: Q4-2024 JCW ASD

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____
Tracking Number: _____ Other/Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____
Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____
Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed _____ N/A

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 5.8 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723 / 06-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>4</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>4</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>2</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 02-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER:

PROJECT NUMBER:

SAP CC or WO#:

ANALYSIS REQUESTED
(Attach List if More Space is Needed)

QA REQUIREMENT:

Q4-2024 JC Weadock ASD

24-0807

REQUESTER: Harold Register

SAMPLING TEAM:

TURNAROUND TIME REQUIRED:

24 HR 48 HR 3 DAYS STANDARD OTHER _____

SEND REPORT TO:

Joseph Firlit

email:

phone:

COPY TO:

Harold Register

MATRIX CODES:

CONTAINERS

TRC

GW = Groundwater
WW = Wastewater
W = Water / Aqueous Liquid
S = Soil / General Solid
O = Oil

OX = Other
SL = Sludge
A = Air
WP = Wipe
WT = General Waste

PRESERVATIVE

LAB
SAMPLE ID

SAMPLE COLLECTION

MATRIX

DATE

TIME

FIELD SAMPLE ID / LOCATION

TOTAL #

None HNO₃ H₂SO₄ NaOH HCl MeOH Other

Total Metals

Anions

TDS

Alkalinity

NPDES
 TNI
 ISO 17025
 10 CFR 50 APP. B
 INTERNAL INFO
 OTHER _____

REMARKS

24-0807-01

10/1/24 0724

GW

JCW-OW-18001

5

4

1

x

x

x

x

↓ -02

10/2/24 0925

GW

JCW-OW-18006

5

4

1

x

x

x

x

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

COMMENTS:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

Received on Ice? Yes No

M&TE #: LS027723

Temperature: 5.8 °C

Cal. Due Date: 06-27-25

To: JFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 18, 2024

Subject: HMP GROUNDWATER MONITORING – JCW LEACHATE WELLS – 2024 Q4

CC: HDRegister, P22-521

Darby Litz, Project Manager
TRC Companies, Inc.
1540 Eisenhower Place
Ann Arbor, MI 48108

Chemistry Project: 24-0808

TRC Environmental, Inc. conducted groundwater monitoring at the JC Weadock site during the week of 10/01/2024 for the 4th Quarter requirements, as specified in the Hydrogeological Monitoring Plan for the site. The samples were received for analysis by the Chemistry Department of Laboratory Services on 10/02/2024 and 10/03/2024.

The report that follows presents the results of the requested analytical testing; the results apply only to the samples as received. All samples have been analyzed in accordance with the 2016 TNI Standard and the applicable A2LA accreditation scope for Laboratory Services. Any exceptions to applicable test method criteria and standard compliance are noted in the Case Narrative or flagged with applicable qualifiers in the analytical results section.

Reviewed and approved by:

Emil Blaj
Sr. Technical Analyst
Project Lead



Testing performed in accordance with the A2LA scope of accreditation specified in the listed certificate. The information contained in this report is the sole property of Consumers Energy. It cannot be reproduced except in full, and with consent from Consumers Energy, or the customer for which this report was issued.

CASE NARRATIVE

I. Sample Receipt

All samples were received within hold time and in good conditions; no anomalies were noted on the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements. In order to minimize contamination, the samples submitted for Low Level Mercury analysis were preserved in the Mercury clean-room upon receipt at the laboratory, as specified in the corresponding test method.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from “Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, “Test Methods for Evaluating Solid Waste – Physical/Chemical Methods”, USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; all other quality control data is listed in the Quality Control Summary associated with the particular test method, as appropriate. Unless specifically noted in the case narrative, all method quality control requirements have been met. If any results are qualified, the corresponding data flags/qualifiers are listed on the last page of the results section. Any additional information on method performance, when applicable, is presented in this section of the case narrative. When data flags are not needed, the qualifiers text box on the last page is left blank, and a statement confirms that no exceptions occurred.

DEFINITIONS / QUALIFIERS

The following qualifiers and/or acronyms are used in the report, where applicable:

<u>Acronym</u>	<u>Description</u>
RL	Reporting Limit
ND	Result not detected or below Reporting Limit
NT	Non TNI analyte
LCS	Laboratory Control Sample
LRB	Laboratory Reagent Blank (also referred to as Method Blank)
DUP	Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
TDL	Target Detection Limit
SM	Standard Methods Compendium

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
B	The analyte was detected in the LRB at a level which is significant relative to sample result
D	Reporting limit elevated due to dilution
E	Estimated due to result exceeding the linear range of the analyzer
H	The maximum recommended hold time was exceeded
I	Dilution required due to matrix interference; reporting limit elevated
J	Estimated due to result found above MDL but below PQL (or RL)
K	Reporting limit raised due to matrix interference
M	The precision for duplicate analysis was not met; RPD outside acceptance criteria
N	Non-homogeneous sample made analysis questionable
PI	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative

Work Order Sample Summary

Customer Name: Karn/Weadock Complex
Work Order ID: Q4-2024 Weadock Part 115 Leachate Wells
Date Received: 10/2/2024 and 10/3/2024
Chemistry Project: 24-0808

<u>Sample #</u>	<u>Field Sample ID</u>	<u>Matrix</u>	<u>Sample Date</u>	<u>Site</u>
24-0808-01	LH-103R	Groundwater	10/01/2024 09:27	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-02	LH-103R Dup	Groundwater	10/01/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-03	LH-103R MS	Groundwater	10/01/2024 09:27	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-04	LH-103R MSD	Groundwater	10/01/2024 09:27	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-05	LH-104	Groundwater	10/01/2024 11:07	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-06	LH-104 Dup	Groundwater	10/01/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-07	FB-02	Water	10/01/2024 09:27	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-08	EB-02	Water	10/01/2024 11:20	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-09	TB-01	Water	10/01/2024 00:00	JCW Solid Waste Disposal Area - Leachate Wells
24-0808-10	EB-03 for Lab Filtration for Dissolved Hg	Water	10/02/2024 13:00	JCW Solid Waste Disposal Area - Leachate Wells

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
 Field Sample ID: **LH-103R**
 Lab Sample ID: 24-0808-01
 Matrix: Groundwater

Laboratory Project: **24-0808**
 Collect Date: 10/01/2024
 Collect Time: 09:27 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-01-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	0.50		ng/L	0.5	10/09/2024	AB24-1008-17

Mercury by EPA 7470A, Total, Aqueous

Aliquot #: 24-0808-01-C02-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp

Aliquot #: 24-0808-01-C02-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	48		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	111		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	6450		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	215000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	2		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	511		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	78		ug/L	10.0	10/14/2024	AB24-1014-02
Magnesium	64800		ug/L	1000.0	10/14/2024	AB24-1014-02
Molybdenum	11		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	6		ug/L	2.0	10/14/2024	AB24-1014-02
Potassium	43400		ug/L	100.0	10/14/2024	AB24-1014-02
Selenium	15		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Sodium	706000		ug/L	1000.0	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	8		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous

Aliquot #: 24-0808-01-C03-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	201000		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	946000		ug/L	1000.0	10/09/2024	AB24-1007-05

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
 Field Sample ID: **LH-103R**
 Lab Sample ID: 24-0808-01
 Matrix: Groundwater

Laboratory Project: **24-0808**
 Collect Date: 10/01/2024
 Collect Time: 09:27 AM

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0808-01-C04-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	2850		mg/L	10.0	10/04/2024	AB24-1004-04

Alkalinity by SM 2320B

Aliquot #: 24-0808-01-C05-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	1150000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	1150000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01

Mercury, Low Level - Dissolved by EPA 1631E

Aliquot #: 24-0808-01-C07-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.5	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R Dup**
Lab Sample ID: 24-0808-02
Matrix: Groundwater

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-02-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.5	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R MS**
Lab Sample ID: 24-0808-03
Matrix: Groundwater

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 09:27 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-03-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	77.0		%	0.5	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-103R MSD**
Lab Sample ID: 24-0808-04
Matrix: Groundwater

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 09:27 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-04-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	86.0		%	0.5	10/09/2024	AB24-1008-17

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
 Field Sample ID: **LH-104**
 Lab Sample ID: 24-0808-05
 Matrix: Groundwater

Laboratory Project: **24-0808**
 Collect Date: 10/01/2024
 Collect Time: 11:07 AM

Mercury, Low Level by EPA 1631E Aliquot #: 24-0808-05-C01-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	0.52		ng/L	0.5	10/09/2024	AB24-1008-17

Mercury by EPA 7470A, Total, Aqueous Aliquot #: 24-0808-05-C02-A01 Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/05/2024	AB24-1005-01

Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp Aliquot #: 24-0808-05-C02-A02 Analyst: EB

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Arsenic	64		ug/L	1.0	10/14/2024	AB24-1014-02
Barium	194		ug/L	5.0	10/14/2024	AB24-1014-02
Beryllium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Boron	13000		ug/L	20.0	10/14/2024	AB24-1014-02
Cadmium	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Calcium	158000		ug/L	1000.0	10/14/2024	AB24-1014-02
Chromium	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Cobalt	ND		ug/L	6.0	10/14/2024	AB24-1014-02
Copper	1		ug/L	1.0	10/14/2024	AB24-1014-02
Iron	1280		ug/L	20.0	10/14/2024	AB24-1014-02
Lead	ND		ug/L	1.0	10/14/2024	AB24-1014-02
Lithium	69		ug/L	10.0	10/14/2024	AB24-1014-02
Magnesium	113000		ug/L	1000.0	10/14/2024	AB24-1014-02
Molybdenum	52		ug/L	5.0	10/14/2024	AB24-1014-02
Nickel	6		ug/L	2.0	10/14/2024	AB24-1014-02
Potassium	11700		ug/L	100.0	10/14/2024	AB24-1014-02
Selenium	5		ug/L	1.0	10/14/2024	AB24-1014-02
Silver	ND		ug/L	0.2	10/14/2024	AB24-1014-02
Sodium	71600		ug/L	1000.0	10/14/2024	AB24-1014-02
Thallium	ND		ug/L	2.0	10/14/2024	AB24-1014-02
Vanadium	3		ug/L	2.0	10/14/2024	AB24-1014-02
Zinc	ND		ug/L	10.0	10/14/2024	AB24-1014-02

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0808-05-C03-A01 Analyst: KDR

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	61000		ug/L	1000.0	10/09/2024	AB24-1007-05
Fluoride	ND		ug/L	1000.0	10/09/2024	AB24-1007-05
Sulfate	302000		ug/L	1000.0	10/09/2024	AB24-1007-05



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-104**
Lab Sample ID: 24-0808-05
Matrix: Groundwater

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 11:07 AM

Total Dissolved Solids by SM 2540C

Aliquot #: 24-0808-05-C04-A01

Analyst: LMO

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1140		mg/L	10.0	10/04/2024	AB24-1004-04

Alkalinity by SM 2320B

Aliquot #: 24-0808-05-C05-A01

Analyst: DLS

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	648000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Bicarbonate	648000		ug/L	10000.0	10/10/2024	AB24-1010-01
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2024	AB24-1010-01



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **LH-104 Dup**
Lab Sample ID: 24-0808-06
Matrix: Groundwater

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-06-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.5	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **FB-02**
Lab Sample ID: 24-0808-07
Matrix: Water

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 09:27 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-07-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **EB-02**
Lab Sample ID: 24-0808-08
Matrix: Water

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 11:20 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-08-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **TB-01**
Lab Sample ID: 24-0808-09
Matrix: Water

Laboratory Project: **24-0808**
Collect Date: 10/01/2024
Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-09-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	10/09/2024	AB24-1008-17



Analytical Report

Report Date: 10/18/24

Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **JCW Solid Waste Disposal Area - Leachate Wells**
Field Sample ID: **EB-03 for Lab Filtration for Dissolved Hg**
Lab Sample ID: 24-0808-10
Matrix: Water

Laboratory Project: **24-0808**
Collect Date: 10/02/2024
Collect Time: 01:00 PM

Mercury, Low Level by EPA 1631E

Aliquot #: 24-0808-10-C01-A01

Analyst: CLE

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury Low Level	ND		ng/L	0.2	10/09/2024	AB24-1008-17

Data Qualifiers	Exception Summary
-----------------	-------------------

No exceptions occurred.

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0808 Inspection Date: 10-02-24 Inspection By: EB

Sample Origin/Project Name: Q4-2024 ICW Leadate Wells

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____

Tracking Number: _____ Other/Carry In (whom) _____

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____

Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____

Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed N/A _____

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range N/A °C Samples Received on Ice: Yes _____ No

M&TE # and Expiration N/A / N/A

*Low level Mercury
samples only*

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_____	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	_____	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	_____	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 02-15-25

Preserved in the Hg Clean Room upon sample receipt 10/02/24

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CUSTOMER: Q4-2024 Weadock Leachate Wells			PROJECT NUMBER: 24-0808			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____													
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			MATRIX CODES: GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wipe O = Oil WT = General Waste				CONTAINERS PRESERVATIVE None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other				Low Level Mercury (Vertical grid for analysis results)		REMARKS										
SEND REPORT TO: Joseph Firlit			email:															phone:								
COPY TO: Harold Register			SAMPLE COLLECTION DATE TIME MATRIX			FIELD SAMPLE ID / LOCATION			TOTAL #			(Vertical grid for analysis results)				REMARKS										
TRC																										
LAB SAMPLE ID			DATE			TIME			MATRIX			FIELD SAMPLE ID / LOCATION				TOTAL #			PRESERVATIVE				Low Level Mercury		REMARKS	
24-0808-01			10-1-24			0927			GW			LH-103R				1							x		→ Extra volume to be filtered at lab	
-02			-			-			GW			LH-103R Dup				1							x		for dissolved mercury	
-03			-			0927			GW			LH-103R MS				1							x		EB 10-02-24	
-04			-			0927			GW			LH-103R MSD				1							x			
-05			-			1107			GW			LH-104				1							x			
-06			-			-			GW			LH-104 Dup				1							x			
-07			-			0927			W			FB-02				1							x			
-08			-			1120			W			EB-02				1							x			
-09			-			-			W			TB-02				1							x			

RELINQUISHED BY:			DATE/TIME:			RECEIVED BY:			COMMENTS:									
Fed Ex			10-02-24 11:42			Fed Ex												
RELINQUISHED BY:			DATE/TIME:			RECEIVED BY:			Received on Ice? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No M&TE #: <u>N/A</u> Temperature: <u>N/A</u> °C Cal. Due Date: <u>N/A</u>									
Fed Ex			10-02-24 11:42			ji												

CONSUMERS
ENERGY

Chemistry Department
General Standard Operating Procedure

PROC CHEM-1.2.01
PAGE 1 OF 2
REVISION 5
ATTACHMENT A

TITLE: SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Number: 24-0808 Inspection Date: 10-03-24 Inspection By: EB

Sample Origin/Project Name: Q4-2024 JCU LH Wells

Shipment Delivered By: Enter the type of shipment carrier.

Inter-Company Mail _____ FedEx _____ UPS _____ USPS _____
Tracking Number: _____ Other Carry In (whom) TRC

Shipping Containers: Enter the type and number of shipping containers received.

Cooler Cardboard Box _____ Custom Case _____ Envelope/Mailer _____
Loose/Unpackaged Containers _____ Other _____

Condition of Shipment: Enter the as-received condition of the shipment container.

Damaged Shipment Observed: None Dented _____ Leaking _____
Other _____

Shipment Security: Enter if any of the shipping containers were opened before receipt.

Shipping Containers Received: Opened _____ Sealed _____ N/A

Enclosed Documents: Enter the type of documents enclosed with the shipment.

CoC Work Request _____ Air Data Sheet _____ Other _____

Temperature of Containers: Measure the temperature of several sample containers.

As-Received Temperature Range 5.4 °C Samples Received on Ice: Yes No _____

M&TE # and Expiration LS027723 / 06-27-25

Number and Type of Containers: Enter the type and total number of sample containers received.

Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or <u>60mL</u>)	<u>4</u>	_____	_____	_____	_____
Quart/Liter (g / p)	_____	_____	_____	_____	_____
9-oz (amber glass jar)	_____	_____	_____	_____	_____
2-oz (amber glass)	_____	_____	_____	_____	_____
125 mL (plastic)	<u>4</u>	_____	_____	_____	_____
24 mL vial (glass)	_____	_____	_____	_____	_____
250 mL (plastic)	<u>2</u>	_____	_____	_____	_____
Other _____	_____	_____	_____	_____	_____

All sample pH meeting criteria? Yes No _____ N/A _____ pH paper lot # 205522 Exp. Date 02-15-25

Indicate if an Exception Report (Page 2 of 2) is needed: Yes _____ No

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAMPLING SITE / CUSTOMER: Q4-2024 Weadock Leachate Wells			PROJECT NUMBER: 24-0808		SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)				QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____																		
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____																											
SEND REPORT TO: Joseph Firlit		email:		phone:			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th rowspan="2">Total Metals</th> <th rowspan="2">Anions</th> <th rowspan="2">TDS</th> <th rowspan="2">Alkalinity</th> <th colspan="7">PRESERVATIVE</th> </tr> <tr> <th>None</th> <th>HNO₃</th> <th>H₂SO₄</th> <th>NaOH</th> <th>HCl</th> <th>MeOH</th> <th>Other</th> </tr> </table>				Total Metals	Anions	TDS	Alkalinity	PRESERVATIVE							None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	REMARKS	
Total Metals	Anions	TDS	Alkalinity	PRESERVATIVE																										
				None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																				
COPY TO: Harold Register TRC		MATRIX CODES: GW = Groundwater OX = Other _____ WW = Wastewater SL = Sludge _____ W = Water / Aqueous Liquid A = Air _____ S = Soil / General Solid WP = Wipe _____ O = Oil WT = General Waste _____			CONTAINERS																									
LAB SAMPLE ID	SAMPLE COLLECTION		MATRIX	FIELD SAMPLE ID / LOCATION		TOTAL #																								
	DATE	TIME						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																
24-0808-01	10/1/24	0915	GW	LH-103R	5	4	1								x	x	x	x												
↓ -05	10/1/24	1107	GW	LH-104	5	4	1								x	x	x	x												

RELINQUISHED BY:		DATE/TIME: <u>10/3/24 1300</u>		RECEIVED BY:		COMMENTS:	
RELINQUISHED BY:		DATE/TIME:		RECEIVED BY:		Received on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: <u>LS027723</u> Temperature: <u>5.4</u> °C Cal. Due Date: <u>06-27-25</u>	



ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz
TRC Environmental Corporation.
1540 Eisenhower Place
Ann Arbor, Michigan 48108-7080

Generated 11/7/2024 2:33:49 PM

JOB DESCRIPTION

Karn/Weadock CCR Background Wells

JOB NUMBER

240-212370-1

Eurofins Cleveland

Job Notes

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

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

Authorization



Generated
11/7/2024 2:33:49 PM

Authorized for release by
Kris Brooks, Project Manager II
Kris.Brooks@et.eurofinsus.com
(330)966-9790



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	14
QC Sample Results	15
QC Association Summary	16
Lab Chronicle	17
Certification Summary	19
Chain of Custody	20
Receipt Checklists	25

Definitions/Glossary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

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

Case Narrative

Client: TRC Environmental Corporation.
Project: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Job ID: 240-212370-1

Eurofins Cleveland

Job Narrative 240-212370-1

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

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

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

Receipt

The samples were received on 10/4/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.1°C and 1.5°C.

Gas Flow Proportional Counter

Method 903.0: Radium 226 Batch 682570

160-682570

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL MW-15008 (240-212370-2), MW-15016 (240-212370-3), MW-15019 (240-212370-4), DUP-BACKGROUND (240-212370-5), EQ-BACKGROUND (240-212370-6), (240-212371-A-1-A) and (240-212371-B-1-D DU)

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

Rad

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

Eurofins Cleveland

Method Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

- EPA = US Environmental Protection Agency
- None = None
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

- EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212370-1	MW-15002	Water	10/03/24 07:00	10/04/24 08:00
240-212370-2	MW-15008	Water	10/02/24 14:05	10/04/24 08:00
240-212370-3	MW-15016	Water	10/03/24 06:01	10/04/24 08:00
240-212370-4	MW-15019	Water	10/02/24 14:52	10/04/24 08:00
240-212370-5	DUP-BACKGROUND	Water	10/02/24 00:00	10/04/24 08:00
240-212370-6	EQ-BACKGROUND	Water	10/03/24 07:05	10/04/24 08:00

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

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: MW-15002

Lab Sample ID: 240-212370-1

Date Collected: 10/03/24 07:00

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.13		0.219	0.241	1.00	0.122	pCi/L	10/08/24 08:22	11/07/24 07:57	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.2		30 - 110					10/08/24 08:22	11/07/24 07:57	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.80		0.718	0.737	1.00	0.923	pCi/L	10/08/24 08:25	10/17/24 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	74.2		30 - 110					10/08/24 08:25	10/17/24 14:13	1
Y Carrier	78.9		30 - 110					10/08/24 08:25	10/17/24 14:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	2.93		0.751	0.775	5.00	0.923	pCi/L		11/07/24 13:23	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: MW-15008

Lab Sample ID: 240-212370-2

Date Collected: 10/02/24 14:05

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.439		0.174	0.179	1.00	0.206	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.6		30 - 110					10/08/24 08:22	10/25/24 07:36	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.539	U	0.513	0.515	1.00	0.821	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	82.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.978		0.542	0.545	5.00	0.821	pCi/L		11/07/24 13:23	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: MW-15016

Lab Sample ID: 240-212370-3

Date Collected: 10/03/24 06:01

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.280		0.155	0.157	1.00	0.208	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.9		30 - 110					10/08/24 08:22	10/25/24 07:36	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.152	U	0.422	0.422	1.00	0.753	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.9		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	80.0		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.432	U	0.450	0.450	5.00	0.753	pCi/L		11/07/24 13:23	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: MW-15019

Lab Sample ID: 240-212370-4

Date Collected: 10/02/24 14:52

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.614		0.177	0.185	1.00	0.154	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.9		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.631	U	0.500	0.503	1.00	0.771	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.9		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	79.3		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.24		0.530	0.536	5.00	0.771	pCi/L		11/07/24 13:23	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-212370-5

Date Collected: 10/02/24 00:00

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.333		0.146	0.149	1.00	0.170	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.1		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.439	U	0.505	0.507	1.00	0.830	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	87.1		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	79.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.772	U	0.526	0.528	5.00	0.830	pCi/L		11/07/24 13:23	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: EQ-BACKGROUND

Lab Sample ID: 240-212370-6

Date Collected: 10/03/24 07:05

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0255	U	0.0703	0.0703	1.00	0.130	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.314	U	0.350	0.351	1.00	0.573	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	82.6		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.340	U	0.357	0.358	5.00	0.573	pCi/L		11/07/24 13:23	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
240-212370-1	MW-15002	74.2	
240-212370-2	MW-15008	86.6	
240-212370-3	MW-15016	88.9	
240-212370-4	MW-15019	86.9	
240-212370-5	DUP-BACKGROUND	87.1	
240-212370-6	EQ-BACKGROUND	89.4	
LCS 160-682570/2-A	Lab Control Sample	93.0	
MB 160-682570/1-A	Method Blank	95.9	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
240-212370-1	MW-15002	74.2	78.9
240-212370-2	MW-15008	86.6	82.6
240-212370-3	MW-15016	88.9	80.0
240-212370-4	MW-15019	86.9	79.3
240-212370-5	DUP-BACKGROUND	87.1	79.6
240-212370-6	EQ-BACKGROUND	89.4	82.6
LCS 160-682571/2-A	Lab Control Sample	93.0	82.6
MB 160-682571/1-A	Method Blank	95.9	80.0
Tracer/Carrier Legend			
Ba = Ba Carrier			
Y = Y Carrier			

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-682570/1-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682570

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.07966	U	0.0783	0.0787	1.00	0.122	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	95.9		30 - 110		10/08/24 08:22	10/25/24 07:36	1			

Lab Sample ID: LCS 160-682570/2-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682570

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	9.912		1.05	1.00	0.110	pCi/L	103	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.0		30 - 110						

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-682571/1-A
Matrix: Water
Analysis Batch: 683952

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682571

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.4992	U	0.354	0.357	1.00	0.536	pCi/L	10/08/24 08:25	10/17/24 14:13	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	95.9		30 - 110		10/08/24 08:25	10/17/24 14:13	1			
Y Carrier	80.0		30 - 110		10/08/24 08:25	10/17/24 14:13	1			

Lab Sample ID: LCS 160-682571/2-A
Matrix: Water
Analysis Batch: 683952

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682571

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-228	8.42	8.969		1.24	1.00	0.525	pCi/L	106	75 - 125
Carrier	LCS %Yield	LCS Qualifier	Limits						
Ba Carrier	93.0		30 - 110						
Y Carrier	82.6		30 - 110						

QC Association Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Rad

Prep Batch: 682570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212370-1	MW-15002	Total/NA	Water	PrecSep STD	
240-212370-2	MW-15008	Total/NA	Water	PrecSep STD	
240-212370-3	MW-15016	Total/NA	Water	PrecSep STD	
240-212370-4	MW-15019	Total/NA	Water	PrecSep STD	
240-212370-5	DUP-BACKGROUND	Total/NA	Water	PrecSep STD	
240-212370-6	EQ-BACKGROUND	Total/NA	Water	PrecSep STD	
MB 160-682570/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-682570/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 682571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212370-1	MW-15002	Total/NA	Water	PrecSep_0	
240-212370-2	MW-15008	Total/NA	Water	PrecSep_0	
240-212370-3	MW-15016	Total/NA	Water	PrecSep_0	
240-212370-4	MW-15019	Total/NA	Water	PrecSep_0	
240-212370-5	DUP-BACKGROUND	Total/NA	Water	PrecSep_0	
240-212370-6	EQ-BACKGROUND	Total/NA	Water	PrecSep_0	
MB 160-682571/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-682571/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: MW-15002

