

July 30, 2024

#### TRANSMITTAL VIA EMAIL 07/30/2024

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: Semiannual Progress Report – Selection of Final Remedy pursuant to §257.97(a)

JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units

#### Dear Ms. Babcock:

This 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<sup>1</sup>, 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 <u>known</u> groundwater conditions were identified in the report 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 except for a 1,600 ft venting feature<sup>2</sup>. Later in 2018, construction of the Weadock Slurry Wall was extended to include the previous vent<sup>3</sup>. 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*<sup>4</sup>, prepared by TRC, dated February 2021 approved and incorporated by reference into the renewed Solid Waste Operating License No. 9640 dated March 11, 2021.

<sup>&</sup>lt;sup>1</sup> TRC. 2019. Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units. Prepared for Consumers Energy Company. September.

<sup>&</sup>lt;sup>2</sup> NTH Consultants, Ltd. 2009. Construction Certification, Soil-Bentonite Cutoff Wall April 24.

<sup>&</sup>lt;sup>3</sup> Golder Associates, Inc. 2018. J.C. Weadock Generating Facility, Slurry Wall Vent Closure Construction Documentation Report. October 30.

<sup>&</sup>lt;sup>4</sup> TRC. 2021. Landfill Hydrogeological Monitoring Plan – JC Weadock Power Plant, Essexville, Michigan. Prepared for Consumers Energy Company. February.

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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.

#### Weadock Landfill Groundwater Sampling Results: March and May 2024 Events

Statistical analysis from the quarterly groundwater monitoring events performed in March and May 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 1 and 2). 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 and molybdenum 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 Second Quarter 2024 Hydrogeological Monitoring Report; JC Weadock Solid Waste Disposal Area (Enclosure 2) 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 First Semiannual 2024 Nature and

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Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan (Enclosure 3).

#### Conclusions

The first phase of partial closure focused on construction approximately 22.5 acres of final cover commenced in May 2023. The certification for the partial closure was accepted by EGLE on July 17, 2024. Consumers Energy will continue monitoring conditions during the execution of the final closure construction including performance of the soil-bentonite slurry wall. 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.

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 January 31, 2024. Please feel free to contact me with any questions or clarifications.

Sincerely,

Harold D. Register, Jr., P.E.

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Mr. Joe Firlit, Consumers Energy

Ms. Darby Litz, TRC Ms. Kristin Lowery, TRC Mr. Jacob Krenz, TRC

#### Enclosures:

- 1) First Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, April 30, 2024).
- 2) 2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report, JC Weadock Solid Waste Disposal Area, Essexville, Michigan. (TRC, July 30, 2024).
- 3) First Semiannual 2024 Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan. (TRC, July 30, 2024).



# Enclosure 1 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

Darby Litz

Project Manager/Hydrogeologist

#### **Prepared For:**

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

#### **Prepared By:**

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Figure 2 Site Map

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#### **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 steam. 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 uncertainly 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 INOW-61OW-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					
рН	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

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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 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 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<sup>™</sup> 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).<sup>1</sup> 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

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<sup>&</sup>lt;sup>1</sup> 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 onsite. 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.



Table 1

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

W-II	TOC	Octobrate Heitref	Screen In	terval	March	4, 2024
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevat (ft)	ion	Depth to Water	Groundwater Elevation
					(ft BTOC)	(ft)
Background Monitori						1
MW-15002	587.71	Sand	580.9 to		6.73	580.98
MW-15008	585.36	Sand with clay	578.7 to	568.7	4.32	581.04
MW-15016	586.49	Sand	581.2 to		5.53	580.96
MW-15019	586.17	Sand and Sand/Clay	579.5 to	569.5	5.46	580.71
Bottom Ash Pond: Do						1
JCW-MW-15007	587.40	Sand	582.7 to	579.2	3.02	584.38
JCW-MW-15009	589.64	Sand	581.9 to	576.9	9.40	580.24
JCW-MW-15010	597.76	Sand	579.7 to	578.2	18.03	579.73
JCW-MW-15028	589.64	Sand	567.7 to	564.7	7.80	581.84
Landfill: Downgradier	nt Monitoring Wells	s (outside slurry wall)				
JCW-MW-18001	596.73	Sand and Sandy Clay	578.3 to	573.3	17.95	578.78
JCW-MW-18004	593.04	Sandy Clay	583.9 to	578.9	12.98	580.06
JCW-MW-18005	590.89	Sand and Sandy Clay	580.0 to	575.0	8.15	582.74
JCW-MW-18006	600.72	Fly Ash and Sandy Clay	582.8 to	577.8	12.73	587.99
MW-50	593.36	Sand	577.8 to	574.8	14.53	578.83
MW-51	594.29	Sand and Clay	577.8 to	574.8	15.24	579.05
MW-52	594.90	Sand	579.3 to	576.3	16.60	578.30
MW-53	593.68	Sand and Clay	579.1 to	576.1	14.58	579.10
MW-53R	594.25	Sand and Clay	580.4 to	575.4	15.38	578.87
MW-54R	593.89	Clay and Sand	581.3 to	576.3	14.75	579.14
MW-55	593.82	Sand	581.5 to	578.5	14.84	578.98
OW-57R OUT	591.00	Sandy Clay	577.0 to	572.0	9.60	581.40
Landfill: Static Water	Level Only (inside	slurry wall)				
JCW-OW-18001	595.84	Fly Ash and Sand	581.1 to	576.1	6.60	589.24
JCW-OW-18002	593.63	Sand	578.9 to	573.9	10.78	582.85
JCW-OW-18003	593.99	Sand and Clay	580.5 to	575.5	8.28	585.71
JCW-OW-18004	594.19	Sandy Clay	584.6 to	579.6	6.36	587.83
JCW-OW-18006	600.61	Fly Ash and Clay with Sand	582.9 to	577.9	7.02	593.59
MW-20	592.73	NR	~581.1 to	~578.1	6.16	586.57
OW-51	593.62	Clay and Sand	578.9 to	575.9	9.15	584.47
OW-53	593.64	Clay and Sand	579.0 to	576.0	7.48	586.16
OW-54	594.10	Clay and Sand	580.0 to	577.0	6.52	587.58
OW-55	594.67	Clay (or Sand and Clay)	580.9 to	577.9	6.16	588.51
OW-56R	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	5.80	585.06
OW-61	602.15	Ash and Sand	588.0 to	585.0	6.20	595.95
Landfill: Leachate He	adwells					•
LH-103R	612.70	Fly Ash	30.2 to	33.2	21.28	591.42
LH-104	596.56	Fly Ash	8.0 to	11.0	8.05	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

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

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction Potential	рН	Specific Conductivity	Temperature	Turbidity
		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(NTU)
Background							
MW-15002	3/5/2024	1.76 <sup>(1)</sup>	-69.2	6.7	4,728	8.3	0.0
MW-15008	3/5/2024	1.51 <sup>(1)</sup>	-115.1	6.7	1,506	8.5	0.0
MW-15016	3/5/2024	1.53 <sup>(1)</sup>	-102.4	7.0	1,318	5.8	0.0
MW-15019	3/5/2024	1.63 <sup>(1)</sup>	-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.

## 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
				MI Non-					
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^		Backo	ground	
Appendix III <sup>(1)</sup>									
Boron	ug/L	NC	500	500	4,000	116	128	336	241
Calcium	mg/L	NC	NC	NC	500 <sup>EE</sup>	175	124	227	174
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500 <sup>EE</sup>	3.79	5.64	271	92.7
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	3,300	1,010	1,090	1,220
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	6.7	6.7	7.0	6.7
Appendix IV <sup>(1)</sup>									
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 <sup>(</sup>	2)								
Iron	ug/L	300**	300 <sup>E</sup>	300 <sup>E</sup>	500,000EE	17,600	18,900	18,200	23,000
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	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 <sup>E</sup>	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

 $surface \ water \ used \ as \ a \ drinking \ water \ source \ as \ described \ in \ footnote \ \{X\}. \ GSI \ criterion \ for \ chloride \ is \ 50 \ mg/L \ when \ the \ discharge \ is \ described \ in \ footnote \ for \ chloride \ is \ for \ for \ chloride \ for \ chloride \ for \ for \ chloride \ for \ for$ 

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}.
- $^{\mbox{\scriptsize EE}}$  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.

April 2024

#### 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:	3/5/2024	3/5/2024	3/6/2024	3/6/2024	3/5/2024	3/5/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Downgradient	Downgradient/ GSI	Downgradient	Downgradient	Downgradient/ GSI	Downgradient/ GSI
Appendix III <sup>(1)</sup>													
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 <sup>EE</sup>	NC	NC	557	238	335	137	199	132
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500EE	NC	NC	1,880	557	512	70	449	266
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	NC	NC	3,450	1,250	1,400	748	1,180	902
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	NC	NC	6.8	7.0	6.7	7.0	7.5	7.4
Appendix IV <sup>(1)</sup>													
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 11	5 <sup>(2)</sup>												
Iron	ug/L	300**	300 <sup>E</sup>	300 <sup>E</sup>	500,000 <sup>EE</sup>	NC	NC	3,570	98	4,020	7,970	889	446
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	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 <sup>E</sup>	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.

#### Summary of Groundwater Sampling Results (Analytical)

JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program

Essexville, Michigan

-							c, micrigan	8					
							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
				MINI		Chronic-Based	Acute-Based	Downgradient/	Downgradient/	Downgradient/	Downgradient/	Downgradient/	
		===		MI Non-		Mixing Zone GSI	Mixing Zone GSI	GSI	GSI	GSI	GSI	GSI	Downgradient
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^	Criteria^	Criteria^	001	001	001	001	001	
Appendix III <sup>(1)</sup>													
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 <sup>EE</sup>	NC	NC	237	134	173	170	166	123
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500EE	NC	NC	540	25	53	49	224	79
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	NC	NC	1,380	694	862	752	866	770
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	NC	NC	7.0	7.5	7.0	7.0	6.9	7.2
Appendix IV <sup>(1)</sup>													
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 11	5 <sup>(2)</sup>												
Iron	ug/L	300**	300 <sup>E</sup>	300⁵	500,000EE	NC	NC	3,120	947	752	159	18,700	44
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	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	5,000E	260	NC	NC	< 10	< 10	< 10	< 10	< 10	< 10

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.

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- \* Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.
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- ^ 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.
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Page 2 of 2 April 2024

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

Assessment Mo	Assessment Monitoring Statistical Evaluation																							
Constituent	Units	GWPS	MW	<i>l</i> -50	MV	V-51	MW	<b>/-</b> 52	MV	MW-53		-53R	MW	-54R	MW	<i>I-</i> 55	OW-57	R OUT	JCW-M\	N-18001	JCW-M	W-18005	JCW-M\	W-18006
Constituent	Offics	GWF3	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron <sup>(1)</sup>	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	-														-		-		ı			

GSI Statistical Evaluation										
Constituent	Units	GSI	MW-55							
Constituent	Utilis	GSI	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.,

Page 1 of 1 April 2024

# 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 ( <b>bold</b> >201)	4 Qtr. 2023 ( <b>bold</b> >201)						
	No Exceedances at Compliance Locations											

# 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
pН	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) <sup>(1)</sup>	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

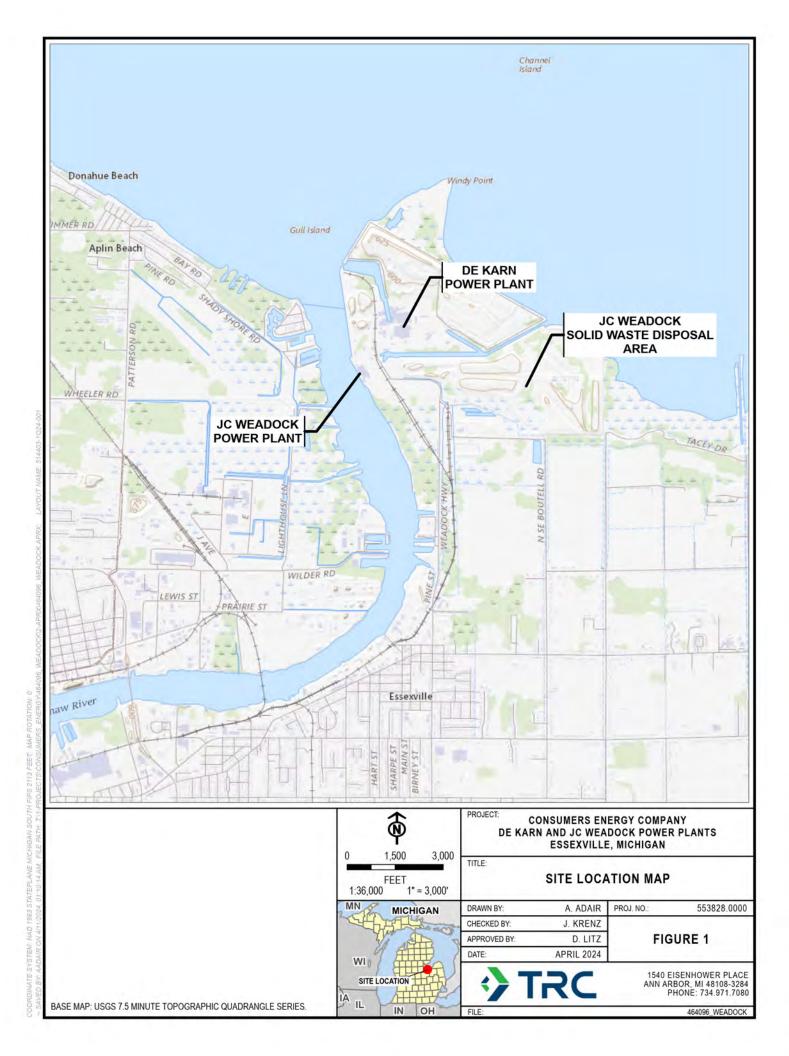
uS/cm = microSiemens per centimeter

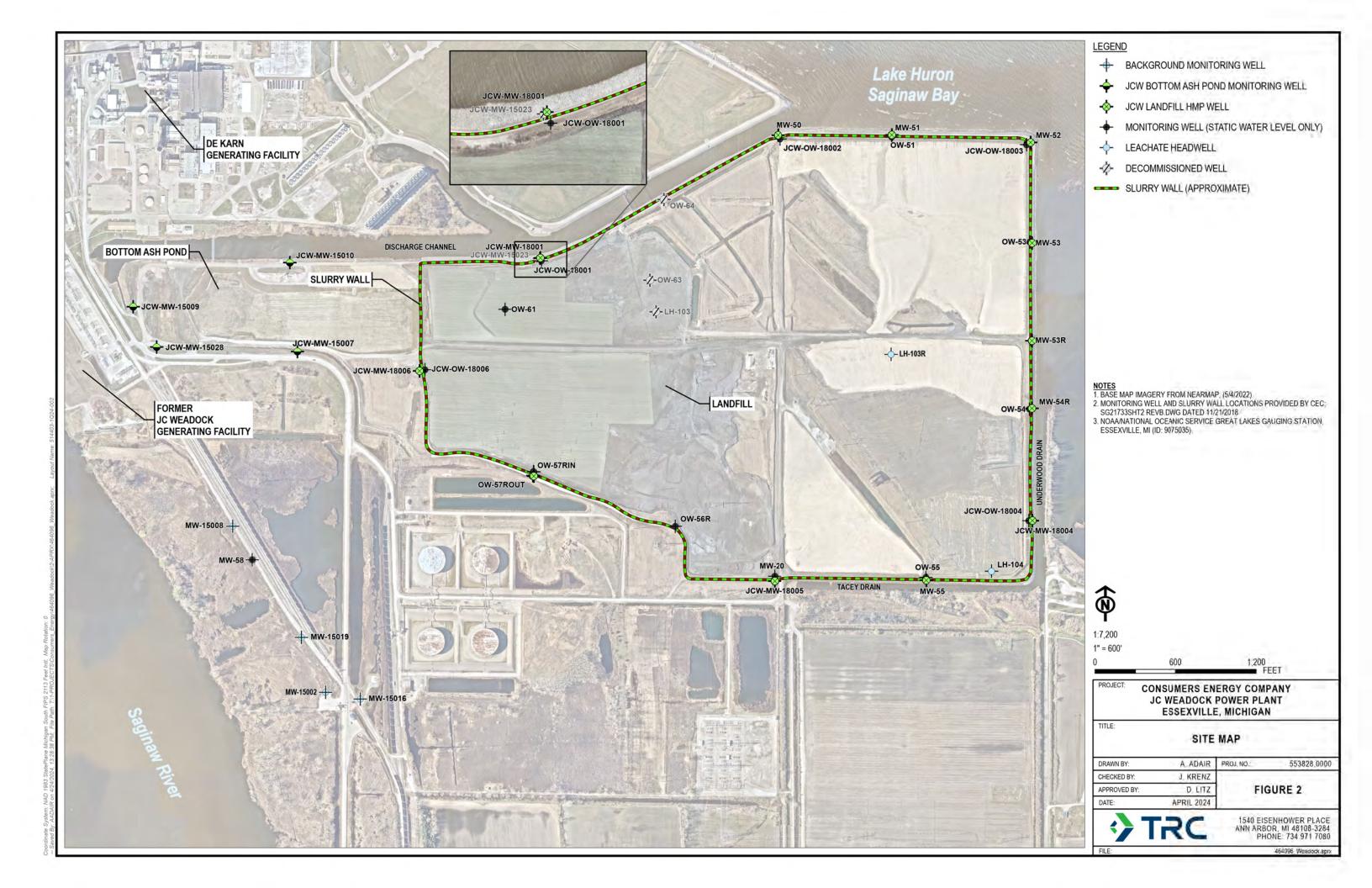
O.R.P. = oxidation-reduction potential

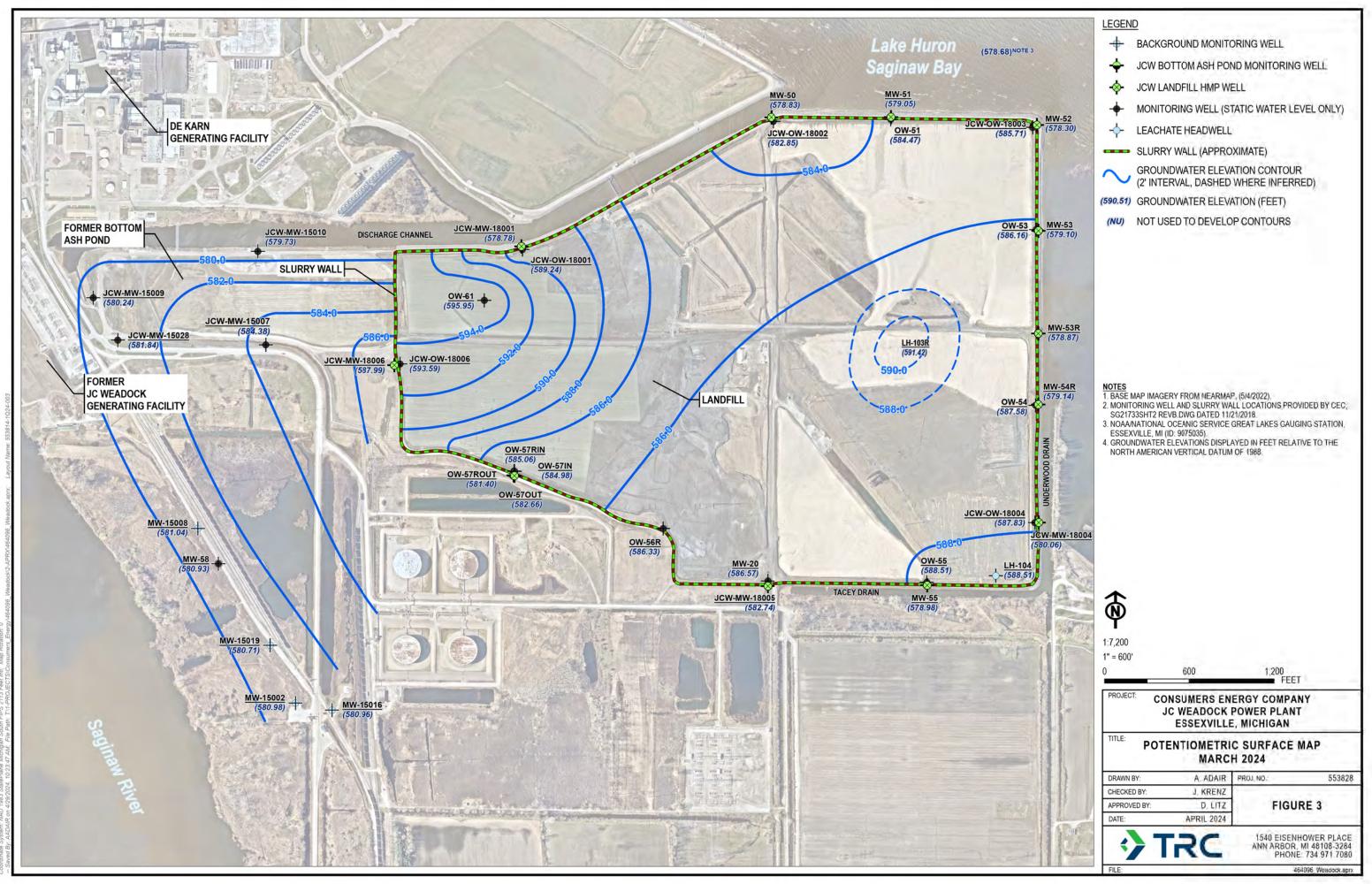
(1) Primary sample result | Duplicate sample result



## **Figures**









# 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) <sup>(1)</sup>
MW-50	3/4/2024	578.83		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	578.68	0.42
MW-53R	3/4/2024	578.87	576.00	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	e:	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	SWL MW	X <sub>wells</sub>	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Discharge Channel	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
JCW-OW-18001	589.24		22.4	4.68E-01	2.00	2.88	1,010		0.47	2,904	8.85E-02	0.66	242
JCW-MW-18001		578.78			3.75			2.30E-08	0.47	2,304	0.03L-02	0.00	242
JCW-OW-18002	582.85		28.9	1.39E-01	4.00	4.25	970	2.30L-00	0.14	4,123	3.74E-02	0.28	102
MW-50		578.83			4.50				0.14	7,120	3.7 <del>4</del> L-02	0.20	102
Monitoring Well Pair	SWL Obs Well	SWL MW	X <sub>wells</sub>	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Adjacent Zone	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
OW-51	584.47		14.4	3.77E-01	4.00	3.88	1,850		0.38	7,169	1.76E-01	1.32	481
MW-51		579.05			3.75				0.00	7,100	1.702 01	1.02	101
JCW-OW-18003	585.71		33.9	2.19E-01	3.50	3.01	740	2.30E-08	0.22	2,224	3.17E-02	0.24	87
MW-52		578.30			2.51					_,			-
OW-53 MW-53	586.16	579.10	20.1	3.51E-01	1.25 1.26	1.26	730		0.35	916	2.09E-02	0.16	57
10107-53		579.10			1.20								
Monitoring Well Pair	SWL Obs Well	SWL MW	X <sub>wells</sub>	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Non-Adjacent Zone	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
OW-54	587.58		21.2	3.98E-01	2.00	2.25	510		0.40	1,148	2.97E-02	0.22	81
MW-54R		579.14			2.50				0.40	1,140	2.97 E-02	0.22	01
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			2.30E-08	0.25	3,340	0.37 L-02	0.40	174
OW-55	588.51		24	3.98E-01	2.00	1.49	1,220	∠.30⊑-00	0.40	1,818	4.72E-02	0.35	129
MW-55		578.98			0.98				0.40	1,010	4.726-02	0.33	129
MW-20	586.57		40.9	9.36E-02	1.50	1.38	1,120		0.09	1,540	9.40E-03	0.07	26
JCW-MW-18005		582.74			1.25				0.09	1,340	3.40E-03	0.07	20

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

2.05E-02

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) =

#### Notes:

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

579.58

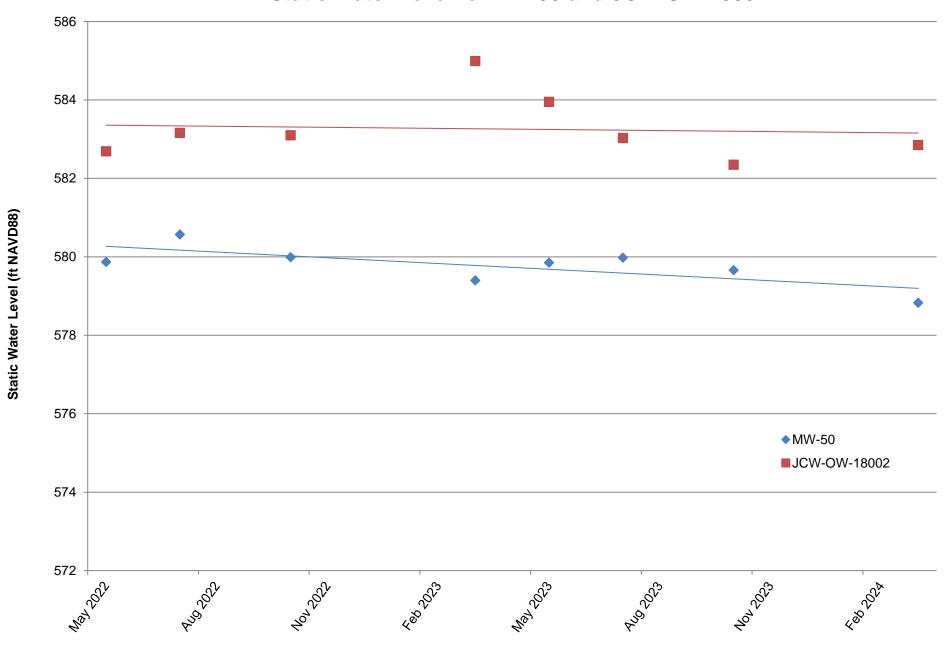
- 1. Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- 2. Saturated thickness will be the thickness of the sand unit when the observed SWL 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.
- 3. 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
- 4. Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- 5. 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

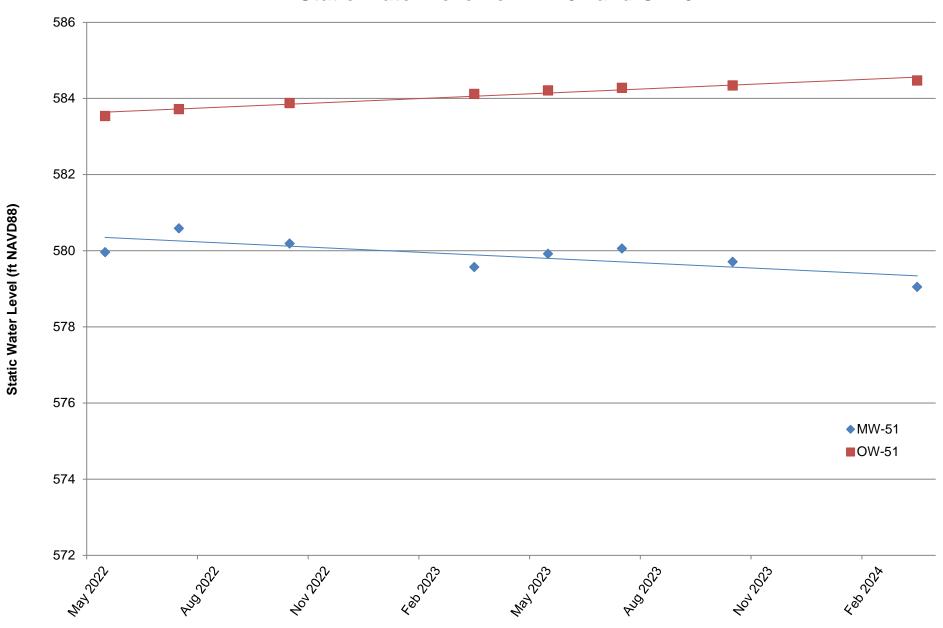
ft/ft = feet per foot; cm/sec = centimeters per second; ft<sup>2</sup> = square feet; ft<sup>3</sup>/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year

i = hydraulic gradient; K = hydraulic conductivity;  $x_{wells}$  = distance between well pairs

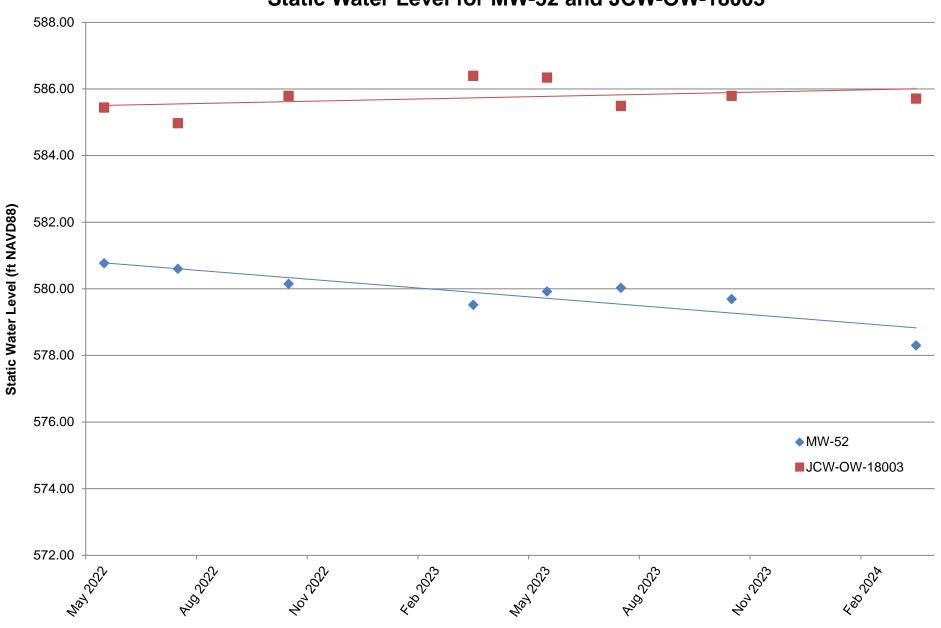
Appendix A
Static Water Level for MW-50 and JCW-0W-18002



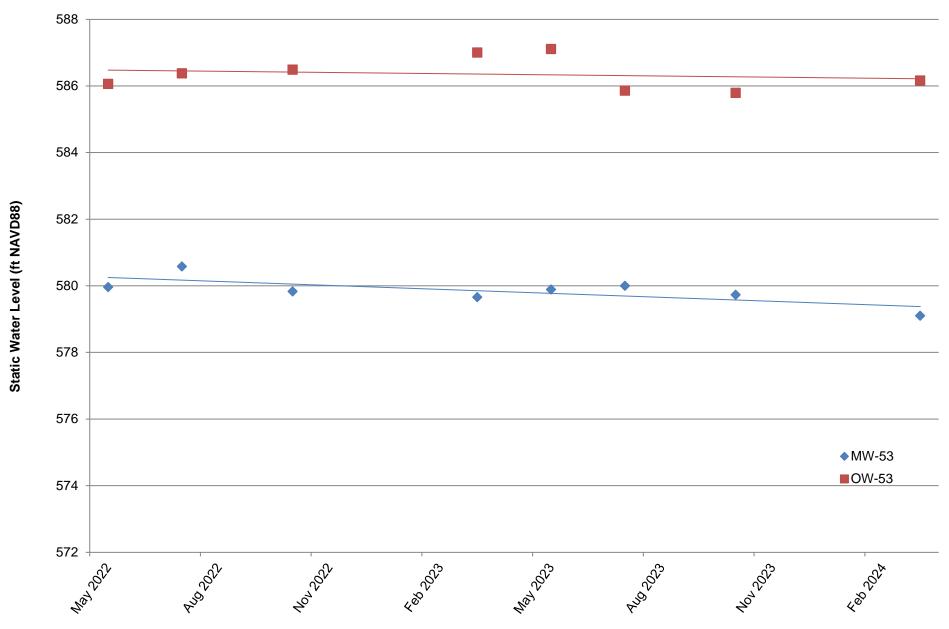
Appendix A
Static Water Level for MW-51 and OW-51



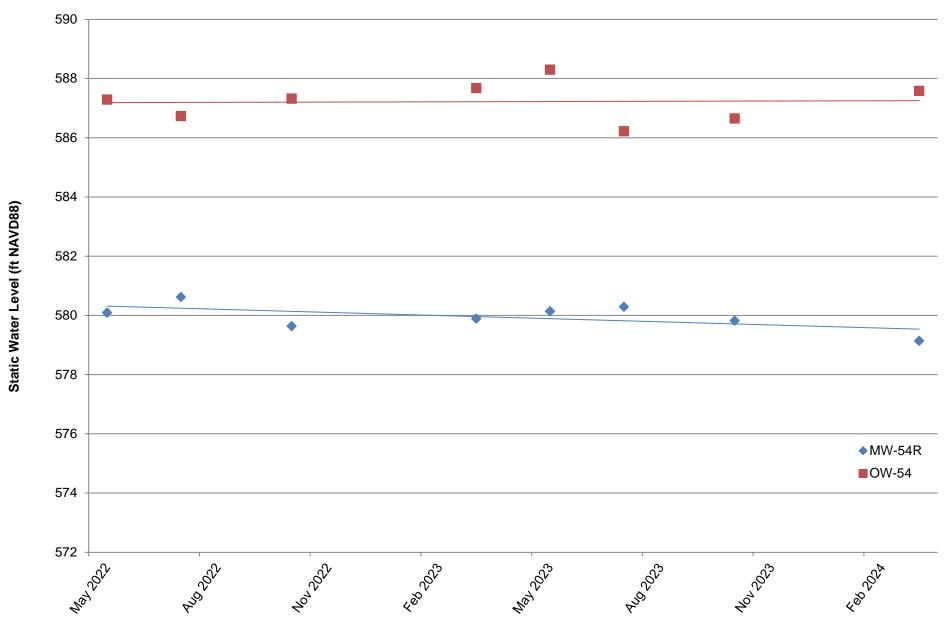
Appendix A
Static Water Level for MW-52 and JCW-0W-18003



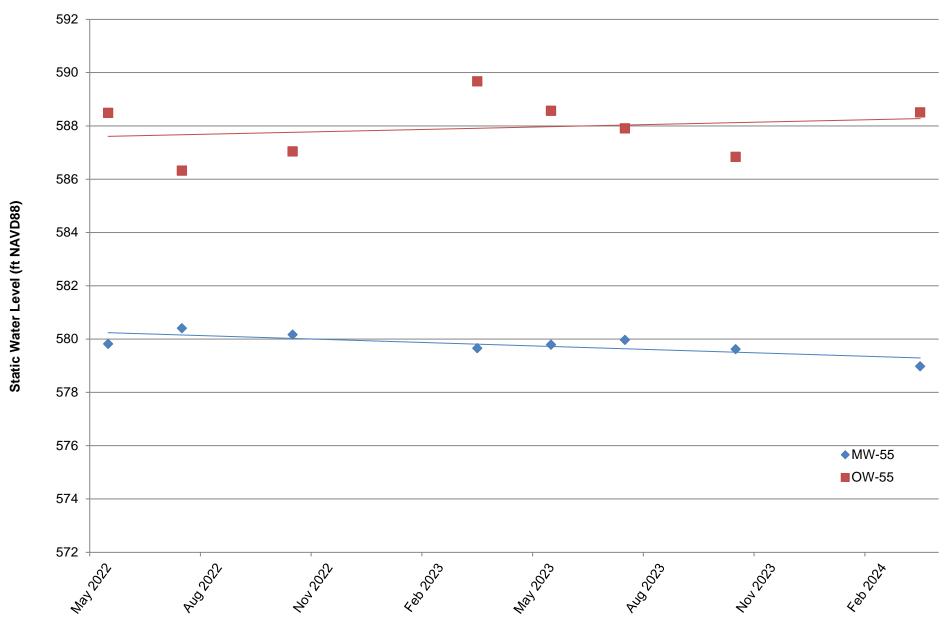
Appendix A
Static Water Level for MW-53 and OW-53



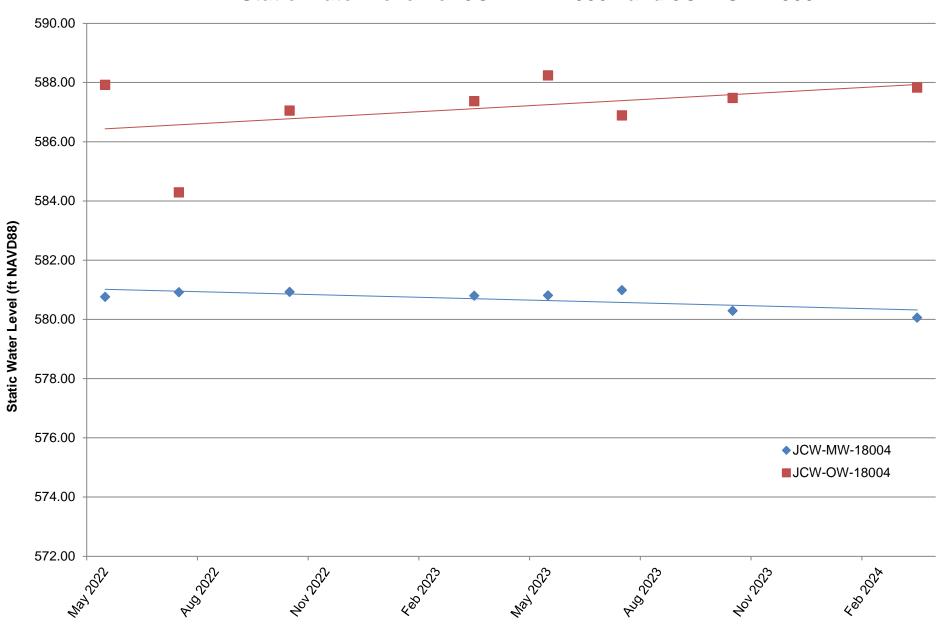
Appendix A
Static Water Level for MW-54R and OW-54



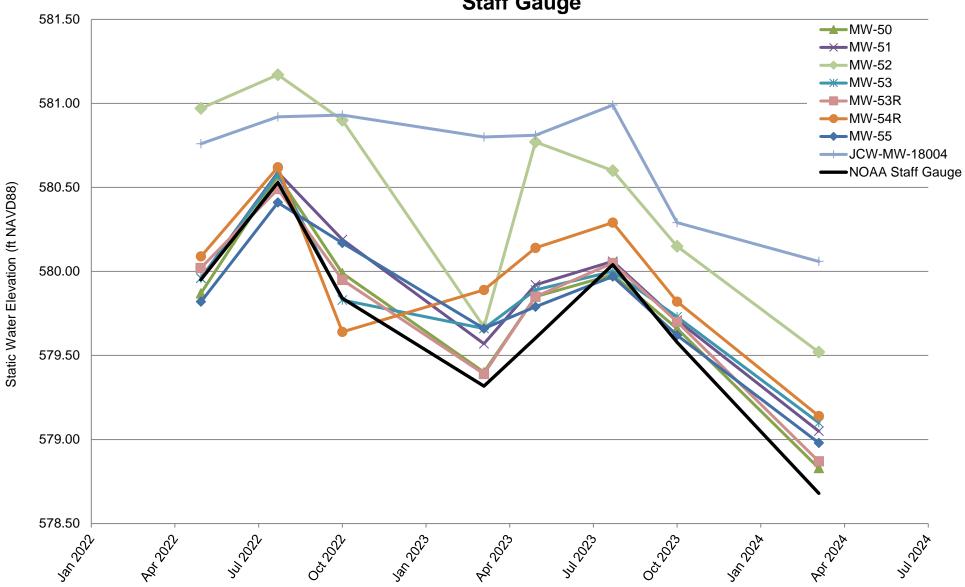
Appendix A
Static Water Level for MW-55 and OW-55



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.</p>
- 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				
MW-15016	3/5/2024	Copper	Field blank contamination; potential false positive.		
MW-15019	3/5/2024		rieid biank contamination, potential raise positive.		
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-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 <5x 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.</li>
- 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		
JCW-MW-18006	3/6/2024		Field duplicate variability (results <5x the reporting limit [RL] and absolute difference greater than RL); potential
OW-57ROUT	3/6/2024	Nickel	uncertainty exists for the listed results.
MW-58	3/6/2024		uncertainty exists for the listed results.
DUP-JCW-LF-02	3/6/2024		<u> </u>

## 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 <sup>(1)</sup>	0	0	0	0	<b>^*</b>	<b>\</b>			
Calcium	↑ <sup>ASD</sup>	0	0	0	0	<b>↓</b>			
Chloride	0	<b>^*</b>	0	0	0	0			
Fluoride	O*	O*	O*	O*	O*	O*			
Iron	1	0	0	0	0	0			
pH/Corrosivity <sup>(1)</sup>	0	0	0	0	0	0			
Sulfate	↑ <sup>ASD</sup>	0	0	<b>^</b> *	<b>^</b> *	<b>↓</b>			
Total Dissolved Solids	0	0	0	0	0	<b>↓</b>			

#### 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 <sup>(1)</sup>	0	0	0	1	0	0		
Calcium	0	0	0	0	0	0		
Chloride	<b>↓</b>	0	0	0	0	0		
Fluoride	O*	O*	O*	O*	O*	O*		
Iron	0	0	0	0	0	0		
pH/Corrosivity <sup>(1)</sup>	0	0	0	0	0	0		
Sulfate	<b>↓</b>	↓*	0	0	0	0		
Total Dissolved Solids	0	0	0	0	0	↑*		

#### Notes:

O\* = Non-detect (70%)

O = No trend

↑ = Upward trend, continuous

↑\* = Upward trend, new

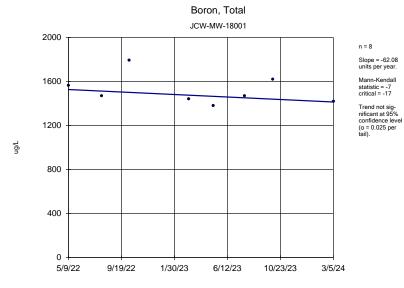
= Upward trend, confirmed

↓ = Downward trend, continuous

↓\* = Downward trend, new

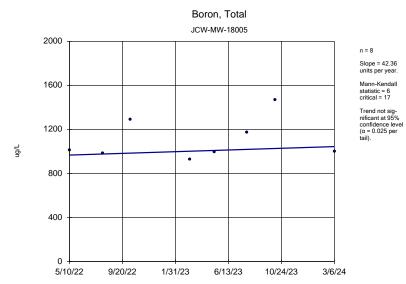
↑ ASD = Alternate Source Demonstration (Fourth Quarter 2023 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, January 2024).

(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).



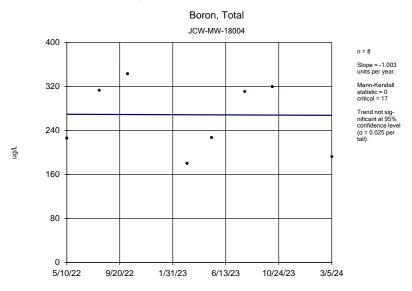
Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM

Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM

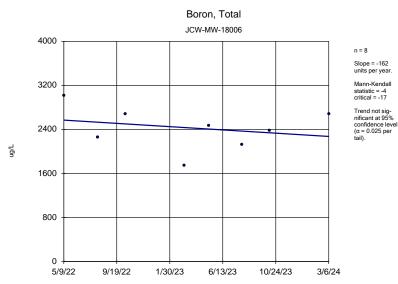
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1



Sen's Slope Estimator Analysis Run 4/7/2024 3:37 PM

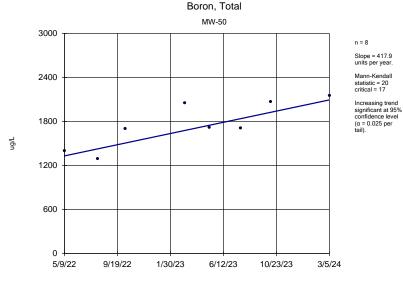
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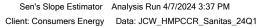
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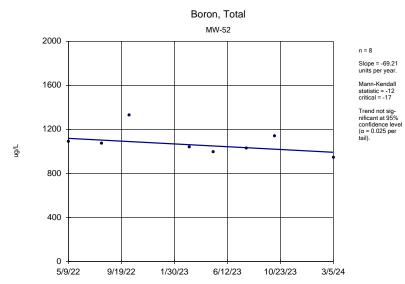


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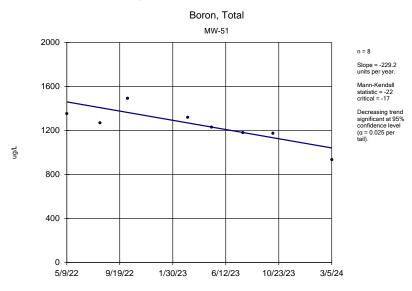






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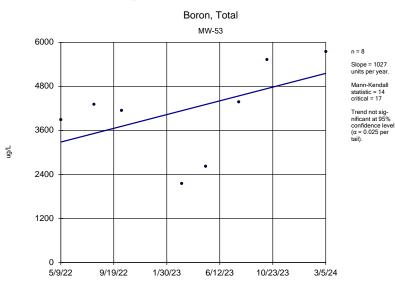
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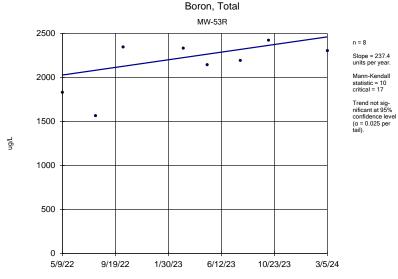
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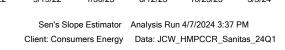
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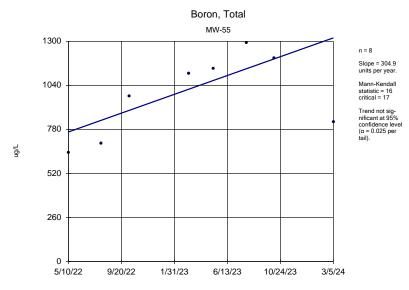


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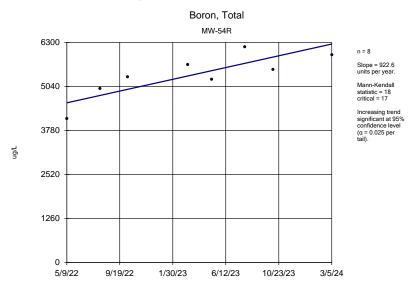






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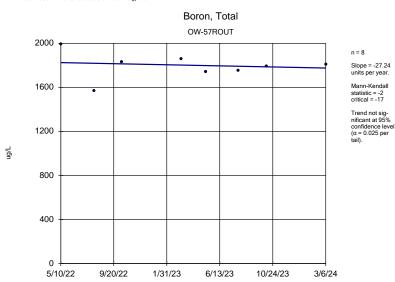
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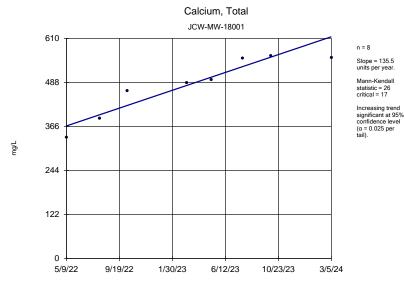
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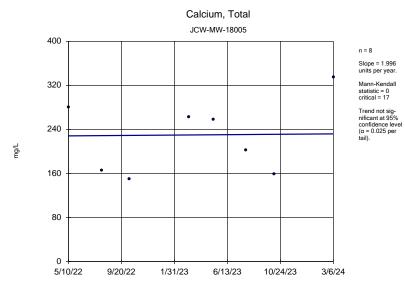
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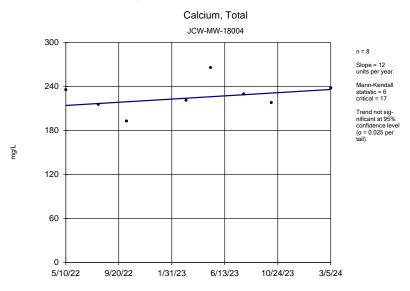
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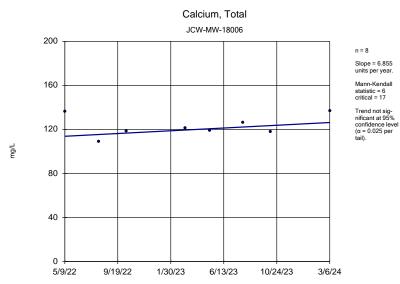
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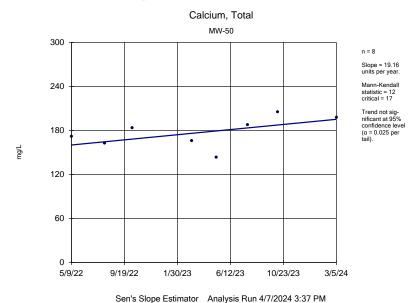
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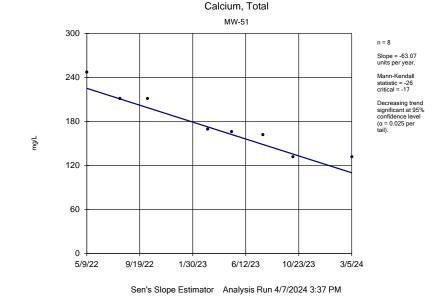


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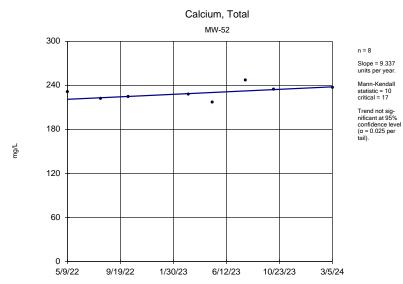


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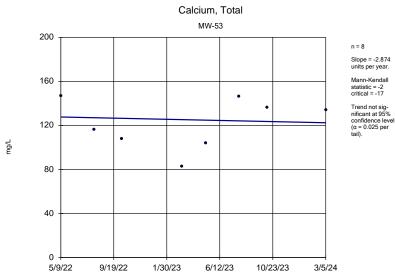




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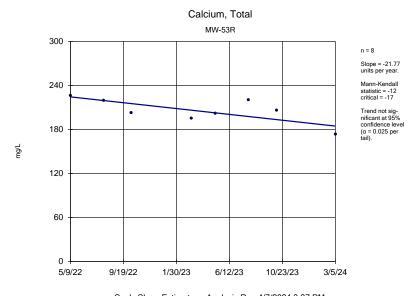
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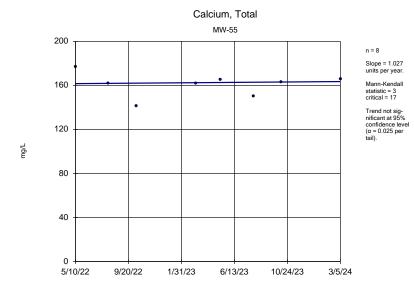
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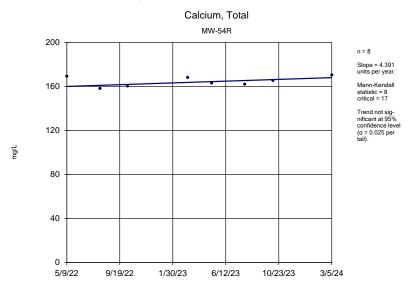
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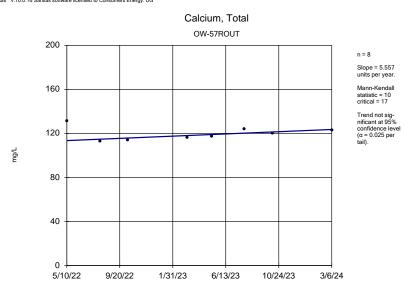
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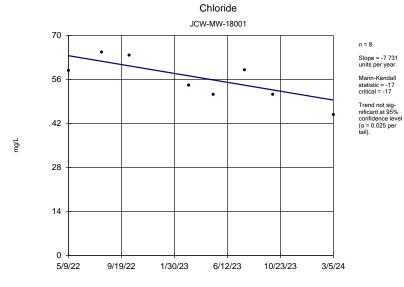
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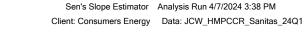
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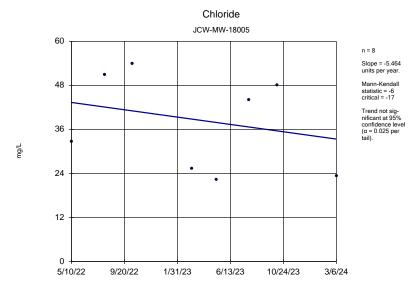


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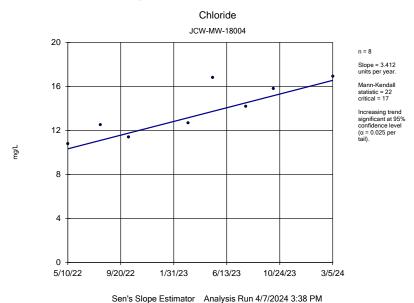
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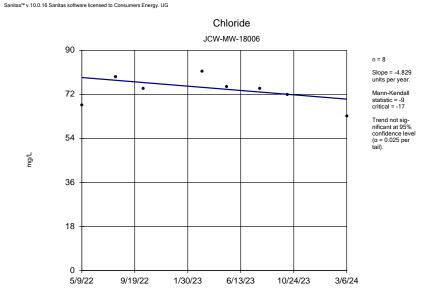




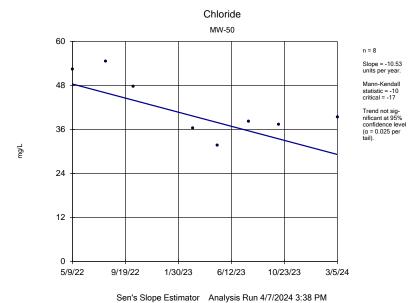
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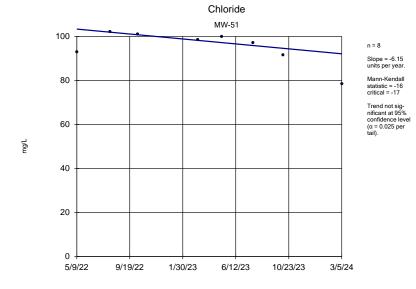
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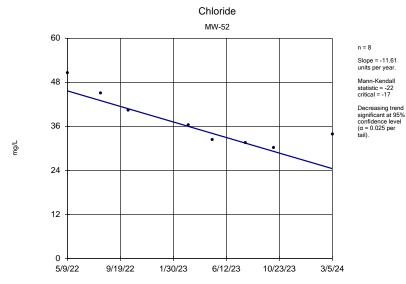