Lab Sample ID: 240-212370-1

Date Collected: 10/03/24 07:00

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	687288	SWS	EET SL	11/07/24 07:57
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:13
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15008

Lab Sample ID: 240-212370-2

Date Collected: 10/02/24 14:05

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 07:36
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15016

Lab Sample ID: 240-212370-3

Date Collected: 10/03/24 06:01

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 07:36
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: MW-15019

Lab Sample ID: 240-212370-4

Date Collected: 10/02/24 14:52

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Client Sample ID: DUP-BACKGROUND

Lab Sample ID: 240-212370-5

Date Collected: 10/02/24 00:00

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Client Sample ID: EQ-BACKGROUND

Lab Sample ID: 240-212370-6

Date Collected: 10/03/24 07:05

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	687371	EMH	EET SL	11/07/24 13:23

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Accreditation/Certification Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR Background Wells

Job ID: 240-212370-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-25
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-25
HI - RadChem Recognition	State	n/a	06-30-25
Illinois	NELAP	200023	11-30-25
Iowa	State	373	12-01-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-25
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-25
Massachusetts	State	M-MO054	06-30-25
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-25
New Jersey	NELAP	MO002	06-30-25
New Mexico	State	MO00054	06-30-25
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-25
North Dakota	State	R-207	12-31-24
Oregon	NELAP	4157	09-01-25
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-25
Texas	NELAP	T104704193	07-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-25
Virginia	NELAP	460230	06-14-25
Washington	State	C592	08-30-25
West Virginia DEP	State	381	10-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Chain of Custody Record

Client Information		Sampler: <u>DAVID JASSC</u>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-124390-33282.1																																																																																																													
Client Contact: Jacob Krenz		Phone: <u>734 904 3316</u>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 1 of 1																																																																																																													
Company: TRC Environmental Corporation.		PWSID:		Analysis Requested					Job #:																																																																																																												
Address: 1540 Eisenhower Place		Due Date Requested:		<table border="1"> <tr> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>903.0 - Ra226Ra228_GFFC</th> <th>904.0 - Standard Target List</th> <th>Total Number of containers</th> </tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td></tr> </table>					Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Ra226Ra228_GFFC	904.0 - Standard Target List	Total Number of containers																					Preservation Codes: D - HNO3		Other:																																																																																	
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Ra226Ra228_GFFC	904.0 - Standard Target List						Total Number of containers																																																																																																												
City: Ann Arbor		TAT Requested (days):		<table border="1"> <tr> <th>Sample Identification</th> <th>Sample Date</th> <th>Sample Time</th> <th>Sample Type (C=comp, G=grab)</th> <th>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AA=Air)</th> <th>Field Filtered Sample (Yes or No)</th> <th>Perform MS/MSD (Yes or No)</th> <th>903.0 - Ra226Ra228_GFFC</th> <th>904.0 - Standard Target List</th> <th>Total Number of containers</th> <th>Special Instructions/Note:</th> </tr> <tr> <td colspan="11">Preservation Code: D D</td> </tr> <tr> <td>MW-15002</td> <td>10/3/24</td> <td>0700</td> <td>G</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>MW-15008</td> <td>10/2/24</td> <td>1405</td> <td>G</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>MW-15016</td> <td>10/3/24</td> <td>0601</td> <td>G</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>MW-15019</td> <td>10/2/24</td> <td>1452</td> <td>G</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>DUP-Background</td> <td>10/2/24</td> <td>—</td> <td>C</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td>EQ-Background</td> <td>10/3/24</td> <td>0705</td> <td>G</td> <td>Water</td> <td>N</td> <td>Y</td> <td></td> <td></td> <td>2</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Water</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>					Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AA=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Ra226Ra228_GFFC	904.0 - Standard Target List	Total Number of containers	Special Instructions/Note:	Preservation Code: D D											MW-15002	10/3/24	0700	G	Water	N	Y			2		MW-15008	10/2/24	1405	G	Water	N	Y			2		MW-15016	10/3/24	0601	G	Water	N	Y			2		MW-15019	10/2/24	1452	G	Water	N	Y			2		DUP-Background	10/2/24	—	C	Water	N	Y			2		EQ-Background	10/3/24	0705	G	Water	N	Y			2						Water							Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		PO #: 215950		WO #:		Project #: 24024154		SSOW#:	
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)						Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, AA=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Ra226Ra228_GFFC	904.0 - Standard Target List	Total Number of containers	Special Instructions/Note:																																																																																																						
Preservation Code: D D																																																																																																																					
MW-15002	10/3/24	0700	G						Water	N	Y			2																																																																																																							
MW-15008	10/2/24	1405	G	Water	N	Y			2																																																																																																												
MW-15016	10/3/24	0601	G	Water	N	Y			2																																																																																																												
MW-15019	10/2/24	1452	G	Water	N	Y			2																																																																																																												
DUP-Background	10/2/24	—	C	Water	N	Y			2																																																																																																												
EQ-Background	10/3/24	0705	G	Water	N	Y			2																																																																																																												
				Water																																																																																																																	
Phone: 734-904-5246(Tel) 734-971-9022(Fax)		Project Name: Kam/Weadock CCR Background Well		Site:		Project #:		SSOW#:		Special Instructions/Note:																																																																																																											
Email: JKrenz@trccompanies.com																																																																																																																					
Project Name: Kam/Weadock CCR Background Well																																																																																																																					
Site:																																																																																																																					



Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: <u>[Signature]</u>	Date/Time: <u>10/3/24 1440</u>	Company: <u>ETC</u>	Received by: <u>[Signature]</u> Date/Time: <u>10/3/24</u> Company: <u>ETC</u>
Relinquished by: <u>[Signature]</u>	Date/Time: <u>10/3/24 1500</u>	Company: <u>ETC</u>	Received by: <u>[Signature]</u> Date/Time: <u>10-4-24 800</u> Company: <u>ETC</u>
Relinquished by:	Date/Time:	Company:	Received by: Date/Time: Company:

Custody Seals Intact: Yes No Custody Seal No.: Cooler Temperature(s) °C and Other Remarks:

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

Eurofins - Cleveland Sample Receipt Form/Narrative
Barberton Facility

LogIn # _____

Client MC Site Name _____

Cooler unpacked by [Signature]

Cooler Received on 10-4-24 Opened on 10-4-24

FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____

Receipt After-hours Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____
 Packing material used Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Water Blue Ice Dry Ice Water None

1 Cooler temperature upon receipt _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 17 (CF 0.1 °C) Observed Cooler Temp. _____ °C See Multiple Cooler Form

2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes No No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No No NA
 -Were tamper/custody seals intact and uncompromised? Yes No No NA

Tests that are not checked for pH by Receiving:
 VOAs
 Oil and Grease
 TOC

- 3 Shippers' packing slip attached to the cooler(s)? Yes No No NA
- 4 Did custody papers accompany the sample(s)? Yes No No NA
- 5 Were the custody papers relinquished & signed in the appropriate place? Yes No No NA
- 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes No No NA
- 7 Did all bottles arrive in good condition (Unbroken)? Yes No No NA
- 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No No NA
- 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No No NA
- 10 Were correct bottle(s) used for the test(s) indicated? Yes No No NA
- 11 Sufficient quantity received to perform indicated analyses? Yes No No NA
- 12 Are these work share samples and all listed on the COC? Yes No No NA
- 13 Were all preserved sample(s) at the correct pH upon receipt? Yes No No NA
- 14 Were VOAs on the COC? Yes No No NA
- 15 Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA
- 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No NA
- 17 Was a LL Hg or Me Hg trip blank present? Yes No No NA

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory
 Time preserved. _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen. _____

Login #: _____

Eurofins - Cleveland Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: <u>17</u>	<u>1.9</u>	<u>1.5</u>	Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	<u>1.0</u>	<u>0.9</u>	Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____			Wellce Blue Ice Dry Ice Water None

See Temperature Excursion Form

Temperature readings

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container pH</u>	<u>Container Temp</u>	<u>Preservation Added</u>	<u>Preservation Lot Number</u>
MW-15002	240-212370-A-1	Plastic 1 liter - Nitric Acid	<2			
MW-15002	240-212370-B-1	Plastic 1 liter - Nitric Acid	<2			
MW-15008	240-212370-A-2	Plastic 1 liter - Nitric Acid	<2			
MW-15008	240-212370-B-2	Plastic 1 liter - Nitric Acid	<2			
MW-15016	240-212370-A-3	Plastic 1 liter - Nitric Acid	<2			
MW-15016	240-212370-B-3	Plastic 1 liter - Nitric Acid	<2			
MW-15019	240-212370-A-4	Plastic 1 liter - Nitric Acid	<2			
MW-15019	240-212370-B-4	Plastic 1 liter - Nitric Acid	<2			
DUP-BACKGROUND	240-212370-A-5	Plastic 1 liter - Nitric Acid	<2			
DUP-BACKGROUND	240-212370-B-5	Plastic 1 liter - Nitric Acid	<2			
EQ-BACKGROUND	240-212370-A-6	Plastic 1 liter - Nitric Acid	<2			
EQ-BACKGROUND	240-212370-B-6	Plastic 1 liter - Nitric Acid	<2			

Chain of Custody Record



Client Information (Sub Contract Lab)				Lab PM: Brooks, Kris M	Carrier/Tracking No(s): 240-191635.1
Client Contact: Shipping/Receiving				E-Mail: Kris.Brooks@et.eurofins.com	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.				Accreditations Required (See note): 240-212370-1	
Address: 13715 Rider Trail North,				Preservation Codes:	
City: Earth City				Analysis Requested:	
State, Zip: MO, 63045				Total Number of containers:	
Phone: 314-298-8566(Tel) 314-298-8757(Fax)				Other:	
Email:				Special Instructions/Note:	
Project Name: Karn/Weadock CCR Groundwater Monitoring				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Site: SSOW#				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Due Date Requested: 11/4/2024				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
TAT Requested (days):				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
PO #				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
WO #				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Project #: 24024154				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Sample Date				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Sample Time				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Sample Type (C=Comp, G=grab)				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Matrix (W=Water, S=Solid, O=Soil, A=Air)				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Preservation Code				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Field Returned Sample (Yes or No)				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Perform MS/MSD (Yes or No)				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
903.0/Precep STD Standard Target List				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
904.0/Precep STD Standard Target List				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	
Ra226Ra228_GFPC				TVA protocol - Ra-226+228 action limit at 5.0 pCi/L	

Possible Hazard Identification
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements:

Empty Kit Relinquished by: MALISSA LOAR Date: 11/4/24
 Relinquished by: MALISSA LOAR Date/Time: 10/17 0830 Company: EVA-S2
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Δ No
 Cooler Temperature(s) °C and Other Remarks:



Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212370-1

Login Number: 212370

List Number: 2

Creator: Forrest, Cheyenne L

List Source: Eurofins St. Louis

List Creation: 10/07/24 12:24 PM

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





ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz
TRC Environmental Corporation.
1540 Eisenhower Place
Ann Arbor, Michigan 48108-7080

Generated 11/5/2024 12:28:58 PM

JOB DESCRIPTION

Karn/Weadock CCR JCW Landfill

JOB NUMBER

240-212371-1

Eurofins Cleveland

Job Notes

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

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

Authorization



Generated
11/5/2024 12:28:58 PM

Authorized for release by
Kris Brooks, Project Manager II
Kris.Brooks@et.eurofinsus.com
(330)966-9790



Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	22
QC Sample Results	24
QC Association Summary	27
Lab Chronicle	28
Certification Summary	32
Chain of Custody	33
Receipt Checklists	40

Definitions/Glossary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

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

Case Narrative

Client: TRC Environmental Corporation.
Project: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Job ID: 240-212371-1

Eurofins Cleveland

Job Narrative 240-212371-1

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

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

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

Receipt

The samples were received on 10/4/2024 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperatures of the 3 coolers at receipt time were 0.9°C, 1.1°C and 1.5°C.

Gas Flow Proportional Counter

Method 903.0: Radium 226 Batch 682570

160-682570

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL JCW-MW-18001 (240-212371-1), JCW-MW-18004 (240-212371-2), JCW-MW-18005 (240-212371-3), JCW-MW-18006 (240-212371-4), MW-50 (240-212371-5), MW-51 (240-212371-6) and (240-212371-B-1-D DU)

Method 903.0: Radium 226 Batch 682572

160-682572

Based upon client request, Ra-226 is reported without the standard 21-day waiting period which ensures short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. The Ra-226 result should be considered to be potentially high biased. Associated samples have activity below the RL MW-52 (240-212371-7), MW-53 (240-212371-8), MW-53R (240-212371-9), MW-54R (240-212371-10), MW-55 (240-212371-11), OW-57ROUT (240-212371-12), DUP-01 (240-212371-13), EB-1 (240-212371-14) and (240-212371-B-8-C DU)

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

Rad

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

Eurofins Cleveland

Method Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	EET SL
904.0	Radium-228 (GFPC)	EPA	EET SL
Ra226_Ra228	Combined Radium-226 and Radium-228	TAL-STL	EET SL
PrecSep STD	Preparation, Precipitate Separation (Standard In-Growth)	None	EET SL
PrecSep_0	Preparation, Precipitate Separation	None	EET SL

Protocol References:

- EPA = US Environmental Protection Agency
- None = None
- TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

- EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-212371-1	JCW-MW-18001	Water	10/01/24 06:35	10/04/24 08:00
240-212371-2	JCW-MW-18004	Water	10/02/24 07:15	10/04/24 08:00
240-212371-3	JCW-MW-18005	Water	10/02/24 09:54	10/04/24 08:00
240-212371-4	JCW-MW-18006	Water	10/02/24 11:45	10/04/24 08:00
240-212371-5	MW-50	Water	10/01/24 08:04	10/04/24 08:00
240-212371-6	MW-51	Water	10/01/24 12:15	10/04/24 08:00
240-212371-7	MW-52	Water	10/01/24 13:10	10/04/24 08:00
240-212371-8	MW-53	Water	10/01/24 13:50	10/04/24 08:00
240-212371-9	MW-53R	Water	10/01/24 14:35	10/04/24 08:00
240-212371-10	MW-54R	Water	10/02/24 06:20	10/04/24 08:00
240-212371-11	MW-55	Water	10/02/24 06:33	10/04/24 08:00
240-212371-12	OW-57ROUT	Water	10/02/24 10:47	10/04/24 08:00
240-212371-13	DUP-01	Water	10/01/24 00:00	10/04/24 08:00
240-212371-14	EB-1	Water	10/02/24 13:30	10/04/24 08:00



Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: JCW-MW-18001

Lab Sample ID: 240-212371-1

Date Collected: 10/01/24 06:35

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.158		0.0918	0.0929	1.00	0.122	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.206	U	0.259	0.260	1.00	0.430	pCi/L	10/08/24 08:25	10/17/24 14:14	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.9		30 - 110					10/08/24 08:25	10/17/24 14:14	1
Y Carrier	81.9		30 - 110					10/08/24 08:25	10/17/24 14:14	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.364	U	0.275	0.276	5.00	0.430	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: JCW-MW-18004

Lab Sample ID: 240-212371-2

Date Collected: 10/02/24 07:15

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.120		0.0834	0.0841	1.00	0.116	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.143	U	0.372	0.372	1.00	0.656	pCi/L	10/08/24 08:25	10/17/24 15:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.0		30 - 110					10/08/24 08:25	10/17/24 15:39	1
Y Carrier	83.7		30 - 110					10/08/24 08:25	10/17/24 15:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.264	U	0.381	0.381	5.00	0.656	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: JCW-MW-18005

Lab Sample ID: 240-212371-3

Date Collected: 10/02/24 09:54

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.169		0.0890	0.0903	1.00	0.106	pCi/L	10/08/24 08:22	10/25/24 09:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.7		30 - 110					10/08/24 08:22	10/25/24 09:22	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.200	U	0.370	0.370	1.00	0.640	pCi/L	10/08/24 08:25	10/17/24 15:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.7		30 - 110					10/08/24 08:25	10/17/24 15:39	1
Y Carrier	81.5		30 - 110					10/08/24 08:25	10/17/24 15:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.369	U	0.381	0.381	5.00	0.640	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: JCW-MW-18006

Lab Sample ID: 240-212371-4

Date Collected: 10/02/24 11:45

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.520		0.131	0.140	1.00	0.0931	pCi/L	10/08/24 08:22	10/25/24 09:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.4		30 - 110					10/08/24 08:22	10/25/24 09:22	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.768		0.425	0.431	1.00	0.600	pCi/L	10/08/24 08:25	10/17/24 15:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	97.4		30 - 110					10/08/24 08:25	10/17/24 15:39	1
Y Carrier	81.1		30 - 110					10/08/24 08:25	10/17/24 15:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.29		0.445	0.453	5.00	0.600	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-50

Lab Sample ID: 240-212371-5

Date Collected: 10/01/24 08:04

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.355		0.115	0.120	1.00	0.105	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.5		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.747	U	0.509	0.514	1.00	0.773	pCi/L	10/08/24 08:25	10/17/24 15:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.5		30 - 110					10/08/24 08:25	10/17/24 15:39	1
Y Carrier	81.1		30 - 110					10/08/24 08:25	10/17/24 15:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.10		0.522	0.528	5.00	0.773	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-51

Lab Sample ID: 240-212371-6

Date Collected: 10/01/24 12:15

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.223		0.106	0.108	1.00	0.125	pCi/L	10/08/24 08:22	10/25/24 09:21	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		30 - 110					10/08/24 08:22	10/25/24 09:21	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.40		0.518	0.534	1.00	0.649	pCi/L	10/08/24 08:25	10/17/24 15:39	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.3		30 - 110					10/08/24 08:25	10/17/24 15:39	1
Y Carrier	82.2		30 - 110					10/08/24 08:25	10/17/24 15:39	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.62		0.529	0.545	5.00	0.649	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-52

Lab Sample ID: 240-212371-7

Date Collected: 10/01/24 13:10

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.149		0.102	0.103	1.00	0.148	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5		30 - 110					10/08/24 08:27	10/25/24 09:24	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.706		0.420	0.425	1.00	0.618	pCi/L	10/08/24 08:29	10/17/24 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.5		30 - 110					10/08/24 08:29	10/17/24 14:12	1
Y Carrier	83.0		30 - 110					10/08/24 08:29	10/17/24 14:12	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.855		0.432	0.437	5.00	0.618	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-53

Lab Sample ID: 240-212371-8

Date Collected: 10/01/24 13:50

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.572		0.156	0.164	1.00	0.148	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		30 - 110					10/08/24 08:27	10/25/24 09:24	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.913		0.373	0.382	1.00	0.466	pCi/L	10/08/24 08:29	10/17/24 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		30 - 110					10/08/24 08:29	10/17/24 14:12	1
Y Carrier	82.6		30 - 110					10/08/24 08:29	10/17/24 14:12	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.48		0.404	0.416	5.00	0.466	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-53R

Lab Sample ID: 240-212371-9

Date Collected: 10/01/24 14:35

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.184		0.0913	0.0928	1.00	0.108	pCi/L	10/08/24 08:27	10/25/24 09:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:27	10/25/24 09:23	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.518	U	0.408	0.411	1.00	0.632	pCi/L	10/08/24 08:29	10/17/24 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.4		30 - 110					10/08/24 08:29	10/17/24 14:12	1
Y Carrier	76.6		30 - 110					10/08/24 08:29	10/17/24 14:12	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.702		0.418	0.421	5.00	0.632	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-54R

Lab Sample ID: 240-212371-10

Date Collected: 10/02/24 06:20

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.213		0.116	0.118	1.00	0.158	pCi/L	10/08/24 08:27	10/25/24 09:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.1		30 - 110					10/08/24 08:27	10/25/24 09:23	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.426	U	0.374	0.376	1.00	0.588	pCi/L	10/08/24 08:29	10/17/24 14:12	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	86.1		30 - 110					10/08/24 08:29	10/17/24 14:12	1
Y Carrier	79.6		30 - 110					10/08/24 08:29	10/17/24 14:12	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.639		0.392	0.394	5.00	0.588	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-55

Lab Sample ID: 240-212371-11

Date Collected: 10/02/24 06:33

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.274		0.132	0.134	1.00	0.162	pCi/L	10/08/24 08:27	10/25/24 09:23	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					10/08/24 08:27	10/25/24 09:23	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.512	U	0.551	0.553	1.00	0.899	pCi/L	10/08/24 08:29	10/17/24 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.8		30 - 110					10/08/24 08:29	10/17/24 14:13	1
Y Carrier	80.4		30 - 110					10/08/24 08:29	10/17/24 14:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.786	U	0.567	0.569	5.00	0.899	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: OW-57ROUT

Lab Sample ID: 240-212371-12

Date Collected: 10/02/24 10:47

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.163		0.0865	0.0878	1.00	0.104	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					10/08/24 08:27	10/25/24 09:24	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.407	U	0.348	0.350	1.00	0.543	pCi/L	10/08/24 08:29	10/17/24 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.1		30 - 110					10/08/24 08:29	10/17/24 14:13	1
Y Carrier	80.0		30 - 110					10/08/24 08:29	10/17/24 14:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.570		0.359	0.361	5.00	0.543	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: DUP-01

Lab Sample ID: 240-212371-13

Date Collected: 10/01/24 00:00

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.353		0.119	0.123	1.00	0.111	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.2		30 - 110					10/08/24 08:27	10/25/24 09:24	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	1.41		0.593	0.608	1.00	0.823	pCi/L	10/08/24 08:29	10/17/24 14:13	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.2		30 - 110					10/08/24 08:29	10/17/24 14:13	1
Y Carrier	78.9		30 - 110					10/08/24 08:29	10/17/24 14:13	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	1.77		0.605	0.620	5.00	0.823	pCi/L		11/05/24 08:09	1

Client Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: EB-1

Lab Sample ID: 240-212371-14

Date Collected: 10/02/24 13:30

Matrix: Water

Date Received: 10/04/24 08:00

Method: EPA 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0401	U	0.0336	0.0338	1.00	0.102	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.2		30 - 110					10/08/24 08:27	10/25/24 09:24	1

Method: EPA 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0266	U	0.348	0.348	1.00	0.651	pCi/L	10/08/24 08:29	10/17/24 14:10	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.2		30 - 110					10/08/24 08:29	10/17/24 14:10	1
Y Carrier	75.9		30 - 110					10/08/24 08:29	10/17/24 14:10	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	-0.0667	U	0.350	0.350	5.00	0.651	pCi/L		11/05/24 08:09	1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	
240-212371-1	JCW-MW-18001	95.9	
240-212371-1 DU	JCW-MW-18001	94.6	
240-212371-2	JCW-MW-18004	92.0	
240-212371-3	JCW-MW-18005	89.7	
240-212371-4	JCW-MW-18006	97.4	
240-212371-5	MW-50	90.5	
240-212371-6	MW-51	93.3	
240-212371-7	MW-52	91.5	
240-212371-8	MW-53	94.6	
240-212371-8 DU	MW-53	94.3	
240-212371-9	MW-53R	89.4	
240-212371-10	MW-54R	86.1	
240-212371-11	MW-55	92.8	
240-212371-12	OW-57ROUT	88.1	
240-212371-13	DUP-01	83.2	
240-212371-14	EB-1	90.2	
LCS 160-682570/2-A	Lab Control Sample	93.0	
LCS 160-682572/2-A	Lab Control Sample	92.5	
MB 160-682570/1-A	Method Blank	95.9	
MB 160-682572/1-A	Method Blank	87.6	

Tracer/Carrier Legend
 Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water

Prep Type: Total/NA

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba (30-110)	Y (30-110)
240-212371-1	JCW-MW-18001	95.9	81.9
240-212371-1 DU	JCW-MW-18001	94.6	82.2
240-212371-2	JCW-MW-18004	92.0	83.7
240-212371-3	JCW-MW-18005	89.7	81.5
240-212371-4	JCW-MW-18006	97.4	81.1
240-212371-5	MW-50	90.5	81.1
240-212371-6	MW-51	93.3	82.2
240-212371-7	MW-52	91.5	83.0
240-212371-8	MW-53	94.6	82.6
240-212371-8 DU	MW-53	94.3	80.0
240-212371-9	MW-53R	89.4	76.6
240-212371-10	MW-54R	86.1	79.6
240-212371-11	MW-55	92.8	80.4
240-212371-12	OW-57ROUT	88.1	80.0
240-212371-13	DUP-01	83.2	78.9
240-212371-14	EB-1	90.2	75.9
LCS 160-682571/2-A	Lab Control Sample	93.0	82.6
LCS 160-682573/2-A	Lab Control Sample	92.5	81.9
MB 160-682571/1-A	Method Blank	95.9	80.0
MB 160-682573/1-A	Method Blank	87.6	78.5

Tracer/Carrier Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Tracer/Carrier Legend

Ba = Ba Carrier

Y = Y Carrier

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

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-682570/1-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682570

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.07966	U	0.0783	0.0787	1.00	0.122	pCi/L	10/08/24 08:22	10/25/24 07:36	1
Carrier	MB	MB	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	30 - 110							
Ba Carrier	95.9		30 - 110		10/08/24 08:22	10/25/24 07:36	1			

Lab Sample ID: LCS 160-682570/2-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682570