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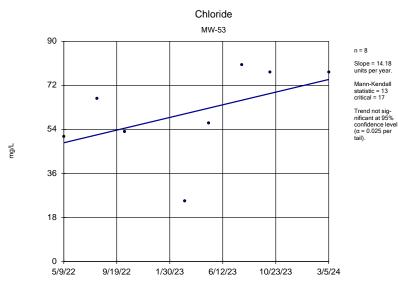
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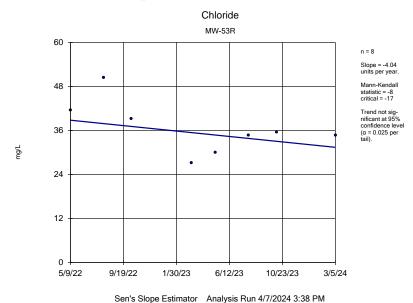


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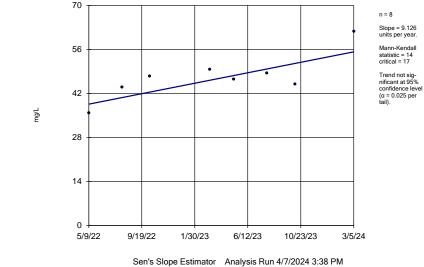
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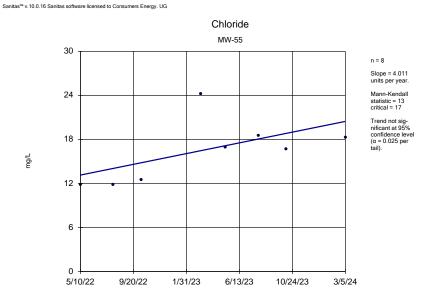


Chloride

MW-54R

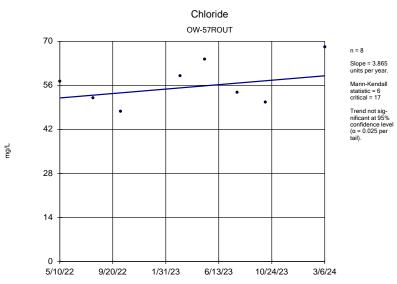
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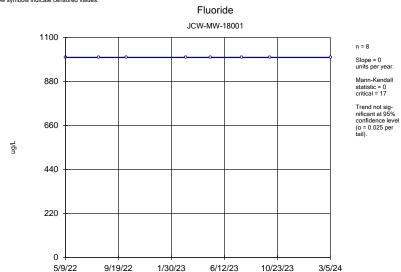
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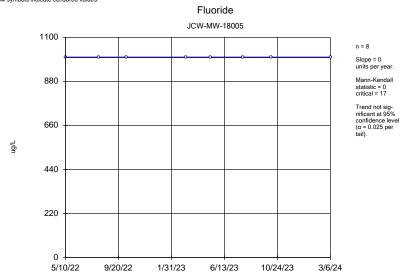
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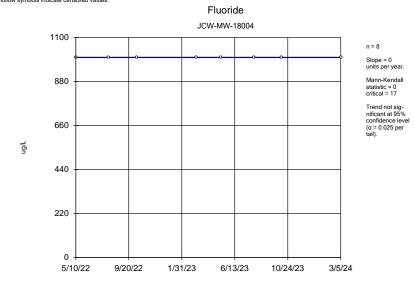
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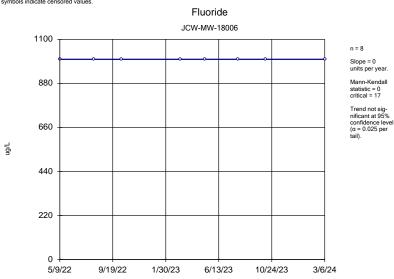
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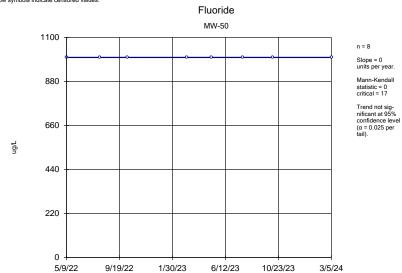
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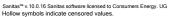


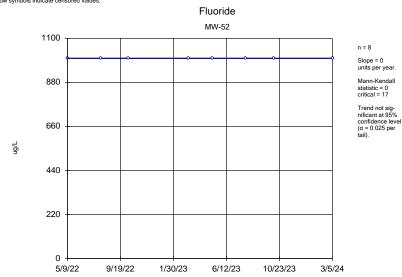
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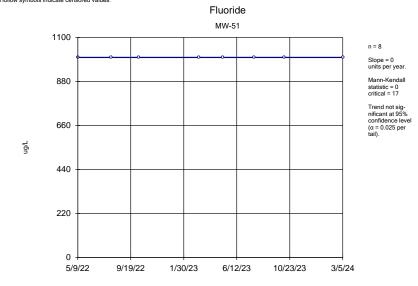
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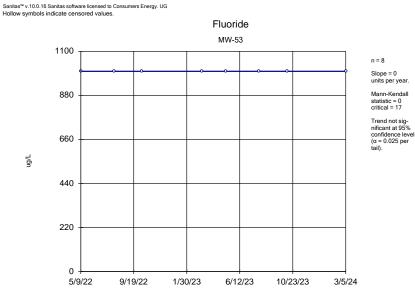
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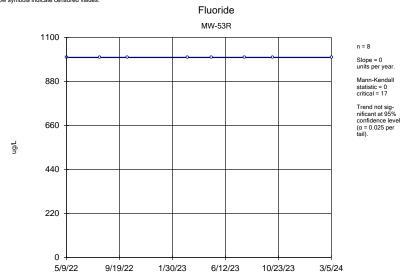


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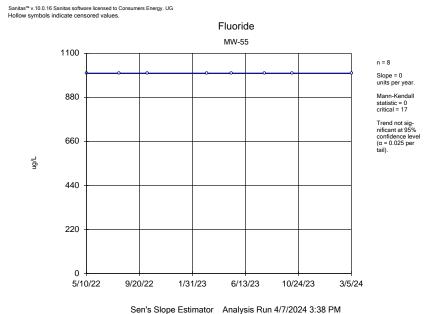


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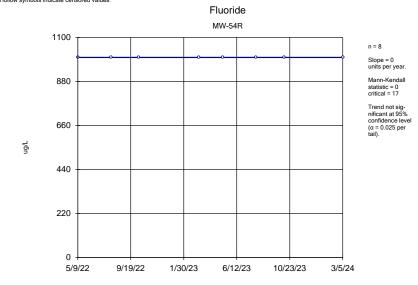
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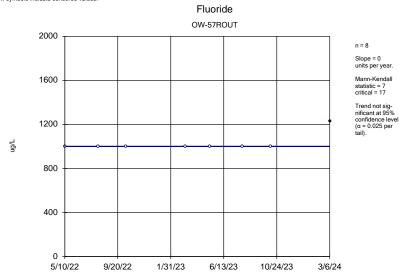
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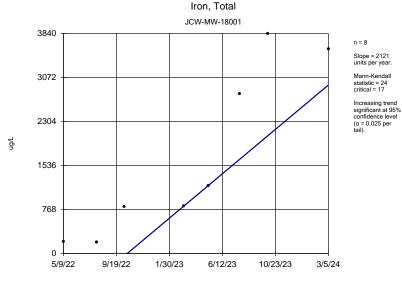
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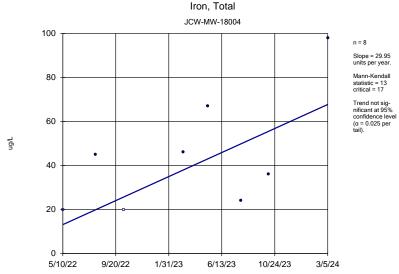


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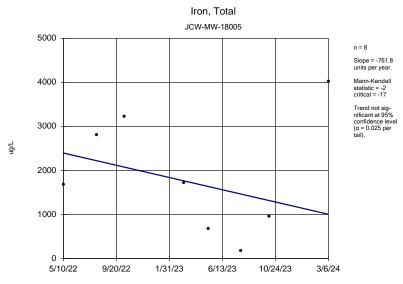
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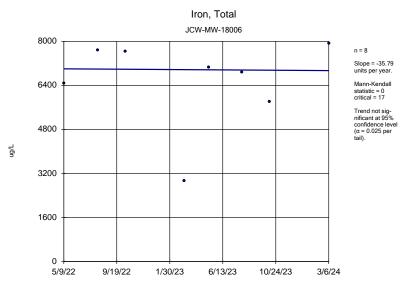
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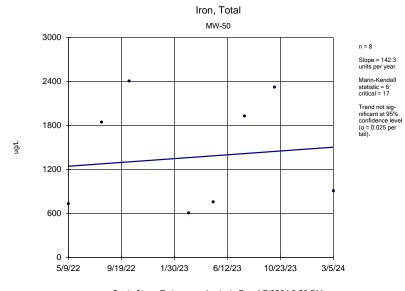
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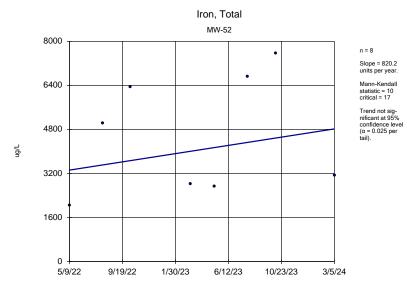
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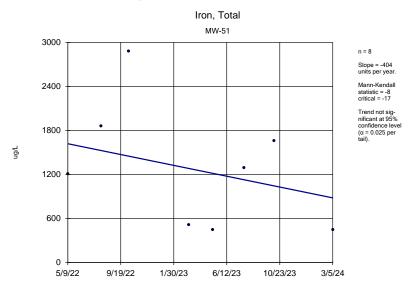
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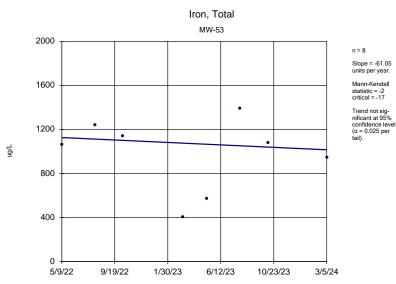
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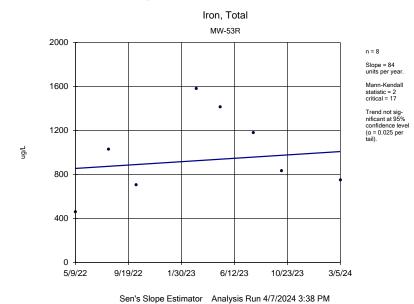
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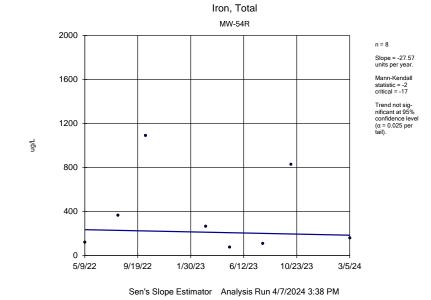
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Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1

Iron, Total

OW-57ROUT

n = 8

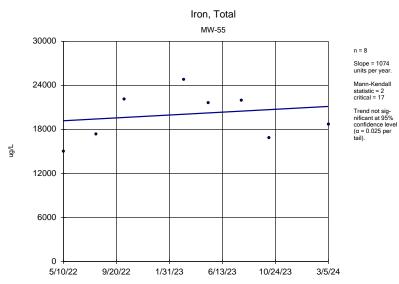
Slope = -4.525

units per year.

Mann-Kendall

statistic = -2 critical = -17





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Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1

1/31/23

Sen's Slope Estimator Analysis Run 4/7/2024 3:38 PM

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6/13/23

10/24/23

3/6/24

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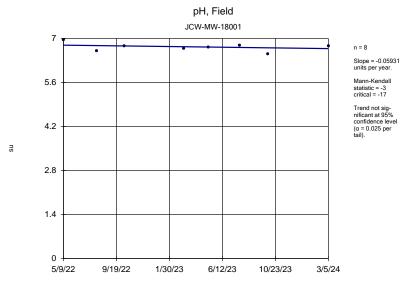
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64

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5/10/22

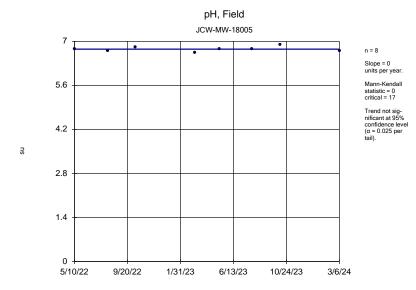
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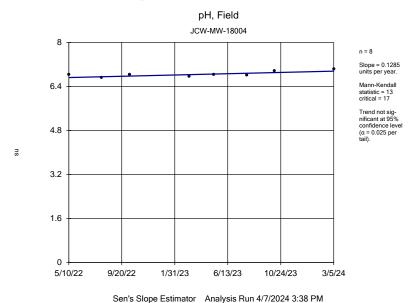
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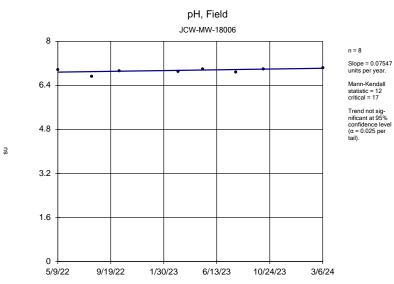


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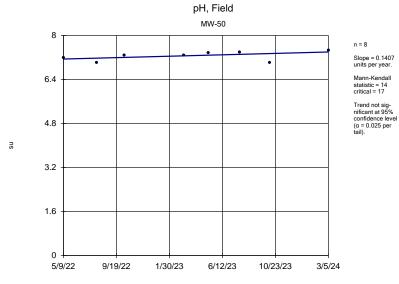


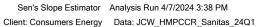
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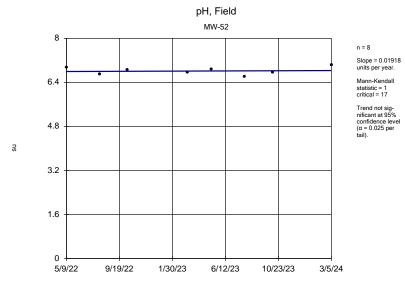


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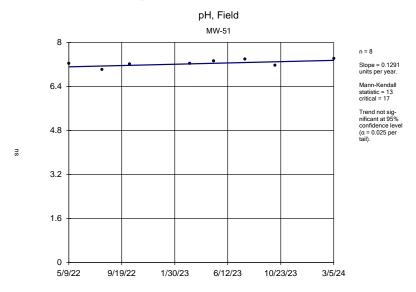




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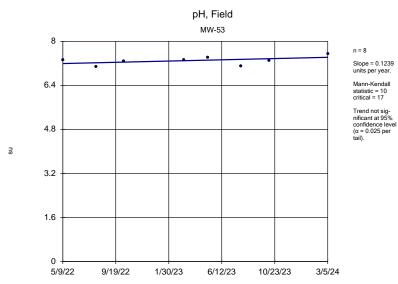
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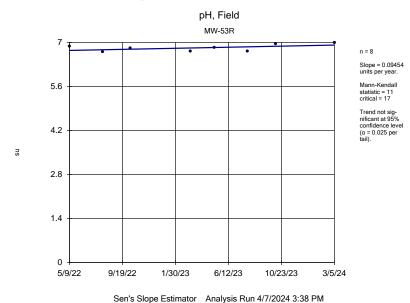
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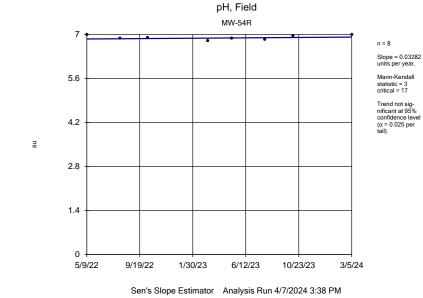
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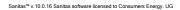
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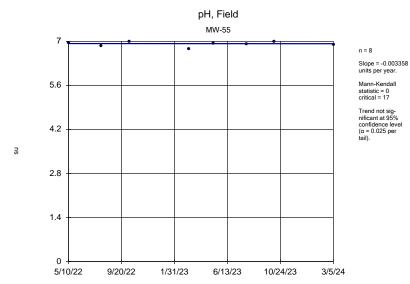


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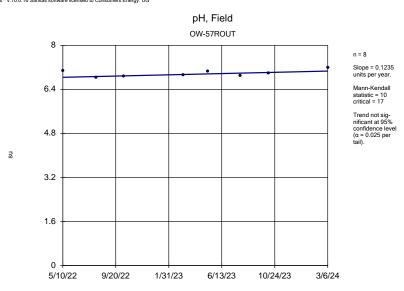
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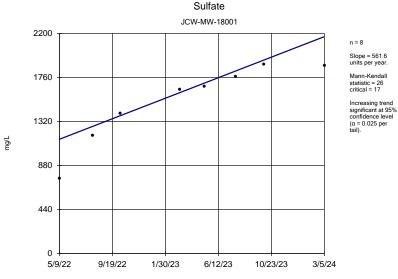


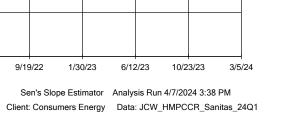


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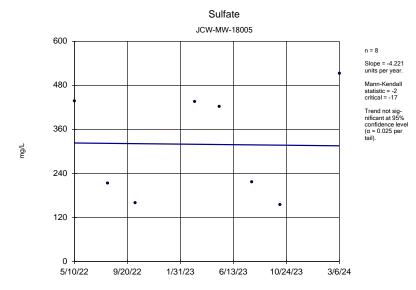
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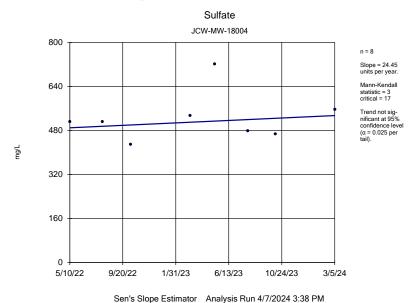




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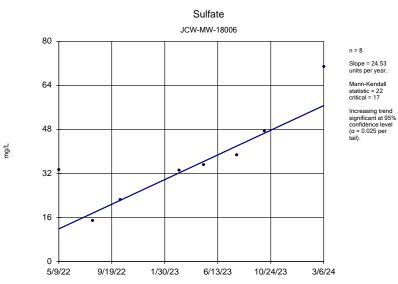


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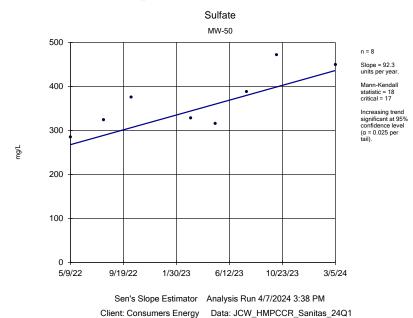


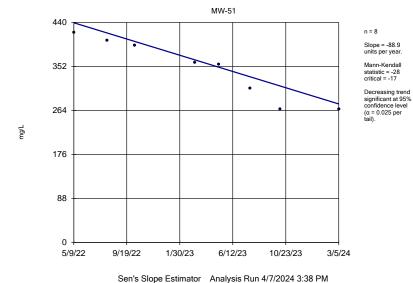
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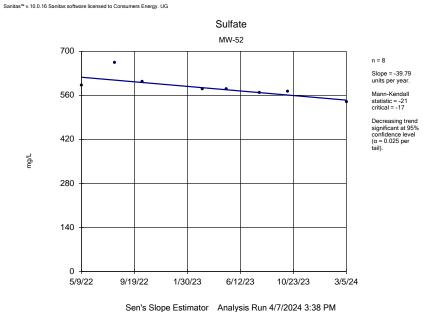




Sulfate

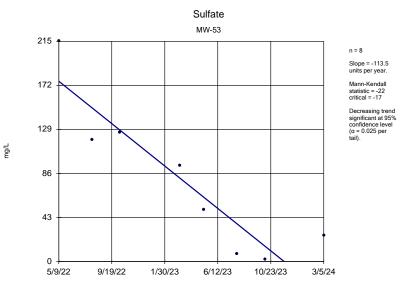


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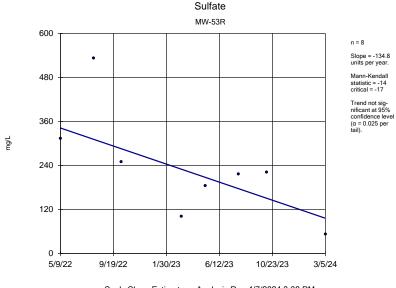
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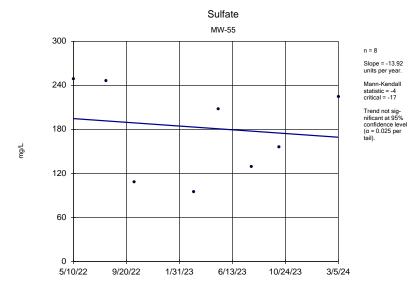
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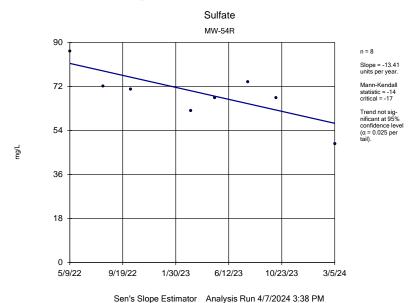


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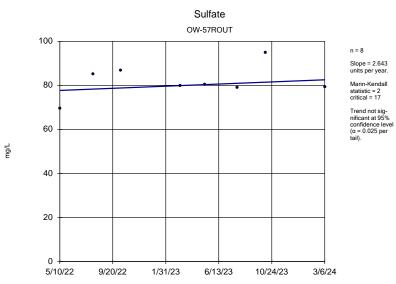


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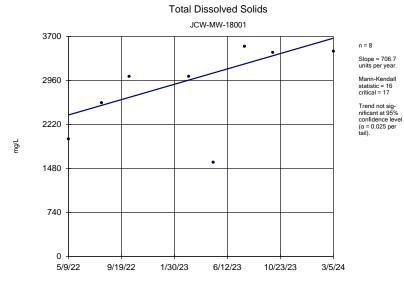


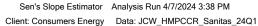
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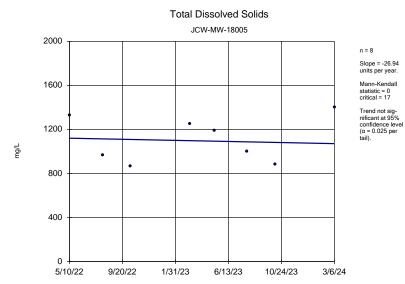


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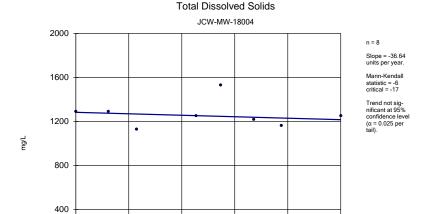




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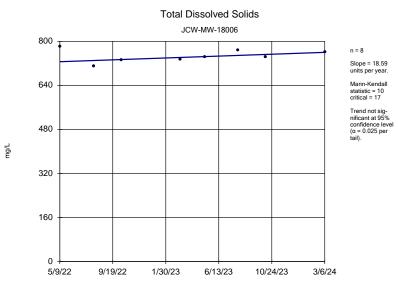
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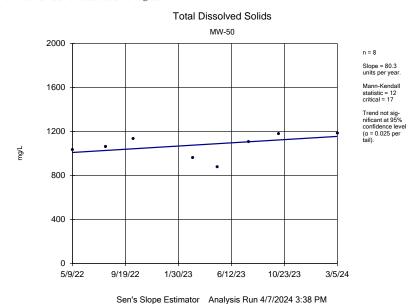
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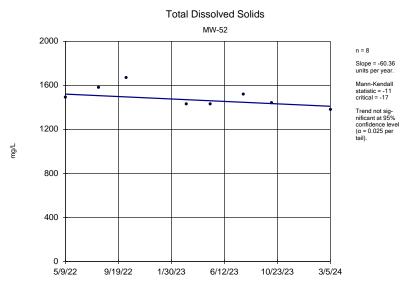


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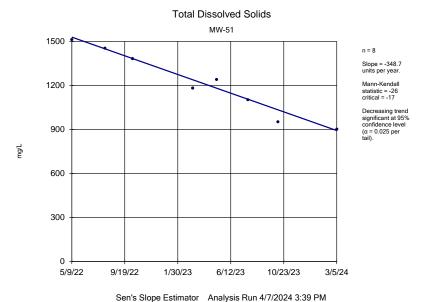


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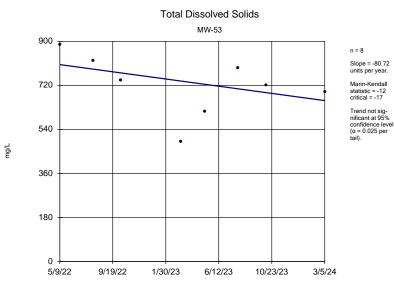


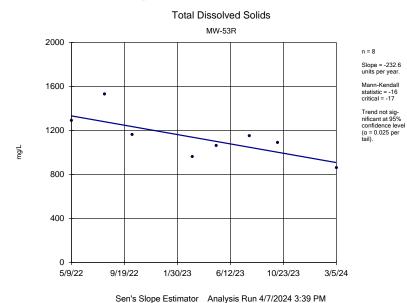
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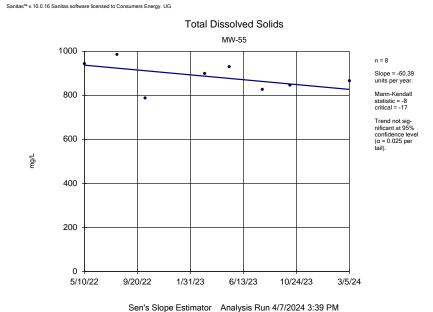
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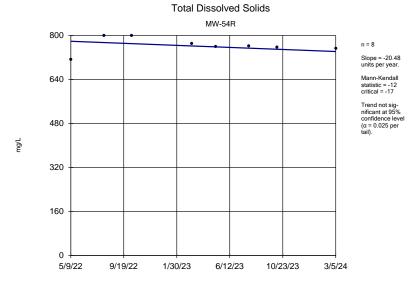
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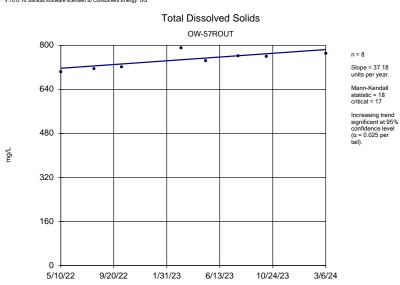
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# Appendix D Assessment Monitoring and GSI Statistical Evaluation



**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

<sup>&</sup>lt;sup>1</sup> 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).

<sup>&</sup>lt;sup>2</sup> TRC. 2021. First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan. Prepared for Consumers Energy Company. April.

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 Guidance 3, 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

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

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<sup>™</sup> statistical software. Sanitas<sup>™</sup> is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas<sup>™</sup> 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 test<sup>4</sup> 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<sup>™</sup> 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<sup>TM</sup> 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.

<sup>&</sup>lt;sup>4</sup> Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

The Sanitas<sup>™</sup> 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.

The Sanitas<sup>™</sup> 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 guarter 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.

### **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**

Comparison of Groundwater Sampling Results to Groundwater Protection Standards Table 1

Table 2 Comparison of Groundwater Sampling Results to GSI

Attachment 1 Assessment Monitoring Sanitas™ Output Files

Attachment 2 GSI Evaluation Sanitas™ Output Files

### **Tables**

								ESSOXVIIIC	e, 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 <sup>(1)</sup>				Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
Boron	ug/L	560	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
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 <sup>(1)</sup>																		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	2	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.

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- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
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		<del></del>											
		Sample Location:	= 10 10 0 0 C	0///0007	10404065		V-51	=/00/000-	40/0/000-	0/5/000			
	1	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 <sup>(1)</sup>													
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 <sup>(1)</sup>													
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.

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(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.

		Comple Leastion:	: MW-52									
		Sample Location: 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		
	1	Sample Date.	3/9/2022	0/1/2022	10/10/2022	3/9/2023	3/6/2023	1/31/2023	10/9/2023	3/3/2024		
Constituent	Unit	GWPS										
Appendix III <sup>(1)</sup>												
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 <sup>(1)</sup>												
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.

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

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		Sample Location:				MV	<i>l</i> -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 <sup>(1)</sup>										
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	SŬ	6.5 - 8.5	7.3	7.1	7.3	7.3	7.4	7.1	7.3	7.5
Appendix IV <sup>(1)</sup>										
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.

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		Comple Legation	ation: MW-53R								
		Sample Location: Sample Date:	5/9/2022	8/1/2022	10/10/2022	3/9/2023	- <b>53K</b> 5/8/2023	7/31/2023	10/9/2023	3/5/2024	
		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 <sup>(1)</sup>											
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 <sup>(1)</sup>											
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.

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SU - standard units; pH is a field parameter.

pCi/L - picocuries per liter.

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		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		
			0.0,00	5, 1, 222		0,0,000	5.5.25			0,0,00		
Constituent	Unit	GWPS										
Appendix III <sup>(1)</sup>												
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 <sup>(1)</sup>												
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.

		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									
Appendix III <sup>(1)</sup>					Field Dup						
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 <sup>(1)</sup>											
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.

				ESSCAVII	ie, Michigan					
		Sample Location:				OW-57	'R 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 <sup>(1)</sup>										
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	SÜ	6.5 - 8.5	7.1	6.8	6.9	6.9	7.1	6.9	7.0	7.2
Appendix IV <sup>(1)</sup>										
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	1	< 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.

		Sample Location:	ample 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		
		Campio Bato.	O/ O/ LOLL	G/ 1/2022	10/10/2022	0,0,2020	0/0/2020	1720/2020	10/0/2020	0/0/2021		
Constituent	Unit	GWPS										
Appendix III <sup>(1)</sup>												
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 <sup>(1)</sup>												
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.

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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.

	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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

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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.

	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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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-1800	6						
		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															
Appendix III <sup>(1)</sup>				Field Dup			Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
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	SÜ	6.5 - 8.5	7.0		6.7	6.9		6.9		7.0		6.9		7.0		7.0	
Appendix IV <sup>(1)</sup>																	
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.

April 2024

					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**					•							•				
Appendix III <sup>(1)</sup>							Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
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 <sup>F</sup>	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 <sup>(1)</sup>																					
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 <sup>H</sup>	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 Parame	ters <sup>(2)</sup>				·																
Iron	ug/L	500,000 <sup>EE</sup>	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.

 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - 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) addtional

assessment monitoring constituents (vanadium and zinc) are reported.

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					Sample Location:				MW	V-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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	10	15	18	10	8	10	18	10
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ters <sup>(2)</sup>	_							_				
Iron	ug/L	500,000 <sup>EE</sup>	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.

 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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) addtional

assessment monitoring constituents (vanadium and zinc) are reported.

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					Sample Location:				MW	<i>I</i> -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**					l			
Appendix III <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>	_				_							 
Iron	ug/L	500,000 <sup>EE</sup>	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.

 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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.

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					Sample Location:				MV	V-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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	1	2	< 1	< 1	1	1	1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ters <sup>(2)</sup>	•											
Iron	ug/L	500,000 <sup>EE</sup>	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) .

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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.

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					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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	8	17	20	17	14	17	16	9
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>	_											
Iron	ug/L	500,000 <sup>EE</sup>	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.

 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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.

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					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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	2	2	1	< 1	< 1	1	1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ters <sup>(2)</sup>												
Iron	ug/L	500,000 <sup>EE</sup>	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.

 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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) addtional

assessment monitoring constituents (vanadium and zinc) are reported.

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h						-								
					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^	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**									
Appendix III <sup>(1)</sup>								Field Dup						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 <sup>F</sup>	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 <sup>(1)</sup>														1
Arsenic	ug/L	10	100	680	100	48	80	78	126	68	44	75	75	46
Chromium	ug/L	11 <sup>H</sup>	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 Parame	ters <sup>(2)</sup>													1
Iron	ug/L	500,000 <sup>EE</sup>	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.

^ - 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) .

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - 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.

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(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.

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					Sample Location:				JCW-M\	W-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 <sup>(1)</sup>													
Boron	ug/L	4,000	44,000	69,000	44,000	226	313	343	180	227	310	319	192
Sulfate	mg/L	1,200 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ters <sup>(2)</sup>												
Iron	ug/L	500,000 <sup>EE</sup>	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}.

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 $^{\star\star}$  GSI criteria is the generic GSI criteria or the Chronic-Based Mixing Zone criteria, if applicable.

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

 $^{\rm H}$  - Chromium GSI criterion based on hexavalent chromium per footnote {H}.

 $^{\mbox{\scriptsize EE}}$  - Criterion is based on the total dissolved solids GSI value per footnote {EE}.

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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.

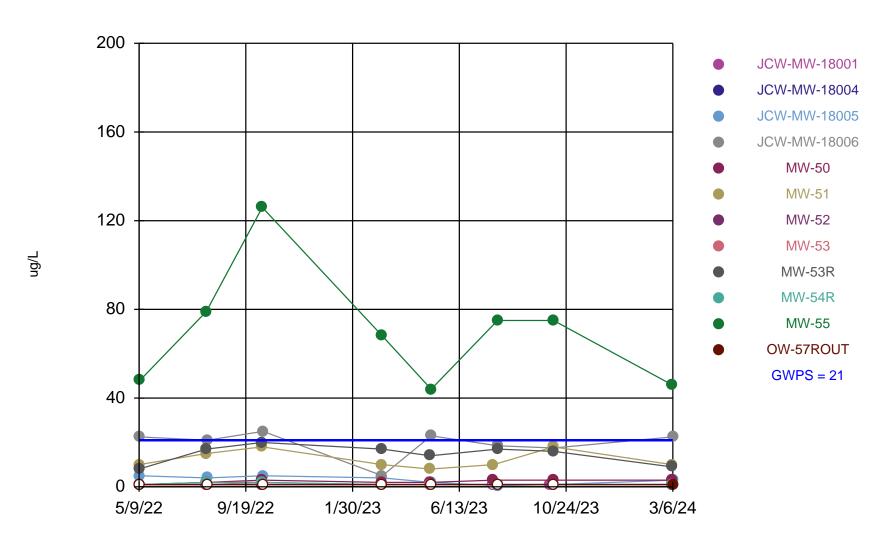
(2) Per Michigan Part 115 Amendments - Public Act No. 640 of 2018 Section 11519b(2) addtional

assessment monitoring constituents (vanadium and zinc) are reported.

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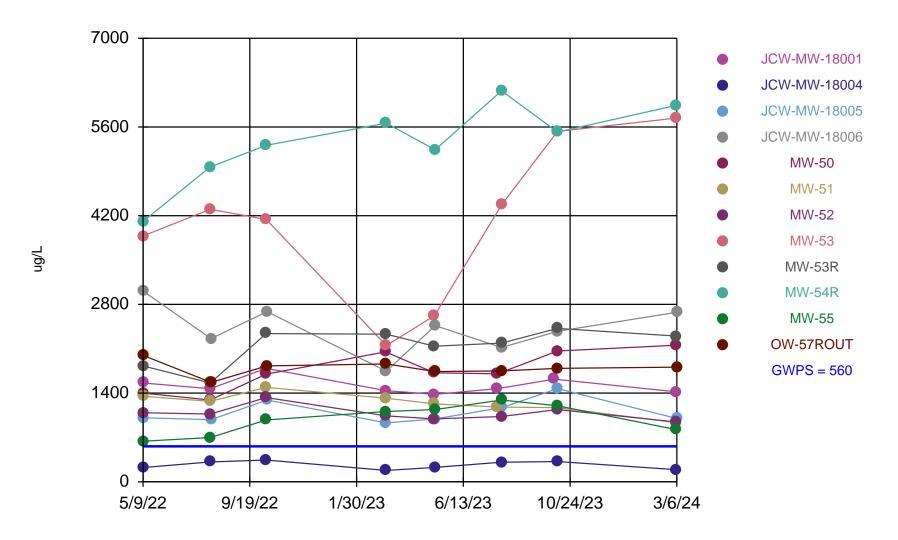
# Attachment 1 Assessment Monitoring Sanitas<sup>™</sup> Output Files

## Arsenic Comparison to GWPS



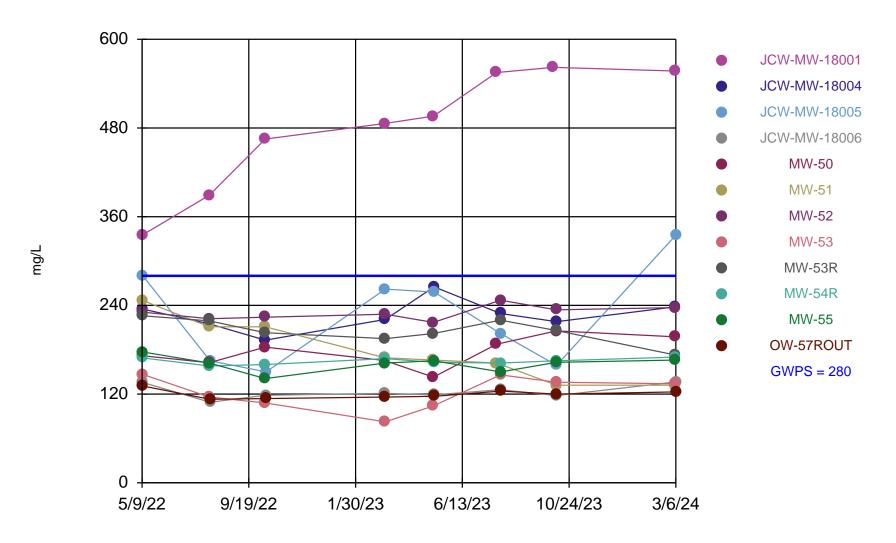
Time Series Analysis Run 4/7/2024 8:56 PM

## Boron Comparison to GWPS



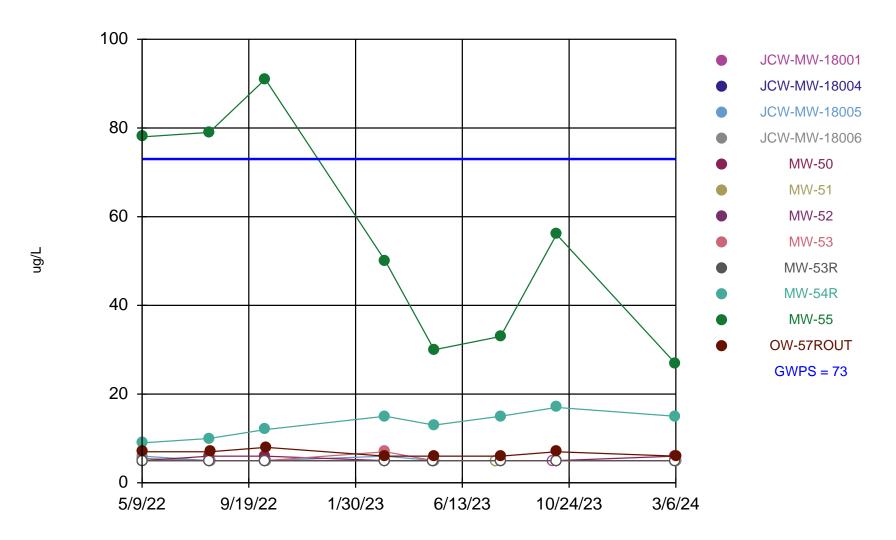
Time Series Analysis Run 4/7/2024 8:59 PM

## Calcium Comparison to GWPS



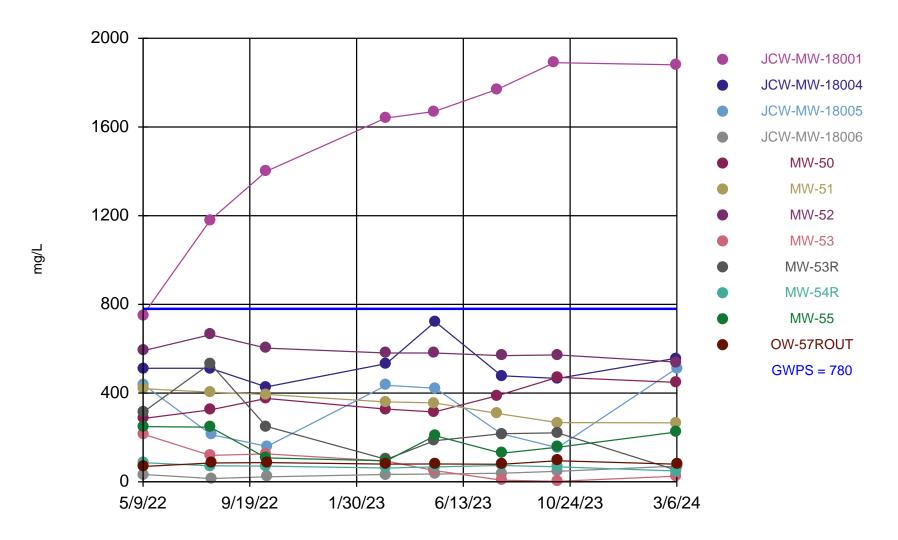
Time Series Analysis Run 4/7/2024 9:01 PM

## Molybdenum Comparison to GWPS



Time Series Analysis Run 4/7/2024 9:05 PM

## Sulfate Comparison to GWPS



Time Series Analysis Run 4/7/2024 9:07 PM

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	Skewness
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

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	Skewness
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

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<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

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

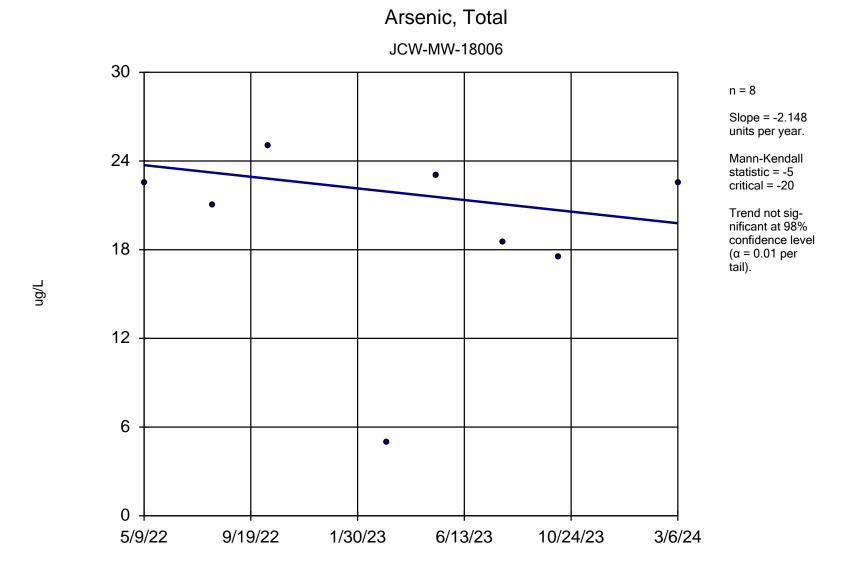
Well	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	Skewness
JCW-MW-18001	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18004	8	100%	5	5	5	5	0	0	NaN
JCW-MW-18005	8	50%	5	6	5.25	5	0.4629	0.08817	1.155
JCW-MW-18006	8	87%	5	5.5	5.063	5	0.1768	0.03492	2.268
MW-50	8	62%	5	6	5.375	5	0.5175	0.09629	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

Constituent: Sulfate Analysis Run 4/7/2024 9:11 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1

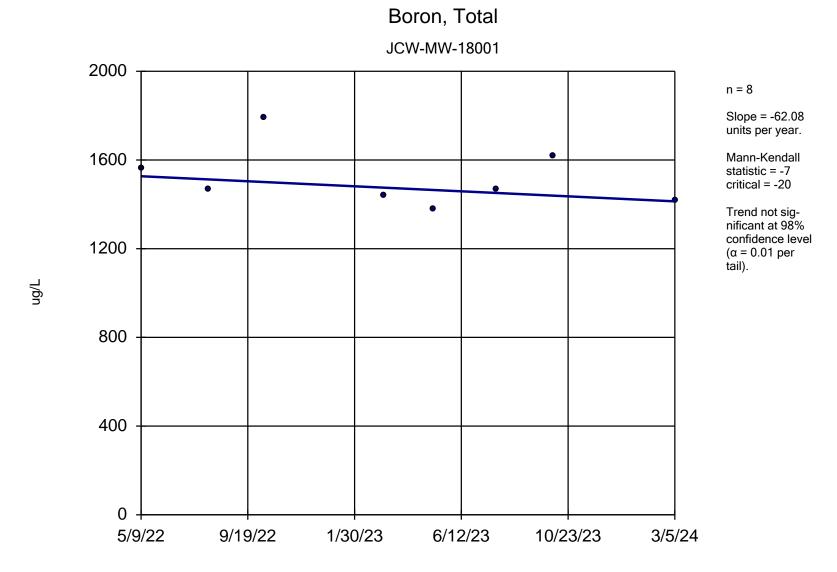
For observations made between 5/9/2022 and 3/6/2024, a summary of the selected data set:

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

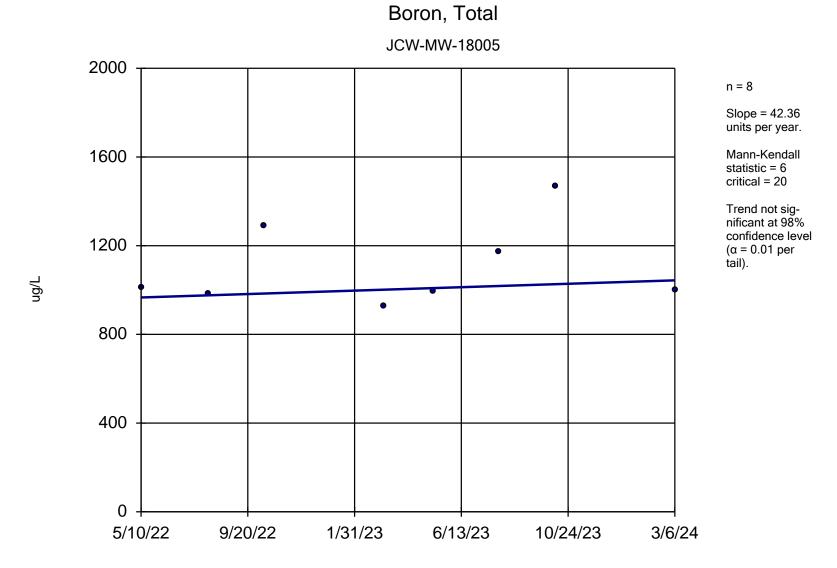
<u>Well</u>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<u>Skewness</u>
JCW-MW-18001	8	0%	752	1890	1523	1655	393.8	0.2586	-0.9625
JCW-MW-18004	8	0%	428	722	526	512	88.9	0.169	1.366
JCW-MW-18005	8	0%	154	512	318.6	319	146.2	0.4588	0.04197
JCW-MW-18006	8	0%	14.9	70.65	36.94	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



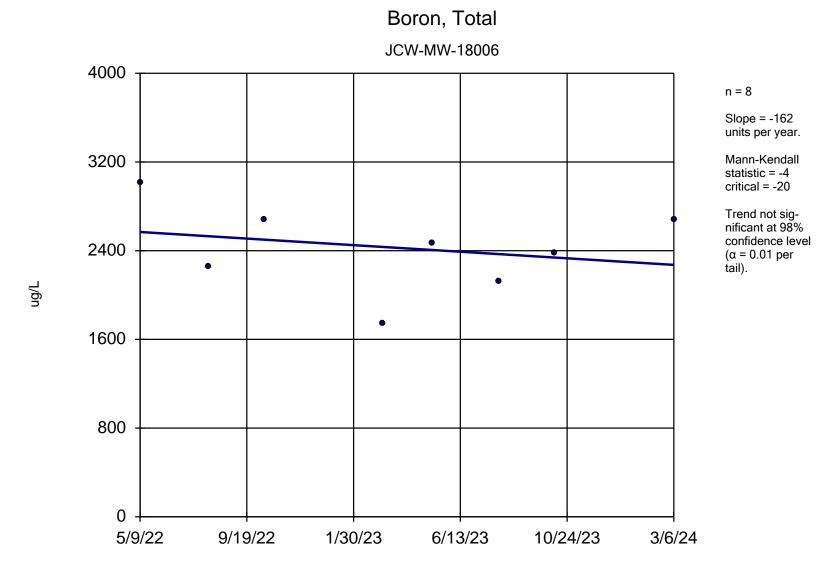
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:50 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



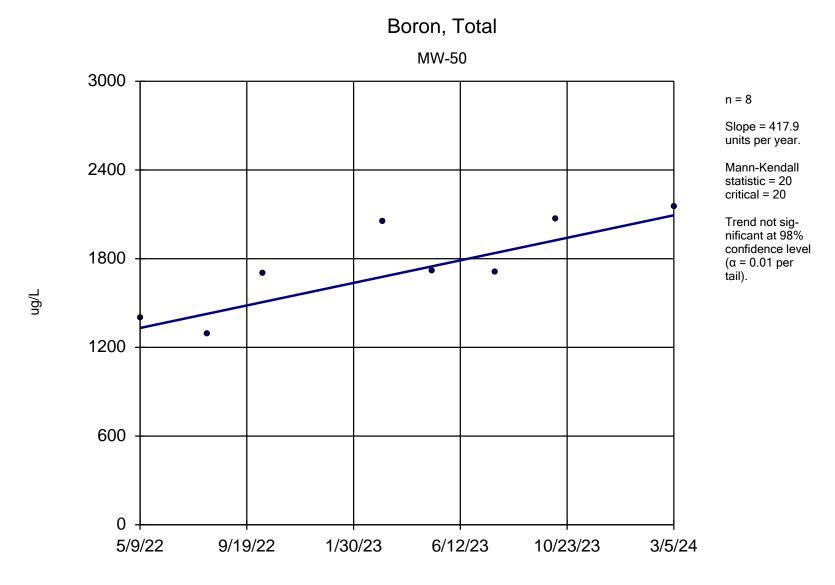
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



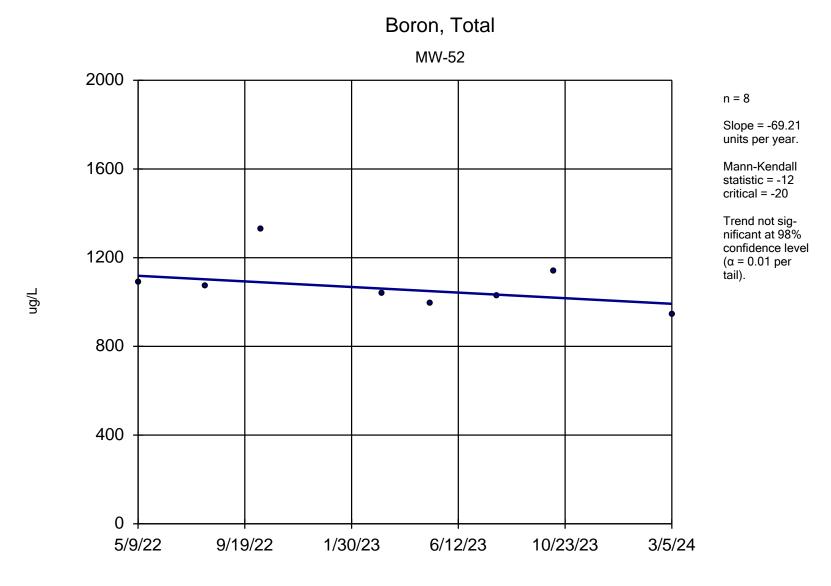
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



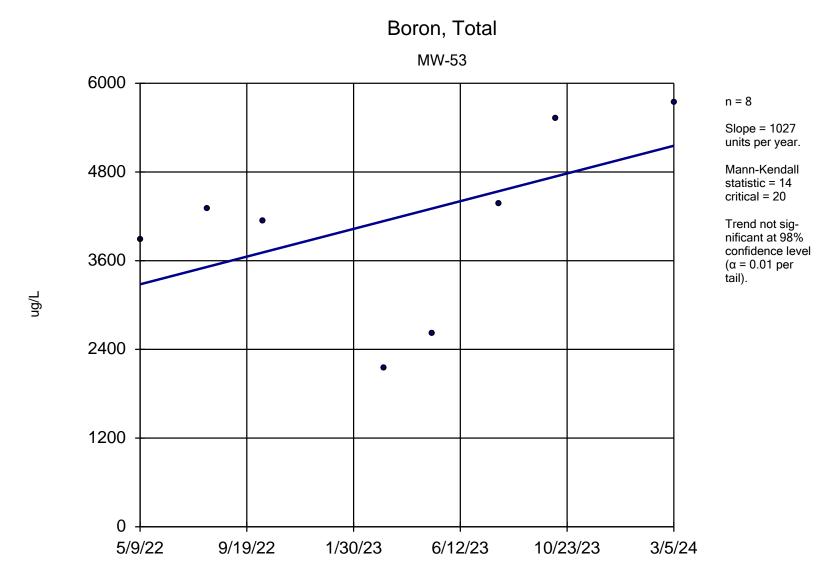
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