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	9.912		1.05	1.00	0.110	pCi/L	103	75 - 125
Carrier	LCS	LCS	Limits		Prepared	Analyzed	Dil Fac		
Ba Carrier	%Yield	Qualifier	30 - 110						
Ba Carrier	93.0		30 - 110		10/08/24 08:22	10/25/24 07:36	1		

Lab Sample ID: 240-212371-1 DU
Matrix: Water
Analysis Batch: 685116

Client Sample ID: JCW-MW-18001
Prep Type: Total/NA
Prep Batch: 682570

Analyte	Sample	Sample	DU	DU	Total	RL	MDC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-226	0.158		0.1769		0.0954	1.00	0.120	pCi/L	0.1	1
Carrier	DU	DU	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	30 - 110							
Ba Carrier	94.6		30 - 110		10/08/24 08:22	10/25/24 09:24	1			

Lab Sample ID: MB 160-682572/1-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682572

Analyte	MB	MB	Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-226	0.01844	U	0.0601	0.0602	1.00	0.115	pCi/L	10/08/24 08:27	10/25/24 09:24	1
Carrier	MB	MB	Limits		Prepared	Analyzed	Dil Fac			
Ba Carrier	%Yield	Qualifier	30 - 110							
Ba Carrier	87.6		30 - 110		10/08/24 08:27	10/25/24 09:24	1			

Lab Sample ID: LCS 160-682572/2-A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682572

Analyte	Spike Added	LCS Result	LCS Qual	Total	RL	MDC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Radium-226	9.58	10.06		1.06	1.00	0.123	pCi/L	105	75 - 125

QC Sample Results

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-682572/A
Matrix: Water
Analysis Batch: 685116

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682572

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	92.5		30 - 110

Lab Sample ID: 240-212371-8 DU
Matrix: Water
Analysis Batch: 685112

Client Sample ID: MW-53
Prep Type: Total/NA
Prep Batch: 682572

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER
										Limit
Radium-226	0.572		0.3922		0.123	1.00	0.101	pCi/L	0.63	1

	DU	DU	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	94.3		30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-682571/1-A
Matrix: Water
Analysis Batch: 683952

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682571

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.4992	U	0.354	0.357	1.00	0.536	pCi/L	10/08/24 08:25	10/17/24 14:13	1

	MB	MB	Limits	Prepared	Analyzed	Dil Fac
Carrier	%Yield	Qualifier				
Ba Carrier	95.9		30 - 110	10/08/24 08:25	10/17/24 14:13	1
Y Carrier	80.0		30 - 110	10/08/24 08:25	10/17/24 14:13	1

Lab Sample ID: LCS 160-682571/2-A
Matrix: Water
Analysis Batch: 683952

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682571

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec
									Limits
Radium-228	8.42	8.969		1.24	1.00	0.525	pCi/L	106	75 - 125

	LCS	LCS	Limits
Carrier	%Yield	Qualifier	
Ba Carrier	93.0		30 - 110
Y Carrier	82.6		30 - 110

Lab Sample ID: 240-212371-1 DU
Matrix: Water
Analysis Batch: 683952

Client Sample ID: JCW-MW-18001
Prep Type: Total/NA
Prep Batch: 682571

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER
										Limit
Radium-228	0.206	U	0.03835	U	0.324	1.00	0.592	pCi/L	0.29	1

Eurofins Cleveland

QC Sample Results

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 240-212371-1 DU
Matrix: Water
Analysis Batch: 683952

Client Sample ID: JCW-MW-18001
Prep Type: Total/NA
Prep Batch: 682571

Carrier	<i>DU</i> %Yield	<i>DU</i> Qualifier	Limits
Ba Carrier	94.6		30 - 110
Y Carrier	82.2		30 - 110

Lab Sample ID: MB 160-682573/1-A
Matrix: Water
Analysis Batch: 683951

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 682573

Analyte	<i>MB</i>		Count	Total	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Radium-228	0.05134	U	0.294	0.294	1.00	0.542	pCi/L	10/08/24 08:29	10/17/24 14:12	1

Carrier	<i>MB</i> %Yield	<i>MB</i> Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	87.6		30 - 110	10/08/24 08:29	10/17/24 14:12	1
Y Carrier	78.5		30 - 110	10/08/24 08:29	10/17/24 14:12	1

Lab Sample ID: LCS 160-682573/2-A
Matrix: Water
Analysis Batch: 683951

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 682573

Analyte	Spike Added	LCS		Total	RL	MDC	Unit	%Rec	%Rec Limits
		Result	Qual	Uncert. (2σ+/-)					
Radium-228	8.42	10.09		1.36	1.00	0.548	pCi/L	120	75 - 125

Carrier	<i>LCS</i> %Yield	<i>LCS</i> Qualifier	Limits
Ba Carrier	92.5		30 - 110
Y Carrier	81.9		30 - 110

Lab Sample ID: 240-212371-8 DU
Matrix: Water
Analysis Batch: 683951

Client Sample ID: MW-53
Prep Type: Total/NA
Prep Batch: 682573

Analyte	Sample		<i>DU</i>		Total	RL	MDC	Unit	RER	Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Radium-228	0.913		0.9033		0.424	1.00	0.560	pCi/L	0.01	1

Carrier	<i>DU</i> %Yield	<i>DU</i> Qualifier	Limits
Ba Carrier	94.3		30 - 110
Y Carrier	80.0		30 - 110

QC Association Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Rad

Prep Batch: 682570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212371-1	JCW-MW-18001	Total/NA	Water	PrecSep STD	
240-212371-2	JCW-MW-18004	Total/NA	Water	PrecSep STD	
240-212371-3	JCW-MW-18005	Total/NA	Water	PrecSep STD	
240-212371-4	JCW-MW-18006	Total/NA	Water	PrecSep STD	
240-212371-5	MW-50	Total/NA	Water	PrecSep STD	
240-212371-6	MW-51	Total/NA	Water	PrecSep STD	
MB 160-682570/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-682570/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-212371-1 DU	JCW-MW-18001	Total/NA	Water	PrecSep STD	

Prep Batch: 682571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212371-1	JCW-MW-18001	Total/NA	Water	PrecSep_0	
240-212371-2	JCW-MW-18004	Total/NA	Water	PrecSep_0	
240-212371-3	JCW-MW-18005	Total/NA	Water	PrecSep_0	
240-212371-4	JCW-MW-18006	Total/NA	Water	PrecSep_0	
240-212371-5	MW-50	Total/NA	Water	PrecSep_0	
240-212371-6	MW-51	Total/NA	Water	PrecSep_0	
MB 160-682571/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-682571/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-212371-1 DU	JCW-MW-18001	Total/NA	Water	PrecSep_0	

Prep Batch: 682572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212371-7	MW-52	Total/NA	Water	PrecSep STD	
240-212371-8	MW-53	Total/NA	Water	PrecSep STD	
240-212371-9	MW-53R	Total/NA	Water	PrecSep STD	
240-212371-10	MW-54R	Total/NA	Water	PrecSep STD	
240-212371-11	MW-55	Total/NA	Water	PrecSep STD	
240-212371-12	OW-57ROUT	Total/NA	Water	PrecSep STD	
240-212371-13	DUP-01	Total/NA	Water	PrecSep STD	
240-212371-14	EB-1	Total/NA	Water	PrecSep STD	
MB 160-682572/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-682572/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-212371-8 DU	MW-53	Total/NA	Water	PrecSep STD	

Prep Batch: 682573

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-212371-7	MW-52	Total/NA	Water	PrecSep_0	
240-212371-8	MW-53	Total/NA	Water	PrecSep_0	
240-212371-9	MW-53R	Total/NA	Water	PrecSep_0	
240-212371-10	MW-54R	Total/NA	Water	PrecSep_0	
240-212371-11	MW-55	Total/NA	Water	PrecSep_0	
240-212371-12	OW-57ROUT	Total/NA	Water	PrecSep_0	
240-212371-13	DUP-01	Total/NA	Water	PrecSep_0	
240-212371-14	EB-1	Total/NA	Water	PrecSep_0	
MB 160-682573/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-682573/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-212371-8 DU	MW-53	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: JCW-MW-18001

Lab Sample ID: 240-212371-1

Date Collected: 10/01/24 06:35

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:14
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: JCW-MW-18004

Lab Sample ID: 240-212371-2

Date Collected: 10/02/24 07:15

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683937	FLC	EET SL	10/17/24 15:39
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: JCW-MW-18005

Lab Sample ID: 240-212371-3

Date Collected: 10/02/24 09:54

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:22
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683937	FLC	EET SL	10/17/24 15:39
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: JCW-MW-18006

Lab Sample ID: 240-212371-4

Date Collected: 10/02/24 11:45

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:22
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683937	FLC	EET SL	10/17/24 15:39
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Lab Chronicle

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-50

Lab Sample ID: 240-212371-5

Date Collected: 10/01/24 08:04

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683937	FLC	EET SL	10/17/24 15:39
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: MW-51

Lab Sample ID: 240-212371-6

Date Collected: 10/01/24 12:15

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682570	BCE	EET SL	10/08/24 08:22
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:21
Total/NA	Prep	PrecSep_0			682571	BCE	EET SL	10/08/24 08:25
Total/NA	Analysis	904.0		1	683937	FLC	EET SL	10/17/24 15:39
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: MW-52

Lab Sample ID: 240-212371-7

Date Collected: 10/01/24 13:10

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:12
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: MW-53

Lab Sample ID: 240-212371-8

Date Collected: 10/01/24 13:50

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685116	FLC	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:12
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: MW-53R

Lab Sample ID: 240-212371-9

Date Collected: 10/01/24 14:35

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:23
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:12
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: MW-54R

Lab Sample ID: 240-212371-10

Date Collected: 10/02/24 06:20

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:23
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:12
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: MW-55

Lab Sample ID: 240-212371-11

Date Collected: 10/02/24 06:33

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:23
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:13
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: OW-57ROUT

Lab Sample ID: 240-212371-12

Date Collected: 10/02/24 10:47

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:13
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Lab Chronicle

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Client Sample ID: DUP-01

Lab Sample ID: 240-212371-13

Date Collected: 10/01/24 00:00

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683951	FLC	EET SL	10/17/24 14:13
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Client Sample ID: EB-1

Lab Sample ID: 240-212371-14

Date Collected: 10/02/24 13:30

Matrix: Water

Date Received: 10/04/24 08:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	PrecSep STD			682572	BCE	EET SL	10/08/24 08:27
Total/NA	Analysis	903.0		1	685112	SWS	EET SL	10/25/24 09:24
Total/NA	Prep	PrecSep_0			682573	BCE	EET SL	10/08/24 08:29
Total/NA	Analysis	904.0		1	683952	FLC	EET SL	10/17/24 14:10
Total/NA	Analysis	Ra226_Ra228		1	686854	FLC	EET SL	11/05/24 08:09

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566



Accreditation/Certification Summary

Client: TRC Environmental Corporation.
 Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-212371-1

Laboratory: Eurofins St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-08-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-24
California	Los Angeles County Sanitation Districts	10259	06-30-22 *
California	State	2886	06-30-25
Connecticut	State	PH-0241	03-31-25
Florida	NELAP	E87689	06-30-25
HI - RadChem Recognition	State	n/a	06-30-25
Illinois	NELAP	200023	11-30-25
Iowa	State	373	12-01-24
Kentucky (DW)	State	KY90125	12-31-24
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-24
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-25
Louisiana (DW)	State	LA011	12-31-24
Maryland	State	310	09-30-25
Massachusetts	State	M-MO054	06-30-25
Missouri	State	780	06-30-25
Nevada	State	MO00054	07-31-25
New Jersey	NELAP	MO002	06-30-25
New Mexico	State	MO00054	06-30-25
New York	NELAP	11616	03-31-25
North Carolina (DW)	State	29700	07-31-25
North Dakota	State	R-207	12-31-24
Oregon	NELAP	4157	09-01-25
Pennsylvania	NELAP	68-00540	02-28-25
South Carolina	State	85002001	06-30-25
Texas	NELAP	T104704193	07-31-25
US Fish & Wildlife	US Federal Programs	058448	07-31-25
USDA	US Federal Programs	P330-17-00028	05-18-26
Utah	NELAP	MO00054	07-31-25
Virginia	NELAP	460230	06-14-25
Washington	State	C592	08-30-25
West Virginia DEP	State	381	10-31-25

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Cleveland

180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone (330) 497-9396 Phone (330) 497-0772

Chain of Custody Record

MICHIGAN eurofins
 190
 Environment Testing

Client Information		Sampler: <u>Sauv JASC</u>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-124391-29048.1																																						
Client Contact: Jacob Krenz		Phone: <u>7349043310</u>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 1 of 2																																						
Company: TRC Environmental Corporation.		PWSID:		Analysis Requested						Job #:																																				
Address: 1540 Eisenhower Place		Due Date Requested:		<table border="1"> <tr> <td rowspan="5">Field Filtered Sample (Yes or No)</td> <td rowspan="5">Perform MS/MSD (Yes or No)</td> <td rowspan="5">904.0 - Ra228Ra228_GFFC</td> <td rowspan="5">903.0 - Standard Target List</td> <td colspan="6"></td> <td rowspan="5">Total Number of containers</td> </tr> <tr><td colspan="6"></td></tr> <tr><td colspan="6"></td></tr> <tr><td colspan="6"></td></tr> <tr><td colspan="6"></td></tr> </table>						Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	904.0 - Ra228Ra228_GFFC	903.0 - Standard Target List							Total Number of containers																									Preservation Codes: D - HNO3	
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	904.0 - Ra228Ra228_GFFC	903.0 - Standard Target List																		Total Number of containers																									
City: Ann Arbor		TAT Requested (days):		Other:																																										
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No																																												
Phone: 734-971-7080(Tel) 734-971-9022(Fax)		PO #: TBD																																												
Email: JKrenz@trccompanies.com		WO #: 5533828.0000																																												
Project Name: Karn/Weadock CCR JCW Lanfill		Project #: 24024154																																												
Site:		SSOW#:																																												
Sample Identification		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/ot, BT=Tissue, A=Air)		Special Instructions/Note:																																				
						Preservation Code:		D D																																						
JCW-MW-18001		10/1/24		0605		G		Water																																						
JCW-MW-18004		10/2/24		0715		G		Water																																						
JCW-MW-18005		10/2/24		0904		G		Water																																						
JCW-MW-18006		10/2/24		1145		G		Water																																						
MW-50		10/1/24		0804		G		Water																																						
MW-51		" "		1215		G		Water																																						
MW-52		" "		1316		G		Water																																						
MW-53		" "		1350		G		Water																																						
MW-53R		" "		1435		G		Water																																						
MW-54R		10/2/24		0620		G		Water																																						
MW-55		10/2/24		0633		G		Water																																						
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)																																								
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months																																								
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:																																								
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:																																								
Relinquished by: <u>[Signature]</u>		Date/Time: 10/1/24 1400		Company: <u>TRC</u>		Received by: <u>[Signature]</u>		Date/Time: 10/3/24 1405		Company: <u>[Signature]</u>																																				
Relinquished by: <u>[Signature]</u>		Date/Time: 10/3/24 1500		Company: <u>DATA</u>		Received by: <u>[Signature]</u>		Date/Time: 10-4-24 800		Company: <u>EC</u>																																				
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:																																				
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:																																										



Chain of Custody Record



Client Information				Sampler: <u>Javier Jasso</u>		Lab PM: Brooks, Kris M		Carrier Tracking No(s):		COC No: 240-124391-29048.2			
Client Contact: Jacob Krenz				Phone: <u>734 904 3310</u>		E-Mail: Kris.Brooks@et.eurofinsus.com		State of Origin:		Page: Page 2 of 2			
Company: TRC Environmental Corporation.				PWSID:		Analysis Requested						Job #:	
Address: 1540 Eisenhower Place				Due Date Requested:		Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) 904.0 - Ra228Ra228_GFPCC 903.0 - Standard Target List						Preservation Codes: D - HNO3	
City: Ann Arbor				TAT Requested (days):								Other:	
State, Zip: MI, 48108-7080				Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No									
Phone: 734-971-7080(Tel) 734-971-9022(Fax)				PO #: 215950									
Email: JKrenz@trccompanies.com				WO #: 5533828.0000									
Project Name: Karn/Weadock CCR JCW Lanfill				Project #: 24024154									
Site:				SSOW#:									
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	904.0 - Ra228Ra228_GFPCC	903.0 - Standard Target List	Total Number of containers	Special Instructions/Note:		
						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	D	D				
OW-57ROUT		10/2/24	1047	G	Water	W	N	T	H	2			
DUP-01		10/1/24	---	G	Water	W	N	T	H	2			
EB-1		10/2/24	1300	G	Water	W	N	T	H	2			
Dup #01		10/2/24	---	G	Water	W	N	T	H	2			
MW 58		10/2/24	1300	G	Water	W	N	T	H	2			
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months							
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:							
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:					
Relinquished by:		Date/Time: 10/3/24 1420		Company: TO		Received by:		Date/Time: 10/3/24 1440		Company: EAST			
Relinquished by:		Date/Time: 10/3/24 1500		Company: PUA		Received by:		Date/Time: 10-4-24 800		Company: E C			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:									

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

Eurofins - Cleveland Sample Receipt Form/Narrative Login # _____
Barberton Facility

Client PPC Site Name _____ Cooler unpacked by [Signature]
 Cooler Received on 10-4-24 Opened on 10-4-24
 FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other _____
 Receipt After-hours Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____
 Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
 COOLANT Wet Ice Blue Ice Dry Ice Water None _____
 See Multiple Cooler Form
 1 Cooler temperature upon receipt _____ °C Corrected Cooler Temp. _____ °C
 IR GUN # 17 (CF 0.1 °C) Observed Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 Yes No
 -Were the seals on the outside of the cooler(s) signed & dated? Yes NO No NA
 -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes NO No NA
 -Were tamper/custody seals intact and uncompromised? Yes NO No NA
 3 Shippers' packing slip attached to the cooler(s)? Yes NO No NA
 4 Did custody papers accompany the sample(s)? Yes NO No NA
 5 Were the custody papers relinquished & signed in the appropriate place? Yes NO No NA
 6 Was/were the person(s) who collected the samples clearly identified on the COC? Yes NO No NA
 7 Did all bottles arrive in good condition (Unbroken)? Yes NO No NA
 8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes NO No NA
 9 For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?
 10 Were correct bottle(s) used for the test(s) indicated? Yes NO No NA
 11 Sufficient quantity received to perform indicated analyses? Yes NO No NA
 12. Are these work share samples and all listed on the COC? Yes No
 If yes, Questions 13-17 have been checked at the originating laboratory

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

13 Were all preserved sample(s) at the correct pH upon receipt? Yes NO No NA pH Strip Lot# HC4447997
 14 Were VOAs on the COC? Yes NO No NA
 15 Were air bubbles >6 mm in any VOA vials? NO Larger than this. Yes NO NA
 16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes NO
 17 Was a LL Hg or Me Hg trip blank present? Yes NO

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page Samples processed by: _____

19. SAMPLE CONDITION
 Sample(s) _____ were received after the recommended holding time had expired.
 Sample(s) _____ were received in a broken container
 Sample(s) _____ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION
 Sample(s) _____ were further preserved in the laboratory
 Time preserved. _____ Preservative(s) added/Lot number(s): _____
 VOA Sample Preservation - Date/Time VOAs Frozen. _____

Login #: _____

Eurofins - Cleveland Sample Receipt Multiple Cooler Form

Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
EC Client Box Other	IR GUN #: <u>17</u>	<u>1.4</u>	<u>1.5</u>	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	<u>1.0</u>	<u>1.1</u>	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	<u>0.8</u>	<u>0.9</u>	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None
EC Client Box Other	IR GUN #: _____	_____	_____	Wet Ice Blue Ice Dry Ice Water None

See Temperature Excursion Form



10/4/2024

Login Container Summary Report

240-212371

11/5/2024

Temperature readings

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservation</u> <u>Temp</u>	<u>Preservation</u> <u>Added</u>	<u>Preservation</u> <u>Lot Number</u>
JCW-MW-18001	240-212371-A-1	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18001	240-212371-B-1	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18004	240-212371-A-2	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18004	240-212371-B-2	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18005	240-212371-A-3	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18005	240-212371-B-3	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18006	240-212371-A-4	Plastic 1 liter - Nitric Acid	<2			
JCW-MW-18006	240-212371-B-4	Plastic 1 liter - Nitric Acid	<2			
MW-50	240-212371-A-5	Plastic 1 liter - Nitric Acid	<2			
MW-50	240-212371-B-5	Plastic 1 liter - Nitric Acid	<2			
MW-51	240-212371-A-6	Plastic 1 liter - Nitric Acid	<2			
MW-51	240-212371-B-6	Plastic 1 liter - Nitric Acid	<2			
MW-52	240-212371-A-7	Plastic 1 liter - Nitric Acid	<2			
MW-52	240-212371-B-7	Plastic 1 liter - Nitric Acid	<2			
MW-53	240-212371-A-8	Plastic 1 liter - Nitric Acid	<2			
MW-53	240-212371-B-8	Plastic 1 liter - Nitric Acid	<2			
MW-53R	240-212371-A-9	Plastic 1 liter - Nitric Acid	<2			
MW-53R	240-212371-B-9	Plastic 1 liter - Nitric Acid	<2			
MW-54R	240-212371-A-10	Plastic 1 liter - Nitric Acid	<2			
MW-54R	240-212371-B-10	Plastic 1 liter - Nitric Acid	<2			
MW-55	240-212371-A-11	Plastic 1 liter - Nitric Acid	<2			
MW-55	240-212371-B-11	Plastic 1 liter - Nitric Acid	<2			
OW-57ROUT	240-212371-A-12	Plastic 1 liter - Nitric Acid	<2			
OW-57ROUT	240-212371-B-12	Plastic 1 liter - Nitric Acid	<2			
DUP-01	240-212371-A-13	Plastic 1 liter - Nitric Acid	<2			
DUP-01	240-212371-B-13	Plastic 1 liter - Nitric Acid	<2			
EB-1	240-212371-A-14	Plastic 1 liter - Nitric Acid	<2			
EB-1	240-212371-B-14	Plastic 1 liter - Nitric Acid	<2			
DUP #02	240-212371-A-15	Plastic 1 liter - Nitric Acid	<2			
DUP #02	240-212371-B-15	Plastic 1 liter - Nitric Acid	<2			
MW-58	240-212371-A-16	Plastic 1 liter - Nitric Acid	<2			
MW-58	240-212371-B-16	Plastic 1 liter - Nitric Acid	<2			

Chain of Custody Record



Client Information (Sub Contract Lab)
 Client Contact: Brooks, Kris M
 Shipping/Receiving: Kris Brooks@et.eurofins.com
 Company: TestAmerica Laboratories, Inc.
 Address: 13715 Rider Trail North, ...
 City: Earth City
 State, Zip: MO, 63045
 Phone: 314-298-8566(Tel) 314-298-8757(Fax)
 Email: ...
 Project Name: Karn/Weadock CCR Groundwater Monitoring
 Site: ...

Sampler: Brooks, Kris M
 Lab PM: Brooks, Kris M
 Carrier Tracking No(s): ...
 State of Origin: Michigan
 Page: Page 1 of 2
 Job #: 240-212371-1
 Preservation Codes: ...

Analysis Requested
 Due Date Requested: 11/4/2024
 TAT Requested (days): ...
 PO #: ...
 WO #: ...
 Project #: 24024154
 SSOV#: ...