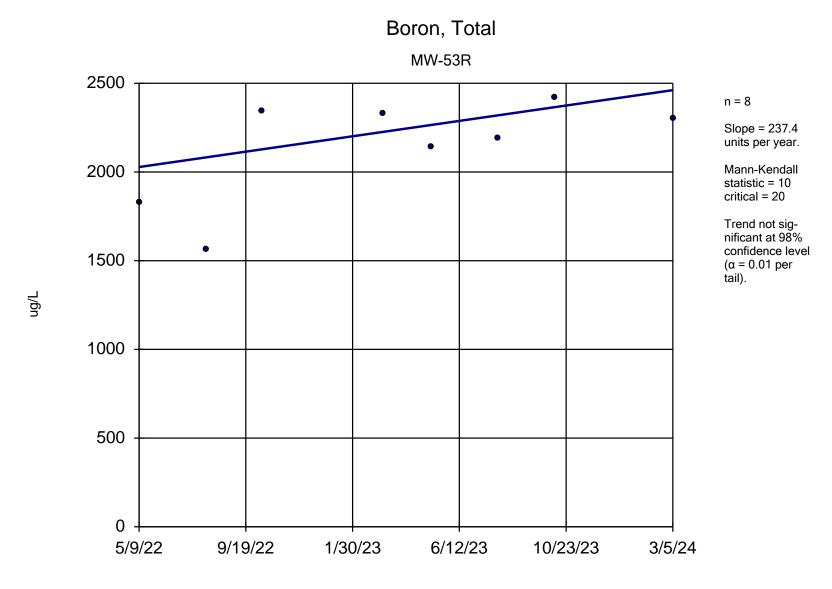
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



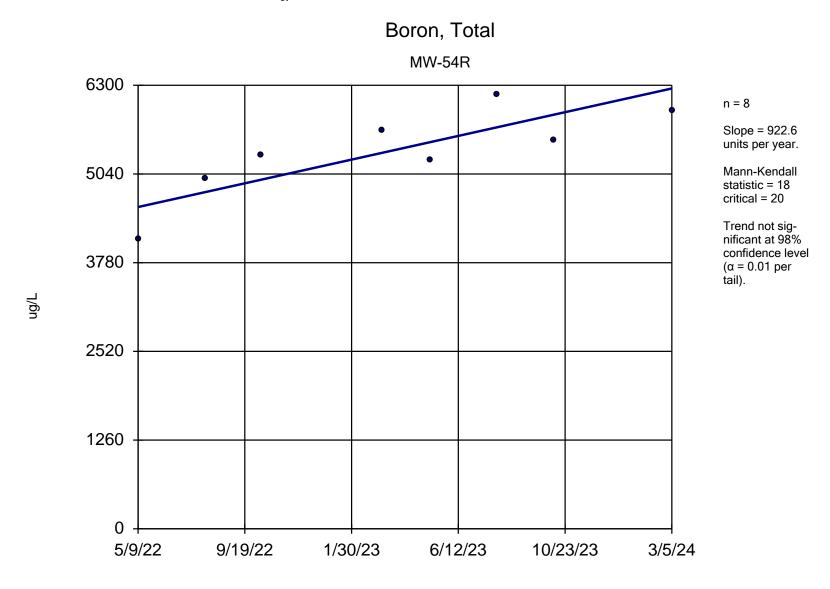
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



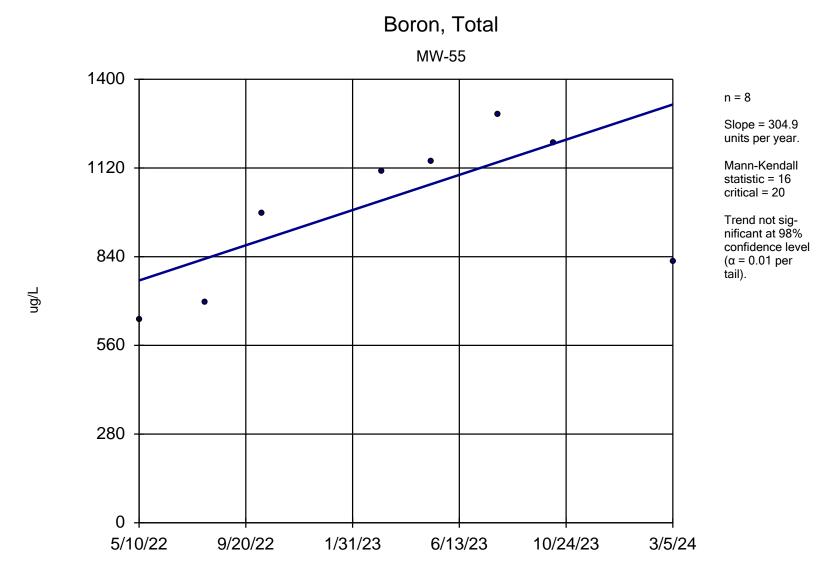
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



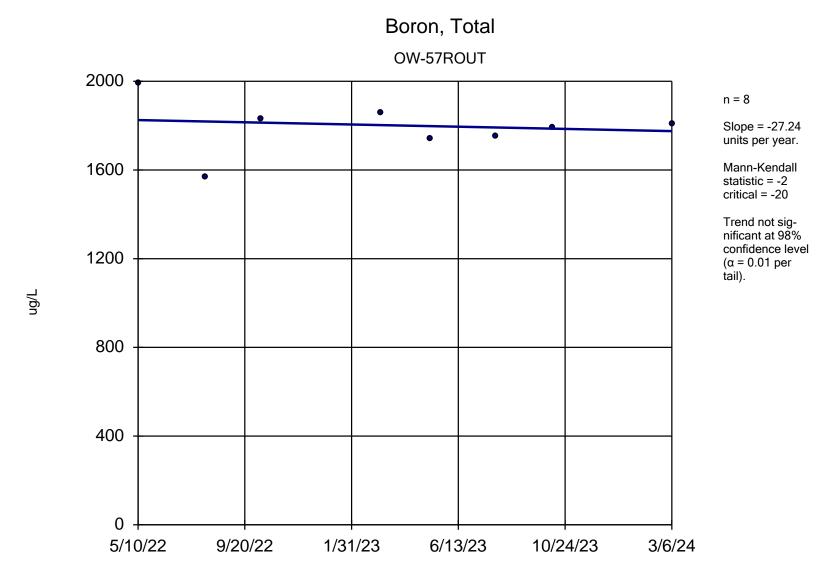
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



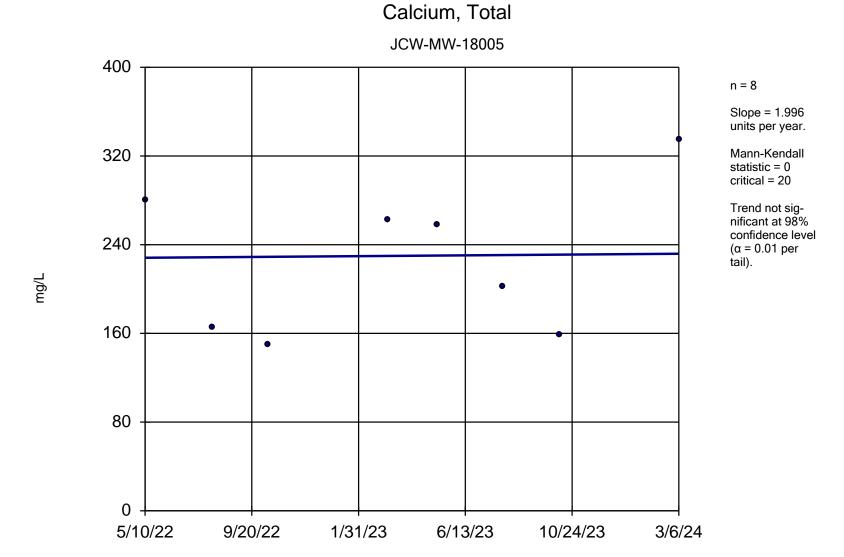
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



Sen's Slope and 98% Confidence Band Analysis Run 4/10/2024 11:23 AM Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1

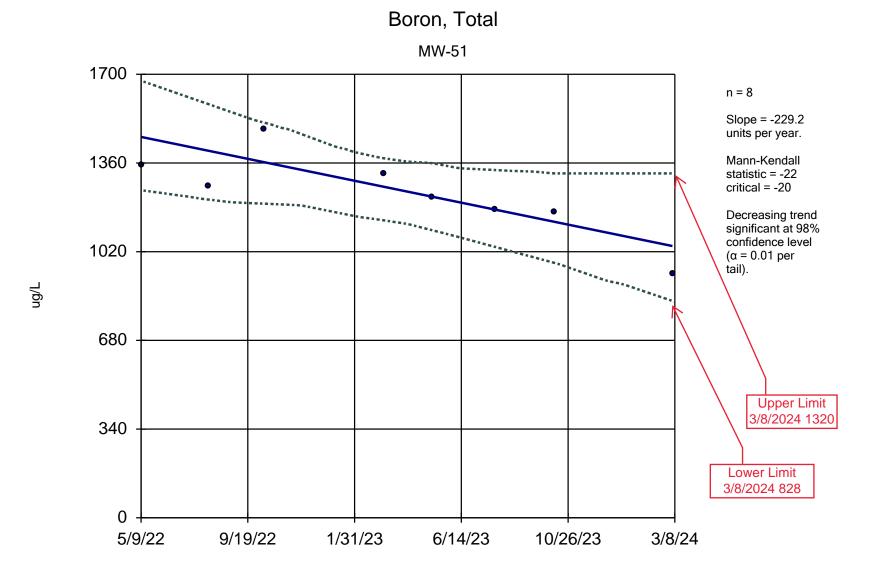


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:58 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1

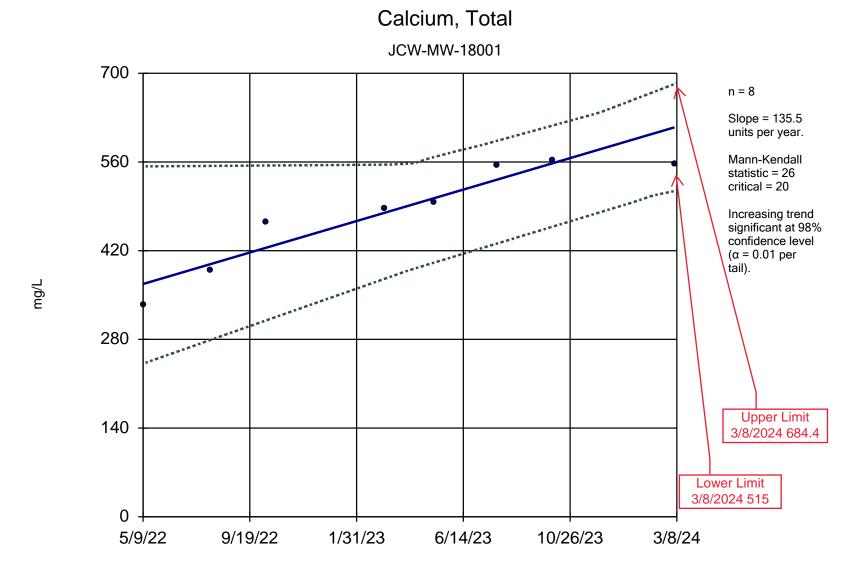


Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 5:59 PM

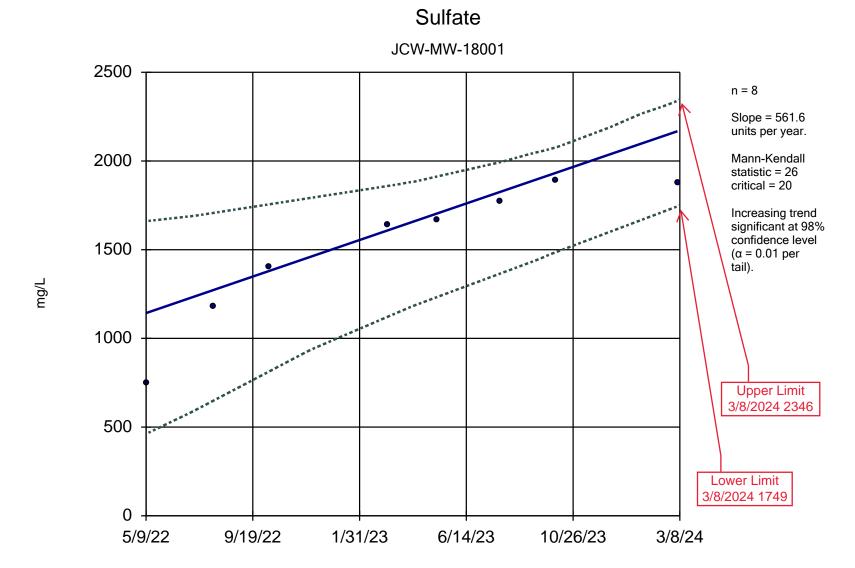
Data: JCW\_HMPCCR\_Sanitas\_24Q1



Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:02 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:05 PM Data: JCW\_HMPCCR\_Sanitas\_24Q1



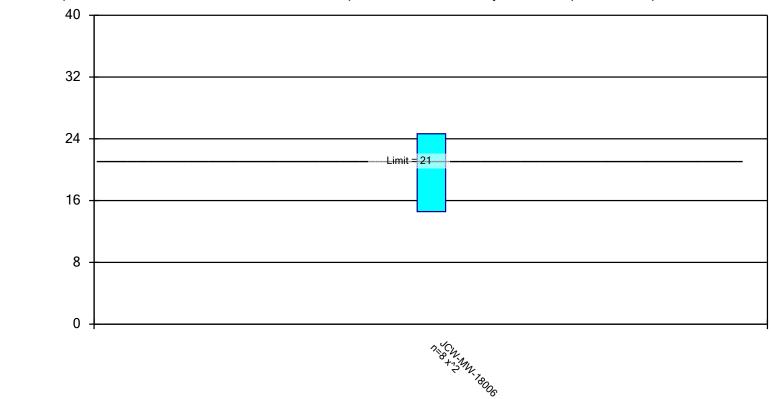
Sen's Slope and 98% Confidence Band Analysis Run 4/8/2024 6:07 PM

Data: JCW\_HMPCCR\_Sanitas\_24Q1

ng/L

### 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

# **Confidence Interval**

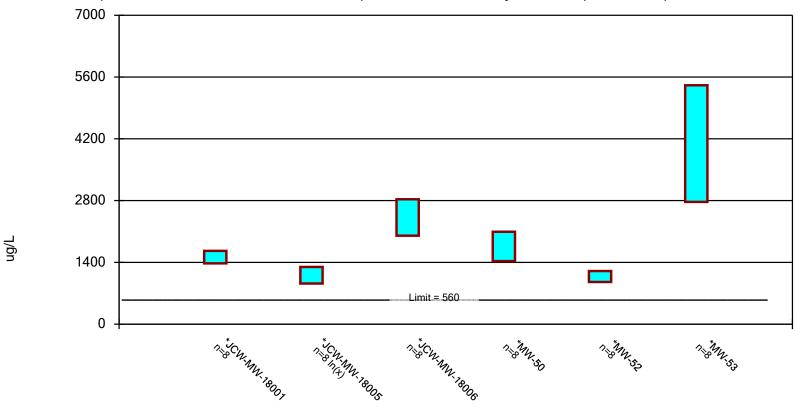
Constituent: Arsenic, Total (ug/L) Analysis Run 4/10/2024 11:37 AM

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**

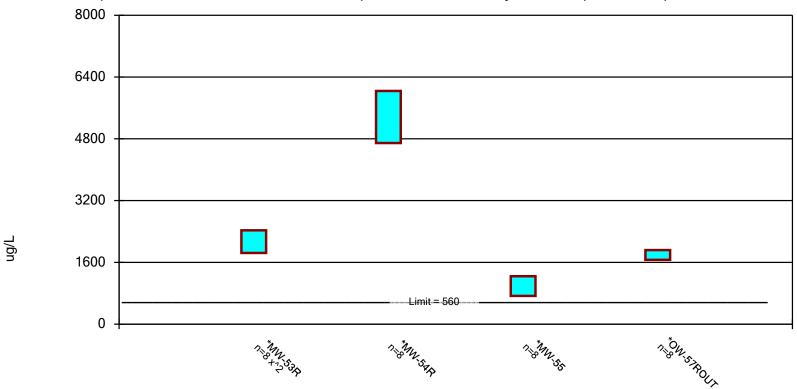
Constituent: Boron, Total (ug/L) Analysis Run 4/10/2024 11:39 AM

Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q1

	JCW-MW-18001	JCW-MW-18005	JCW-MW-18006	MW-50	MW-52	MW-5
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**

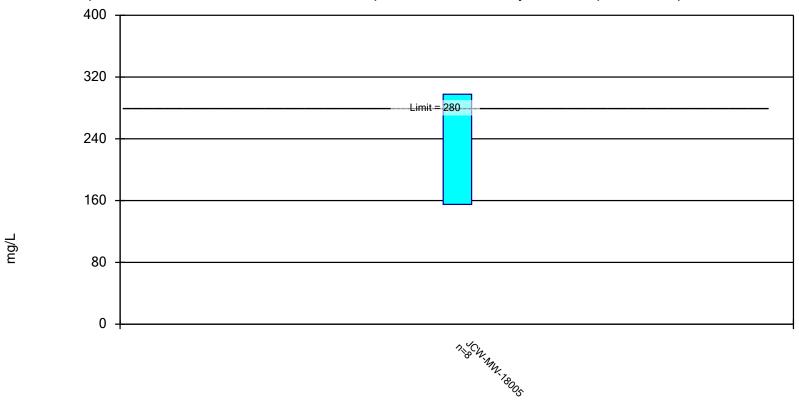
Constituent: Boron, Total (ug/L) Analysis Run 4/10/2024 11:39 AM

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



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 1<sup>st</sup> 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 accredidation specified in the listed certificate.

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#### **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

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	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

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<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



03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 JCW-MW-18001
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-01
 Collect Time:
 06:37 AM

Metals by EPA 6020B: CCR Rule Appe	ndix III-IV To	otal Metals	s Ехр	Aliquot #: 24-0	132-01-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, Aqueou	s			Aliquot #: 24-0	132-01-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 Analyt	e List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	132-01-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 #: 24-0	132-01-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
	0.4	0122 Bogo	E of 20			



**Report Date:** 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 JCW-MW-18001
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-01
 Collect Time:
 06:37 AM

Alkalinity by SM 2320B	alinity by SM 2320B Alic		Aliquot #: 24-0	132-01-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	

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 JCW-MW-18004
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-02
 Collect Time:
 11:03 AM

Metals by EPA 6020B: CCR Rule	Appendix III-IV 10	tai wietais Exp	Aliquot #: 24-0	0132-02-C01-A01	Analyst: EB
Parameter(s)	Result	Flag Uni	ts RL	<b>Analysis Date</b>	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, Ac	queous		Aliquot #: 24-0	)132-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag Uni	ts RL	<b>Analysis Date</b>	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	6 Aliquot #: 24-0	)132-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag Uni	ts 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 25	40C		Aliquot #: 24-0	0132-02-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag Uni	ts RL	Analysis Date	Tracking
Total Dissolved Solids	1250	mg/L	. 10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 JCW-MW-18005
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0132-03
 Collect Time:
 07:23 AM

Metals by EPA 6020B: CCR Rule Appe	enaix III-IV 10	tai wetais	=хр	Aliquot #: 24-0	132-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueou	ıs			Aliquot #: 24-0	132-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	132-03-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 #: 24-0	132-03-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 JCW-MW-18006
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0132-04
 Collect Time:
 08:57 AM

Metals by EPA 6020B: CCR Ru	ie Appendix III-IV 10	tai wetais	= Exp	Aliquot #: 24-0	132-04-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 #: 24-0	132-04-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	132-04-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 2	2540C			Aliquot #: 24-0	132-04-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	748		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-50
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-05
 Collect Time:
 08:29 AM

Metals by EPA 6020B: CCR Rule Ap	penaix III-IV 10	tai wetais	s Exp	Aliquot #: 24-0	132-05-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, Aque	ous			Aliquot #: 24-0	132-05-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule Ana	lyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	132-05-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 #: 24-0	132-05-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1180		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



#### **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-51
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-06
 Collect Time:
 09:21 AM

Metals by EPA 6020B: CCR Rul	e Appendix III-IV 10	tai wetais Exp	Aliquot #: 24-0	0132-06-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag Un	its 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, A	Aqueous		Aliquot #: 24-0	Aliquot #: 24-0132-06-C01-A02		
Parameter(s)	Result	Flag Un	its RL	<b>Analysis Date</b>	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, Aqueou	S Aliquot #: 24-0	)132-06-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag Un	its RL	Analysis Date	Tracking	
Chloride	78300	ug/L	1000.0	03/09/2024	AB24-0308-01	
Fluoride	ND	ug/L		03/09/2024	AB24-0308-01	
Sulfate	266000	ug/L	1000.0	03/10/2024	AB24-0308-01	
Total Dissolved Solids by SM 2	540C		Aliquot #: 24-0	)132-06-C03-A01	Analyst: LMO	
Parameter(s)	Result	Flag Un	its RL	Analysis Date	Tracking	
Total Dissolved Solids	902	mg/	L 10.0	03/07/2024	AB24-0308-02	

Report Date:

03/20/24



#### **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-52
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-07
 Collect Time:
 01:50 PM

Metals by EPA 6020B: CCR Rule	e Appendix III-IV TO	tai wetais Exp	Aliquot #: 24-0	0132-07-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag Uni	ts 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, A	queous		Aliquot #: 24-0	Aliquot #: 24-0132-07-C01-A02		
Parameter(s)	Result	Flag Uni	ts RL	<b>Analysis Date</b>	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 #: 24-0	)132-07-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag Uni	ts 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 2	540C		Aliquot #: 24-0	)132-07-C03-A01	Analyst: LMC	
Parameter(s)	Result	Flag Uni	ts RL	Analysis Date	Tracking	
Total Dissolved Solids	1380	mg/L	10.0	03/07/2024	AB24-0308-02	

Report Date:

03/20/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-53
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-08
 Collect Time:
 01:11 PM

Metals by EPA 6020B: CCR Ru	e Appendix III-IV TO	tai wetais ex	Aliquot #: 24-	0132-08-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag Ur	nits RL	<b>Analysis Date</b>	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-	Aliquot #: 24-0132-08-C01-A02		
Parameter(s)	Result	Flag Ur	nits RL	<b>Analysis Date</b>	Tracking	
Mercury	ND	ug/l	0.2	03/12/2024	AB24-0311-02	
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqueou	S Aliquot #: 24-	0132-08-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag Ur	nits RL	Analysis Date	Tracking	
Chloride	77400	ug/l	1000.0	03/09/2024	AB24-0308-01	
Fluoride	ND	ug/l		03/09/2024	AB24-0308-01	
Sulfate	25400	ug/l		03/09/2024	AB24-0308-01	
Total Dissolved Solids by SM 2	2540C		Aliquot #: 24-	0132-08-C03-A01	Analyst: LMO	
Parameter(s)	Result	Flag Ur	nits RL	Analysis Date	Tracking	
Total Dissolved Solids	694	mg/	L 10.0	03/07/2024	AB24-0308-02	

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-53R
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-09
 Collect Time:
 12:32 PM

Metals by EPA 6020B: CCR Rul	ie Appendix III-IV 10	tai wetais	= EXP	Aliquot #: 24-0	132-09-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, A	Aqueous			Aliquot #: 24-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	132-09-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 2	2540C			Aliquot #: 24-0	132-09-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	862		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-54R
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-10
 Collect Time:
 11:46 AM

Metals by EPA 6020B: CCR Rule Appe	ilaix III-IV 10	idi Metals		Aliquot #: 24-0	132-10-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueou	S			Aliquot #: 24-0132-10-C01-A02 Analyst:		
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule Analyt	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	132-10-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 #: 24-0	132-10-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	752		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



#### **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 MW-55
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0132-11
 Collect Time:
 10:23 AM

Metals by EPA 6020B: CCR Rule Ap	penaix III-IV 10	tai wetals		Aliquot #: 24-0	132-11-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, Aque	ous			Aliquot #: 24-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule Ana	lyte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	132-11-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 25400	;			Aliquot #: 24-0	132-11-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	866		mg/L	10.0	03/07/2024	AB24-0308-02

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

Field Sample ID: OW-57ROUT Collect Date: 03/06/2024
Lab Sample ID: 24-0132-12 Collect Time: 08:10 AM

Metals by EPA 6020B: CCR Rul	e Appendix III-IV 10	tai wetais Ex	P Aliquot #: 24	-0132-12-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag U	nits 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, A	Aqueous		Aliquot #: 24	Aliquot #: 24-0132-12-C01-A02		
Parameter(s)	Result	Flag U	nits RL	<b>Analysis Date</b>	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, Aqueοι	JS Aliquot #: 24	-0132-12-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag U	nits RL	Analysis Date	Tracking	
Chloride	68100	ug/	L 1000.0	03/09/2024	AB24-0308-01	
Fluoride	1230	ug/			AB24-0308-01	
Sulfate	79300	ug/	L 1000.0	03/09/2024	AB24-0308-01	
Total Dissolved Solids by SM 2	540C		Aliquot #: 24	-0132-12-C03-A01	Analyst: LMO	
Parameter(s)	Result	Flag U	nits RL	Analysis Date	Tracking	
Total Dissolved Solids	770	mg,	/L 10.0	03/07/2024	AB24-0308-02	

Report Date:

03/20/24

24-0132



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project:

 Field Sample ID:
 MW-58
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0132-13
 Collect Time:
 09:24 AM

Metals by EPA 6020B: CCR Rule Appe	endix ili-iv 10	idi Metals	- zp	Aliquot #: 24-0	132-13-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueou	us			Aliquot #: 24-0132-13-C01-A02 Analys		
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	132-13-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 #: 24-0	132-13-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

Report Date:

03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

Field Sample ID: DUP-JCW-LF-01 Collect Date: 03/05/2024 Collect Time: 03/05/2024 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Ru	e Appendix III-IV 10	tai wetais	= Exp	Aliquot #: 24-0	132-14-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 #: 24-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqı	ieous	Aliquot #: 24-0	132-14-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 2	540C			Aliquot #: 24-0	132-14-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1190		mg/L	10.0	03/07/2024	AB24-0308-02



03/20/24



#### **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

Field Sample ID: DUP-JCW-LF-02 Collect Date: 03/06/2024 Lab Sample ID: 24-0132-15 Collect Time: 03/06/2024

Metals by EPA 6020B: CCR Ru	ie Appendix III-IV 10	tai wetais	= EXP	Aliquot #: 24-0	132-15-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 #: 24-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Rule	e Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	132-15-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 2	2540C			Aliquot #: 24-0	132-15-C03-A01	Analyst: LMC
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	776		mg/L	10.0	03/07/2024	AB24-0308-02



03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

Field Sample ID: JCW-MW-18001 MS

Collect Date: 03/05/2024 Lab Sample ID: 24-0132-16 Collect Time: 06:37 AM

Metals by EPA 6020B: CCR R	tule Appendix III-IV To	otal Metals Ex	rp ,	Aliquot #: 24-0	132-16-C01-A01	Analyst: EB
Parameter(s)	Result	Flag U	nits	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 #: 24-0	132-16-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag U	nits	RL	Analysis Date	Tracking
Mercury	96.0	%		0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR Ru	ıle Analyte List, Cl, F,	SO4, Aqueou	us <i>i</i>	Aliquot #: 24-0	132-16-C02-A01	Analyst: KDF
Parameter(s)	Result		nits	RL	Analysis Date	Tracking
Chloride	107	%		1000.0	03/09/2024	AB24-0308-0
Fluoride	99	%		1000.0	03/09/2024	AB24-0308-01
Sulfate	114	%		1000.0	03/09/2024	AB24-0308-01



03/20/24



**Laboratory Services** A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

Field Sample ID: JCW-MW-18001 MSD

Collect Date: 03/05/2024 Lab Sample ID: 24-0132-17 Collect Time: 06:37 AM

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals Exp	Aliquot #: 24-0	132-17-C01-A01	Analyst: EB
Parameter(s)	Result	Flag Uni	its 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	al, Aqueous		Aliquot #: 24-0	132-17-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag Uni	its RL	Analysis Date	Tracking
Mercury	98.0	%	0.2	03/12/2024	AB24-0311-02
Anions by EPA 300.0 CCR R	Rule Analyte List, Cl, F,	SO4, Aqueous	S Aliquot #: 24-0	132-17-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag Uni	-	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



03/20/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 FB-01
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0132-18
 Collect Time:
 09:46 AM

Matrix: Water

Metals by EPA 6020B: CCF	K Kule Appendix III-IV 10	tai wetais	Ехр	Aliquot #: 24-0	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, To	tal, Aqueous			Aliquot #: 24-0	132-18-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, Aqu	eous	Aliquot #: 24-0	132-18-C02-A01	Analyst: KDF		
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		



03/20/24



### **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0132

 Field Sample ID:
 EB-01
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0132-19
 Collect Time:
 09:43 AM

Matrix: Water

Metals by EPA 6020B: CCR F	tule Appendix III-IV 10	iai wetais	⊏xp	Aliquot #: 24-0	132-19-C01-A01	Analyst: El		
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 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, Tota	I, Aqueous			Aliquot #: 24-0	132-19-C01-A02	Analyst: CLI		
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 R	ule Analyte List, Cl, F,	SO4, Aque	eous	Aliquot #: 24-0	132-19-C02-A01	Analyst: KDF		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Chloride	ND ug/L 10		1000.0	03/09/2024	AB24-0308-01			
Fluoride	ND ug/L		1000.0	03/09/2024	AB24-0308-0			
Sulfate	ND					AB24-0308-0 <sup>-</sup>		



**Report Date:** 03/20/24

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 4 ATTACHMENT A

#### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Number:	4-0132				
Inspection Date: 3/7/24		_	Inspection By: CLE	LLMO	
Sample Origin/Project Name:	01-2024	Wead	lock porcuater		
	dEx 🖊	UPS	S USPS	Airb	orne
Other/Hand Carry (who Tracking Number: 27)	A COLUMN TO A COLU		Shipping Form Atta	ached: Yes	No
Shipping Containers: Enter the	type and nu	ımber of shi	pping containers received.		
Cooler Ca			Custom Case Other		
Condition of Shipment: Enter t	he as-receiv	red condition	n of the shipment container.		
Damaged Shipment Obs	served: Non	ie	Dented		sing
Shipment Security: Enter if any	of the ship	ping contain	ners were opened before reco	eipt.	
Shipping Containers Re			/	-	
Enclosed Documents: Enter the				Other_	
Temperature of Containers: M	easure the to	emperature (	of several sample containers		
As-Received Temperatu				- /	lo
M&TE # and Expiration  Number and Type of Container	5.23.	24	per of sample containers reco	eived.	
Container Type	Water	Soil	Other	Broken	Leaking
VOA (40mL or (0m)L)	4				
Quart/Liter (g/p)		_			
9-oz (amber glass jar)		-			
2-oz (amber glass)		_			
125 mL (plastic)	3Ce_	-			
24 mL vial (glass)		-			
500 mL (plastic)		_			
Other 150 ml plashc	LCe	_	-		

# **CHAIN OF CUSTODY**



#### **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

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135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 2

SAMPLING SITE / CUSTOMER: Q1-2024 Weadock Porewater Wells					PROJECT NUMBER:	SAP CC or W	SAP CC or WO#:									YSIS		QA REQUIREMENT:			
					24-0132 REQUESTER: H			Harold Register							ch Lis	t if M					
SAMPLING TEAM:					TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ⋈ OTHER															□ NPDES ☑ TNI	
SEND F	REPORT TO:	Joseph Firlit			email:	phone:															□ ISO 17025
CC	PY TO:	Harold Regis	ster		MATRIX CODES:			CONTAINERS													☐ 10 CFR 50 APP, B
		TRC			GW = Groundwater OX = Other WW = Wastewater SL - Sludge W = Water / Aqueous Liquid A = Air		PRESERVATIVE					VΕ	als								☐ INTERNAL INFO
	LAB	SAMPLE COL	LECTION	XI	S = Soil / General Solid WP = Wij	pe neral Waste	AL#						Metals	us		Alkalinity					□ OTHER
	MPLE ID	DATE TIME		MATRIX	FIELD SAMPLE ID / LO		TOTAL	None	None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub>		NaOH HCI MeOH		Total	Anions	TDS	Alka					REMARKS
24-	0132-01	3/5/24	des	GW	JCW-MW-18001		5	4	1				x	х	x	x					
	-02	3/5/24	1103		JCW-MW-18004		3	2	1				x	x	x						
	-03	3/4/24	6223	GW	JCW-MW-18005		3	2	1				x	x	x						
	-04	3/4/24	0857	GW	JCW-MW-18006		3	2	1				x	x	x						
	-05	3/5/24	0834	GW	MW-50		3	2	1				x	x	X.						
	-06	315/24	0921	GW	MW-51		3	2	1				x	x	x.						
	-07	3/5/24	13 50	GW	MW-52		3	2	1				x	x	x						
	-08	315/24	1311	GW	MW-53		3	2	1				x	x	x						
	-09	3/4/24	1232	GW	MW-53R		3	2	1				x.	x	x						
	-10	3/4/24	1144	GW	MW-54R		3	2	1				x	x	x						
	-11	3/5/24	1023	GW	MW-55		3	2	1				x	x	x						
Į.	-12	36124	0810	GW	OW-57ROUT		3	2	1				x	x	x						
RELINQ	JISHED BY:	1	1	DATE/	ГІМЕ:	RECEIVED BY:							CO	MME	NTS						
/		_	3/4	0/2	4 1541	Fed Ex															
RELINO	JISHED BY:		1	DATE/	TIME:	RECEIVED BY:	W						Rec	eived	on I	ce?	Yes	□ No	M&	TE#:	015402
	Fed	EX		o.	1 1 × 124 09 45	A	_`						Ter	npera	ture:	0.4	- 20	°C	Cal.	Due I	Date: 05-23-24
					EG 037124	24-0132 Page 27 c	f 28														

# **CHAIN OF CUSTODY**



#### CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 2 of 2

SAMPLING SITE / CUSTOMER:				PROJECT NUMBER:	SAP CC or W	SAP CC or WO#:									YSIS		QA REQUIREMENT:						
Q1-2024 Weadock Porewater Wells					24-0132	REQUESTER	REQUESTER: Harold Register								h Lis	t if M	10	QA REQUIREMENT:					
SAMPLING TEAM:					TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ⋈ OTHER														NPDES TNI				
SEN	D REPORT TO:	Joseph Firlit			email: phone:																I ISO 17025		
	COPY TO:	Harold Registe	r		MATRIX CODES: GW = Groundwater OX = Other			CONTAINERS															1 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			PRESERVATIVE					als								☐ INTERNAL INFO		
	LAB	SAMPLE COLI	LECTION	X	S = Soil / General Solid WP = W	ipe eneral Waste	AL#						Metals	us		Alkalinity					□ OTHER		
SAMPLE ID		DATE TIME		MATRIX	FIELD SAMPLE ID / LOCATION		TOTAL	None	HNO	NaOH	HCI	MeOH	Total	Anions	TDS	Alka					REMARKS		
	24-0132-13	3/4/24	0924	GW	MW-58		3	2	1				x	x	x								
	-14	3/5/24	_	GW	DUP-JCW-LF-01		3	2	ì				x	x	x								
	-15	3/4/24	-	GW	DUP-JCW-LF-02		3	2	1				x	x	X								
	-16	3/5/24	437	GW	JCW-MW-18001 MS		2	1	1				x	x									
	-17	et 11	6437	GW	JCW-MW-18001 MSD		2	1	1				x	x									
	-18	3/4/24	-	W	FB-01		2	1	1				x	x									
	-19	3/4/24	0943	W	EB-01		2	1	ľ				x	x									
									+	H	+	H								-			
								H		H	+	H											
									+		+	t											
									1	Ħ	t	t											
RELI	NQUISHED BY:			DATE/	TIME:	RECEIVED BY:			-1-		-		CO	MME	NTS	:							
6	2	3/6/2	4	550	1	Fel ex																	
RELI	NQUISHED BY:	3/6/20 d = x		DATE/		RECEIVED BY:							Rec	eived	on l	ce? d	Yes - 2.0	□ No °C	M&'	TE#: C	1540 2 to: 05.23.24		
		N			B032127	24-0132 Page 28 d	of 28		-	-				-									



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 1<sup>st</sup> 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 accredidation 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, 22<sup>nd</sup> 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

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	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 DEK-JCW Background Wells

**Date Received:** 3/7/2024 **Chemistry Project:** 24-0131

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<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



**Report Date:** 03/20/24 04/15/24R

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0131** 

 Field Sample ID:
 MW-15002
 Collect Date:
 03/05/2024R

 Lab Sample ID:
 24-0131-01
 Collect Time:
 10:52 AM

Mercury by EPA 7470A, Total, Aqueous	8			Aliquot #: 24-0	131-01-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 Appe	ndix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	)131-01-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 Analyt	e List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	)131-01-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 #: 24-0	)131-01-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



Report Date: 03/20/24

04/15/24R

A CENTURY OF EXCELLENCE

Field Sample ID: MW-15008 Lab Sample ID: 24-0131-02

Matrix: Groundwater

Sample Site:	DEK JCW Background	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 Appe	ndix III-IV To	tal Metals	з Ехр	Aliquot #: 24-0	131-02-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 Analyt	e List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	131-02-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 #: 24-0	131-02-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



**Report Date:** 03/20/24 04/15/24R

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0131** 

 Field Sample ID:
 MW-15016
 Collect Date:
 03/05/2024R

 Lab Sample ID:
 24-0131-03
 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 Appen	dix III-IV Tot	al Metals	з Ехр	Aliquot #: 24-0	131-03-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, S	SO4, Aqu	ieous	Aliquot #: 24-0	131-03-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 #: 24-0	131-03-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

Report Date:

03/20/24

04/15/24R



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0131** 

 Field Sample ID:
 MW-15019
 Collect Date:
 03/05/2024R

 Lab Sample ID:
 24-0131-04
 Collect Time:
 10:00 AM

Mercury by EPA 7470A, Total, Aqueou	s			Aliquot #: 24-0	131-04-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 Appe	ndix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	)131-04-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 Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	)131-04-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 #: 24-0	)131-04-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



Report Date: 03/20/24

04/15/24R

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 #: 24-0	131-05-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 Appe	ndix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	131-05-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 Analyt	e List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	131-05-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 #: 24-0	131-05-C03-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
. ,		ı ıay			-	_
Total Dissolved Solids	1030		mg/L	10.0	03/08/2024	AB24-0308-07





Report Date: 03/20/24

04/15/24R

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,	Aliquot #: 24-0	0131-06-C01-A01	Analyst: CLE		
Parameter(s)	Result	Flag Units	s RL	Analysis Date	Tracking
Mercury	ND	ug/L	0.2	03/11/2024	AB24-0311-02
Metals by EPA 6020B: CCR Ru	ıle Appendix III-IV To	tal Metals Exp	Aliquot #: 24-0	0131-06-C01-A02	Analyst: EB
Parameter(s)	Result	Flag Units	s 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



**Report Date:** 03/20/24 04/15/24R

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 4 ATTACHMENT A

## TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Numbe Inspection Date: 3				FLIMO	
Sample Origin/Project				ond	
Shipment Delivered By					
Pony	FedEx_	UPS	USPS	Airl	borne
	rry (whom)				
Tracking Number	per: 27 183937	9620	Shipping Form	Attached: Yes	No
Shipping Containers:	Enter the type and	number of ship	ping containers receive	d.	
Cooler (1)	Cardboard B	ox	Custom Case	Envelop	e/Mailer
	aged Containers		Other		
Condition of Shipment	Control of the con-				
					Admin .
			Dented	Lea	king
(	40 Dec 1977		T-5 - 10 - 59 5 W		
Shipment Security: En	nter if any of the sh	ipping containe	ers were opened before	receipt.	
Shipping Conta	ainers Received: O	pened	Sealed		
Enclosed Documents:					
CoC	Work Request		Air Data Sheet	Other	
Temperature of Conta	iners: Measure the	temperature of	fseveral sample contain	ners.	
As-Received T	emperature Range	2.4.1.40	Samples Received	on Ice: Yes 1	No
M&TE # and I	Expiration Olsu	.02			
	5.22	12.1.1			
Number and Type of C	Containers: Enter	the total number	er of sample containers	received,	
		Soil	Other	Broken	Leaking
VOA (40mL or		-	-	-	-
Quart/Liter (g/		_	-		-
9-oz (amber gl		-		-	
2-oz (amber gl		_	-	-	-
125 mL (plasti				-	-
24 mL vial (gla		-	-	-	-
250 500 mL (plasti		_	-	-	
Other					

# **CHAIN OF CUSTODY**



## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

QA REQUIREMENT:  □ NPDES
☐ NPDES
⊠ TNI
☐ ISO 17025
☐ 10 CFR 50 APP. B☐ INTERNAL INFO
OTHER
REMARKS
#: 015402
e Date: 07-23-24



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 1<sup>st</sup> 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 accredidation specified in the listed certificate.

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#### **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

Qualifier	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	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 ASD

**Date Received:** 3/7/2024 **Chemistry Project:** 24-0133

Sample # Field Sample ID Matrix Sample Date Site

24-0133-01 JCW-OW-18001 Groundwater 03/05/2024 07:40 JC Weadock ASD



Report Date:

03/20/24



Sample Site: JC Weadock ASD Laboratory Project: 24-0133

 Field Sample ID:
 JCW-0W-18001
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0133-01
 Collect Time:
 07:40 AM

				Aliquot #. 24-0	133-01-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	5			Aliquot #: 24-0	133-01-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	ons by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous Aliquot #: 24-0133-01-C02-A01					
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 #: 24-0	133-01-C03-A01	Analyst: LMC
Devementaria)	Result	Flag	Units	RL	Analysis Date	Tracking
Parameter(s)	rtoourt	ı ıug	Oilita		Allaly 313 Date	Hacking



A CENTURY OF EXCELLENCE

## **Analytical Report**

**Report Date:** 03/20/24

Sample Site: JC Weadock ASD Laboratory Project: 24-0133

 Field Sample ID:
 JCW-OW-18001
 Collect Date:
 03/05/2024

 Lab Sample ID:
 24-0133-01
 Collect Time:
 07:40 AM

Alkalinity by SM 2320B		Aliquot #: 24-0	133-01-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



A CENTURY OF EXCELLENCE

## **Analytical Report**

**Report Date:** 03/20/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

#### PROC CHEM-1.2.01 PAGE 1 OF 2 General Standard Operating Procedure **REVISION 4** ATTACHMENT A

## TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Number: 24-013				
Inspection Date: 3.07.24		Inspection By: Lm6		
Sample Origin/Project Name:	2024 Wea	dock ASD		
Shipment Delivered By: Enter the type	e of shipment carr	ier.		
Pony FedEx V	UPS	USPS	Airb	orne
Other/Hand Carry (whom)				3,11,2
Tracking Number: 271 83 4	82 2968	Shipping Form Atta	ched: Yes	No
Shipping Containers: Enter the type ar	nd number of ship	ping containers received.		
	i Box	Custom Case	Envelope	e/Mailer
Loose/Unpackaged Containers		Other		
Condition of Shipment: Enter the as-re			1.70	C.20
Damaged Shipment Observed: Other		Dented	Leal	king
Other	Control of the Control			
Shipment Security: Enter if any of the	shipping containe	ers were opened before rece	ipt.	
Shipping Containers Received:	Opened	Sealed		
Enclosed Documents: Enter the type o	f documents enclo	osed with the shipment.		
CoC V Work Reque	st	Air Data Sheet	Other	
Temperature of Containers: Measure				
As-Received Temperature Ran		Samples Received on	Ice: Yes N	lo
M&TE # and Expiration 615	402 5.23.24	1		
Number and Type of Containers: Ent	er the total number	er of sample containers rece	ived.	
Container Type Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL) 2				
Quart/Liter (g/p)	_			
9-oz (amber glass jar)				
2-oz (amber glass)	_			
125 mL (plastic) 2	_			_
24 mL vial (glass)				
500 mL (plastic)				_
Other 260 mL 1	_			

# **CHAIN OF CUSTODY**

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## **CONSUMERS ENERGY COMPANY – LABORATORY SERVICES**

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Page	of	
1 age	O1	

SAMPLING SITE / CU				PROJECT NUMBER:	SAP CC or W	O#:						ANALYSIS REQUESTED					OA REOLUBEMENT.								
Q1-2024 Weadock A	SD			24-0133	REQUESTER	: Hard	old I	Regis	ter			1	(Atta	ch Lis	st if N	More	Space	ce is N	eeded)		QA REQUIREMENT:				
SAMPLING TEAM:				URNAROUND TIME REQUIRED:  ☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ OTHER														□ NPDES  ☑ TNI							
SEND REPORT TO:	Joseph Firlit			email:	X CODES: CONTAINEDS												İ			□ ISO 17025					
COPY TO:	Harold Regis	ster		MATRIX CODES: GW = Groundwater OX = Other													1			☐ 10 CFR 50 APP. B					
	TRC			WW - Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air					PRESERVATIVE				VE.	als					1				☐ INTERNAL INFO		
LAB	SAMPLE COL	LECTION	RIX	S = Soil / General Solid WP = Wip	e eral Waste	AL#										I Metals	Suc		Alkalinity						□ OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TOTAL	None	HNO,	NaOF	HCI	Other	Total	Anions	TDS	Alka						REMARKS				
24-0133-01	3/5/24	0740		JCW-OW-18001		5	4	1				x	x	x	x										
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	ا جد			03/08/27 09.0	4	4						Ter	npera	ture:	0.4	(-2	.0 0	C	Cal.	Due	Date: 05-23-24				
, ,				E8 03414	24-0133 Page 9 o	f 🛭	-																		



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 1<sup>st</sup> 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 accredidation specified in the listed certificate.

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#### **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. <u>Methodology</u>

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, 22<sup>nd</sup> 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
В	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
Н	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

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 LH-103R
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-01
 Collect Time:
 10:33 AM

Mercury, Low Level by EPA 1631E		Al	iquot #: 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



**Report Date:** 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells

Laboratory Project: **24-0134**Collect Date: 03/06/2024

Field Sample ID: LH-103R Dup Collect Date: 03/06/2024 Lab Sample ID: 24-0134-02 Collect Time: 12:00 AM

Mercury, Low Level by EPA 1631E		Al	iquot #: 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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 LH-103R MS
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-03
 Collect Time:
 10:33 AM

Mercury, Low Level by EPA 1631E		Al	liquot #: 24-0	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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

Field Sample ID: LH-103R MSD Collect Date: 03/06/2024 Lab Sample ID: 24-0134-04 Collect Time: 10:33 AM

Mercury, Low Level by EPA 1631E			Α	\liquot #: 24-0	134-04-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag U	Inits	RL	Analysis Date	Tracking
Mercury Low Level	109	%		0.5	03/13/2024	AB24-0312-08



**Report Date:** 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells

Laboratory Project: 24-0134
Collect Date: 03/06/2024

 Field Sample ID:
 LH-104
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-05
 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



**Report Date:** 03/20/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 LH-104 Dup
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-06
 Collect Time:
 12:00 AM

Mercury, Low Level by EPA 1631E		Ali	quot #: 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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 FB-02
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-07
 Collect Time:
 10:55 AM

Matrix: Water

Mercury, Low Level by EPA 1631E		Al	iquot #: 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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 EB-02
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-08
 Collect Time:
 12:10 PM

Matrix: Water

Mercury, Low Level by EPA 1631E				Aliquot #: 24-0	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



**Report Date:** 03/20/24

**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area - Leachate Wells Laboratory Project: 24-0134

 Field Sample ID:
 TB-02
 Collect Date:
 03/06/2024

 Lab Sample ID:
 24-0134-09
 Collect Time:
 12:00 AM

Matrix: Water

Mercury, Low Level by EPA 1631E		Al	liquot #: 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



**Report Date:** 03/20/24

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A CENTURY OF EXCELLENCE

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 4 ATTACHMENT A

TITLE:	SAMPLE LOG-IN – SHIPMENT INSPECTION FORM

Project Log-In Number: 24 -013	<del>उ</del> प
Inspection Date: 03   07   24	Inspection By: CIE LMO
Sample Origin/Project Name: 01-2024	Deadock leachast
Shipment Delivered By: Enter the type of sh	ipment carrier.
Pony FedEx _ ✓ Other/Hand Carry (whom)	UPS Airborne
Tracking Number: 27183931966	Shipping Form Attached: Yes No
Shipping Containers: Enter the type and num	nber of shipping containers received.
Cooler (1) Cardboard Box Loose/Unpackaged Containers	Custom Case Envelope/Mailer Other
Condition of Shipment: Enter the as-received	d condition of the shipment container.
Damaged Shipment Observed: None Other	Dented Leaking
Shipment Security: Enter if any of the shippi	ing containers were opened before receipt.
Shipping Containers Received: Open	
Enclosed Documents: Enter the type of docu	iments enclosed with the shipment.
	Air Data Sheet Other
Temperature of Containers: Measure the ter	nperature of several sample containers.
As-Received Temperature Range	Samples Received on Ice: Yes No V
M&TE # and Expiration	\A
Number and Type of Containers: Enter the	total number of sample containers received.
Container Type Water VOA (40mL or 60mL)	Soil Other Broken Leaking
Quart/Liter (g/p)	
9-oz (amber glass jar)	
2-oz (amber glass)	
125 mL (plastic)	
24 mL vial (glass)	
500 mL (plastic) Other <b>603</b>	

### **CHAIN OF CUSTODY**



#### CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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Page 1 of 1

SAM	PLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or W	7O#:							A	VAL	/SIS I	REQU	FSTE	D			7.7			
Q1-2024 Weadock Leachate Wells SAMPLING TEAM:					24-0134	REQUESTER	R: Haro	old I	Regi	ster							re Spac			Q.	A REQUIREME	NT:			
SAMI	PLING TEAM:	TRC			TURNAROUND TIME REQUIRED:	'ANDARD 🗵 01	THER_													1 7 4	NPDES TNI				
SEN.	D REPORT TO:	Joseph Firlit			email:	phone:						_							17.3	☐ ISO 17025					
	COPY TO:	Harold Regis	ter		MATRIX CODES: GW = Groundwater OX = Other		CONT			NTAINERS		lercur				☐ 10 CFR 50 APP. B									
I AR		TRC SAMPLE COLLECTION		X	WW = Wastewater   SL = Sludg   W = Water / Aqueous Liquid   A = Air   S = Soil / General Solid   WP = Wipt   O = Oil   WT = General Solid   WT = General S	e	IT#	PRESERVATIVE			Low Level Mercury	Level N				☐ INTERNAL INFO ☐ OTHER	)								
SAMPLE ID		DATE TIME		MATRIX	O = Oil WT = General Waste  FIELD SAMPLE ID / LOCATION		TOTAL#	None	HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH	NaOH	MeOH	Low				REMARKS									
	24-0134-01	3/4/24	1033	GW	LH-103R		1				1		x							T	TAL MARKET				
	-02	IKI		GW	LH-103R Dup		1				1		x												
	-03	11 1/	1033	GW	LH-103R MS		1				1		x					1							
		11 11	1033	GW	LH-103R MSD		1				1		x												
	-05	11 11	110	GW	LH-104		1				1		x												
	-06	te 11	_	GW	LH-104 Dup		1				1		x												
	-07	3/4/24	1017	w	FB-02		1	1	1	1				1		x									
	-08	3/4/24	1210	W	EB-02		1				1		x												
	-09	3/6/24	-	W	TB-02		1				1		х												
RELINQUISHED BY:		My	1	3/6	5/24/1600 R	ECEIVED BY: Feder						COMMENTS:													
RELIN	QUISHED BY: Fed 6x			3.1.				324					Received on Ice? ☐ Yes ☑ No M&TE#: N/A  Temperature: N/A °C Cal. Due Date: N/A												



# Appendix F Field Records

# TRC

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: PURPOSE OF FIELDWORK:	7/9/24 3/4/2024 TO 3/6/2024  First Quarter 2024 Groundwater Sampling							
WORK PERFORMED BY:	Jake Krenz, Javier Jasso, Andrew Whaley, Elric Rinehart							

3/14/24 DATE

CHECKED BY

3121124

DATE

DATE



#### **GENERAL NOTES**

PROJECT NAME:	CEC Karn BAP/LI: 2024	<del>CW Comp</del> D	ATE: SUIN	TIME ARRIVED:0100
PROJECT NUMBER			UTHOR: (J) JK AW	TIME LEFT: 150
	20.000	1/1		1.35
	, ,,,,	WE	ATHER	
EMPERATURE: 60	) °F WIND:	15	MPH VIS	SIBILITY: Clear
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Annual	Safety train	nins		
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		COMM	UNICATION	and the second s
NAME	REPRESENTING	COMM	UNICATION SUBJECT / C	COMMENTS
	REPRESENTING TRC	COMM PM - Upd	SUBJECT / C	COMMENTS
	<del></del>		SUBJECT / C	COMMENTS
	TRC	PM - Upd	SUBJECT / C	COMMENTS
	TRC	PM - Upd	SUBJECT / C	COMMENTS
	TRC Consumers	PM - Upd Site Conta	SUBJECT / C ates act	
	TRC Consumers	PM - Upd Site Conta	SUBJECT / C	
Darby Litz  WASTE MATRIX	TRC Consumers INVESTI	PM - Upd Site Conta	SUBJECT / Cates act  RIVED WASTE SUMMARY	
Darby Litz	TRC Consumers  INVESTI	PM - Upd Site Conta	SUBJECT / Cates act  RIVED WASTE SUMMARY	
Darby Litz  WASTE MATRIX	TRC Consumers  INVESTI	PM - Upd Site Conta	SUBJECT / Cates act  RIVED WASTE SUMMARY	

DATE

CHECKED BY

SIGNED



#### **GENERAL NOTES**

PROJECT NAME	CEC Weadock LF: 2024	4 GW Comi DATE	215 29	TIME ARRIVED 550
PROJECT NUMBER			OR: AW JK JJ ER	TIME LEFT: (4/C
PROJECT NOMBER	. 555626.0000.	OOOO AOTH	JR. AVV 310 33 EIO	TIME LETT. ( ((C
,		WEATH	FR	
TEMPERATURE: けし	) °F WIND:	20 MPH		LITYOUS Cent Rain
	= = =	ORK / SAMPLING		
Jaw-me	18001ms.	msi), sc	.w-ow-1800	1,50, Dup#01
51, 55, 18	000+ 54R	53R 52	1	
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Elric - Bae	horound wer	<u>u</u>		
PROI	BLEMS ENCOUNTERE	D	CORRECT	IVE ACTION TAKEN
			- Management of the second of	
	4647		<u></u>	
		COMMUNIC	CATION	
NAME	REPRESENTING		SUBJECT/COM	MMENTS
Darby Litz	TRC	PM/Updates		
Jon Gaeth	Consumers	Site Contact	to to the second	
	la Servi			
		<u> </u>	·	
	INVESTI	GATION DERIVE	D WASTE SUMMARY	
WASTE MATRIX	QUANTITY		COMMEN	TS
Groundwater	NM	To Ground		Arter
			L. S. P.	
	1 (1)	,		
-	3/14/20	1	Mar	LMN 3/21/2
SIGNED	•	DATE	CHÉCKED BY	DATE