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Soak, On-water, etc.)	Field Filtered Sample (Yes or No)	Perform MSMSD (Yes or No)	903.0/PreSep STD Standard Target List	904.0/PreSep STD Standard Target List	Ra2ReRa28_GFP	Total Number of Containers	Special Instructions/Note:
JCW-MW-18001 (240-212371-1)	10/1/24	06:35 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
JCW-MW-18004 (240-212371-2)	10/2/24	07:15 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
JCW-MW-18005 (240-212371-3)	10/2/24	09:54 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
JCW-MW-18006 (240-212371-4)	10/2/24	11:45 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-50 (240-212371-5)	10/1/24	08:04 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-51 (240-212371-6)	10/1/24	12:15 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-52 (240-212371-7)	10/1/24	13:10 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-53 (240-212371-8)	10/1/24	13:50 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-53R (240-212371-9)	10/1/24	14:35 Eastern	G	Water	X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification
 Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) _____
 Empty Kit Relinquished by: _____ Date: _____
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____
 Custody Seals Intact: _____ Custody Seal No.: _____
 Δ Yes Δ No

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months
 Special Instructions/QC Requirements: _____
 Method of Shipment: _____
 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: _____
 Received by: _____ Date/Time: _____
 Cooler Temperature(s) °C and Other Remarks: _____

Chain of Custody Record

Client Information (Sub Contract Lab)			Sampler: Brooks, Kris M		Carrier Tracking No(s): 240-191635.2							
Client Contact: Shipping/Receiving			E-Mail: Kris.Brooks@et.eurofins.com		Page: Page 2 of 2							
Company: TestAmerica Laboratories, Inc.			Accreditations Required (See note):		Job #: 240-212371-1							
Address: 13715 Rider Trail North,			Due Date Requested: 11/4/2024		Preservation Codes:							
City: Earth City			TAT Requested (days):									
State: MO												
Zip: 63045												
Phone: 314-298-8566(Tel) 314-298-8757(Fax)												
Email:												
Project Name: Karn/Waadock CCR Groundwater Monitoring												
Site: 24024154												
SSOW#:												
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (G=Comp, G=grab)	Matrix (Water, Sewage, On-site, etc.)	Preservation Code:	Field Filtered Sample (Yes or No)	Form MS/MSD (Yes or No)	903.0/PreSep STD Standard Target List	904.0/PreSep STD Standard Target List	Ra226Ra228 GFC	Total Number of Containers	Special Instructions/Note:
MW-54R (240-212371-10)	10/2/24	06:20 Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-55 (240-212371-11)	10/2/24	06:33 Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
OW-57ROUT (240-212371-12)	10/2/24	10:47 Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
DUP-01 (240-212371-13)	10/1/24	Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
EB-1 (240-212371-14)	10/2/24	13:30 Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
DUP #02 (240-212371-15)	10/2/24	Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L
MW-58 (240-212371-16)	10/2/24	13:08 Eastern	G	Water		X	X	X	X		2	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification

Unconfirmed
 Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Empty Kit Relinquished by: _____ Date: _____ Time: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____
 Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seal No.: _____
 Custody Seals Intact: Yes No
 Cooler Temperature(s) °C and Other Remarks: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Special Instructions/QC Requirements: _____

Received by: _____ Date/Time: _____ Company: _____
 Received by: _____ Date/Time: _____ Company: _____
 Received by: _____ Date/Time: _____ Company: _____



Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-212371-1

Login Number: 212371

List Number: 2

Creator: Forrest, Cheyenne L

List Source: Eurofins St. Louis

List Creation: 10/07/24 12:24 PM

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



Appendix F Field Records



PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance
PROJECT NUMBER:	553828.0000.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	9/30/24 TO 10/3/24
PURPOSE OF FIELDWORK:	Fourth Quarter 2024 Groundwater Sampling
WORK PERFORMED BY:	Javier Jasso

Javier Jasso 10-24-24
SIGNED DATE

Darby Litz 10-24-24
CHECKED BY DATE



GENERAL NOTES

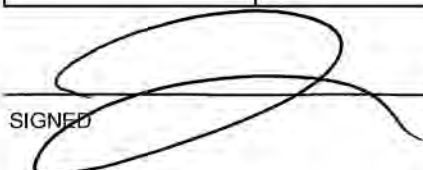
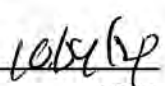
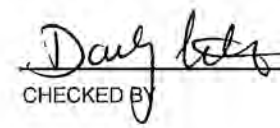
PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: <u>9-30-24</u>	TIME ARRIVED: <u>615</u>
PROJECT NUMBER: 553828.0000.0000	AUTHOR: JJ	TIME LEFT: <u>1330</u>

WEATHER		
TEMPERATURE: <u>64</u> °F	WIND: <u>S-10</u> MPH	VISIBILITY: <u>clear</u>
WORK / SAMPLING PERFORMED		
<u>Collect site wide water levels</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED _____ DATE 10-24-24
 CHECKED BY _____ DATE 10-24-24



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 10/1/24	TIME ARRIVED: 0535
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: 1445


WEATHER		
TEMPERATURE: 67 °F	WIND: 10-20 MPH	VISIBILITY: over cast Part

WORK / SAMPLING PERFORMED
Wells Sampled = Jew mw-18001, ms & msd, Job DW-18001 mw-50, Dup #01, LH-103R, Dup ms & msd, 2H 10M mw 51 mw 52, mw 53, mw 53R

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED  DATE 10/1/24

CHECKED BY  DATE 10-8-24



GENERAL NOTES

Weadock LF

PROJECT NAME: CEC King ^(DL) BAPA: 2024 GW Com	DATE: 10-1-24	TIME ARRIVED: 0730
PROJECT NUMBER: 553814.0001.0000 553826 0000	AUTHOR: JJ ^(JK) AW	TIME LEFT: 1545

WEATHER		
TEMPERATURE: <u>75</u> °F	WIND: <u>0-10</u> MPH	VISIBILITY: <u>Clear/light rain</u>
WORK / SAMPLING PERFORMED		
<i>Helped Javier collect LL H₂ samples @ Weadock LF</i>		
<i>Collected ^{Karn (DL)} perimeter Dike samples MW-16, MW-14, MW-12</i>		
<i>Shipped samples</i>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN
<i>/</i>	<i>/</i>

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM - Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	Purge to Ground

DL King 10-16-24
 SIGNED DATE

Darby Litz 10-17-24
 CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 10/1/24	TIME ARRIVED: 0759
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AK JK JJ AK	TIME LEFT: @ 1530

WEATHER		
TEMPERATURE: <u>64</u> °F	WIND: <u>6</u> MPH	VISIBILITY: <u>cloudy</u>
WORK / SAMPLING PERFORMED		
<u>Training on clean-hands-dirty-hands w/ Jake & Javier</u>		

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

[Signature] 10/8/24
SIGNED DATE

[Signature] 10-8-24
CHECKED BY DATE



GENERAL NOTES

PROJECT NAME: CEC Weadock LF; 2024 GW Com	DATE: 10/2/24	TIME ARRIVED: 0520
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: 1600

WEATHER		
TEMPERATURE: 46 °F	WIND: 15 MPH	VISIBILITY: overcast

WORK / SAMPLING PERFORMED
Wells SAM mu-54R, jaw mu-18004, MW 55, Dup #01 jaw mu-18005, mu 57Rout, jaw mu 18006, jaw-0w-18006 MW 58, FB #01, QB #01, mu-15008, mu-15019

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground


 SIGNED _____ DATE 10/4/24

 CHECKED BY _____ DATE 10-8-24



GENERAL NOTES

PROJECT NAME: CEC Weadock LF: 2024 GW Com	DATE: 10/3/24	TIME ARRIVED: 0530
PROJECT NUMBER: 553828.0000.0000	AUTHOR: AW JK JJ	TIME LEFT: 0730


WEATHER		
TEMPERATURE: 51 °F	WIND: 20 MPH	VISIBILITY: Overcast

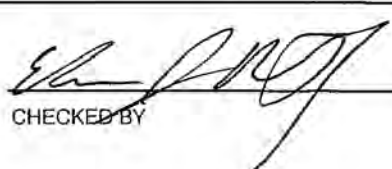
WORK / SAMPLING PERFORMED
Wells Sample MW-15004, MW-15002, FA,

PROBLEMS ENCOUNTERED	CORRECTIVE ACTION TAKEN

COMMUNICATION		
NAME	REPRESENTING	SUBJECT / COMMENTS
Darby Litz	TRC	PM/Updates
Jon Gaeth	Consumers	Site Contact

INVESTIGATION DERIVED WASTE SUMMARY		
WASTE MATRIX	QUANTITY	COMMENTS
Groundwater	NM	To Ground

SIGNED  DATE 10/4/24

CHECKED BY  DATE 10-8-24



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Weadock LF; 2023 GW Co	SAMPLER NAME:	Javier Jasso
PROJECT NO.:	514403.0000.0000		

WATER LEVEL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PRODUCT LEVEL MEASUREMENTS COLLECTED WITH:

NA	NA
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

DEPTH TO BOTTOM OF WELL MEASUREMENTS COLLECTED WITH:

HERON DIPPER-T	TRC A2
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)

PURGING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

SAMPLING METHOD

PERISTALTIC PUMP	TRC A2
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)

GEOTECH DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FILTRATION DEVICE	FILTER TYPE AND SIZE

DEDICATED POLY TUBING	<input checked="" type="checkbox"/> LOW-FLOW SAMPLING EVENT
TUBING TYPE	

PURGE WATER DISPOSAL METHOD

GROUND
 DRUM
 POTW
 POLYTANK
 OTHER _____

DECONTAMINATION AND FIELD BLANK WATER SOURCE

STORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DI WATER SOURCE
 _____ SIGNED	 _____ CHECKED BY
10/4/24 _____ DATE	10-8-24 _____ DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: D20 DSS	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: AN	DATE: 10/14/24

PH CALIBRATION CHECK

pH 7 (LOT #): 3650918 (EXP. DATE): 10/25	pH 4 / 10 (LOT #): 4601317 (EXP. DATE): 4/24	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
700 / 700	400 / 400	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): 46 E0789 (EXP. DATE): 5/15	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
1300 / 1300	23	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): 235100312 (EXP. DATE): 9/28	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
223 / 223	23	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
8.35 / 8.35	23	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): A3097 (EXP. DATE): 4/25	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
0 / 0	/	<input checked="" type="checkbox"/> WITHIN RANGE	0500
100 / 100	/	<input checked="" type="checkbox"/> WITHIN RANGE	0500
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED DATE 10/14/24

CHECKED BY DATE 10-8-24



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	MODEL: DredSS	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: Ad	DATE: 10/2/24

PH CALIBRATION CHECK

pH 7		pH 4 / 10		CAL. RANGE	TIME
(LOT #): 3650918	(EXP. DATE): 10/15	(LOT #): 4001317	(EXP. DATE): 4/16		
POST-CAL. READING / STANDARD	700 / 700	POST-CAL. READING / STANDARD	400 / 400	<input checked="" type="checkbox"/> WITHIN RANGE	0500
	/		/	<input type="checkbox"/> WITHIN RANGE	
	/		/	<input type="checkbox"/> WITHIN RANGE	
	/		/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 4020784	(°CELSIUS)		
(EXP. DATE): 5/15			
POST-CAL. READING / STANDARD	1360 / 1360	23	0500
	/		
	/		
	/		

ORP CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
(LOT #): 2210031	(°CELSIUS)		
(EXP. DATE): 9/18			
POST-CAL. READING / STANDARD	223 / 223	23	0500
	/		
	/		
	/		

D.O. CALIBRATION CHECK

CAL. READING	TEMPERATURE	CAL. RANGE	TIME
	(°CELSIUS)		
POST-CAL. READING / SATURATED AIR	8.35 / 8.35	23	0500
	/		
	/		
	/		

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): A3097	(LOT #):		
(EXP. DATE): 4/15	(EXP. DATE):		
POST-CAL. READING / STANDARD	0 / 0		0500
	/		
	14 / 100		
	/		

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED

[Signature] 10/4/24
DATE

CHECKED BY

[Signature] 10-8-24
DATE



WATER QUALITY METER CALIBRATION LOG

PROJECT NAME: CEC Weadock LF, 2024 GW Compliance	MODEL: <i>Pro DSS</i>	SAMPLER: JJ
PROJECT NO.: 553828.0000.0000	SERIAL #: <i>AW1</i>	DATE: <i>10/3/24</i>

PH CALIBRATION CHECK

PH 7 (LOT #): <i>3650918</i> (EXP. DATE): <i>10/15</i>	PH 4 / 10 (LOT #): <i>4401317</i> (EXP. DATE): <i>4/10</i>	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<i>700 / 700</i>	<i>400 / 400</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

SPECIFIC CONDUCTIVITY CALIBRATION CHECK

CAL. READING (LOT #): <i>46E0784</i> (EXP. DATE): <i>5/15</i>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<i>1360 / 1360</i>	<i>23</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

ORP CALIBRATION CHECK

CAL. READING (LOT #): <i>232093119</i> (EXP. DATE): <i>9/10</i>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD			
<i>223 / 223</i>	<i>23</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

D.O. CALIBRATION CHECK

CAL. READING (LOT #): <i>835</i> (EXP. DATE): <i>8-31</i>	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / SATURATED AIR			
<i>835 / 831</i>	<i>23</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	
/		<input type="checkbox"/> WITHIN RANGE	

TURBIDITY CALIBRATION CHECK

CALIBRATION READING (NTU)		CAL. RANGE	TIME
(LOT #): <i>117097</i> (EXP. DATE): <i>4/15</i>	(LOT #): (EXP. DATE):		
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD		
<i>100 / 100</i>	<i>100</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
<i>100 / 100</i>	<i>100</i>	<input checked="" type="checkbox"/> WITHIN RANGE	<i>0500</i>
/	/	<input type="checkbox"/> WITHIN RANGE	
/	/	<input type="checkbox"/> WITHIN RANGE	

COMMENTS

<input type="checkbox"/> AUTOCAL SOLUTION	<input checked="" type="checkbox"/> STANDARD SOLUTION (S)
(LOT #):	LIST LOT NUMBERS AND EXPIRATION DATES UNDER CALIBRATION CHECK
(EXP. DATE):	
CALIBRATED PARAMETERS	CALIBRATION RANGES ⁽¹⁾
<input type="checkbox"/> pH	pH: +/- 0.2 S.U.
<input type="checkbox"/> COND	COND: +/- 1% OF CAL. STANDARD
<input type="checkbox"/> ORP	ORP: +/- 25 mV
<input type="checkbox"/> D.O.	D.O.: VARIES
<input type="checkbox"/> TURB	TURB: +/- 5% OF CAL. STANDARD
<input type="checkbox"/>	
<input type="checkbox"/>	
<input type="checkbox"/>	⁽¹⁾ CALIBRATION RANGES ARE SPECIFIC TO THE MODEL OF THE WATER QUALITY METER

NOTES

PROBLEMS ENCOUNTERED

CORRECTIVE ACTIONS

SIGNED *[Signature]* *10/4/24* DATE

CHECKED BY *[Signature]* *10-8-24* DATE

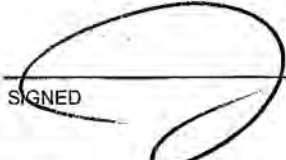


WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 9/30/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	0635	TOC	16.58	23.75	NA	NM
JCW-MW-18004	0714	TOC	12.65	14.72	NA	NM
JCW-MW-18005	0744	TOC	10.33	14.24	NA	NM
JCW-MW-18006	0804	TOC	15.50	23.68	NA	NM
JCW-OW-18001	0637	TOC	8.53	20.25	NA	NM
JCW-OW-18002	0642	TOC	18.48	19.41	NA	NM
JCW-OW-18003	0654	TOC	10.10	18.62	NA	NM
JCW-OW-18004	0717	TOC	7.73	14.85	NA	NM
JCW-OW-18006	0808	TOC	10.18	23.45	NA	NM
LH-103R	0735	TOC	21.50	33.50	NA	NM
LH-104	0725	TOC	9.64	14.00	NA	NM
JCW-MW-20	0745	TOC	8.50	14.00	NA	NM
MW-50	0641	TOC	13.45	19.40	NA	NM
MW-51	0644	TOC	14.30	20.00	NA	NM
MW-52	0653	TOC	14.94	19.74	NA	NM
MW-53	0700	TOC	13.76	18.18	NA	NM
MW-53R	0704	TOC	14.31	18.80	NA	NM
MW-54R	0710	TOC	14.05	17.22	NA	NM
MW-55	0728	TOC	13.92	16.38	NA	NM
MW-58	0827	TOC	6.00	18.28	NA	NM
OW-51	0647	TOC	9.05	17.05	NA	NM
OW-53	0701	TOC	9.95	18.00	NA	NM
OW-54	0713	TOC	7.77	16.48	NA	NM
OW-55	0730	TOC	7.93	18.42	NA	NM
OW-56	0748	TOC	7.30	19.27	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  DATE 10/4/24

CHECKED  DATE 10-8-24

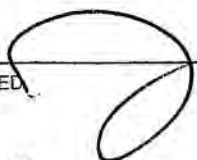


WATER LEVEL DATA

PROJECT NAME: CEC Weadock LF: 2024 GW Compliance	DATE: 9/30/24
PROJECT NUMBER: 553828.0000.0000	AUTHOR: Javier Jasso

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-56R	0750	TOC	7.36	20.22	NA	NM
OW-57 IN	0757	TOC	6.03	19.60	NA	NM
OW-57R IN	0750	TOC	6.18	20.18	NA	NM
OW-57 OUT	0755	TOC	10.57	19.48	NA	NM
OW-57R OUT	0754	TOC	9.58	20.20	NA	NM
JCW-MW-15007		TOC			NA	NM
JCW-MW-15009		TOC			NA	NM
JCW-MW-15010		TOC			NA	NM
JCW-MW-15028		TOC			NA	NM
OW-61	0630	↓	10.58	37.07	↓	↓
JCW-MW-15033	0701	↓	14.95	DUM	↓	↓
JCW-MW-15036	0707	↓	14.75	DUM	↓	↓
MW-16B	0712	↓	14.18	19.87	↓	↓
JCW-MW-15021	0721	↓	14.95	DUM	↓	↓
MW-19	0802	↓	16.63	20.83	↓	↓

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  DATE 10/4/24

CHECKED  DATE 10-8-24



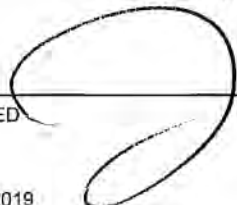
WATER LEVEL DATA

Weadock DL Compliance DL

PROJECT NAME: CEC-WEADOCK-BAP LF 2023 GW COMPLIANCE	DATE: 01/30/24
PROJECT NUMBER: 514403.0001.0000	AUTHOR: J JASSO

WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW=MW 15007	0600	Joc	5.73	8.95	NA	NM
JCW-MW-15009	0616	↓	9.79	13.00	↓	↓
JCW-MW-15010	0624		17.13	19.57		
JCW-MW-15028	0612		9.58	25.16		
MW-15002	0638		8.54	14.60		
MW-15008	0820		5.30	17.40		
MW-15016	0843		5.70	8.10		
MW-15019	0833		6.38	16.67		
JCW-MW-15003	0617		6.60	DNM		
MW-106B	0613		9.58	41.16		
MW15020	0627		5.76	17.36		
MW-114B	0829		5.68	41.15		
MW-15024	0831		6.53	17.17		
MW-15018	0835		7.15	9.94		
Yw.mw-15001	0839	✓	8.00	DNM	↓	↓
		-				

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED  DATE 10/4/24

CHECKED  DATE 10-8-24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/12/24	BY: E/R DATE: 10-8-24

SAMPLE ID: <u>WW MW 1800'</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0540</u>	DATE: <u>10/12/24</u>	SAMPLE	TIME: <u>0625</u>	DATE: <u>10/12/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.00</u> SU CONDUCTIVITY: <u>3508</u> umhos/cm		ORP: <u>-218</u> mV DO: <u>1.0</u> mg/L		
DEPTH TO WATER: <u>16.56</u> T/ PVC	TURBIDITY: <u>5</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>325</u> T/ PVC	TEMPERATURE: <u>15.3</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: <u>9</u> LITERS <input type="checkbox"/> GALLONS	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE <input checked="" type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: <u>grayish</u> ODOR: <u>none</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0540	200	4.4	1703	223	8.7	370	17.9	1733	INITIAL
0545		6.85	3613	-174	1.78	300	15.4	1746	1
0550		6.90	3575	-184	1.50	135	15.3	1740	2
0555		6.95	3562	-200	1.23	67	15.3	1746	3
0600		6.97	3571	-203	1.16	31	15.3	1740	4
0605		6.97	3564	-205	1.12	90	15.3	1740	5
0610		7.00	3553	-215	1.0	8.0	15.3	1740	6
0615		7.00	3531	-217.4	1.0	5	15.3	1740	7
0620		7.00	3510	-218	1.0	5	15.3	1740	8
0625		7.00	3508	-218	1.0	5	15.3	1740	9

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
3	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
3	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Water</u>	DATE SHIPPED: <u>10/11/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/9/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/16/24	BY: EJC DATE: 10-2-24

SAMPLE ID: <u>3CW-02-18001</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0654</u>	DATE: <u>10/1/24</u>	SAMPLE	TIME: <u>0724</u>	DATE: <u>10/1/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.00</u> SU CONDUCTIVITY: <u>1571</u> umhos/cm		ORP: <u>-196</u> mV DO: <u>1.10</u> mg/L		
DEPTH TO WATER: <u>853</u> T/ PVC	TURBIDITY: <u>495</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>2075</u> T/ PVC	TEMPERATURE: <u>15.8</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: <u>6</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COLOR: <u>clear</u> ODOR: <u>none</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0654	200	7.38	1587	-171	8.5	30	16.7	858	INITIAL
0659		7.08	1564	-183	1.86	7.60	16.4	8.67	1
0704		7.00	1606	-190	1.34	5.8	16.2	8.67	2
0709		7.00	1615	-192	1.20	5.8	16.0	8.67	3
0714		7.00	1590	-195.9	1.10	5.0	15.9	8.67	4
0719		7.00	1574	-196	1.10	4.95	15.8	8.67	5
0724		7.00	1571	-196	1.10	4.95	15.8	8.67	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
2	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fiber</u>	DATE SHIPPED: <u>10/1/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: <u>10/14/24</u>	BY: <u>ER</u> DATE: <u>10-8-24</u>

SAMPLE ID: <u>MW 50</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0739</u>	DATE: <u>10/14/24</u>	SAMPLE	TIME: <u>0804</u>	DATE: <u>10/14/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.62</u> SU CONDUCTIVITY: <u>1479</u> umhos/cm		ORP: <u>-205</u> mV DO: <u>1.19</u> mg/L		
DEPTH TO WATER: <u>13.45</u> T/ PVC	TURBIDITY: <u>3.96</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>19.46</u> T/ PVC	TEMPERATURE: <u>15.4</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: <u>5</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- <u>#01</u>		
COLOR: <u>clear</u> ODOR: <u>none</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
<u>0739</u>	<u>20P</u>	<u>7.57</u>	<u>1541</u>	<u>-160</u>	<u>10.6</u>	<u>1.8</u>	<u>16.1</u>	<u>13.95</u>	INITIAL
<u>0744</u>		<u>7.60</u>	<u>1531</u>	<u>-186</u>	<u>1.96</u>	<u>5.0</u>	<u>15.4</u>	<u>14.0</u>	<u>1</u>
<u>0749</u>		<u>7.65</u>	<u>1491</u>	<u>-200</u>	<u>1.35</u>	<u>4.0</u>	<u>15.3</u>	<u>14.0</u>	<u>2</u>
<u>0754</u>		<u>7.62</u>	<u>1480</u>	<u>-205</u>	<u>1.20</u>	<u>3.89</u>	<u>15.4</u>	<u>14.0</u>	<u>3</u>
<u>0759</u>		<u>7.62</u>	<u>1481</u>	<u>-205</u>	<u>1.19</u>	<u>3.96</u>	<u>15.4</u>	<u>14.0</u>	<u>4</u>
<u>0804</u>		<u>7.63</u>	<u>1479</u>	<u>-205</u>	<u>1.19</u>	<u>3.96</u>	<u>15.4</u>	<u>14.0</u>	<u>5</u>

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
<u>2</u>	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>2</u>	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	<u>4</u>	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
<u>2</u>	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/14/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 10/11/24
	BY: EJC	DATE: 10-8-24

SAMPLE ID: LH-103R	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0853	DATE: 10/11/24	SAMPLE	TIME: 0937	DATE: 10/11/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.55 SU		CONDUCTIVITY: 4051 umhos/cm		
DEPTH TO WATER: 21.50 T/ PVC	ORP: -254 mV		DO: 1.10 mg/L		
DEPTH TO BOTTOM: 33.14 PVC	TURBIDITY: 4.8 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 14.8 °C		FERROUS Fe _____ mg/L		
VOLUME REMOVED: 3.5 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear		ODOR: none		
COLOR: blackish	ODOR: yes		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: MS/MSD 44 Hg Dup LH-103R Dup			
COMMENTS: Extra volume for 44 Hg 44 Hg to be lab filtered					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0850	100	7.60	3330	-206	8.20	250	16.6	21.48	INITIAL
0857		7.58	3954	-238	1.85	20	15.4	21.68	0
0902		7.52	4058	-242	1.41	6.2	14.7	21.70	1
0907		7.52	4053	-245	1.28	5.3	14.7	21.70	1.5
0912		7.52	4052	-248	1.20	4.6	14.8	21.70	2
0917		7.52	4051	-254	1.10	4.8	14.8	21.70	2.5
0922		7.52	4051	-254	1.10	4.8	14.8	21.70	3
0927		7.52	4051	-254	1.10	4.8	14.6	21.70	3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	4	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	1	40 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
1	125 mL	PLASTIC	VOA	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

→ lab filtered

SHIPPING METHOD: Fedex	DATE SHIPPED: 10/11/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/1/24	BY: ER DATE: 10-8-24

SAMPLE ID: <u>44-104</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1037</u>	DATE: <u>10/1/24</u>	SAMPLE	TIME: <u>1107</u>	DATE: <u>10/1/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.63</u>	SU CONDUCTIVITY: <u>1590</u> umhos/cm	ORP: <u>-220</u> mV	DO: <u>1.62</u> mg/L	
DEPTH TO WATER: <u>9.64</u> T/ PVC	TURBIDITY: <u>4.95</u> NTU	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
DEPTH TO BOTTOM: <u>14.02</u> T/ PVC	TEMPERATURE: <u>16.9</u> °C	FERROUS Fe _____ mg/L			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: _____			
VOLUME REMOVED <u>3</u> LITERS <input type="checkbox"/> GALLONS	COLOR: <u>clear</u>	ODOR: <u>none</u>			
FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	FILTRATE COLOR: _____	FILTRATE ODOR: _____			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP	<u>DL 44-104 Dup</u>			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER	COMMENTS: <u>LL HG</u>				

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1037	100	7.87	1871	-240	8.87	27	19.0	9.70	INITIAL
1042		7.59	1781	-2226	205	7.81	16.3	10.20	.5
1047		7.64	1773	-2224	1.64	7.30	16.4	10.20	1
1052		7.73	1595	-224	1.52	5.97	16.4	10.25	1.1
1057		7.82	1556	-220	1.63	5.8	16.7	10.25	2
1103		7.84	1572	-220	1.63	4.95	16.9	10.25	2.5
1107		7.83	1594	-220	1.62	4.95	16.9	10.25	3.
1112									3.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	2	40 mL	VOA	E	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	<u>DLA</u>	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Kelco</u>	DATE SHIPPED: <u>10/1/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/11/24	BY: ELL DATE: 10-8-24