REVISED 04/2019



#### **GENERAL NOTES**

DDO JEOT MARE	OF 0 M/2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	04 CM C== DA==	91.1.	<u> </u>	TIME ADDIVED: A -1/4
PROJECT NAME:	CEC Weadock LF: 202				TIME ARRIVED: 05U
PROJECT NUMBER	553828.0000	0.0000 AUTH	OR: AW JK	JJ ER	TIME LEFT: (720
		NATE A TIL	IFD.		
	<b>1</b>	WEATH			
TEMPERATURE: 3	°F WIND	: <u>15</u> MPH	<del>1</del> —	VISIBILITY	1: Over Cont
	. W	ORK / SAMPLING	PERFORMED	)	
JCW-MW	18005, 1, FB#01	18006, Du	P#07,	Ju 5	TROUT
56, 68#	1, FA+01	(	<del></del>		
					No. of the Control of
				п.	
					——————————————————————————————————————
				<u>-</u>	
PROI	BLEMS ENCOUNTER	ED	C	ORRECTIVE	E ACTION TAKEN
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					· .
		COMMUNIC	CATION		
NAME	REPRESENTING		*****	ECT / COMME	ENTS
Darby Litz	TRC	PM/Updates			
Jon Gaeth	Consumers	Site Contact			
				.,	
	INVEST	IGATION DERIVE	D WASTE SUN	MARY	
WASTE MATRIX	QUANTITY			COMMENTS	
Groundwater	NM	To Ground			
		•		/ /	
	3/14/20	1	ah	n wh	N 3/21/24
SIGNED		DATE	CHECKE	) BY	DATE



#### **EQUIPMENT SUMMARY**

PROJECT NAME:	CEC Weado	ck LF: 2024 GW Cd	SAMPLER NAME:	J. Jasso,	
PROJECT NO.:	553828.000	00.000	SAMPLEN NAME.	J. Jasso,	
WATER LEVEL MEAS	UREMENTS COLL	ECTED WITH:			
HEI	RON DIPPER-T			TRC A2	
NAME AND MODEL OF IN	NSTRUMENT		SERIAL NUMB	ER (IF APPLICABLE)	
PRODUCT LEVEL MEA	ASUREMENTS CO	DLLECTED WITH			
	NA	•		NA	
NAME AND MODEL OF IN	NSTRUMENT		SERIAL NUMB	ER (IF APPLICABLE)	
<b>ДЕРТН ТО ВОТТОМ С</b>	OF WELL MEASUR	REMENTS COLLE	ECTED WITH:		
HEI	RON DIPPER-T			TRC A2	
NAME AND MODEL OF IN	NSTRUMENT	1+4.0 m	SERIAL NUMB	ER (IF APPLICABLE)	
PURGING METHOD				1411-111	
PER	ISTALTIC PUMP			TRC A2	
NAME AND MODEL OF P	PUMP OR TYPE OF	BAILER	SERIAL NUMB	ER (IF APPLICABLE)	
SAMPLING METHOD					
PER	ISTALTIC PUMP			TRC A2	
NAME AND MODEL OF P	PUMP OR TYPE OF	BAILER	SERIAL NUMB	ER (IF APPLICABLE)	
GEOTECH	DISPOSABLE FIL	TER		0.45 MICRON	
NAME AND MODEL OF F	ILTERATION DEVIC		FILTER TYPE	AND SIZE	
DEDICA	TED POLY TUBIN	IG	√ LC	W-FLOW SAMPLING EVE	NT
TUBING TYPE					
PURGE WATER DISPO	DSAL METHOD				
✓ GROUND	☐ DRUM	POTW	POLYTANK	OTHER	
DECONTAMINATION A	AND FIELD BLAN	K WATER SOUR	CE		
ST	ORE BOUGHT	•		LABORATORY PROV	'IDED
POTABLE WATER SOUR			DI WATER SO	URCE	
	) 3/14	1/24	alle	- While	Elzlby
SIGNED	/ /	DATE	CHECKED BY		DATE



# C ≯TRC

### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GV	ce	MODEL: 1	JWG	SBS	SAMPLER: JJ			
PROJECT NO.:	553828.0000.0000			SERIAL#:	An	)	DATE: 3	15/24	
PH (	CALIBRATION CHECK				SPE	CIFIC CONDU	CTIVITY CA	LIBRATION CI	HECK
pH 7 (LOT #): 36 339 1 B (EXP. DATE): 143 5	pH 4 / 10 (LOT #) 3 6 1669   (EXP. DATE): 9/2 <	CAL. RANGE	πме	(1)	LOT#) <b>36K (</b> EXP. DATE):	READING STOP  IN 124  INDING/STANDARD	TEMPERATI	CAL.	TIME
POST-CAL. READING/STANDARD	POST-CAL READING / STANDARD  UCO / LCO	WITHIN	056		1360	/ 1740	2 Y.	WITHIN	050
/ /	1	WITHIN RANGE			• • •	1		WITHIN RANGE	
1	1	WITHIN RANGE		]		1		WITHIN RANGE	
1		WITHIN RANGE				1		WITHIN RANGE	
ORP	CALIBRATION CHECK					D.O. CAL	IBRATION C	HECK	
CAL. READING	TEMPERATURE	-		] [	CAL F	READING	TEMPERATI		
(LOT #): 3 E 100 3 (CEXP. DATE): 5 13 (CEXP. DATE):	(°CELSIUS)	CAL. RANGE	ПМЕ				(°CELSIUS	CAL. RANGE	πмε
POST-CAL. READING / STANDARD	0-	WITHIN		<u> </u>		ING /SATURATED AIR	<u> </u>	Z WITHIN	a 06
227 / 227	9,9	RANGE	osic		8.01	1887	₹C_	RANGE	055
/		RANGE WITHIN	****	-		1		RANGE WITHIN	
		RANGE WITHIN				,		RANGE WITHIN	~
/	,	RANGE				1		RANGE	
	ITY CALIBRATION CHEC	K		1 F	<del></del>		COMMENTS		<b>'</b> 0`
(LOT #): A 3 0 1	READING (NTU)					SOLUTION	H	ARD SOLUTION	
(EXP. DATE): 41)	(LOT #): (EXP. DATE):	CAL. RANGE	TIME	1 [	LOT #): EXP. DATE):			ERS AND EXPIRATION CHEC	
POST-CAL, READING / STANDARD	POST-CAL, READING / STANDARD				CALIBRATED	PARAMETERS	CALIE	RATION RANGES (1	)
010	1	WITHIN	25 K	1	D pH		pH: +/- 0	).2 S.U.	
100/100	/	WITHIN	U5(C	<u> </u>	- co	ND	COND: +/- 1	% OF CAL. STAN	DARD
1		WITHIN RANGE			☐ OR	RP .	ORP: +/- 2	5 mV	
/	1	WITHIN RANGE		]	D.0	<b>D</b> .	D.O.: VAR	RIES	
	NOTES			,	□ ти	RB	TURB: +/- 5	% OF CAL. STAN	DARD
								N RANGES ARE SPE THE WATER QUALI	
P	PROBLEMS ENCOUNTERED			]		CORRECTI	VE ACTIONS		
				w.v.,					
	3/14/	74			CLA	May h	ly	3/21/28	
SIGNED!	/	DATE			CHECKE	DBY	$\boldsymbol{\nu}$		DATE

# C ≯TRC

#### WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GV	V Complian	ce	MODEL:	Ow	1055	SAMPLE	R:	JJ	
PROJECT NO.:	553828.0000.0000			SERIAL	# 1	Ñ	DATE: ?	3/6	124	
PH	CALIBRATION CHECK			_	SF	PECIFIC CONDU	ICTIVITY	CALIBR	ATION C	HECK
(LOT #):7(L) DATE: (D) (EXP. DATE): (D) (POST-CAL. READING / STANDARD	pH 4 / 10 (LOT #):3 6 10 10 11 (EXP. DATE): 4 10 11 POST-CAL. READING / STANDARD	CAL. RANGE	TIME		CAI (LOT #): <b>7 (</b> (EXP. DATE	L READING	TEMPEF	RATURE	CAL. RANGE	TIME
701/70	400 11/ce	WITHIN	nso	c	1360	11760	24	!	WITHIN	17504
1	1	WITHIN			'/	1			WITHIN RANGE	<b></b>
1	1	WITHIN RANGE	~			1			WITHIN RANGE	
/	1	WITHIN RANGE				1		<del></del>	WITHIN RANGE	
ORP	CALIBRATION CHECK			_		D.O. CAL	·		K	
CAL READING (LOT #) \$3 F( \infty ) 7' (EXP. DATE): 9 D Y	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME		CA	L. READING	TEMPEF (°CEL		CAL. RANGE	TIME
POST-CAL. READING / STANDARD					1	EADING /SATURATED AIR			<del></del>	
777 127	72	WITHIN RANGE	05°	と と	6-2	18.81	20	)	WITHIN	025
. /		WITHIN RANGE				1			WITHIN RANGE	
1		WITHIN RANGE				1			WITHIN RANGE	
1		WITHIN RANGE				1			WITHIN RANGE	
TURBID	ITY CALIBRATION CHEC	CK					COMME	NTS		
CALIBRATION	READING (NTU)			]	☐ AUTO	CAL SOLUTION		ANDARD	SOLUTION	(S)
(LOT #): 43 (P) (EXP. DATE):	(LOT #): (EXP. DATE):	CAL. RANGE	TIME		(LOT#): (EXP. DATE	<b>):</b>			ND EXPIRATI RATION CHE	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD				CALIBRA	TED PARAMETERS	C	ALIBRATIO	N RANGES (	)
010	1	WITHIN	USCL			рН	pH:	+/- 0.2 S.U	J.	
19119	1	WITHIN	050			COND	COND:	+/- 1% OF	CAL. STAN	DARD
1	1	WITHIN RANGE				ORP	ORP:	+/- 25 mV		
1	1	WITHIN RANGE				D.O.	D.O.:	VARIES		
	NOTES					TURB	TURB:	+/- 5% OF	CAL. STAN	DARD
									GES ARE SP VATER QUAL	
	PROBLEMS ENCOUNTERED			<u> </u>		CORRECT	IVE ACTIONS			
· · ·	TOSELIIO ETOSOTTENED					00.0201		-		
		.144.77.								
SIGNED	3/14/2	DATE	-		CHF	CELLY CKED BY	Men	1	<i>Sl</i> z	LEN DATE
	•	J L			J. 1.			-		· · · · <del>-</del>

### ♦ TRC

#### **WATER LEVEL DATA**

PROJECT NAME:	CEC Wead	lock LF: 2024 GV	V Compliance		DATE:	2/4/28	
PROJECT NUMBER:	553828.00	00.0000			AUTHO	R: Javier Jasso	
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPT BOT (FEI	гом	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	de(V	тос	17.95	23.	7	NA	NM
JCW-MW-18004	0658	TOC	1298	14.7	14	NA	NM
JCW-MW-18005	0)34	TOC	8.55	142	90	NA	NM
JCW-MW-18006	0919	TOC	1273	23.i	y 70	NA	NM
JCW-OW-18001	0619	TOC	6.60	200	) <sup>د</sup>	NA .	NM
JCW-OW-18002	6624	TOC	10.78	19.7	14	NA	NM
JCW-OW-18003	6625	TOC	6.78		(e)	NA	NM
JCW-OW-18004	0700	тос	6.36	14.	6 <	NA	NM
JCW-OW-18006	0920	TOC	7.02	730	4 V	NA	NM
LH-103R	6717	TOC	21.26	33		NA	NM
LH-104	0767	TOC	865	14.	00	NA	NM
JCW-MW-20	いつろと	TOC	6.16	140	O(	NA	NM
MVV-50	603	TOC	14.53	20.	CO	NA	NM
MW-51	dezc	TOC	1524	20	00	NA	NM
MW-52	Ole 34	TOC	Reco	19	74	NA	NM
MW-53	decic	TOC	14.58	18.1	18	NA	NM
MW-53R	dou	TOC	15.36	(0,1	8	NA	NM
MW-54R	6653	TOC	14.75	17-9	ን	NA	NM
MVV-55	0711	TOC	14.84	14.3	, «	NA	NM
MVV-58	3943	тос	5.33	18.3	160	NA	NM
OW-51	Cle31	тос	9.15	(7.)		NA	NM
OW-53	deul	тос	7.46	180	0	NA	NM
OW-54	desi	тос	6.52	Ju. 4	10	NA NA	NM
OW-55	07/7	тос	6.16	(04	7	NA	NM
OW-56	0741	тос	5.65	197	7	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR
(E.G., 1.1 + 0.00 T/PVC).

3/14/24 SIGNED DATE

CHECKED WMY

<u> 2164 - </u>

DATE

### TRC

#### **WATER LEVEL DATA**

PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance	DATE: 2 4 LY
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	0747	TOC	566	59.70	NA	NM
OW-57 IN	0746	TOC	5,6 5	1900	NA	NM
OW-57R IN	0744	TOC	5.80	20.18	NA	NM
OW-57 OUT	074Ce	TOC	& led	19.44	NA	NM
OW-57R OUT	0740	TOC	9.60	2000	NA	NM
JCW-MW-15007	0935	TOC	3,02	8.95	NA	NM
JCW-MW-15009	26780	TOC	940	13.00	NA	NM
JCW-MW-15010	6690	TOC	(8.03)	19-57	NA	NM
JCW-MW-15028	6930	TOC	7.80	25.10	NA	NM
MVV-15002	0953	TOC	6-73	16-60	NA	NM
MVV-15008	0939	тос	4,33	17.40	NA	NM
MVV-15016	0951	TOC	5.53	994	NA	NM
MVV-15019	0949	TOC	5.46	1467	NA	NM
YMW543	6434	11	7.78	100 plus	\]	7
Janu 15002	deur	11	14.5·5	100714	M.	
mu ile R	0693	И	15,00	19.607	V	7
Jew-muisori	0703	И	1505	100 plus	Q.	1/
76.61	0722	( i	6.20	37.10	V	17
mw-19	5751	C1	<i>છ</i> . ૧૯	20.63	11	1
SOM WM 15003	C477	11	७७७	Paga in L	(7	1/
mu 106B	C533	11	7.45	પા 1 હ		11
MW-15080	ભુત ભુત	11	5.00	17.17	U	7
Mu-1143	0944	tr	4.68	32.76	U	11
muiscay	0947	l (	6.00	17.17	ų	1/
Janusosi	0955	11	6.18	100 26	11	T/

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

3/14/24

### **♦**TRC

PROJECT NAME:	CEC V	Veadock LF: 2	024 GW C	PRE	PARED		CHEC	KED				
PROJECT NUMBER	R: 553828	8.0000.0000	BY:	JJ	DATE	4/3-4 BY:	AW	DATE: Stz 1/24				
SAMPLE ID: JCW-MW-160 WELL DIAMETER: 2" 4" 6" OTHER												
WELL MATERIAL:  PVC SS IRON GALVANIZED STEEL OTHER												
SAMPLE TYPE:	☑ GW	□ ww □	SW 🗌 DI	L	EACHATE	□ отн	ER					
PURGING	TIME:	107 D	ATE: 3/5/14		MPLE	TIME: OC	<i>,</i>	ATE: 315/24				
101102 —	PUMP	PERISTALTIC	PUMP	PH: (g	<u>ه ۲۲۰</u> s	U CONDUC		3 oumhos/cm				
METHOD:	BAILER			ORP:	<u>۲ کار، ۱</u> m	V DO:	<u>0.91</u> mg	/L				
DEPTH TO WATER: 17.91 T/ PVC TURBIDITY: 6.1 NTU												
DEPTH TO BOTTOM: 2371 T/ PVC												
WELL VOLUME:	NA	LITERS	GALLONS	TEMPER	RATURE: 9		FERROUS Fe	mg/L				
VOLUME REMOVED:	_3_	LITERS	GALLONS	COLOR	clea		<u> </u>	100				
color: _cl	0 V		OOR:101	FILTRAT	ΓΕ (0.45 um)	YES	Z NO					
	TUR	BIDITY			E COLOR:	·	FILTRATE ODOR					
NONE SLI	GHT 🗌	MODERATE	VERY	QC SAN	MPLE: MS	/MSD	DUP-					
DISPOSAL METHOD:	☑ GROUI	ND  DRUM	OTHER	COMME	ENTS:							
TIME PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE WATER	CUMULATIVE PURGE VOLUME				
RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)				
0607 10P	40	29B		8.85	10.8	10.7	1.001	INITIAL				
de 2 /	(olec	3243	18.9	1.81	Leilo	10.1	1770	, \				
cei7	6.70	3300	- 28	1.3	را. بن	10.4	1770					
0622	6.75	3390	- 34	1.0	(0.7)	10.5	1770	1.0				
Ole 77	to.75	<del>11</del> 24	- 34.0 (	297	6.5	9.8	1770	2				
0637	6.75	3437	- 34.2	097	4.3	9.7	1770	2.5				
6437	675	3433	-34.7	09 T	4,5	9.7	1778	3				
	L.											
NOTE: STA	BILIZATION	N TEST IS COM	IPLETE WHEN 3 S	UCCESSIN	/E READINGS	ARE WITHIN	THE FOLLOWING	G LIMITS:				
	COND.: +/-			.: +/- <b>0.3</b>	TURB: +/-			TEMP.: +/-				
BOTTLES FILLED	PRESERV	ATIVE CODES	A - NONE B	- HNO3	C - H2SO4	D - NaOH	I E- HC	CL F				
NUMBER SIZE	TYPE	PRESERVAT	IVE FILTERED	NUMBE	R SIZE	TYPE	PRESERVATIV	/E FILTERED				
250 mL	PLASTIC	А			125 mL	PLASTIC	D	□Y <b>Z</b> N				
3 125 mL	PLASTIC	А	□ Y 🛭 N		40 mL	VOA	Е	□ Y <b>Z</b> N				
2 60 mL	VOA	А						□ Y □ N				
3 125 mL	PLASTIC	В	N 🚺 Y					□ Y □ N				
125 mL	PLASTIC	С	□ Y 🚺 N					□Y □N				
SHIPPING METHOD:	Fed E	<b>X</b> D.	ATE SHIPPED:	3/56	24	AIRBILL N	NUMBER:					
COC NUMBER:		s	IGNATURE:		7/	DATE SIG	ENED: 3//	4/26				

PROJECT	ΓNAME:	CEC V	Veadock LF: 20	024 GW C	PR	EPARED		CHEC	KED
PROJECT	г ишмве	R: 55382	3.0000.0000	BY	JJ	DATESIN	174 BY:	4w	DATESIZI
SAMPLE	اD: کرئے	- رين	18001	WELL DIA	METER: 🗸	2"	6"  OTH	ER	
WELL MAT		✓ PVC		IRON GA	LVANIZED S	STEEL	□ отн	ER	
SAMPLE T	YPE:	☑ GW	□ww □	SW 🔲 DI		LEACHATE	□ отн	ER	
PUR	GING	TIMEU)	CC DA	TE 2   5   2"	4 S	AMPLE	TIME: 07	40 0	ATE 3 15
PÜRGE	<b>7</b>	PUMP	PERISTALTIC F	PUMP	PH:	(e-40 s	1	TIVITY: LSU	umho
METHO	D:	BAILER			ORP: -11.3 mV DO: 3.9 mg/L				ı/L
DEPTH TO		لارلون	T/ PVC		TURBIDITY: LO NTU				
DEPTH TO	о воттом	20.71	T/ PVC						☐ VER
WELL VOL		NA .	LITERS	GALLONS		RATURE: <u>&amp;</u>		FERROUS Fe _	064.
	REMOVED		LITERS	GALLONS	COLO				non
COLOR:	<del></del>	<sup>و</sup> /ننن		OR: NO W		ATE (0.45 um)	∐ YES	Ø_NO	
NONE	Пе	_	BIDITY MODERATE	☐ VERY		TE COLOR:	/MSD	FILTRATE ODOR  DUP-	: I
	DISPOSAL METHOD: GROUND DRUM OTH					MENTS:	ANISD		
DISPOSA		GROOI	D DKOM		T	ILINIO.		LIMATER	L CUMULAT
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE LEVEL	PURGE VO
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR
070	100	7.56	(547	12.>	10.0	55	7.6	teles	INITIA
0705		7.18	1526	24.8	ري ي	36	8.4	6-70	, 1
0710		700	1529	<u>[3.7]</u>	(o, i	25	8,4	6.70	
לארט		7.00	(53)	<u>(e, 1</u>	3.8	25	8.4	(j.70	1.5
250		6.99	1530	0.5	5,4	36	٤.3	4.70	3
<del>ن7) `</del>		6.95	1537	-48	5.0	10	8.5	6.70	ス.て
C730	,	Lecto	1541	10.		10	8.6	670	3
5735		6,90	1544	- 11.0	40	10	6,4	670	3.5
0740		690	1547	-11.2	3.9	10	とう	670	4
<del></del>	NOTE: STA	BILIZATION	I TEST IS COMP	PLETE WHEN :	SUCCESS	IVE READINGS	ARE WITHIN	THE FOLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> E	0.O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVATIV	/E FILTERE	D NUMB	ER SIZE	TYPE	PRESERVATIV	/E FILTE
1	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	
ì	125 mL	PLASTIC	А	□	N	40 mL	VOA	E	
د	60 mL	VOA	Α		+				Y
) }	125 mL	PLASTIC	В		1				
,	125 mL	PLASTIC	С		<del>1 - 1</del>				□ Y □
SHIPPING	METHOD.	Feli	Z. DA	TE SHIPPED:	3/5/2	4	AIRBILL N	IUMBER:	
			<b>^</b>		0176	_			

## **⇒** TRC

PROJEC1	PROJECT NAME: CEC Weadock LF: 2024 GW C					REPARED		CHECKED	
PROJECT	Г NUMBE	R: 55382	8.000.0000	вү	: JJ	DATE: 3 (1	ulzy BY:/	łw.	DATE: \$\\21/24
SAMPLE	ID: M	$\overline{w}$	50	WELL DIA	METER: 🔽	] 2" 🔲 4" 🔲	] 6" □ OTH	IER	
WELL MAT	TERIAL:	✓ PVC	ss 🗆	IRON GA	LVANIZED	STEEL	□ от⊦	IER	
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI		LEACHATE	□ от⊦	IER	
PUR	GING	TIME:	774 DA	ATE 3 /5/24	f s	SAMPLE	TIME: 0 &	i Ui	ATE: 3 /5/24
PURGE METHO		PUMP BAILER	PERISTALTIC	PUMP	PH: ORP:	2 4 4 4	ONDUC	CTIVITY:	unnos/cm
DEPTH TO	O WATER:	14.53	T/ PVC		<del></del>	IDITY: Le-C	NTU		
DEPTH TO	BOTTOM	: 2026	T/ PVC		J-NC			MODERATE	☐ VERY
WELL VOL	UME:	NA _	LITERS	GALLONS	TEMP	ERATURE: 2		FERROUS Fe _	mg/L
VOLUME	REMOVED	: 3. \	☑ LITERS	GALLONS	COLC	OR:	i A	ODOR:	now
COLOR:	-	Cler	<u>ly</u> or	OR: NOW	FILTR	ATE (0.45 um)	YES	NO	
			BIDITY		ļ	ATE COLOR:	24100	FILTRATE ODOR	
NONE			MODERATE	VERY			S/MSD	JUP- 72	
DISPOSAL		: GROUI	ND DRUM	OTHER	COM	MENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	IRE WATER	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
0754	100	7.53	1362	37	9.5	45	7,4	14.30	INITIAL
0754		7.40	1394	181	2.4	13.7	8.1	1431	- 7
o you		7.41	1428	-13	1.4	7,3	8.6	1435	(
0800		7.45	1437	- 21.5	1.3	7.5	8.7	1435	1.5
0814		7.45	1444	- 320	1,1	6.0	8.7	1435	3
0819		745	1448	- 450	1.0	6.0	86	1435	2.1
0674		7.45	1440	- 45.1	10	60	8.6	1435	3
083		7.45	1447	-45.5	100	Cocc	E.C	1437	3. \
pH: +/-		ABILIZATION			3 SUCCESS			THE FOLLOWING	G LIMITS: TEMP.: +/-
BOTTLES			ATIVE CODES		B - HNO3	C - H2SO4			
NUMBER	SIZE	TYPE	PRESERVATI				TYPE	PRESERVATIV	
2	250 mL	PLASTIC	A	VE FILTERE	<del>,</del>	125 mL	PLASTIC	D	Y N
2	125 mL	PLASTIC	A		N	40 mL	VOA	E	
	60 mL	VOA	A		N				Y
2	125 mL	PLASTIC	В		N				DY DN
	125 mL	PLASTIC	С		N				
SHIPPING		Fed 1		ATE SHIPPED:	31<12	74	AIRBILL N	NUMBER:	
COC NUME		Zn		GNATURE:	-131	<del>-</del>	DATE SIG		(14/14
			- A		eq	<del>]</del>	1		<del>: [                                   </del>

<b>&lt;&gt;&gt;</b>	T	2	C

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED									
			3.0000.0000	BY:	JJ		4124 BY:	1	DATE: 3/21/24
		. 555626							3 Elle
SAMPLE I		<u>''</u>	<u>5 (</u>	WELL DIAME			6" OTH		
WELL MAT		✓ PVC			ANIZED S		ОТН		
SAMPLE T	/PE:	☑ GW	<u> </u>	SW DI		LEACHATE	ОТН	ER	
PURC	SING	TIME &	5 ( DA	TE:3/5/24	i	AMPLE			TE3 (5 /24'
PURGE	_	PUMP	PERISTALTIC F	PUMP	PH:		U CONDUC	TIVITY: LDS 4	umhos/cm
METHOD		BAILER			ORP:	7 .	IV DO:	mg	/L
DEPTH TO		1524	T/ PVC		TURBI	DITT	MTU D	MODEDATE	□ vebv
		20.W			QIA Q	i		MODERATE	VERY
WELL VOL		NA	LITERS  LITERS	GALLONS		70110112.		FERROUS Fe	$\frac{\text{mg/L}}{\text{100}}$
VOLUME F		<u>ک</u> آب		OR: NO N	COLO	R: ATE (0.45 um)	☐ YES	ODOR: 1	
COLOR:				OR. 1010	_	TE COLOR:		FILTRATE ODOR	
NONE	∏ s⊔		BIDITY MODERATE	☐ VERY			:/MSD	DUP-	· 1
_		✓ GROUN		OTHER		MENTS:			
TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL DURGE VOLUME									
TIME	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	D.O. ( mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)
0891	100	7.94	(i)	13.5	10	13	7.0	15.24	INITIAL
0854		756	1236		3,9	8.0	7.8	15.30	
6904		74	1237		3.4 2.4	7.7	8,1	1330	
690Ce		745	1242	- 4.1	3.0	7.2	8.1	1330	(.)
		7.41	1250	-15.5	150	4.5	8.0	1330	3
0916		741	1254	-15.8	1.10	6.4	8.1	1330	3.1
6971		7.41 7.41	1254	-160	<u>1.45</u>	6.4	E. 3	1570	3
0-171		701	( 9 ) Q	- (4-0	10 1 1	Q.		7	
						I DEADING	A DE MAITHE	THE FOLLOWIN	C LIMITS.
pH: +/-		COND.: +/-			D.: +/- <b>0.3</b>			THE FOLLOWIN	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERED	NUME	ER SIZE	TYPE	PRESERVATI	/E FILTERED
1	250 mL	PLASTIC	А	□ Y <b>Z</b> I	N	125 mL	PLASTIC	D	☐ Y ☐ N
ı	125 mL	PLASTIC	А	□ Y <b>[</b> ]	N	40 mL	VOA	E	□ Y □ N
	60 mL	VOA	А	Y Z	И				□ Y □ N
Į	125 mL	PLASTIC	В	Y 🗆 1	N				□Y □N
	125 mL	PLASTIC	С		N				□Y □N
SHIPPING	METHOD:	Fed	EX DA	ATE SHIPPED:	3/5/2	4	AIRBILL I	NUMBER:	
COC NUMI	BER:		- SI	GNATURE:	6		DATE SIG	GNED: 3	114/24