SAMPLE ID: MW-51	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1145	DATE: 10/11/24	SAMPLE	TIME: 1215	DATE: 10/11/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 7.65	SU CONDUCTIVITY: 1328	umhos/cm
			ORP: -228	mV DO: 1.10	mg/L
DEPTH TO WATER: 14.30 T/ PVC			TURBIDITY: 4.65 NTU		
DEPTH TO BOTTOM: 20.0 T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: 16.4 °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: 6 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: Clear ODOR: none		
COLOR: Cloudy ODOR: none			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1145	200	7.94	1393	-220	9.60	80	19.4	14.60	INITIAL
1152	}	7.73	1355	-215	2.13	34	16.6	14.70	1
1155		7.68	1343	-217	1.53	9.0	16.6	14.70	2
1200		7.67	1334	-225	1.20	5.0	16.7	14.70	3
1205		7.65	1328	-228	1.10	4.70	16.5	14.70	4
1210		7.65	1328	-228	1.10	4.65	16.4	14.70	5
1215		7.65	1328	-228	1.10	4.65	16.4	14.70	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fedex	DATE SHIPPED: 10/11/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/11/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/1/24	BY: CK DATE: 10-8-24

SAMPLE ID: MW-53	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1240	DATE: 10/1/24	SAMPLE	TIME: 1310	DATE: 10/1/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.13 SU CONDUCTIVITY: 1743 umhos/cm		ORP: -193 mV DO: 1.20 mg/L		
DEPTH TO WATER: 14.94 T/ PVC	TURBIDITY: 4.95 NTU		<input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: 19.70 T/ PVC	TEMPERATURE: 15.9 °C FERROUS Fe _____ mg/L		COLOR: Clear ODOR: none		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: 6 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: Cloudy	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1240	200	7.38	1695	-196	8.20	4.3	18.5	1545	INITIAL
1245		7.18	1753	-191	2.40	7.20	16.1	1560	1
1250		7.14	1743	-190	1.37	5.3	15.8	1560	2
1255		7.14	1744	-194	1.20	4.95	16.0	1560	3
1300		7.13	1743	-193	1.20	5.0	15.9	1560	4
1305		7.13	1743	-193	1.20	4.95	16.0	1560	5
1310		7.13	1743	-193	1.20	4.95	15.9	1560	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fiber	DATE SHIPPED: 10-1-2024	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/4/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 10/1/24

SAMPLE ID: MW 53	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> VVW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1330	DATE: 10/1/24	SAMPLE	TIME: 1350	DATE: 10/1/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.60 SU CONDUCTIVITY: 955 umhos/cm		ORP: -234 mV DO: 1.10 mg/L		
DEPTH TO WATER: 1376 T/ PVC	TURBIDITY: 4.5 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: 18.14 T/ PVC	TEMPERATURE: 15.9 °C FERROUS Fe		mg/L		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: clear		ODOR: none		
VOLUME REMOVED: 4 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: FILTRATE ODOR:		
COLOR: clear	ODOR: none		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1330	200	7.60	1151	-101	10.0	24	16.9	14.11	INITIAL
1335		7.70	1047	-210	1.86	7.75	15.8	14.22	1
1340		7.80	951	-235.9	1.80	4.5	15.9	14.33	2
1345		7.80	993	-234	1.10	4.4	15.9	14.33	3
1350		7.80	955	-234	1.10	4.5	15.9	14.33	4
									5
									6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F -							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Feder	DATE SHIPPED: 10/1/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/1/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 10/1/24	BY: ER	DATE: 10-8-24
SAMPLE ID: MW 532		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1405	DATE: 10/1/24	SAMPLE	TIME: 1435	DATE: 10/1/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.28 SU CONDUCTIVITY: 1365 umhos/cm			
		ORP: -210 mV DO: 1.10 mg/L			
DEPTH TO WATER: 143 T/ PVC		TURBIDITY: 6 NTU			
DEPTH TO BOTTOM: 182 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 15.4 °C FERROUS Fe _____ mg/L			
VOLUME REMOVED: 4 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear ODOR: none			
COLOR: Tanish ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
TURBIDITY		FILTRATE COLOR: _____ FILTRATE ODOR: _____			
<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1405	200	7.53	1714	-194	7.43	800	16.8	14.6	INITIAL
1410		7.31	1471	-210	1.66	23	15.4	14.70	1
1415		7.30	1436	-212	1.30	30	15.5	14.70	2
1420		7.29	1409	-215	1.20	8.0	15.4	14.70	3
1425		7.28	1381	-210	1.10	6	15.4	14.70	4
1430		7.28	1371	-210	1.10	6	15.4	14.70	5
1435		7.28	1365	-210	1.10	6	15.4	14.70	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fedex	DATE SHIPPED: 10/1/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/1/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/16/24	BY: ER DATE: 10-8-24

SAMPLE ID: MW 54R	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0547	DATE: 10/16/24	SAMPLE	TIME: 0622	DATE: 10/16/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.00		SU CONDUCTIVITY: 1267		umhos/cm
DEPTH TO WATER: 1405 T/ PVC	ORP: -171 mV		DO: 1.29		mg/L
DEPTH TO BOTTOM: 1725 T/ PVC	TURBIDITY: 5.8 NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TEMPERATURE: 13.9 °C		FERROUS Fe _____ mg/L		
VOLUME REMOVED: 7 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	COLOR: Clear		ODOR: none		
COLOR: grayish	ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0547	200	4.0	1358	227	8.35	250	14.1	1391	INITIAL
0551		6.85	1254	-108	2.0	24	14.1	1405	1
0557		6.95	1253	-154	1.64	2.0	14.2	1405	2
0603		6.95	1253	-160	1.60	6.85	14.2	1405	3
0607		6.95	1254	-170	1.30	6.30	14.0	1405	4
0612		7.00	1260	-175	1.30	5.8	13.9	1405	5
0617		7.00	1266	-175	1.29	5.8	13.9	1405	6
0622		7.00	1267	-175	1.29	5.8	13.9	1405	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/10/24	BY: ER DATE: 10-8-24

SAMPLE ID: <u>JCW-MC 18004</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>06:10</u>	DATE: <u>10/2/24</u>	SAMPLE	TIME: <u>07:15</u>	DATE: <u>10/2/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.02</u> SU CONDUCTIVITY: <u>1385</u> umhos/cm		ORP: <u>-115</u> mV DO: <u>6.70</u> mg/L		
DEPTH TO WATER: <u>1265</u> T/ PVC	TURBIDITY: <u>5.0</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>1477</u> T/ PVC	TEMPERATURE: <u>13.5</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: <u>2.5</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COLOR: <u>clear</u> ODOR: <u>none</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
06:10	100	7.43	679	-106	10.0	21	12.9	1315	INITIAL
06:55		7.00	1413	-108	6.56	12	13.7	1320	0.1
07:00		7.00	1400	-115	6.70	7.0	14.1	1375	1
07:05		7.02	1389	-115	6.70	5.0	13.5	1376	1.1
07:10		7.02	1387	-115	6.70	5.0	13.5	1377	2
07:15		7.02	1385	-115	6.70	5.0	13.5	1378	2.5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/2024</u>	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/14/24	BY: CR DATE: 10-8-24

SAMPLE ID: Saw-001 1800C	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 1205	DATE: 10/12/24	SAMPLE	TIME: 1225	DATE: 10/12/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 9.35 SU CONDUCTIVITY: 735 umhos/cm		ORP: -260 mV DO: 1.29 mg/L		
DEPTH TO WATER: 10.16 T/ PVC		TURBIDITY: 4.8 NTU			
DEPTH TO BOTTOM: 23.41 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 13.6 °C FERROUS Fe _____ mg/L			
VOLUME REMOVED: 4 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Clear		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhbs/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1205	200	8.80	756	-198	10.0	9.0	15.9	10.24	INITIAL
1210		9.20	773	-246	2.16	5.0	13.6	10.50	1
1215		9.35	755	-260	1.30	4.8	13.6	10.70	2
1220		9.35	729	-260	1.30	4.8	13.6	10.70	3
1225		9.35	735	-260	1.29	4.8	13.6	10.70	4
									5
									6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
2	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>below</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/14/24	BY: ER DATE: 10-8-24

SAMPLE ID: MW-55	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: 0758	DATE: 10/12/24	SAMPLE	TIME: 0833	DATE: 10/12/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: 7.24	SU CONDUCTIVITY: 1186 umhos/cm	ORP: -180 mV	DO: 1.10 mg/L	
DEPTH TO WATER: 13.92 T/ PVC	TURBIDITY: 6.91 NTU		TEMPERATURE: 15.6 °C FERROUS Fe _____ mg/L		
DEPTH TO BOTTOM: 16.38 T/ PVC	<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		COLOR: Clear ODOR: none		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: 7 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	<input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- #03		
COLOR: Cloudy	ODOR: none		DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0758	200	7.24	1164	-128	1.0	8.0	13.8	14.10	INITIAL
0803		7.06	1171	-158	2.2	2.2	14.6	14.15	1
0808		7.10	1172	-100	1.56	1.6	15.1	14.15	2
0813		7.21	1176	-177	1.33	1.3	15.4	14.15	3
0816		7.25	1178	-180	1.20	9.0	15.5	14.15	4
0823		7.24	1182	-180	1.10	7.0	15.6	14.15	5
0828		7.24	1185	-180	1.10	6.95	15.5	14.15	6
0833		7.24	1186	-180	1.10	6.95	15.6	14.15	7

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

No radium

SHIPPING METHOD: Fedex	DATE SHIPPED: 10/2/24	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: 10/14/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/16/24	BY: ER DATE: 10-18-24

SAMPLE ID: <u>CEC-MW-18005</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0924</u>	DATE: <u>10/12/24</u>	SAMPLE	TIME: <u>0954</u>	DATE: <u>10/12/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>7.16</u> SU CONDUCTIVITY: <u>1383</u> umhos/cm		ORP: <u>-178</u> mV DO: <u>6.25</u> mg/L		
DEPTH TO WATER: <u>16.33</u> T/ PVC	TURBIDITY: <u>7.98</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>16.26</u> T/ PVC	TEMPERATURE: <u>15.1</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input type="checkbox"/> NO		TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		
VOLUME REMOVED: <u>3</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE COLOR: _____ FILTRATE ODOR: _____		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: <u>Brown</u> ODOR: <u>None</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0924	100	7.43	1354	-150	10	800	15.0	1045	INITIAL
0929		7.17	1315	-152	1.93	88	14.8	1120	5
0934		7.15	1294	-163	1.46	17	15.0	1140	1
0939		7.15	1291	-171	1.28	14	15.3	1140	1.5
0944		7.16	1287	-178	1.25	8.0	15.5	1140	2
0949		7.14	1285	-178	1.25	7.99	15.5	1140	2.5
0954		7.16	1283	-178	1.25	7.98	15.5	1140	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 10/2/24	BY: ER	DATE: 10-8-24
SAMPLE ID: mw 572 out		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1017	DATE: 10/2/24	SAMPLE	TIME: 1047	DATE: 10/2/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.24 SU CONDUCTIVITY: 1245 umhos/cm			
		ORP: -210 mV DO: 1.15 mg/L			
DEPTH TO WATER: 9.58 T/ PVC		TURBIDITY: 4.0 NTU			
DEPTH TO BOTTOM: 20.00 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 13.1 °C FERROUS Fe _____ mg/L			
VOLUME REMOVED: 3 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: none	
COLOR: Clear		ODOR: none		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input checked="" type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1017	100	7.57	1279	-187	10.0	5.0	16.3	9.90	INITIAL
1022		7.29	1316	-194	2.30	7.5	15.0	10.96	0.5
1037		7.24	1308	-196	1.46	5.10	14.9	11.80	1
1032		7.23	1292	-200	1.29	4.92	15.1	12.58	1.5
1037		7.24	1260	-210	1.15	4.0	15.1	13.08	2
1042		7.24	1248	-210	1.15	4.0	15.1	13.58	2.5
1047		7.24	1245	-210	1.15	4.0	15.1	13.91	3

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/4/24	BY: ER DATE: 10-8-24

SAMPLE ID: <u>slw-mw-18006</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>1120</u>	DATE: <u>10/8/24</u>	SAMPLE	TIME: <u>1145</u>	DATE: <u>10/8/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.33</u> SU CONDUCTIVITY: <u>1199</u> umhos/cm		
			ORP: <u>-183</u> mV DO: <u>1.15</u> mg/L		
DEPTH TO WATER: <u>15.50</u> T/ PVC			TURBIDITY: <u>3.8</u> NTU		
DEPTH TO BOTTOM: <u>23.64</u> T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>13.4</u> °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: <u>5</u> <input checked="" type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>clear</u> ODOR: <u>non</u>		
COLOR: <u>clear</u> ODOR: <u>non</u>			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input type="checkbox"/> NONE <input checked="" type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1120	200	7.64	635	-164	10.0	3.2	13.3	15.50	INITIAL
1125		7.41	1235	-178	1.97	4.5	13.4	15.70	1
1130		7.31	1155	-185	1.50	4.3	13.3	15.70	2
1135		7.23	1187	-183	1.15	3.8	13.4	15.70	3
1140		7.23	1189	-183	1.15	3.8	13.4	15.70	4
1145		7.23	1199	-183	1.15	3.8	13.4	15.70	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Pallet</u>	DATE SHIPPED: <u>10/8/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ	DATE: 10/12/24

SAMPLE ID: <u>MW 58</u>		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER	
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER			
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER			

PURGING	TIME: <u>1238</u>	DATE: <u>10/12/24</u>	SAMPLE	TIME: <u>1308</u>	DATE: <u>10/12/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>7.46</u> SU CONDUCTIVITY: <u>2195</u> umhos/cm		
DEPTH TO WATER: <u>6.00</u> T/ PVC			ORP: <u>-190</u> mV DO: <u>1.19</u> mg/L		
DEPTH TO BOTTOM: <u>18.78</u> T/ PVC			TURBIDITY: <u>40</u> NTU		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
VOLUME REMOVED: <u>6</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>16.4</u> °C FERROUS Fe _____ mg/L		
COLOR: <u>clear</u> ODOR: <u>none</u>			COLOR: <u>clear</u> ODOR: <u>none</u>		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhbs/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1238	200	8.03	1034	-183	10.0	17.0	16.7	6.08	INITIAL
1243		7.28	2481	-183	1.79	5.0	16.3	6.10	1
1248		7.30	2404	-186	1.50	4.0	16.3	6.10	2
1253		7.40	2250	-190	1.3	4.0	16.4	6.10	3
1258		7.40	2237	-190	1.20	4.0	16.3	6.10	4
1303		7.46	2200	-190	1.19	4.0	16.4	6.10	5
1308		7.40	2195	-190	1.15	4.0	16.4	6.10	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
↑	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
|	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
|	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

DL No radium

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/12/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 10/1/24	BY: ER	DATE: 10-8-24
SAMPLE ID: MW-15008		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 1340	DATE: 10/1/24	SAMPLE	TIME: 1405	DATE: 10/2/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 7.29 SU CONDUCTIVITY: 1845 umhos/cm			
DEPTH TO WATER: 5.30 T/ PVC		ORP: -190 mV DO: 098 mg/L			
DEPTH TO BOTTOM: 1740 T/ PVC		TURBIDITY: 4.0 NTU			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
VOLUME REMOVED: 5 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 15.9 °C FERROUS Fe _____ mg/L			
COLOR: Clear ODOR: None		COLOR: Clear ODOR: None			
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		FILTRATE COLOR: _____ FILTRATE ODOR: _____			
		QC SAMPLE: <input type="checkbox"/> MS/MSD <input checked="" type="checkbox"/> DUP- #01			
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1346	200	7.53	1299	-169	1.0	13	18.6	5.35	INITIAL
1345		7.33	2107	-174	1.90	5.0	16.2	5.35	1
1350		7.29	1997	-185	1.20	4.0	16.1	5.35	2
1355		7.29	1860	-190	1.00	4.0	16.0	5.35	3
1400		7.29	1855	-190	0.99	4.0	16.0	5.35	4
1405		7.29	18.45	-190	0.98	4.0	15.9	5.35	5

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
2	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	4	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
2	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/2/24	BY: ELK DATE: 10-8-24

SAMPLE ID: MW-15019		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER	
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER			
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER			

PURGING	TIME: 1432	DATE: 10/2/24	SAMPLE	TIME: 1452	DATE: 10/2/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: 7.09 SU CONDUCTIVITY: 2087 umhos/cm		
DEPTH TO WATER: 6.38 T/ PVC			ORP: -168 mV DO: 1.17 mg/L		
DEPTH TO BOTTOM: 16.87 T/ PVC			TURBIDITY: 4.2 NTU		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: 15.0 °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: 4 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: Clear ODOR: NOK		
COLOR: Clear ODOR: NOK			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1432	200	7.18	1994	-206	8.95	8.0	19.7	6.41	INITIAL
1437		7.10	2084	-164	1.80	4.2	15.0	6.12	1
1442		7.09	2087	-168	1.78	4.2	15.0	6.10	2
1447		7.09	2085	-168	1.18	4.2	15.0	6.12	3
1452		7.09	2087	-166	1.17	4.2	15.0	6.10	4
									5
									6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: Fedex	DATE SHIPPED: 10/2/24	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: 10/4/24



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/1/24	BY: ER DATE: 10-8-24

SAMPLE ID: <u>MW-15016</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME: <u>0535</u>	DATE: <u>10/3/24</u>	SAMPLE	TIME: <u>0605</u>	DATE: <u>10/3/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER	PH: <u>6.85</u> SU CONDUCTIVITY: <u>1940</u> umhos/cm		ORP: <u>-150</u> mV DO: <u>0.89</u> mg/L		
DEPTH TO WATER: <u>570</u> T/ PVC	TURBIDITY: <u>3.0</u> NTU		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
DEPTH TO BOTTOM: <u>8.10</u> T/ PVC	TEMPERATURE: <u>17.3</u> °C FERROUS Fe _____ mg/L		COLOR: <u>clear</u> ODOR: <u>none</u>		
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FILTRATE COLOR: _____ FILTRATE ODOR: _____		
VOLUME REMOVED: <u>6</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS	TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input checked="" type="checkbox"/> VERY		QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COLOR: <u>Brown</u> ODOR: <u>slight</u>	DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER				
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0535	200	6.65	1751	223	8.35	4.0	16.3	577	INITIAL
0540		6.65	1864	-103	1.56	7.5	16.9	585	1
0545		6.77	1896	-137	1.13	9.95	17.3	585	2
0550		6.80	1915	-144	1.0	5.0	17.3	585	3
0555		6.85	1928	-150	0.93	3.0	17.3	585	4
0600		6.85	1936	-150	0.91	3.0	17.3	585	5
0605		6.85	1946	-150	0.89	3.0	17.3	585	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____							
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N

SHIPPING METHOD: <u>Fuber</u>	DATE SHIPPED: <u>10/3/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/14/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C		PREPARED		CHECKED	
PROJECT NUMBER: 553828.0000.0000		BY: JJ	DATE: 10/3/24	BY: ER	DATE: 10-8-24
SAMPLE ID: MW-15002		WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER			
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER					
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER					
PURGING	TIME: 0630	DATE: 10/3/24	SAMPLE	TIME: 0700	DATE: 10/3/24
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER		PH: 6.89	SU	CONDUCTIVITY: 8940	umhos/cm
		ORP: -148	mV	DO: 0.91	mg/L
DEPTH TO WATER: 8.54 T/ PVC		TURBIDITY: 3.3 NTU			
DEPTH TO BOTTOM: 16.82 T/ PVC		<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			
WELL VOLUME: NA <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		TEMPERATURE: 13.9 °C		FERROUS Fe _____ mg/L	
VOLUME REMOVED: 6 <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS		COLOR: Clear		ODOR: Slight	
COLOR: Clear		ODOR: slight		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
TURBIDITY: <input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		FILTRATE COLOR: _____		FILTRATE ODOR: _____	
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER		COMMENTS:			

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhbs/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0630	200	7.17	2093	-139	10.0	2.5	14.4	8.51	INITIAL
0635		6.96	4536	-139	2.66	6.0	14.1	8.75	1
0640		6.81	6785	-146	1.28	3.5	14.1	8.80	2
0645		6.70	8037	-138	1.00	3.3	14.0	8.80	3
0650		6.89	8885	-148	0.99	3.4	14.0	8.80	4
0655		6.89	8900	-148	0.95	3.3	14.0	8.80	5
0700		6.89	8940	-148	0.91	3.3	13.9	8.80	6

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____									
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED		NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y	<input type="checkbox"/> N
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y	<input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y	<input type="checkbox"/> N
	60 mL	VOA	A	<input type="checkbox"/> Y	<input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	B	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N
	125 mL	PLASTIC	C	<input type="checkbox"/> Y	<input type="checkbox"/> N					<input type="checkbox"/> Y	<input type="checkbox"/> N

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/3/24</u>	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF; 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: 10/11/24	BY: ER DATE: 10-8-24

SAMPLE ID: <u>F.B. #01</u> Background	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>0730</u>	DATE: <u>10/7/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>NA</u> SU	CONDUCTIVITY: <u>NA</u> umhos/cm	
			ORP: <u>NA</u> mV	DO: <u>NA</u> mg/L	
DEPTH TO WATER: <u>NA</u> PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: <u>NA</u> PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C	FERROUS Fe: <u>NA</u> mg/L	
VOLUME REMOVED: <u>NA</u> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>NA</u>	ODOR: <u>NA</u>	
COLOR: <u>NA</u>	ODOR: <u>NA</u>		FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
TURBIDITY <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE COLOR: <u>NA</u>	FILTRATE ODOR: <u>NA</u>	
DISPOSAL METHOD <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
COMMENTS:					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
INITIAL									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		2 1L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/3/24</u>	AIRBILL NUMBER:
COC NUMBER:	SIGNATURE: <u>[Signature]</u>	DATE SIGNED: <u>10/11/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: <u>10/10/24</u>	BY: EA DATE: <u>10-8-24</u>

SAMPLE ID: <u>FB #01</u>	WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER	
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER	

PURGING	TIME:	DATE:	SAMPLE	TIME: <u>1327</u>	DATE: <u>10/2/2024</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>NA</u> SU CONDUCTIVITY: <u>NA</u> umhos/cm		
			ORP: <u>NA</u> mV DO: <u>NA</u> mg/L		
DEPTH TO WATER: _____ T/ PVC			TURBIDITY: <u>NA</u> NTU		
DEPTH TO BOTTOM: _____ T/ PVC			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C FERROUS Fe _____ mg/L		
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			COLOR: <u>cloudy</u> ODOR: <u>NOV</u>		
COLOR: _____ ODOR: _____			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP-		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER			COMMENTS:		

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
INITIAL									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:
 pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N		40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N		1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/4/24</u>



WATER SAMPLE LOG

PROJECT NAME: CEC Weadock LF: 2024 GW C	PREPARED	CHECKED
PROJECT NUMBER: 553828.0000.0000	BY: JJ DATE: <u>10/2/24</u>	BY: <u>ER</u> DATE: <u>10-2-24</u>
SAMPLE ID: <u>EB #1</u> WELL DIAMETER: <input checked="" type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> 6" <input type="checkbox"/> OTHER _____		
WELL MATERIAL: <input checked="" type="checkbox"/> PVC <input type="checkbox"/> SS <input type="checkbox"/> IRON <input type="checkbox"/> GALVANIZED STEEL <input type="checkbox"/> OTHER _____		
SAMPLE TYPE: <input checked="" type="checkbox"/> GW <input type="checkbox"/> WW <input type="checkbox"/> SW <input type="checkbox"/> DI <input type="checkbox"/> LEACHATE <input type="checkbox"/> OTHER _____		

PURGING	TIME: _____	DATE: _____	SAMPLE	TIME: <u>1330</u>	DATE: <u>10/2/24</u>
PURGE METHOD: <input checked="" type="checkbox"/> PUMP PERISTALTIC PUMP <input type="checkbox"/> BAILER			PH: <u>NA</u> SU CONDUCTIVITY: <u>NA</u> umhos/cm		
DEPTH TO WATER: <u>NA</u> (PVC)			ORP: <u>NA</u> mV DO: <u>NA</u> mg/L		
DEPTH TO BOTTOM: <u>NA</u> (PVC)			TURBIDITY: <u>NA</u> NTU		
WELL VOLUME: <u>NA</u> <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			<input checked="" type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY		
VOLUME REMOVED: _____ <input type="checkbox"/> LITERS <input type="checkbox"/> GALLONS			TEMPERATURE: <u>NA</u> °C FERROUS Fe _____ mg/L		
COLOR: _____ ODOR: _____			COLOR: <u>clear</u> ODOR: <u>none</u>		
TURBIDITY: <input type="checkbox"/> NONE <input type="checkbox"/> SLIGHT <input type="checkbox"/> MODERATE <input type="checkbox"/> VERY			FILTRATE (0.45 um) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
DISPOSAL METHOD: <input checked="" type="checkbox"/> GROUND <input type="checkbox"/> DRUM <input type="checkbox"/> OTHER _____			FILTRATE COLOR: _____ FILTRATE ODOR: _____		
			QC SAMPLE: <input type="checkbox"/> MS/MSD <input type="checkbox"/> DUP- _____		
COMMENTS: _____					

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
INITIAL _____									

NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:

pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or <= 10 TEMP.: +/-

BOTTLES FILLED		PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F - _____								
NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED	
1	250 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	1	125 mL	PLASTIC	D	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	A	<input type="checkbox"/> Y <input type="checkbox"/> N	1	40 mL	VOA	E	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	60 mL	VOA	A	<input type="checkbox"/> Y <input type="checkbox"/> N	2	1 L	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	B	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	
1	125 mL	PLASTIC	C	<input type="checkbox"/> Y <input type="checkbox"/> N					<input type="checkbox"/> Y <input type="checkbox"/> N	

SHIPPING METHOD: <u>Fedex</u>	DATE SHIPPED: <u>10/2/24</u>	AIRBILL NUMBER: _____
COC NUMBER: _____	SIGNATURE:	DATE SIGNED: <u>10/2/24</u>

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page ____ of ____

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock Potrowater Wells		PROJECT NUMBER: 24-0806		SAP CC or WO#: _____ REQUESTER: Harold Register		QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____ REMARKS											
SAMPLING TEAM: Joseph Firlit																	
TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____		email: _____ phone: _____		MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		CONTAINERS OX = Other SL = Sludge A = Air WP = Waste WT = General Waste											
LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL #	PRESERVATIVE											
						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	Alkalinity	TDS	Anions	Total Metals	
24-0806-01	10/1/24	0620	GW	JCW-MW-18001	5	4	1										
-02	10/2/24	0715	GW	JCW-MW-18004	3	2	1										
-03	10/2/24	0954	GW	JCW-MW-18005	3	2	1										
-04	10/2/24	1145	GW	JCW-MW-18006	3	2	1										
-05	10/1/24	0804	GW	MW-50	3	2	1										
-06	10/1/24	1215	GW	MW-51	3	2	1										
-07	10/1/24	1316	GW	MW-52	3	2	1										
-08	10/1/24	1350	GW	MW-53	3	2	1										
-09	10/1/24	1435	GW	MW-53R	3	2	1										
-10	10/2/24	0622	GW	MW-54R	3	2	1										
-11	10/2/24	0633	GW	MW-55	3	2	1										
-12	10/2/24	1047	GW	OW-57ROUT	3	2	1										
RELINQUISHED BY:		DATE/TIME: 10/2/24 1340		RECEIVED BY:		DATE/TIME: 10/2/24 1340		COMMENTS: Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____ Temperature: _____ °C Cal. Due Date: _____									

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES
135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page _____ of _____

SAMPLING SITE / CUSTOMER: Q4-2024 JC Weadock Porewater Wells			PROJECT NUMBER: 24-0806			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)			QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____		
SAMPLING TEAM:			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			email: _____ phone: _____			Total Metals			Alkalinity		
SEND REPORT TO: Caleb Bratts			MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil			OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste			CONTAINERS			TDS		
COPY TO: Harold Register			FIELD SAMPLE ID / LOCATION			TOTAL #			PRESERVATIVE			Anions		
TRC			MATRIX			HNO ₃			H ₂ SO ₄			NaOH		
SAMPLE COLLECTION			DATE			TIME			HCl			MeOH		
DATE			TIME			MATRIX			Other			REMARKS		
24-0806-13	10/6/24	1300	GW	MW-58	3	2	1				x	x		
-14	10/1/24	—	GW	DUP-JCW-LF-01	3	2	1				x	x		
-15	10/6/24	—	GW	DUP-JCW-LF-02	3	2	1				x	x		
-16	10/1/24	0600	GW	JCW-MW-18001 MS	2	1	1				x	x		
-17	10/1/24	0600	GW	JCW-MW-18001 MSD	2	1	1				x	x		
-18	10/6/24	1300	W	FB-01	2	1	1				x	x		
-19	10/6/24	1300	W	EB-01	2	1	1				x	x		

RELINQUISHED BY: _____ DATE/TIME: 10/6/24 1300

RECEIVED BY:  DATE/TIME: _____

RELINQUISHED BY: _____ DATE/TIME: _____

RECEIVED BY: _____ DATE/TIME: _____

COMMENTS:

Received on Ice? Yes No M&TE #: _____

Temperature: _____ °C Cal. Due Date: _____

CHAIN OF CUSTODY

Page ____ of ____

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251



SAMPLING SITE / CUSTOMER:

Q4-2024 JC Weadock ASD

PROJECT NUMBER:

24-0807

SAP CC or WOH#:

REQUESTER: Harold Register

QA REQUIREMENT:

- NPDES
- TNI
- ISO 17025
- 10 CFR.50 APP. B
- INTERNAL INFO
- OTHER _____

REMARKS

TURNAROUND TIME REQUIRED:
 24 HR 48 HR 3 DAYS STANDARD OTHER _____

email:

phone: _____

MATRIX CODES:

- GW = Groundwater
- WW = Wastewater
- W = Water / Aqueous Liquid
- S = Soil / General Solid
- O = Oil
- OX = Other
- SL = Sludge
- A = Air
- WP = Wipe
- WT = General Waste

CONTAINERS

PRESERVATIVE

- None
- HNO₃
- H₂SO₄
- NaOH
- HCl
- MeOH
- Other

TOTAL #

FIELD SAMPLE ID / LOCATION

JCW-OW-18001

JCW-OW-18006

SEND REPORT TO: Joseph Firit
Harold Register
TRC

LAB SAMPLE ID

24-0807-01

-02

DATE

10/1/24

10/2/24

TIME

0724

0755

MATRIX

GW

GW

5

4

1

5

4

1

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

x

RELINQUISHED BY:

(Signature)

DATE/TIME:

10/2/24 13:00

RECEIVED BY:

(Signature)

DATE/TIME:

RECEIVED BY:

Received on Ice? Yes No

Temperature: _____ °C

M&TE #:

Cal. Due Date: _____

COMMENTS:

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES
 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 4

SAMPLING SITE / CUSTOMER:		PROJECT NUMBER:		SAP CC or WO#:		ANALYSIS REQUESTED		QA REQUIREMENT:	
Q4-2024 Weadock Leachate Wells		24-0808		REQUESTER: Harold Register		(Attach List if More Space is Needed)		<input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____	
SAMPLING TEAM:		TURNAROUND TIME REQUIRED:		email:		phone:		REMARKS	
Joseph Firlit		<input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____						Extra volume to be filtered at lab for dissolved metals EB 10-02-24	
SEND REPORT TO:		MATRIX CODES:		CONTAINERS		PRESERVATIVE			
Harold Register		GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil		OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste		None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other			
COPY TO:		SAMPLE COLLECTION		FIELD SAMPLE ID / LOCATION		TOTAL			
TRC		DATE		TIME		MATRIX			
LAB SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION	TOTAL	None	HNO ₃	H ₂ SO ₄	NaOH
24-0808-01	10-1-24	0927	GW	LH-103R	1		1	1	1
-02			GW	LH-103R Dup	1				
-03		0927	GW	LH-103R MS	1				
-04		0927	GW	LH-103R MSD	1				
-05		1107	GW	LH-104	1				
-06			GW	LH-104 Dup	1				
-07		0927	W	FB-02	1				
-08		1120	W	EB-02	1				
-09			W	TB-02	1				

COMMENTS:

RECEIVED BY:

Fed Ex

DATE/TIME:

RECEIVED BY:

fi

DATE/TIME:

10-02-24 11:42

RELINQUISHED BY:

RELINQUISHED BY:

Fed Ex

M&TE #: N/A

Cal. Due Date: N/A

Received on Ice? Yes No

Temperature: N/A °C

CHAIN OF CUSTODY

Page of

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251



<p>SAMPLING SITE / CUSTOMER: Q4-2024 Weadock Leachate Wells</p> <p>SAMPLING TEAM: Joseph Firit</p> <p>SEND REPORT TO: Joseph Firit</p> <p>COPY TO: Harold Register TRC</p> <p>LAB SAMPLE ID 24-0808-01 ↓ -05</p>	<p>PROJECT NUMBER: 24-0808</p> <p>TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER</p> <p>email: _____ phone: _____</p> <p>MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil</p> <p>OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste</p> <p>FIELD SAMPLE ID / LOCATION LH-103R LH-104</p>	<p>SAP CC or WO#: _____</p> <p>REQUESTER: Harold Register</p>	<p>ANALYSIS REQUESTED (Attach List if More Space is Needed)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Total Metals</td> <td style="width: 10%; text-align: center;">x</td> <td style="width: 10%; text-align: center;">x</td> <td style="width: 10%; text-align: center;">x</td> <td style="width: 10%; text-align: center;">x</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>Antons</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>TDS</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Alkalinity</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td style="text-align: center;">x</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Total Metals	x	x	x	x							Antons	x	x	x	x							TDS	x	x	x	x							Alkalinity	x	x	x	x							<p>QA REQUIREMENT:</p> <p><input type="checkbox"/> NPDES</p> <p><input checked="" type="checkbox"/> TNI</p> <p><input type="checkbox"/> ISO 17025</p> <p><input type="checkbox"/> 10 CFR 50 APP. B</p> <p><input type="checkbox"/> INTERNAL INFO</p> <p><input type="checkbox"/> OTHER _____</p> <p>REMARKS</p>
Total Metals	x	x	x	x																																												
Antons	x	x	x	x																																												
TDS	x	x	x	x																																												
Alkalinity	x	x	x	x																																												
<p>CONTAINERS</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 10%;">TOTAL #</td> <td colspan="6" style="text-align: center;">PRESERVATIVE</td> </tr> <tr> <td style="width: 10%;">None</td> <td style="width: 10%;">HNO₃</td> <td style="width: 10%;">H₂SO₄</td> <td style="width: 10%;">NaOH</td> <td style="width: 10%;">HCl</td> <td style="width: 10%;">MeOH</td> <td style="width: 10%;">Other</td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> <td style="text-align: center;">1</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>				TOTAL #	PRESERVATIVE						None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other	5	4	1						5	4	1																				
TOTAL #	PRESERVATIVE																																															
	None	HNO ₃	H ₂ SO ₄	NaOH	HCl	MeOH	Other																																									
5	4	1																																														
5	4	1																																														
<p>DATE/TIME: _____</p> <p>RECEIVED BY: <i>[Signature]</i></p>																																																
<p>DATE/TIME: _____</p> <p>RECEIVED BY: <i>[Signature]</i></p>																																																

COMMENTS:


Received on Ice? Yes No M&TE #: _____

Temperature: _____ °C Cal. Due Date: _____

Client Information		Sampler: <u>Sauv J ASSC</u>	Lab PM: <u>Brooks, Kris M</u>	Carrier Tracking No(s): <u>240-124391-29048.1</u>	COC No: <u>240-124391-29048.1</u>	
Client Contact: <u>Jacob Krenz</u>		Phone: <u>7349043310</u>	E-Mail: <u>Kris.Brooks@eurofins.com</u>	State of Origin:	Page: <u>Page 1 of 2</u>	
Company: <u>TRC Environmental Corporation.</u>		Analysis Requested				
Address: <u>1540 Eisenhower Place</u>		Total Number of Containers				
City: <u>Ann Arbor</u>		Preservation Codes: <u>D - HNO3</u>				
State, Zip: <u>MI, 48108-7080</u>		Other:				
Phone: <u>734-971-7080(Tel) 734-971-9022(Fax)</u>		Special Instructions/Note:				
Email: <u>JKrenz@trccompanies.com</u>						
Project Name: <u>KarmWeadock CCR JCW Lanfill</u>						
Site: <u></u>						
Due Date Requested:						
TAT Requested (days):						
Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No						
PO #: <u>TBD</u>						
WO #: <u>5533828.0000</u>						
Project #: <u>24024154</u>						
SSOW#:						
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Other, etc.)	Preservation Code	Special Instructions/Note
JCW-MW-18001	10/1/24	0605	G	Water	D	
JCW-MW-18004	10/2/24	0715	G	Water	D	
JCW-MW-18005	10/2/24	0954	G	Water	D	
JCW-MW-18006	10/2/24	1145	G	Water	D	
MW-50	10/1/24	0804	G	Water	D	
MW-51	11/1/24	1215	G	Water	D	
MW-52	11/1/24	1316	G	Water	D	
MW-53	11/1/24	1350	G	Water	D	
MW-53R	11/1/24	1435	G	Water	D	
MW-54R	10/2/24	0622	G	Water	D	
MW-55	10/2/24	0633	G	Water	D	
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Special Instructions/QC Requirements:						
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological						
Deliverable Requested: I, II, III, IV, Other (specify)						
Empty Kit Relinquished by:						
Relinquished by: <u>[Signature]</u> Date: <u>10/2/24 1440</u>						
Relinquished by: _____ Date: _____						
Relinquished by: _____ Date: _____						
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No						
Custody Seal No.:						
Received by: <u>[Signature]</u> Date/Time: <u>10/2/24 1445</u> Company: <u>[Signature]</u> Received by: _____ Date/Time: _____ Company: _____ Received by: _____ Date/Time: _____ Company: _____ Cooler Temperature(s) °C and Other Remarks:						

Chain of Custody Record

Eurofins Cleveland
 180 S. Van Buren Avenue
 Barberton, OH 44203
 Phone (330) 497-9396 Phone (330) 497-0772

Client Information	Sampler: <u>Jacob Krenz</u> Lab PM: <u>Brooks, Kris M</u> Phone: <u>734 904 3310</u> E-Mail: <u>Kris.Brooks@et.eurofins.com</u>	Carrier Tracking No(s): State of Origin:	COC No: Page: Job #:	Preservation Codes: Other:							
Company: <u>TRC Environmental Corporation.</u> Address: <u>1540 Eisenhower Place</u> City: <u>Ann Arbor</u> State, Zip: <u>MI, 48108-7080</u> Phone: <u>734-971-7080(Tel) 734-971-9022(Fax)</u> Email: <u>JKrenz@trccompanies.com</u>		Analysis Requested									
Project Name: <u>Karm/Weadock CCR JCW Lanfill</u> Site:		Preservation Codes: Other:									
Field/Filtered Sample (Vial ID NO) 904.0, Ra226Ra228, GPPC 93.0 - Standard Target List											
Due Date Requested: TAT Requested (days): Compliance Project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No PO #: <u>215950</u> WO #: <u>5533828.0000</u> Project #: <u>24024154</u> SSON#:											
Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Sewable, Dewatered, BT-Tissue, Air/Vol)	Preservation Code	Special Instructions/Note:					
OW-57ROUT	10/2/24	1047	G	Water	Water						
DUP-01	10/1/24		G	Water	Water						
EB-1	10/2/24	1300	G	Water	Water						
Dup for <u>MAW 58</u>											
Total Number of Containers:											
Possible Hazard Identification <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input checked="" type="checkbox"/> Unknown <input type="checkbox"/> Radiological											
Deliverable Requested: I, II, III, IV, Other (specify)											
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months											
Special Instructions/QC Requirements:											
Empty Kit Relinquished by:											
Relinquished by: 		Date: <u>10/3/24</u>		Company: <u>Comp 76</u>							
Relinquished by:		Date/Time:		Received by: <u>Duke</u>							
Relinquished by:		Date/Time:		Date/Time: <u>1420</u>							
Relinquished by:		Date/Time:		Date/Time: <u>1440</u>							
Custody Seals Intact: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No											
Cooler Temperature(s) °C and Other Remarks:											

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page _____ of _____

SAMPLING SITE / CUSTOMER: Q4-2024 JCW-DEK Background Wells			PROJECT NUMBER: 24-0805			SAP CC or WO#: REQUESTER: Harold Register			ANALYSIS REQUESTED (Attach List if More Space is Needed)			QA REQUIREMENT: <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> TNI <input type="checkbox"/> ISO 17025 <input type="checkbox"/> 10 CFR 50 APP. B <input type="checkbox"/> INTERNAL INFO <input type="checkbox"/> OTHER _____		
SAMPLING TEAM: SEND REPORT TO: Joseph Firitt			TURNAROUND TIME REQUIRED: <input type="checkbox"/> 24 HR <input type="checkbox"/> 48 HR <input type="checkbox"/> 3 DAYS <input type="checkbox"/> STANDARD <input checked="" type="checkbox"/> OTHER _____			email: _____ phone: _____			Total Metals Anions TDS			REMARKS		
COPY TO: Harold Register TRC			MATRIX CODES: GW = Groundwater WW = Wastewater W = Water / Aqueous Liquid S = Soil / General Solid O = Oil			CONTAINERS PRESERVATIVE None HNO ₃ H ₂ SO ₄ NaOH HCl MeOH Other								
LAB SAMPLE ID			FIELD SAMPLE ID / LOCATION			TOTAL #								
SAMPLE COLLECTION DATE TIME MATRIX			MATRIX											
24-0805-01	10/3/24	0700	GW	MW-15002	3	2	1				x	x		
-02	10/6/24	1405	GW	MW-15008	3	2	1				x	x		
-03	10/3/24	0605	GW	MW-15016	3	2	1				x	x		
-04	10/6/24	1450	GW	MW-15019	3	2	1				x	x		
-05	10/6/24	—	GW	DUP-Background	3	2	1				x	x		
-06	10/3/24	0735	W	FB- Background	1						x			
RELINQUISHED BY:			DATE/TIME: 10/3/24 1300			RECEIVED BY:			DATE/TIME:			COMMENTS:		
RELINQUISHED BY:			DATE/TIME:			RECEIVED BY:			DATE/TIME:			Received on Ice? <input type="checkbox"/> Yes <input type="checkbox"/> No M&TE #: _____ Temperature: _____ °C Cal. Due Date: _____		

Client Information		Lab PMK: Brooks, Kris M		Carrier Tracking No(s): 240-124390-33282.1	
Client Contact: Jacob Krenz		E-Mail: Kris.Brooks@et.eurofins.com		Page: Page 1 of 1	
Company: TRC Environmental Corporation.		PWSID:		Job #:	
Address: 1540 Eisenhower Place		Due Date Requested:		Preservation Codes: D - HNO3	
City: Ann Arbor		TAT Requested (days):		Other:	
State, Zip: MI, 48108-7080		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No		Total Number of Containers:	
Phone: 734-904-6246(Tel) 734-971-9022(Fax)		PO #: 215950		Special Instructions/Note:	
Email: JKrenz@trccompanies.com		WO #:			
Project Name: Karm/Wadock CCR Background Well		Project #: 24024154			
Site:		SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Water, Solid, Other)	Preservation Code		Special Instructions/Note
					903.0, Ra226Ra228, GPPC	904.0 - Standard Target List	
MW-15002	10/3/24	0700	G	Water			
MW-15008	10/2/24	1405	G	Water			
MW-15016	10/3/24	0605	G	Water			
MW-15019	10/2/24	1452	G	Water			
DUP-Background	10/2/24	---	G	Water			
EQ-Background	10/2/24	0705	G	Water			

Possible Hazard Identification
 Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Empty Kit Relinquished by: _____ Date: _____

Relinquished by: _____ Date/Time: 10/3/24 1440 Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Relinquished by: _____ Date/Time: _____ Company: _____

Custody Seals Intact: Yes No Custody Seal No.: _____

Received by: *[Signature]* Date/Time: 10/3/24 Company: _____

Received by: _____ Date/Time: _____ Company: _____

Received by: _____ Date/Time: _____ Company: _____

Special Instructions/OC Requirements: _____

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return To Client Disposal By Lab Archive For _____ Months

Appendix G

Alternate Source Demonstration Supporting Information

A CMS Energy Company

Date: January 28, 2025

To: Operating Record

From: Harold D. Register, Jr., P.E. 

RE: Alternate Source Demonstration Professional Engineer Certification, §257.94(e)2
JC Weadock Landfill CCR Unit

Professional Engineer Certification Statement [40 CFR 257.94(e)2]

I hereby certify that the alternative source demonstration presented within this Fourth Quarter 2024 Hydrogeological Monitoring Report for the JC Weadock Landfill CCR unit has been prepared to meet the requirements of Title 40 CFR §257.94(e)2 of the Federal CCR Rule. This document is accurate and has been prepared in accordance with good engineering practices, including the consideration of applicable industry standards, and with the requirements of Title 40 CFR §257.94(e)2.


Signature

January 28, 2025

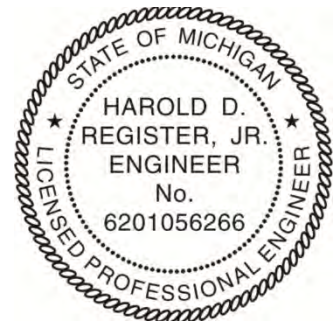
Date of Certification

Harold D. Register, Jr., P.E.

Name

6201056266

Professional Engineer Certification Number



01/28/2025

References

TRC (January 2025). 2024 Semiannual Groundwater Monitoring Report/Fourth Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Landfill Solid Waste Disposal Area, Essexville, Michigan

Figure G1: Time Series Plots for JCW-MW-18001 ASD

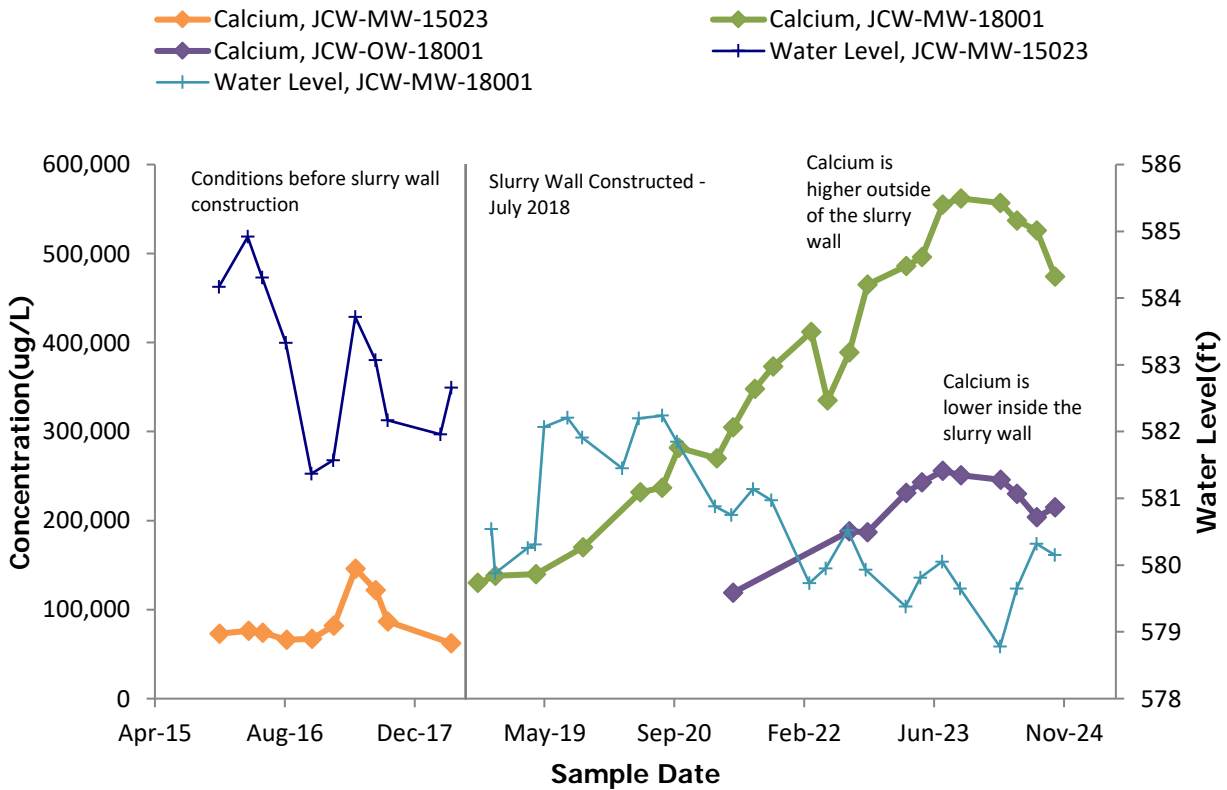
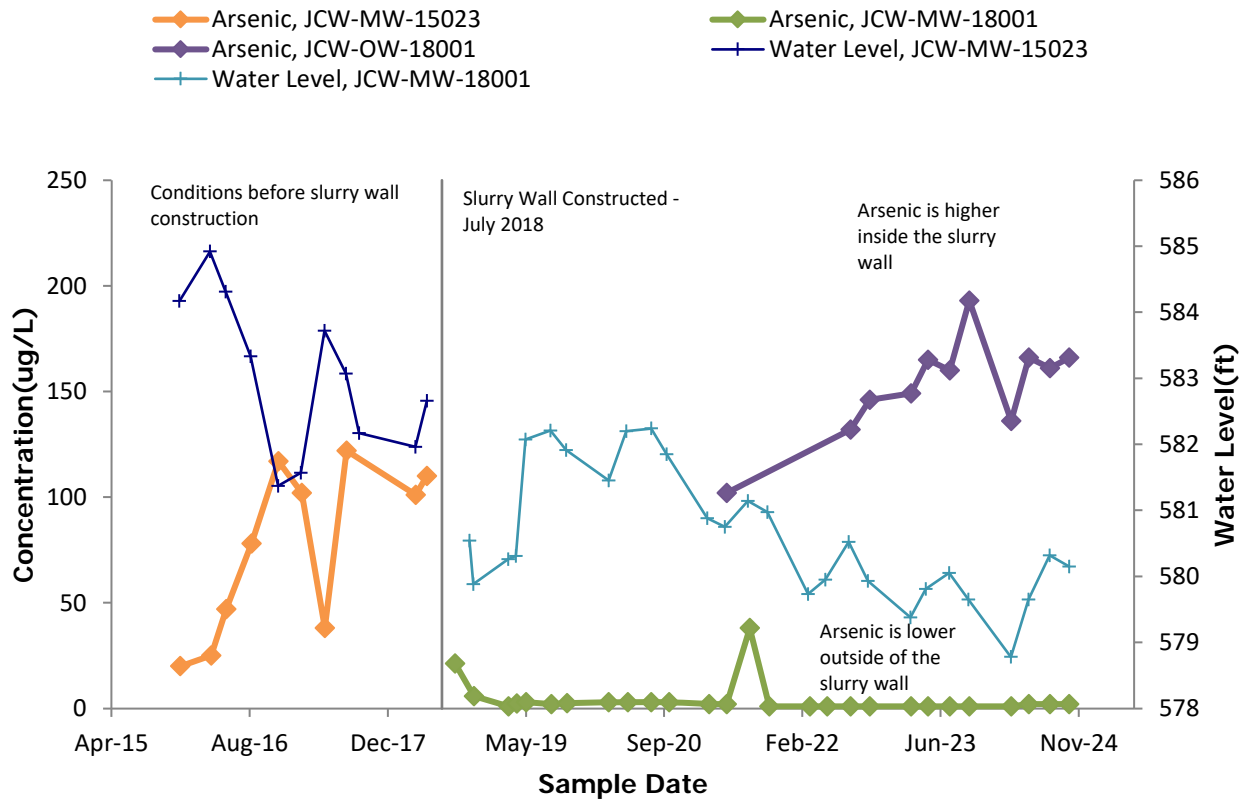


Figure G1: Time Series Plots for JCW-MW-18001 ASD

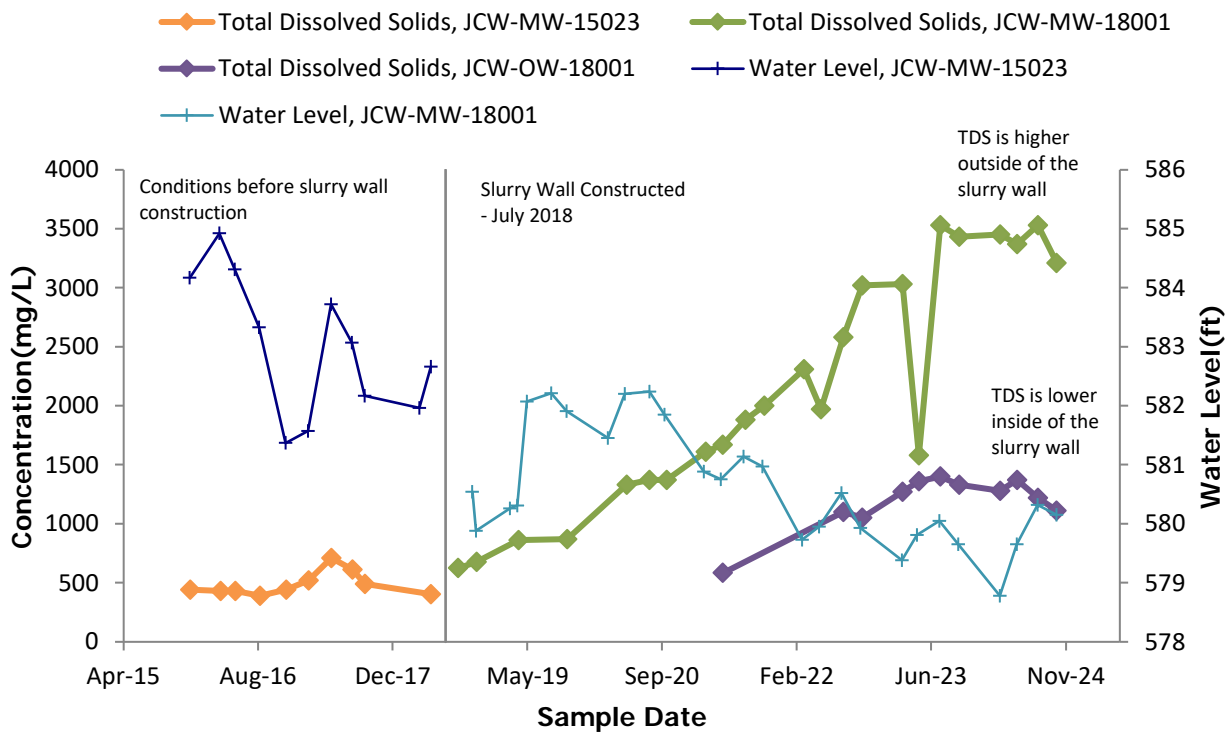
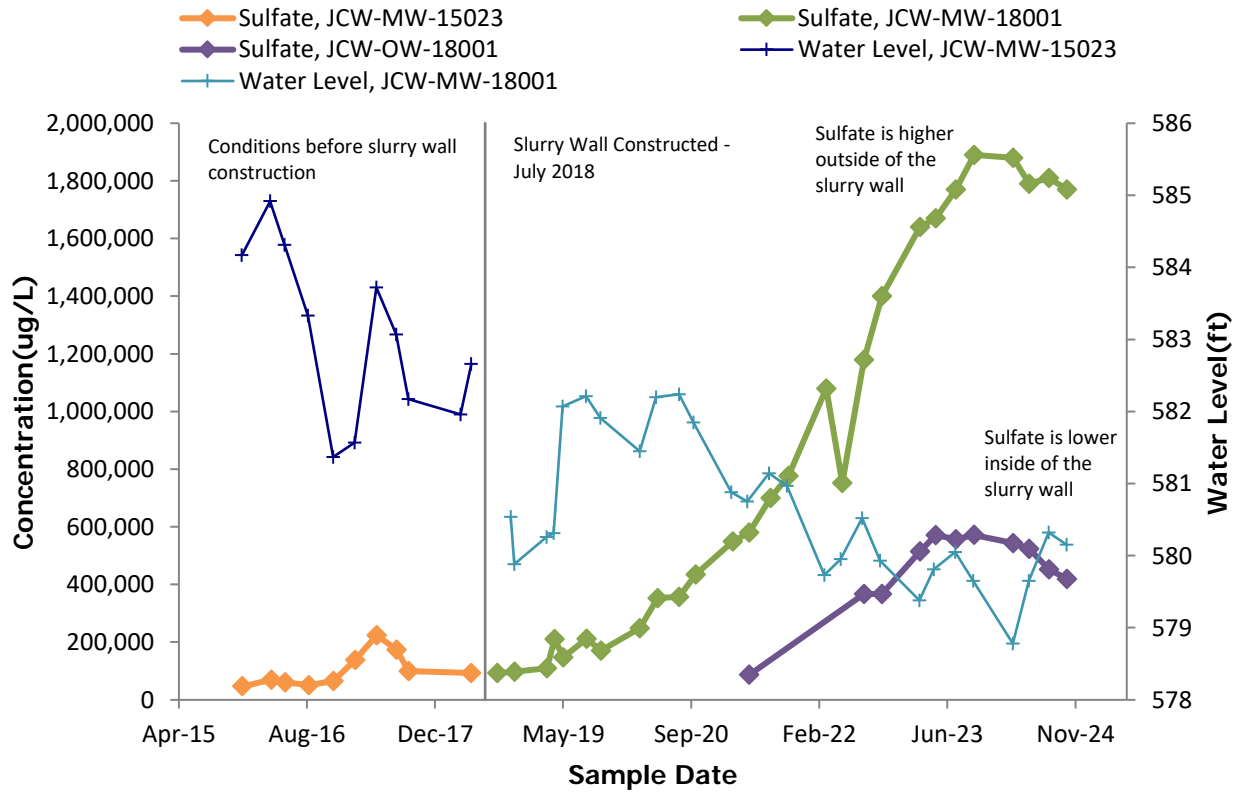


Figure G1: Time Series Plots for JCW-MW-18001 ASD

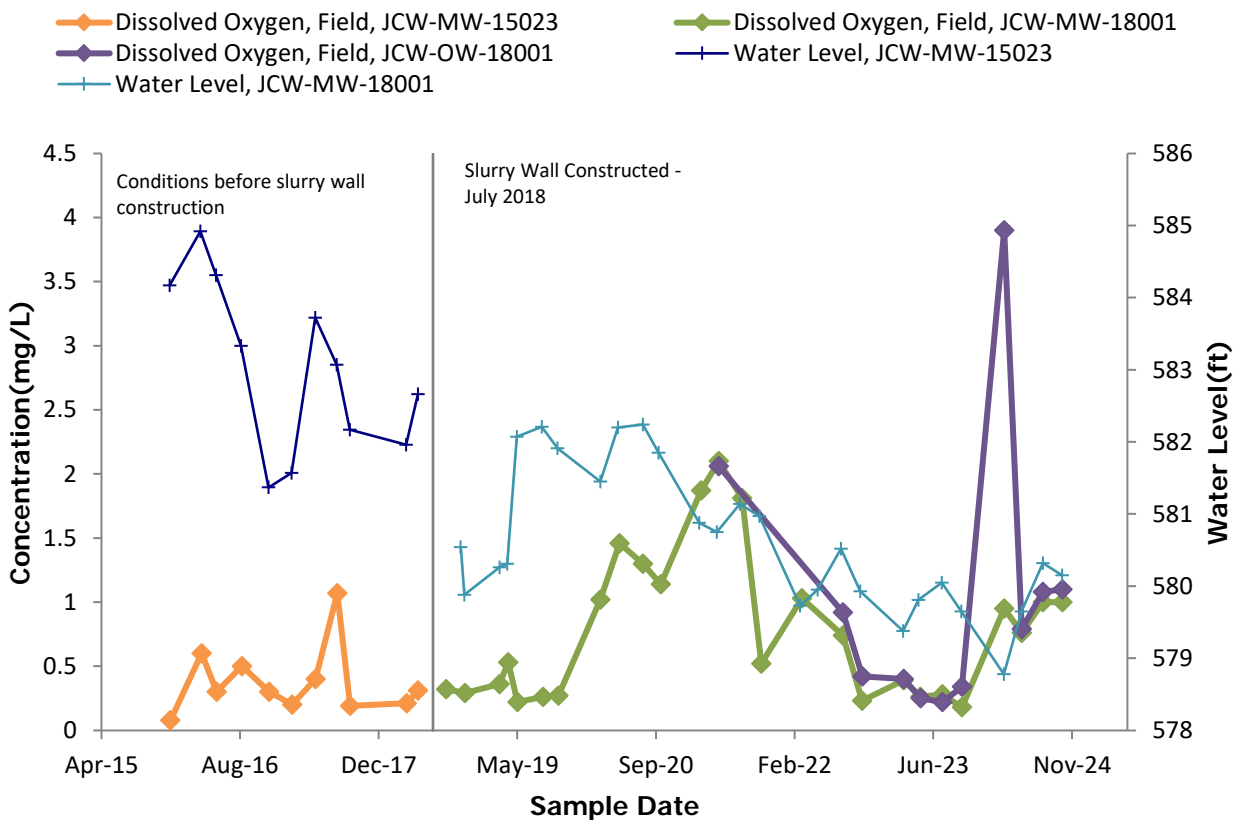
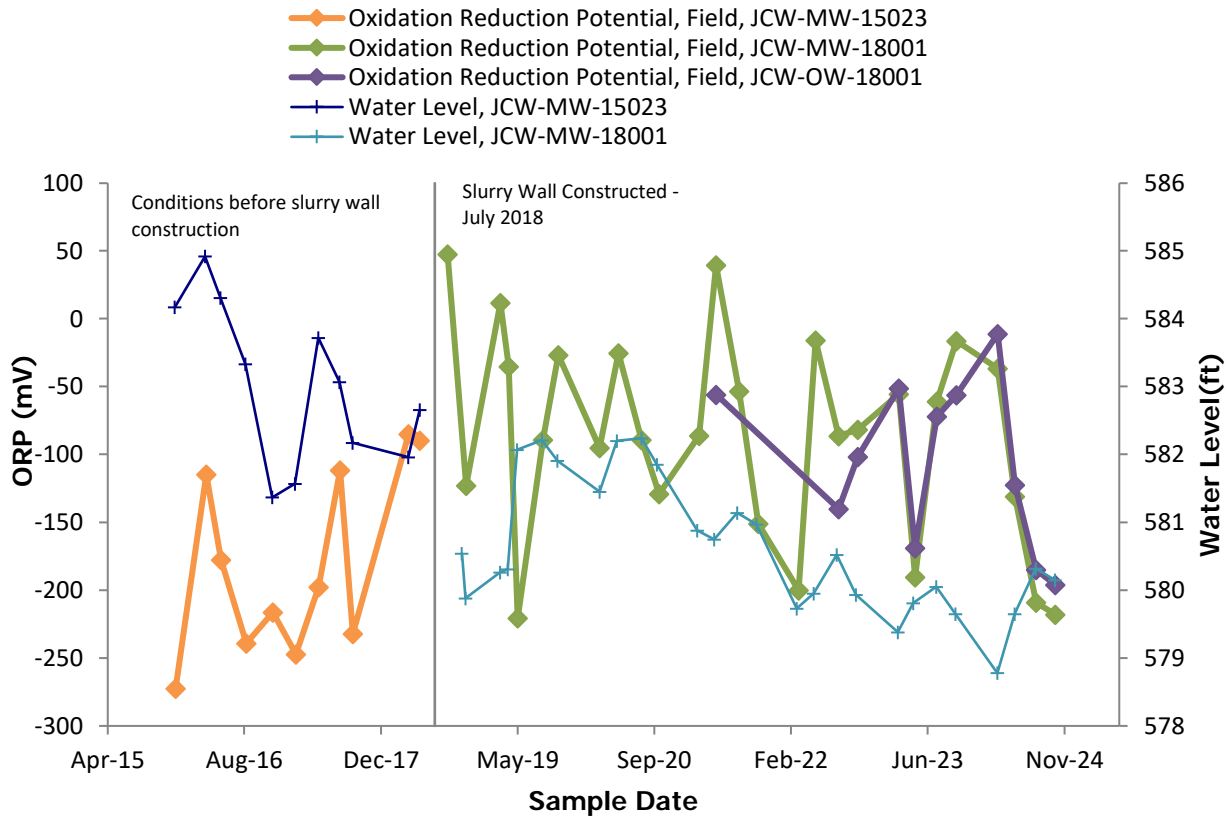
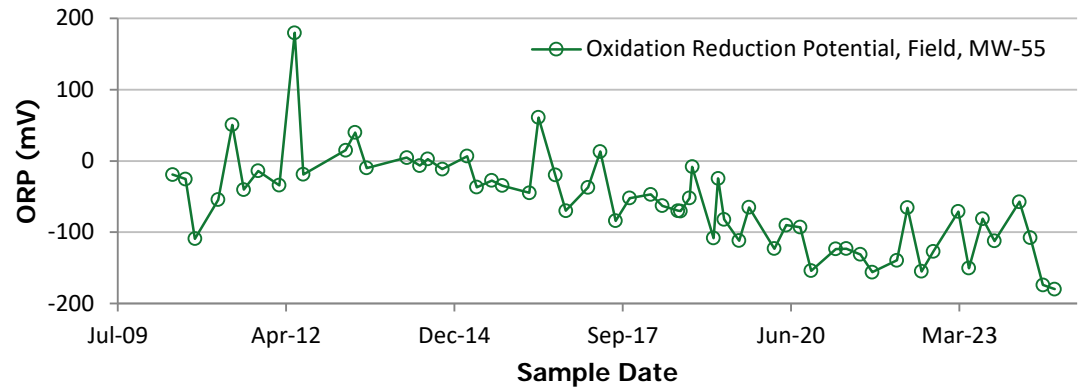
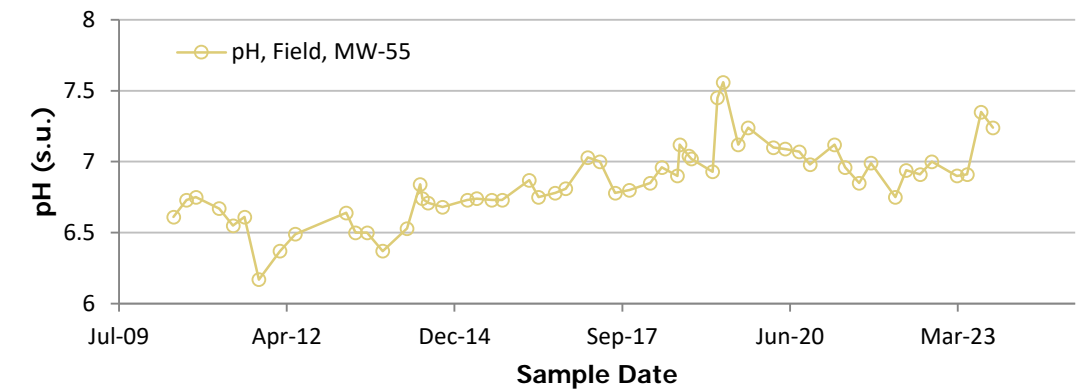
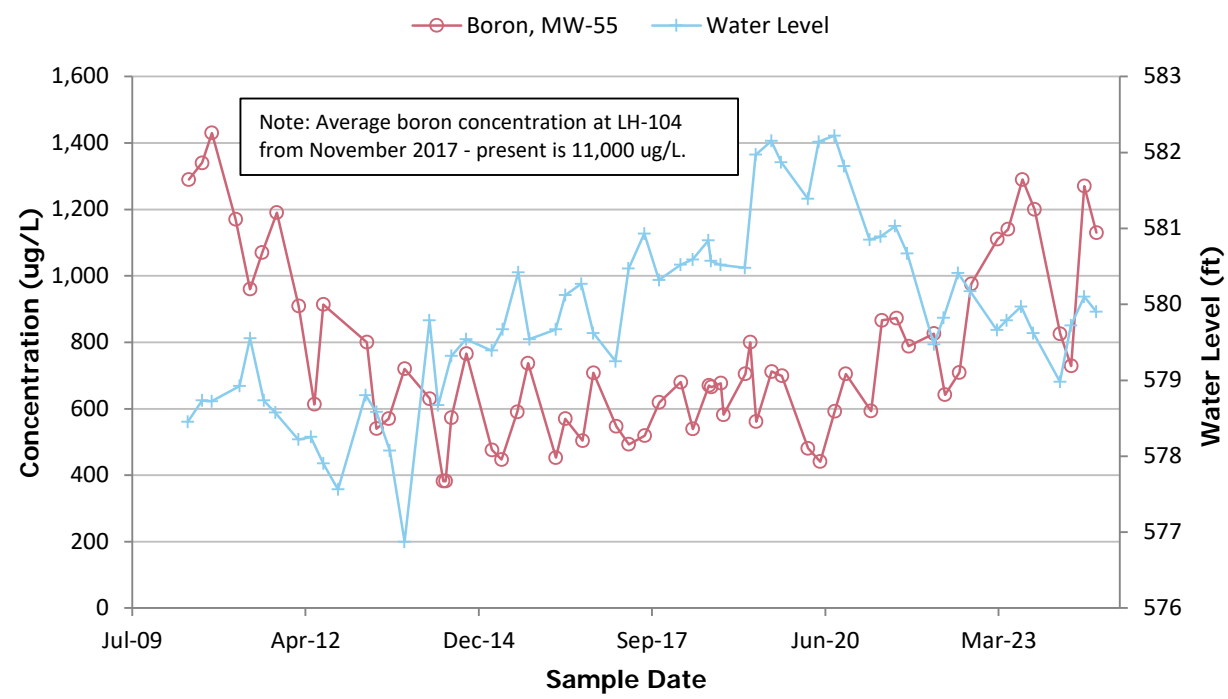
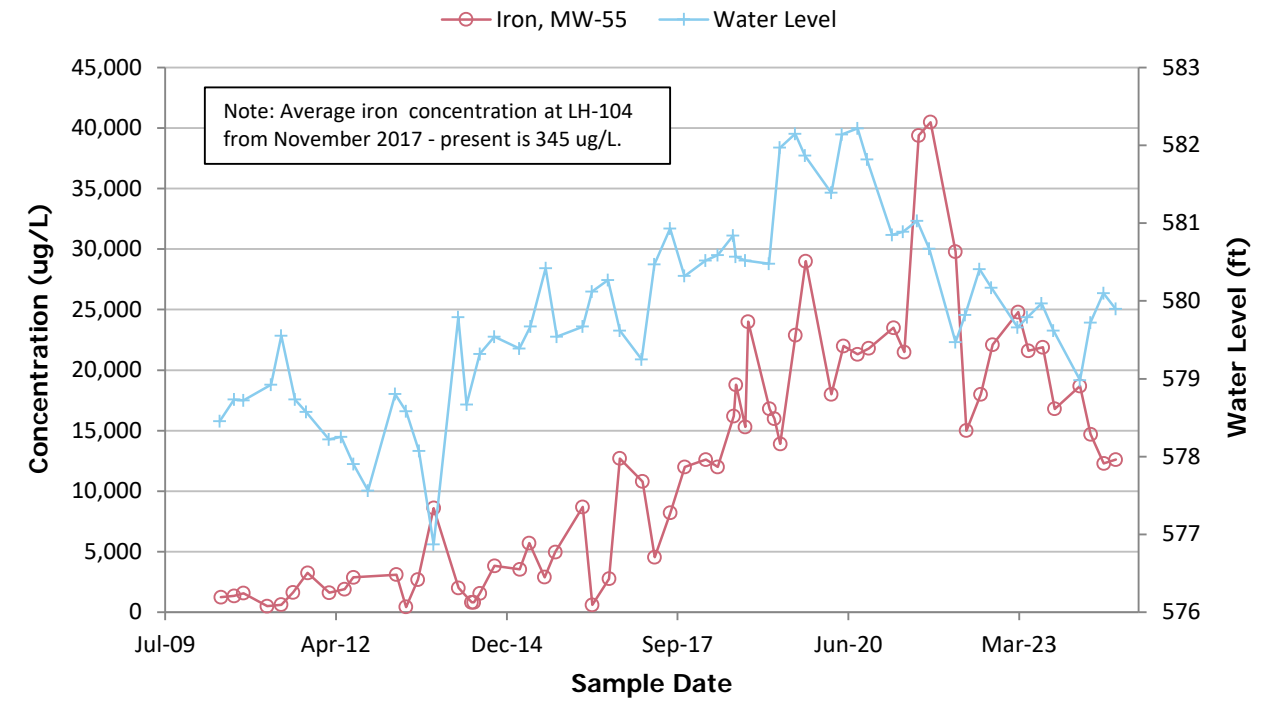
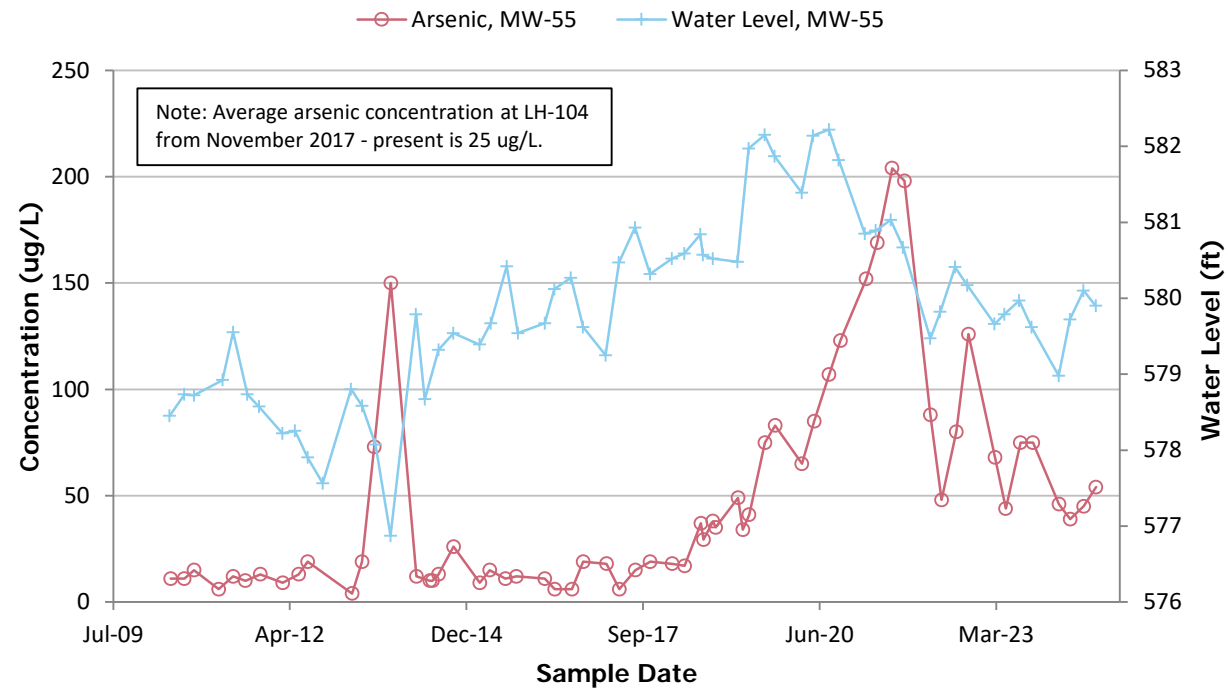


Figure G2: Time Series Plots for MW-55 ASD



Enclosure 6

**2024 Annual Nature and Extent Data Summary, JC
Weadock, Consumers Energy, Essexville, Michigan. (TRC,
January 30, 2025)**

Technical Memorandum

Date: January 30, 2025

To: J.R. Register, Consumers Energy

From: Darby Litz, TRC
Kristin Lowery, TRC

Project No.: 553828.0000 Phase 2 Task 2

Subject: 2024 Annual Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan

Introduction

In response to the United States Environmental Protection Agency's (U.S. EPA's) Resource Conservation and Recovery Act (RCRA) Coal Combustion Residual rule ("CCR Rule") promulgated on April 17, 2015, as amended, Consumers Energy Company (Consumers Energy) has conducted groundwater monitoring at the JC Weadock Bottom Ash Pond and Landfill CCR Units. During the statistical evaluation of the initial assessment monitoring event (May 2018), arsenic was present in one downgradient monitoring well at statistically significant levels exceeding the Groundwater Protection Standard (GWPS) at the Weadock Landfill¹ and beryllium and lithium were present in one downgradient monitoring well at statistically significant levels exceeding the GWPSs at the Weadock Bottom Ash Pond².

The CCR Rule 40 CFR §257.96(a) requires that an owner or operator initiate an assessment of corrective measures (ACM) to prevent further release, to remediate any releases, and to restore impacted areas to original conditions if any Appendix IV constituent has been detected at a statistically significant level exceeding a GWPS. The *Assessment of Corrective Measures (ACM)*³ was initiated on April 14, 2019 and was certified and submitted to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) on September 11, 2019 in accordance with the schedule in §257.96.

Per §257.95(g)(1), in the event that the facility determines, pursuant to §257.93(h), that there is a statistical exceedance of the GWPSs for one or more of the Appendix IV constituents, the facility must characterize the nature and extent of the release of CCR as well as any site conditions that may affect the remedy selected. The nature and extent characterization was performed using data collected from existing site wells. Installation of additional monitoring wells at locations downgradient of the CCR

¹ TRC. 2019. *Statistical Evaluation of Initial Assessment Monitoring Sampling Event, JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan*. January 14.

² TRC. 2019. *Statistical Evaluation of Initial Assessment Monitoring Sampling Event, JC Weadock Bottom Ash Pond, Consumers Energy Company, Essexville, Michigan*. January 14.

³ TRC. 2019. *Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units*. Prepared for Consumers Energy Company. September 11.

Technical Memorandum

units was not necessary or feasible due to the proximity of the surface water bodies and the lack of a shallow water-bearing unit to the south demonstrated by site hydrogeological investigations. Monitoring wells are shown on Figure 1.

Approach

Given the proximity of the Weadock Bottom Ash Pond to the Weadock Landfill at the Weadock property, the nature and extent of contamination was assessed from a site-wide perspective rather than on a per CCR unit basis. The nature and extent of groundwater impacted by a release from the Weadock Bottom Ash Pond overlaps with groundwater impacted by operation of the Weadock Landfill. Additionally, looking at impacted groundwater on a site-wide basis was more practical from a risk mitigation standpoint, given:

- the likely age of the release(s);
- a long operational history of ash management;
- the historical use of CCR as fill; and
- The influence of geochemistry on several of the Appendix IV constituent concentrations in groundwater.

Consistent with the ACM, the evaluation of the nature and extent of contamination in groundwater focuses on the constituents which triggered corrective measures: arsenic, beryllium, and lithium.

Groundwater Nature and Extent Relative to Groundwater Protection Standards

As discussed in the ACM, the nature and extent of contamination (i.e., arsenic, beryllium, and lithium) in groundwater relative to GWPSs has been defined per the RCRA CCR Rule requirements based on the site-specific hydrogeology. Although arsenic, beryllium, and lithium concentrations have previously exceeded the GWPS within the groundwater monitoring system wells, these constituents are delineated within the limits of the property owned by Consumers Energy and there are currently no adverse effects on human health or the environment from either surface water or groundwater due to CCR management at the Weadock Bottom Ash Pond or Weadock Landfill. The property is owned and operated by Consumers Energy and groundwater is not used for drinking water. There are no on-site drinking water wells and there are no surface water potable water intakes within 3 miles of the site, so the drinking water pathway is not complete. A shallow water-bearing unit is not observed to the south of the landfill, which prevents offsite migration of Appendix III and Appendix IV constituents.

The Weadock Bottom Ash Pond has been certified as closed. Beryllium and lithium are no longer present in groundwater at concentrations exceeding the GWPS and arsenic was demonstrated to have remained at concentrations below the GWPS in the Weadock Bottom Ash Pond monitoring well network. Groundwater data collected post-CCR removal demonstrates that the remedy is complete per the criteria set forth in §257.98(c) and the remedy is protective of human health and the environment as presented in the Completion of Remedy Letter Report⁴ and the Weadock Bottom Ash Pond CCR unit was certified closed⁵. Beryllium and lithium have never been detected at concentrations above the

⁴ Consumers Energy. 2023. *JC Weadock Bottom Ash Pond Coal Combustion Residual (CCR) Unit, 40 CFR 257.98(e) Completion of Remedy Letter Report*. November 10.

⁵ Consumers Energy. 2023. *JC Weadock Bottom Ash Pond 40 CFR 257.102(c) Closure by Removal Certification*. November 10.

Technical Memorandum

GWPSs in the Weadock Landfill monitoring well network. As such, this nature and extent evaluation focuses on arsenic relative to the Weadock Landfill CCR unit.

Graphs depicting concentrations versus time for arsenic observed within the Weadock Landfill groundwater monitoring system wells are included in Attachment A. The distribution of arsenic relative to the Weadock Landfill in the shallow water-bearing unit as compared to the GWPS is shown on Figure 1. Three categories were assigned to the arsenic groundwater data collected from March 2023 to October 2024 (i.e., a minimum of 8 semi-annual data points) to develop Figure 1, as follows:

- White – No Exceedances: all concentrations were below the GWPS
- Yellow – Two or More Exceedances: individual observations above the GWPS⁶
- Orange – Statistically Significant GWPS Exceedances⁷

The following is a summary of the RCRA Appendix IV nature and extent evaluation for arsenic.

Arsenic

Arsenic concentrations have at times exceeded the GWPS in three groundwater monitoring wells located along the Weadock Landfill perimeter (MW-51⁸, MW-55, and JCW-MW-18006), although these exceedances of the GWPS are not statistically significant. These areas of elevated arsenic concentrations are limited in extent and are dependent upon geochemical conditions, which are changing either due to lake levels rising or in the case of JCW-MW-18006, activities related to the Weadock Bottom Ash Pond closure. Also, an Alternate Source Demonstration (ASD) for arsenic at MW-55 was included in Appendix G of the 2019 *Annual Groundwater Monitoring and Corrective Action Report for the Weadock Landfill* (2019 Annual Report).⁹ The basis for this ASD is summarized below and updated time series plots in support of this ASD are included in the *2024 Semiannual Groundwater Monitoring Report and Fourth Quarter 2024 Hydrogeological Monitoring Report* (24Q4 HMP Report).¹⁰

Data collected from the 2018 investigation at MW-55 as well as data collected during routine sampling events for Part 115 and Federal CCR groundwater compliance show the following:

- **Distinct Chemistry from Leachate** – The leachate chemistry from a monitoring well screened at the base of the ash fill (LH-104) is distinctly different from the groundwater chemistry near MW-55 and the temporary monitoring wells installed by TRC in the investigation area, as illustrated Appendix G of the 2019 Annual Report. Additionally, concentrations of arsenic are generally much lower, and concentrations of boron are much higher within the landfill (LH-104) than outside of the landfill at MW-55 (Figure G2: 24Q4 HMP Report).

⁶ Although an exceedance is defined as a single detection above the GWPS, confidence intervals will be used to determine compliance per the CCR Rule, using the statistical procedures and performance standards in § 257.93(f) and (g)

⁷ Lower confidence limit is above the GWPS based upon most recent assessment monitoring statistical evaluation using the past eight compliance sampling events.

⁸ Single direct exceedance of the arsenic GWPS was observed at MW-51 in October 2024.

⁹ TRC. 2020. *2019 Annual Groundwater Monitoring Report* – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company. January 30.

¹⁰ TRC. 2024. *2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report* – JC Weadock Solid Waste Disposal Area. July 30.

Technical Memorandum

- **Conservative Tracer** – Boron is a metalloid known to be present in coal ash and can be used as a conservative tracer in groundwater. The average concentration of boron in Leachate Headwell LH-104 (11,000 ug/L: November 2017 - October 2024) is significantly higher than concentrations observed at any of the other locations sampled as a part of this monitoring program and approximately an order of magnitude higher than concentration observed at MW-55 (1,130 ug/L in October 2024). Additionally, recently observed boron concentrations at MW-55 are similar to or lower than historical concentrations, which further supports that the water quality at MW-55 is not directly affected by groundwater migrating from the landfill.
- **Changes in Geochemistry Related to Water Level Changes** – Water levels observed at MW-55, as shown in Appendices A and G of the 24Q4 HMP Report, increased over 4-ft between 2010 and 2020. The oxidation-reduction potential (ORP) at MW-55 has generally decreased (i.e., is more reducing) since 2010, while pH has generally increased. These changes in field indicator parameters over time as a result of changes in water levels have affected the geochemical conditions in the vicinity of MW-55, resulting in changes in the solubility of both arsenic and iron. Since 2021, water levels have been generally decreasing, resulting in a slight increase in ORP (i.e., is less reducing) and decreases in pH and concentrations of both arsenic and iron, which further illustrates the relationship between groundwater elevations, redox state, and concentration of arsenic and molybdenum in groundwater.

Summary

The nature and extent of arsenic in the shallow water-bearing unit is defined in accordance with the Federal CCR rule based on the site-specific hydrogeology. Beryllium and lithium concentrations in groundwater have been addressed as a part of the Weadock Bottom Ash Pond closure. Although arsenic concentrations at times exceed the GWPS within the groundwater monitoring system wells, the concentrations are not present at statistically significant levels. Arsenic is delineated within the limits of the property owned by Consumers Energy and there are currently no adverse effects on human health or the environment from either surface water or groundwater due to CCR management at the Weadock Bottom Ash Pond or Weadock Landfill. Risk from potential exposure to groundwater is managed.

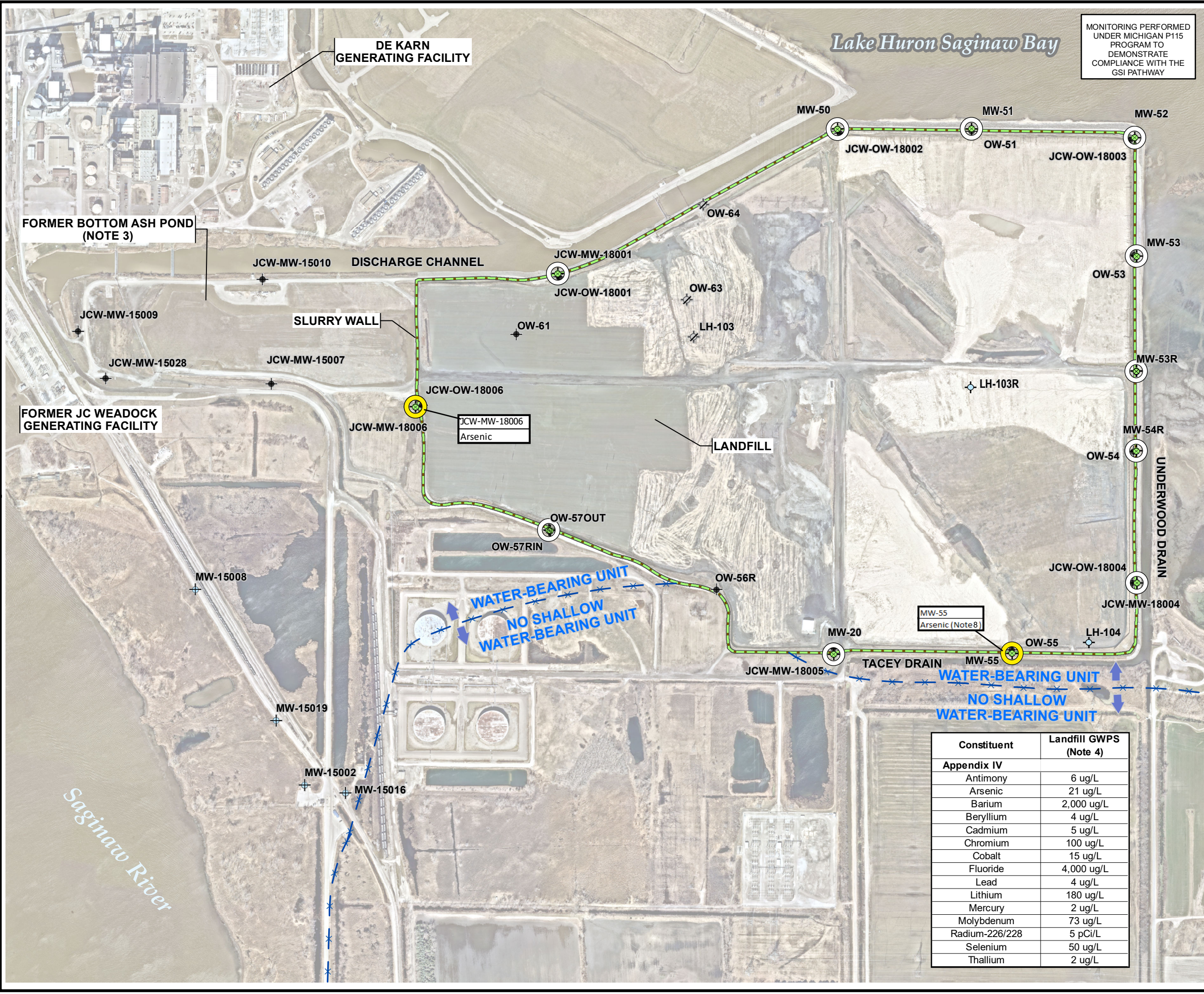
Attachments

Figure 1 Nature and Extent Summary: GWPS Exceedances

Attachment A Time Series Graphs

Figure

Coordinate System: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl (Foot) TRC - GIS
 Map Rotation: 0
 Plot Date: 1/27/2025, 15:36:48 PM by EYPSILANTIS -- LAYOUT: ANSIB(11"x17")
 Path: X:\1-PROJECTS\Consumers Energy Company\Michigan\CCR_GW\2017_269767418426-ExceedancesNE_GWPS_20240725.mxd



MONITORING PERFORMED UNDER MICHIGAN P115 PROGRAM TO DEMONSTRATE COMPLIANCE WITH THE GSI PATHWAY

LEGEND

- BACKGROUND MONITORING WELL
- JCW LANDFILL MONITORING WELL
- LEACHATE HEADWELL
- DECOMMISSIONED MONITORING WELL
- MONITORING WELL (STATIC WATER LEVEL ONLY)
- NO EXCEEDANCES
- TWO OR MORE EXCEEDANCES (NOTES 5 & 6)
- STATISTICALLY SIGNIFICANT GWPS EXCEEDANCE (NOTE 7)
- SLURRY WALL (APPROXIMATE)
- APPROXIMATE WATER-BEARING UNIT BOUNDARY

WELL ID	* GWPS EXCEEDANCE TRIGGERING ASSESSMENT OF CORRECTIVE MEASURES PURSUANT TO §257.96
JCW-MW-18006	Arsenic
MW-55	Arsenic (Note 8)

- NOTES**
- BASE MAP IMAGERY FROM NEARMAP, (10/3/2022).
 - MONITORING WELL AND SLURRY WALL LOCATIONS PROVIDED BY CEC; SG21733SHT2 REV.B.DWG DATED 11/21/2018
 - THE JC WEADOCK BOTTOM ASH POND CCR UNIT WAS CERTIFIED AS CLOSED IN ACCORDANCE WITH 40 CFR 257.102(C) CLOSURE BY REMOVAL OF CCR IN NOVEMBER 2023.
 - GWPS IS THE HIGHER OF THE MCL/RSI, APPLICABLE MICHIGAN PART 201 CRITERIA, AND UTL AS ESTABLISHED IN TRC'S TECHNICAL MEMORANDUM DATED APRIL 23, 2021.
 - GROUNDWATER DATA FROM MARCH 2023 TO OCTOBER 2024 ARE SCREENED AGAINST THE GWPS FOR EVALUATION PURPOSES ONLY. AN EXCEEDANCE IS DEFINED AS A SINGLE DETECTION ABOVE THE GWPS, HOWEVER, CONFIDENCE INTERVALS WILL BE USED TO DETERMINE COMPLIANCE PER THE CCR RULES.
 - AN EXCEEDANCE OF THE GWPS DOES NOT INDICATE UNACCEPTABLE RISK FROM GROUNDWATER EXPOSURE; THE DRINKING WATER PATHWAY IS NOT COMPLETE ON THE PROPERTY. GROUNDWATER CONDITIONS CONTINUE TO BE MONITORED TO INFORM THE JCW LANDFILL REMEDY SELECTION.
 - LOWER CONFIDENCE LIMIT IS ABOVE GWPS.
 - ALTERNATE SOURCE DEMONSTRATION INCLUDED IN THE SEMIANNUAL PROGRESS REPORT (CONSUMERS ENERGY, JULY 2024).



Constituent	Landfill GWPS (Note 4)
Appendix IV	
Antimony	6 ug/L
Arsenic	21 ug/L
Barium	2,000 ug/L
Beryllium	4 ug/L
Cadmium	5 ug/L
Chromium	100 ug/L
Cobalt	15 ug/L
Fluoride	4,000 ug/L
Lead	4 ug/L
Lithium	180 ug/L
Mercury	2 ug/L
Molybdenum	73 ug/L
Radium-226/228	5 pCi/L
Selenium	50 ug/L
Thallium	2 ug/L

PROJECT: **CONSUMERS ENERGY COMPANY
 JC WEADOCK POWER PLANT
 ESSEXVILLE, MICHIGAN**

TITLE: **NATURE AND EXTENT SUMMARY
 GWPS EXCEEDANCES**

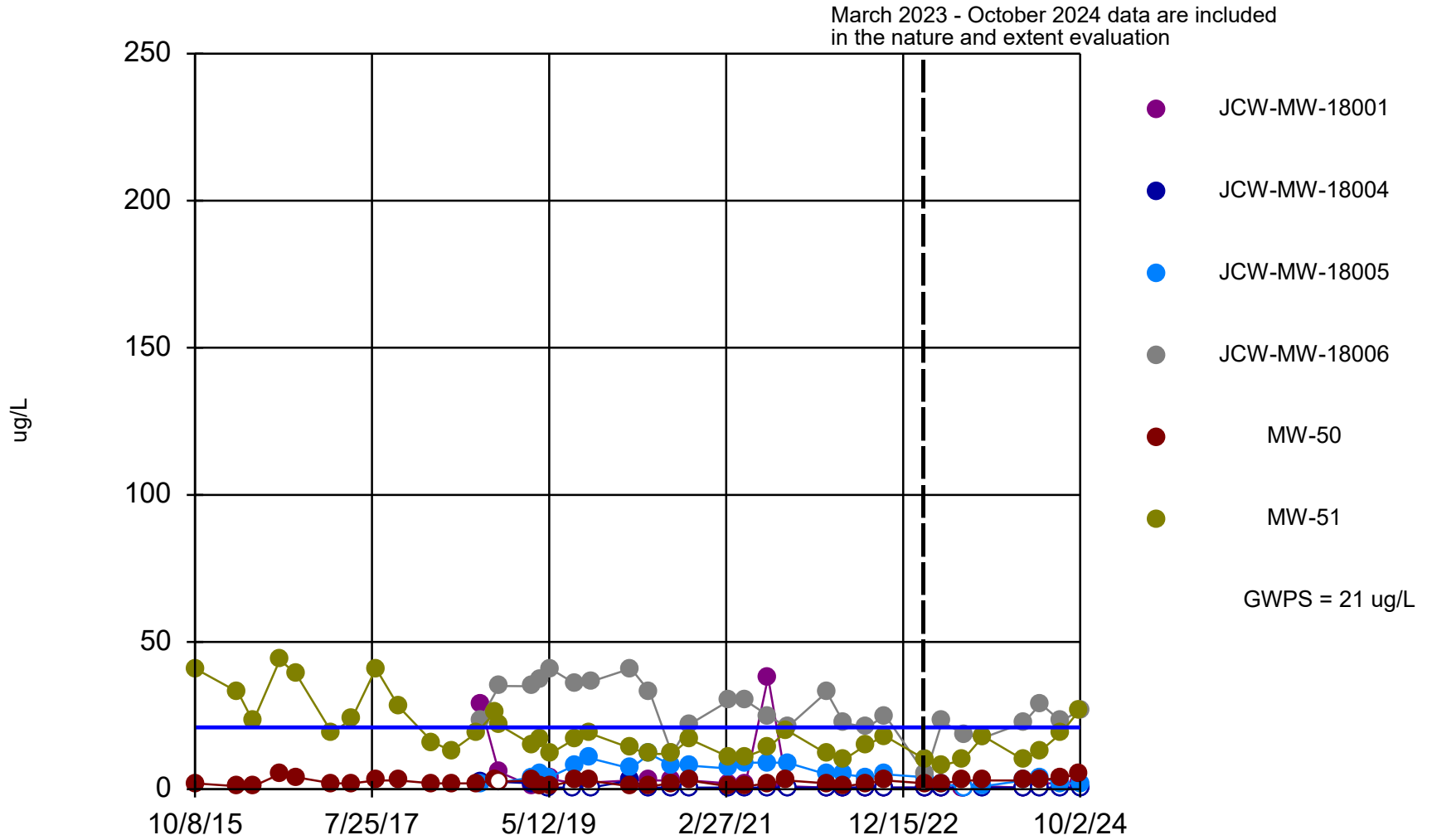
DRAWN BY: E. YPSILANTIS PROJ NO.: 553828
 CHECKED BY: K. LOWERY
 APPROVED BY: D. LITZ
 DATE: JANUARY 2025

FIGURE 1

Attachment A

Time Series Graphs

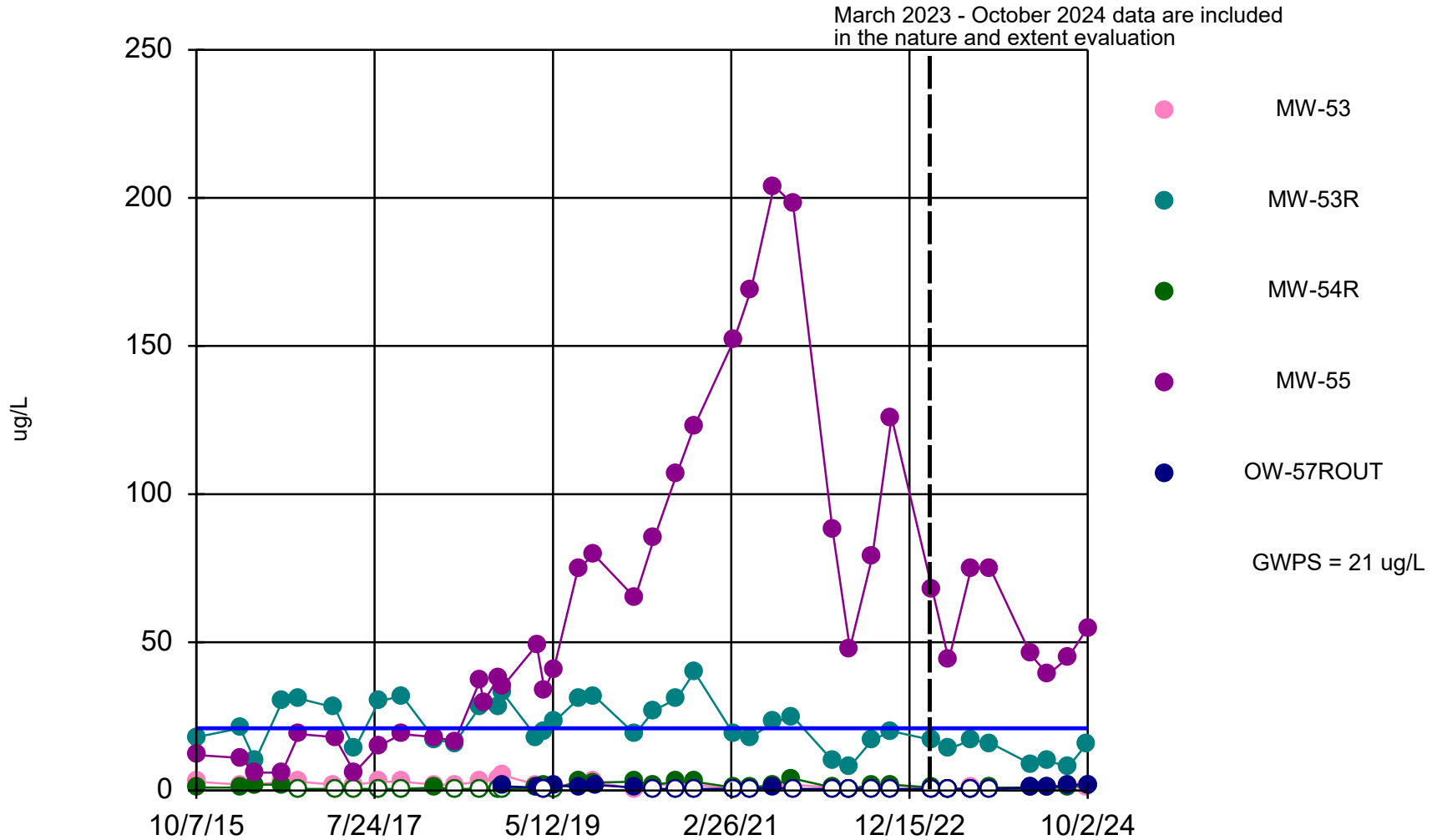
Arsenic Comparison to GWPS



Time Series Analysis Run 12/20/2024 10:27 AM

Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4

Arsenic Comparison to GWPS



Time Series Analysis Run 12/20/2024 10:28 AM
Client: Consumers Energy Data: JCW_HMPCCR_Sanitas_24Q4