# **♦ TRC**

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED										
PROJECT	NUMBER	R: 55382	8.0000.0000	ВУ	′: JJ	DATES	124 BY:	AW	DATE: 3/2/6	
SAMPLE I	D:	V !	55	WELL DIA	METER: 🗸	] 2"	6"	IER		
WELL MAT	ERIAL:	✓ PVC	□ss □	]IRON   GA	ALVANIZED	STEEL	ОТН	IER		
SAMPLE T	YPE:	☑ GW	□ww □	] SW 🔲 DI		LEACHATE	□ отн	IER		
PURG	SING	TIME: 0	943	DATE:3/5/2	<u> </u>	SAMPLE TIME: (0) 3 DATE: 3/5/94				
PURGE METHOD		PUMP BAILER	PERISTALTIC	PUMP		<u> </u>		CTIVITY: 131 mg.		
DEPTH TO	WATER:	14.64	T/ PVC			IDITY: 9.9	NTU			
<u> </u>	_	1434			THE WAR	NE SLI	GHT 🗆	MODERATE	☐ VERY	
WELL VOL	UME:	NA	LITERS	GALLONS	TEMP	ERATURE:	. (r °c	FERROUS Fe	mg/L	
VOLUME F	REMOVED:	y	LITERS	GALLONS	COLC	R: Cl	iw	ODOR:	nove	
COLOR:	Bre	Whis	<u>n</u> 0	DOR: <b>1101</b>	<u>ار</u> FILTR	ATE (0.45 um)	YES	NO		
		TUR	BIDITY		FILTRA	ATE COLOR:		FILTRATE ODOR		
NONE	SLI	GHT 🗌	MODERATE	<b>✓</b> VERY	QC S	AMPLE: MS	/MSD	DUP-		
DISPOSAL	METHOD:	:☑ GROUI	ND 🗌 DRUM	/ OTHER	COM	MENTS:				
TIME	PURGE RATE	PH	CONDUCTIVIT	Y ORP	D.O.	TURBIDITY	TEMPERATU	RE WATER	CUMULATIVE PURGE VOLUME	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)_	(NTU)	(°C)	(FEET)	(GAL OR L)	
8143	100	7,36	120E	-6.5	8.8	100	6.5	1478	INITIAL	
0948		10.95	1213	-390	2.2	lel	78	1485	. 1	
0953		6.90	1214	-51	1.3	24	ブブ	1487		
0958		695	1210	- 40	[cl	21	7.6	1485	6.0	
1003		6-43	1209	- (e(	1.0	17	7.6	1485	2	
008		6.43	1209	- 60.N	1.0	15	7.1	1485	2.5	
1013		1,90	1209	- 57.5	1.0	10	7.6	1485	3	
1018		6.90	1210	- 57.7	5 1. b	10	7.4	1485	3. T	
(0)3		Le.cu	idio	~ 57.)	1.0	9-9	7.6	1485	4.0	
	IOTE: STA	BILIZATION	TEST IS CO	WPLETE WHEN	3 SUCCESS	SIVE READINGS	ARE WITHIN	THE FOLLOWING	G LIMITS:	
pH: +/-	0.1	COND.: +/-	3 % ORF	P: +/- 10	D.O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-	
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - <b>N</b> aOH	E- HC	L F	
NUMBER	SIZE	TYPE	PRESERVAT	TIVE FILTER	ED <b>N</b> UME	BER SIZE	TYPE	PRESERVATIV	E FILTERED	
j	250 mL	PLASTIC	Α	□ Y <b>[t</b>	HN	125 mL	PLASTIC	D	☐Y ☐N	
1	125 mL	PLASTIC	Α	□ Y 4	LN	40 mL	VOA	Е	Y N	
	60 mL	VOA	Α	□ Y [ <b>]</b>	L N				☐ Y ☐ N	
i	125 mL	PLASTIC	В		ЦN				☐ Y ☐ N	
	125 mL	PLASTIC	С	Y	] N				□Y □N	
SHIPPING I	METHOD:	Fel	Ex c	OATE SHIPPED:	_3 la	79	AIRBILL N	NUMBER:		
COC NUME	BER:		_ 8	SIGNATURE:			DATE SIG	ENED: 3/L	4/34	
	OCHONDER. J. 12 GOLDEN J. 12 GO									

# **♦ TRC**

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED								
PROJECT NUMBER: 553828	3.0000.0000	BY:	JJ	DATEZIN	1128 BY: AG	)	DATE SIZI 124	
SAMPLE ID: JCW MW	118004	WELL DIAMET	ΓER: 🗸 2'	"	6" OTHER	R		
WELL MATERIAL:			NIZED ST	EEL	OTHER	\		
SAMPLE TYPE:	□ww □	SW 🗌 DI		EACHATE	OTHER	2		
PURGING TIME: 1	38 DA	TE3/5/24	SA	MPLE	TIME: \ \ O	<u> </u>	TE: 3/3/24	
PURGE ✓ PUMP METHOD: □ BAILER	PERISTALTIC F	PUMP	PH: 7.04 SU CONDUCTIVITY: 145 umhos/cm  ORP: 78,1 mV DO: 9.0 mg/L					
DEPTH TO WATER: 1296	T/ PVC		TURBIDITY: 6.2 NTU					
DEPTH ТО ВОТТОМ: 14.7 Ч	T/ PVC		D-NONE	⊑ ☐ SLI	GḤT M	ODERATE	☐ VERY	
WELL VOLUME: NA	LITERS	GALLONS	TEMPERATURE: Uc C FERROUS Femg/L					
VOLUME REMOVED: _ 3 . \	LITERS	GALLONS	COLOR:	cle	<u>مر</u> اور	OOR:	non_	
color: Uww	OD-	OR: nov	FILTRATI	E (0.45 um)	YES 5	МО		
1 3	BIDITY		FILTRATE	COLOR:	FI	LTRATE ODOR:		
NONE SLIGHT	MODERATE	☐ VERY	QC SAM	PLE: MS	/MSD	DUP-		
DISPOSAL METHOD: ✓ GROUN	ND DRUM	OTHER	COMME	NTS:				
TIME PURGE PH	CONDUCTIVITY	ORP		TURBIDITY	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)	
1036 100 7, 3C	(umhos/cm)		(mg/L)	(NTU)	(°C)	1283	INITIAL	
1043 7.05	1414		7.4	(e, Ce	615	1320	.5	
1048 7.05	1438		9.4	اي،4	6.4	13.46		
1053 704	1448		7.0	6.3	4.5	13.55	7.1	
1056 704	नंपंड़ी		1.6	(p.)2	6.5	13 55		
1103 704	1455		9,0	6,7	415	1360	2.5	
		101	1,0	۷, ۰	Ψ'.	1300	2.	
pH: +/- <b>0.1</b> COND.: +/-	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.: +/-</td							
	ATIVE CODES		- HNO3	C - H2SO4	T T		L F	
NUMBER SIZE TYPE	PRESERVATI		NUMBER			PRESERVATIV		
250 mL PLASTIC	□ Y 🗗 N		125 mL	PLASTIC	D	U Y U N		
125 mL PLASTIC	A	□Y Æ N		40 mL	VOA	E		
60 mL VOA A ☐ Y ☐ N 125 mL PLASTIC B ☐ Y ☐ N								
125 mL PLASTIC	C	OY ON					□ Y □ N	
SHIPPING METHOD: Fed	EX DA	ATE SHIPPED:	31612	4	AIRBILL NU	MBER:		
COC NUMBER:	7-	GNATURE:			DATE SIGN	ED: 3/14	1/14	

# **⇒** TRC

VOLUME REMOVED: 3	PROJECT	ROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED								
WELL MATERIAL:	PROJECT	NUMBER	R: 553828	3.0000.0000	BY:	JJ	DATE: 3	ULU BY:	Aw	DATE:
SAMPLE TYPE	SAMPLE I	D: 1M	W-5	4/2	WELL DIAMET	ΓER: ✓	2" 4"	6" OTH	ER	
PURGING	WELL MAT	ERIAL:	✓ PVC	□ss [	] IRON   GALVA	NIZED S	STEEL	□ отн	ER	
PURGE	SAMPLE T	/PE:	☑ GW	□ ww [	SW DI		LEACHATE	□ отн	ER	
METHOD	PURG	SING	TIME: \	16	DATE: 3/9/24	s	AMPLE	TIME:   \	ا ي	PATE 3 15 /24
DEPTH TO WATER   1/2   71   PVC	PURGE		PUMP	PERISTALTIC	C PUMP			U CONDUC		umhos/cm
DEPTH TO BOTTOM. D.S. TI PVC  WELL VOLUME:  NA   LITERS   GALLONS   TEMPERATURE   V.S.   "C   FERROUS FE   mg/N  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   "C   FERROUS FE   mg/N  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   "C   FERROUS FE   mg/N  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   "C   FERROUS FE   mg/N  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   "C   FERROUS FE   mg/N  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   V.S.   MN  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   MN  VERY  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   MN  VERY  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   MN  VERY  VOLUME REMOVED. 3   LITERS   GALLONS   COLOR   V.S.   MN  VERY  VOLUME REMOVED. 4   V.S.   V.S.   MN  VERY  VOLUME REMOVED. 5   FERROUS FE   Mg/N  VERY  VOLUME REMOVED. 5   NO  VERY  VOLUME REMOVED. 5   V.S.   MN  VERY   METHOD	):	BAILER			ORP:			<u>1.4</u> m	g/L	
WELL VOLUME:    NA	DEPTH TO	WATER:	<u>14.75</u>	T/ PVC		<b>-</b> ,				
VOLUME REMOVED: 3	DEPTH TO	воттом:	15.92	T/ PVC		<del>  '</del>			MODERATE	☐ VERY
TURBIDITY	WELL VOL	JME:		<u> </u>	GALLONS	TEMPE			FERROUS Fe _	mg/L
NONE	VOLUME F			1		COLO	R: <u>( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (</u>	<u> </u>		nor
NONE	COLOR:	B	recei	<u> </u>	DOR: nor	FILTRA	TE (0.45 um)	∐ YES	NO NO	
DISPOSAL METHOD: ☐ GROUND ☐ DRUM ☐ OTHER COMMENTS:  TIME PURGE RATE (ML/MN) (SU) ((umhos/cm) (mV) (mg/L) (NTU) TEMPERATURE (PET) (GALORL) (GALORL) (MG/L) (NTU) TEMPERATURE (ML/MN) (GALORL) (GALORL) (MG/L) (NTU) TEMPERATURE (ML/MN) (GALORL) (GALORL) (MG/L) (NTU) TEMPERATURE (ML/MN) (GALORL) (GALORL) (MG/L) (M	_	_			<b>_</b>	<b>——</b>			` <del></del>	R:
TIME PURGE PH CONDUCTIVITY ORP (MIM) (SU) (umhos/cm) (mV) (mg/L) (NTU) TEMPERATURE (EVEL (FEET) (GALDIME (GALDIME (MIM)) (MIM)) (SU) (umhos/cm) (mV) (mg/L) (NTU) (NTU) (CC) (FEET) (GALDIME  (GALDIME (GALDIME (GALDIME (GALDIME (GALDIME (GALDIME (GALDIME) (GALDIME (GALDIME (GALDIME (GALDIME (GALDIME (GALDIME) (GALDIME								/MSD	☐ DUP-	
TIME   RATE   PH   CONDUCTIVITY   ORP   D.O.   TURBIDITY   TEMPERATURE   LEVEL   (FEET)   FURGE VOLUME   (MI_MMN)   (SU)   (umhos/cm)   (mV)   (mg/L)   (NTU)   (°C)   (FEET)   (GAL OR L)   (GAL OR L)   (MI_MN)   (SU)   (umhos/cm)   (mV)   (mg/L)   (NTU)   (°C)   (FEET)   (GAL OR L)   (GAL OR L)   (MI_MN)   (MI_MN	DISPOSAL	METHOD:	☑ GROU	ND DRUI	M OTHER	СОММ	IENTS:			
(ML/MIN)	TIME		PH	CONDUCTIVIT	Y ORP	D.O.	TURBIDITY	TEMPERATU	IRF I	l I
			(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)		
	1110	100		`	1 10		185	7.0	1432	INITIAL
		1	1		<del>                                     </del>			710	14.00	, ĵ
	,		760	רווו	(e3.5)	3.8	15		1445	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     250 mL   PLASTIC   A  </td <td>- 1</td> <td></td> <td>700</td> <td>113)</td> <td>59</td> <td>2.0</td> <td>ιο</td> <td>7.0</td> <td>1445</td> <td>1.5</td>	- 1		700	113)	59	2.0	ιο	7.0	1445	1.5
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:   PH: +/- 0.1	1136		7.00	1170	50	ጋ.ሪ	9.6	7.0	1441	)
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:  pH: +/- 0.1	1141		7,00	113	50			7.0	144	7.5
pH: +/- 0.1         COND.: +/- 3 %         ORP: +/- 10         D.O.: +/- 0.3         TURB: +/- 10 %         or           TEMP.: +/-           BOTTLES FILLED         PRESERVATIVE CODES A - NONE         B - HNO3         C - H2SO4         D - NaOH         E - HCL         F	1146		7.00	1131	49.5	1,9	૯ૢવ	6.9	।५५१	3
pH: +/- 0.1         COND.: +/- 3 %         ORP: +/- 10         D.O.: +/- 0.3         TURB: +/- 10 %         or           TEMP.: +/-           BOTTLES FILLED         PRESERVATIVE CODES A - NONE         B - HNO3         C - H2SO4         D - NaOH         E - HCL         F										
pH: +/- 0.1         COND.: +/- 3 %         ORP: +/- 10         D.O.: +/- 0.3         TURB: +/- 10 %         or           TEMP.: +/-           BOTTLES FILLED         PRESERVATIVE CODES A - NONE         B - HNO3         C - H2SO4         D - NaOH         E - HCL         F										
pH: +/- 0.1         COND.: +/- 3 %         ORP: +/- 10         D.O.: +/- 0.3         TURB: +/- 10 %         or           TEMP.: +/-           BOTTLES FILLED         PRESERVATIVE CODES A - NONE         B - HNO3         C - H2SO4         D - NaOH         E - HCL         F										
pH: +/- 0.1         COND.: +/- 3 %         ORP: +/- 10         D.O.: +/- 0.3         TURB: +/- 10 %         or           TEMP.: +/-           BOTTLES FILLED         PRESERVATIVE CODES A - NONE         B - HNO3         C - H2SO4         D - NaOH         E - HCL         F		IOTE: STA	DII IZATION	I TEST IS CO	MDI ETE WHEN 3 SI	ICCESS	IVE DEADINGS	ARF WITHIN	THE FOLLOWIN	NG LIMITS:
NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED    250 mL PLASTIC   A										
250 mL PLASTIC   A   Y	BOTTLES	FILLED	PRESERV	ATIVE CODE	A - NONE B	- HNO3	C - H2SO4	D - NaOH	1 E- H	CL F
1 125 mL       PLASTIC       A       □ Y       □ N       40 mL       VOA       E       □ Y       □ N         60 mL       VOA       A       □ Y       □ N       □ Y       □ N         1 125 mL       PLASTIC       B       □ Y       □ N       □ Y       □ N         1 125 mL       PLASTIC       C       □ Y       □ N       □ Y       □ N         SHIPPING METHOD:       I SL       EX       DATE SHIPPED:       3 (6 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTERED	NUMB	ER SIZE	TYPE	PRESERVATI	VE FILTERED
60 mL VOA A □ Y □ N □ Y □ N  1 125 mL PLASTIC B □ Y □ N  125 mL PLASTIC C □ Y □ N  SHIPPING METHOD:	l	250 mL	PLASTIC	А	□ Y 🗗 N		125 mL	PLASTIC	D	□ Y □ N
1 125 mL PLASTIC B Y N Y N  125 mL PLASTIC C Y N Y N  SHIPPING METHOD: Fed Ex DATE SHIPPED: 3 (6/24)  AIRBILL NUMBER:	l	125 mL	PLASTIC	А	□ Y 🗗 N		40 mL	VOA	Е	ПΛМ
SHIPPING METHOD: Fed EX DATE SHIPPED: 36674 AIRBILL NUMBER:	60 mL VOA A   Y   N									□ Y □ N
SHIPPING METHOD: Ted EX DATE SHIPPED: 3(6/24) AIRBILL NUMBER:	1	125 mL	PLASTIC	В	□ Y 🛱 N					□ Y □ N
	-	125 mL	PLASTIC	С	N Y N					□Ү□и
	SHIPPING	METHOD:	red	EX	DATE SHIPPED:	31612	94	AIRBILL I	NUMBER:	
COC NUMBER: DATE SIGNED: 3/1/4/13/4	COC NUME	BER:			SIGNATURE:	4	5)	DATE SIG	GNED:	11464

### ◆ TRC

PROJECT	PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED								
			8.0000.0000	BY:	JJ		live BY:	1w	DATE: 3/81/24
SAMPLE	D: 50 L.	<u>,</u> 53	i)	WELL DIAM	ETER: 🗸		6" □ OTH		, <u>G.J. J.</u>
WELL MAT		<u>ノ                                    </u>	<del></del>		/ANIZED S		ОТН		
SAMPLE T		☑ TVO ☑ GW		SW DI		LEACHATE	ОТН		
PURC		TIME: 13	S & DA	TE: 3/5/24	<u> </u>	AMPLE	TIME: 12	, ,	ATE:3/5/14
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP:		U CONDUC	CTIVITY: 1 34 mg	
DEPTH TO	WATER:	15,38	T/ PVC		TURB	DITY: 6.	_ NTU		
DEPTH TO			T/ PVC			NE 🗌 SLI	gнт □	MODERATE	☐ VERY
WELL VOL		NA	LITERS	GALLONS	TEMPE	RATURE:	), ]_c	FERROUS Fe	mg/L
VOLUME F	REMOVED:	_3_	LITERS	GALLONS	COLO	R: _ <u>((</u>	CN	ODOR: _	non
COLOR:	TK	SM15	M OD	OR: <b>101</b>	FILTRA	ATE (0.45 um)	YES	Ĵ-NO	
	•		BIDITY		FILTRA	TE COLOR:		FILTRATE ODOR	t:
NONE	SLI	GHT 🗌	MODERATE	VERY	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROU	ND 🗌 DRUM	OTHER	COMM	MENTS:			
TIME	TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL PURGE VOLUME								
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
1303	100	232	1252		9.3	2)0	7.6	1492	INITIAL
130)	1	7.00	1273		·a. J	100	7.0	15.6	. ,
1917	1	767	1323	40	1,3	23	7.7	1510	)
1317		700	1259	30	1.0	9	7.7	1310	1.5
1997			1246	2.3	097	יי	7.7	1516	2
1227		700	1241		091	6.9	77	1510	2.7
-		7.4	1247	_ ^ _	<u>091</u>	4.9	プラ	1510	3
1333-		1.40	1211	0.1	011	9: )	/- /	1 5.0	
	-				·				
								, and the second	
								I THE FOLLOWIN	_
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> D.0	D.: +/- <b>0.3</b>	TURB: +/-	10 % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	FILLED	PRESERV.	ATIVE CODES	A - NONE E	3 - HNO3	C - H2SO4	D - NaOl	H E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVATI	/E FILTERED	NUME	ER SIZE	TYPE	PRESERVATIV	/E FILTERED
(	250 mL	PLASTIC	А		N _	125 mL	PLASTIC	D	☐ Y ☐ N
125 mL PLASTIC A Y N						40 mL	VOA	E	□ Y □ N
60 mL VOA A   Y   N									□ Y □ N
į	125 mL	PLASTIC	В		٧				
	125 mL	PLASTIC	С		4				☐ Y ☐ N
SHIPPING	METHOD:	Fes	EX DA	TE SHIPPED:	3166	4	AIRBILL	NUMBER:	
COC NUME	BER:		SIG	GNATURE:		<u> </u>	DATE SIG	GNED: 🤿	14/24
	114104								

<b>{}</b>	T	<b>3</b> C
		<i></i>

PROJECT	NAME:	CEC W	Veadock LF: 2	2024 GW C	PR	EPARED		CHEC	KED
PROJECT	NUMBER	: 553828	3.0000.0000	BY:	IJ	DATES	1/24 BY: /	tw.	DATE 3/21/24
SAMPLE	D: M &			WELL DIAM	ETER: 🗸	2" 4"	6"  OTH		
WELL MATI		✓ PVC	ss	IRON GAL	/ANIZED S	STEEL	□ отн	ER	
SAMPLE TY	PE:	√ GW	□ ww   □	SW 🗌 DI		LEACHATE	□ отн	ER	
PURG	SING	£ j :∃MIT	41 D	ATE:315/2	<b>∤</b> s	AMPLE		* '	TE3/5/24
PURGE METHOD	. =	PUMP BAILER	PERISTALTIC	PUMP	PH: ORP:			TIVITY: 110Y	
DEPTH TO		NIC C	T/ PVC		TURB		NTU		
		18.18			— <del>∏ N</del> ⊖	NE SLI	— GНТ □	MODERATE	☐ VERY
WELL VOL		NA NA	LITERS	GALLONS	<del></del>	RATURE:	76 ºs 1	FERROUS Fe	mg/L
VOLUME R			LITERS	GALLONS	COLO		ew	ODOR:	none
COLOR:		Braur	1151/2 OI	DOR: <b>nonu</b>		ATE (0.45 um)	YES	ON -	•
		•	BIDITY		FILTRA	TE COLOR:		FILTRATE ODOR	
NONE	SLI		MODERATE	☐ VERY	QC SA	AMPLE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROUN	ND DRUM	I 🗌 OTHER	COMM	MENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L) INITIAL
1241	100	763	1072	コトレ	9.	80	フィタ	1438	
1246		7.69	1090	4.1	1,5	30	1.4	1445	, 1
1251		7.60	1097	- 3.5	1.7	19	7.7	1445	
1254		7.58	1100	- i3.5	1.0	17	7. 8	प्रिंधर	1,5
1301		ブグ	1161	- 320	094	10	7.60	1447	J
1306		7.54	1103	- 321	<u>c8)</u>	10	7.7	1447	٦.١
1311		7.54	1104	- 32.5	085	10	7.8	1445	3
	\								
	IOTE: STA	BILIZATION	N TEST IS COM	MPLETE WHEN 3	SUCCESS	SIVE READINGS	ARE WITHIN	THE FOLLOWING	G LIMITS:
pH: +/-	0.1 (	COND.: +/-	3 % ORF	P: +/- <b>10</b> D.	O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTERE	NUME	BER SIZE	TYPE	PRESERVATIV	/E FILTERED
t	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	☐ Y ☐ N
(	125 mL	PLASTIC	А		N	40 mL	VOA	Е	□ Y □ N
	60 mL	VOA	Α		N				Y N
	125 mL	PLASTIC	В		N				UY UN
	125 mL	PLASTIC	С	□ Y □	N		_		□Y □N
SHIPPING	METHOD:	Fed &	Ey	ATE SHIPPED:	3161	24	AIRBILL I	NUMBER:	
COC NUMBER: SIGNATURE: DATE SIGNED: 3/14/24									

### **⇒**TRC

PROJECT	PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED										
PROJECT	NUMBE	R: 55382	8.000.000	0 E	3 <b>Y</b> :	JJ	DATE:3	Ylac BY:	Aω	D.	ATE: Stzitz4
SAMPLE II	D: کونو	no i	4,005	WELL D	IAMET	ER: 🗸 2	"	6" OT	HER		
WELL MATE		☑ PVC	□ss		SALVA	NIZED ST	EEL	🗌 от	HER		
SAMPLE TY	PE:	☑ GW	□ww	☐ sw ☐ ɪ	OI	LE	EACHATE	ОТ	HER		
PURG	ING	TIME: 0	e68	DATE: ) lul	248	SA	MPLE	TIME: ()	723	DATE	= 316124
PURGE	_	PUMP	PERISTALT	IC PUMP		PH:	2.Jo s	SU CONDU	JCTIVITY:	<u> 100 (</u>	umhos/cm
METHOD:		BAILER		41.4		ORP:	<u>&amp; .                                   </u>	nV DO:	085	mg/L	
DEPTH TO	WATER:	8.95	T/ PVC			TURBIDI	'	NTU			_
DEPTH TO	воттом	1638	T/ PVC			MONE	SL	IGHT _	MODERA	ſΕ	VERY
WELL VOLU	IME:	NA	LITERS	GALLON	1S	TEMPER.	ATURE: <u>(</u>	ين ℃	FERROUS	Fe	mg/L
VOLUME R	EMOVED:	715	LITERS	GALLON	1S	COLOR:		٧٧	ODOR:	Ac	<u>یالا</u> "
COLOR:		310W	<u> </u>	ODOR:		FILTRATE	E (0.45 um)	YES	Ŭ NO		
		TUR	BIDITY			FILTRATE	COLOR:		FILTRATE	ODOR:	
NONE	SLI	GHT 🗌	MODERATE	<b>∮</b> ∀ER	Υ	QC SAM	PLE: MS	S/MSD	DUP-		
DISPOSAL	METHOD:	☑ GROUI	ND DRU	JM 🗌 OTHER		COMME	NTS:				
TIME	PURGE	PH	CONDUCTIV	TTY ORP		D.O.	TURBIDITY	TEMPERAT	DRE I	TER	CUMULATIVE
	RATE (ML/MIN)	(SU)	(umhos/cn	n) (mV)		mg/L)	(NTU)	(°C)		VEL   I	PURGE VOLUME ( (GAL OR L)
<del></del>	100	V.v	771	لاولا			XGC	70		SE	INITIAL
cle13		658	154	1 95	3		186	Gi (	9,0	)C	, ſ
3140		6.70	1 501	84	Ì	80	89	(es)	9.4	8	
n (233)		6.71	1560	プラも		a T	45	40	97	1	1,1
13(0)0		6:01	1560	> 60	1	.3	34	5.4	9.8	37	2
0°e33		671	1560	50	l	.3	30	40	Ġ.c	co	7.5
0638		6:71	1560	1 41		2	30	Û.	10	20	3
clay3		lei71	1561	36	Ĺ	4	28 <u> </u>	(a)	10	6	3.
0648	It	1271	196	3 20	į	1,	26	(e)	10.	c	4
0453		(0.7	H 56	820	l	11 5	ŽŪ	4.2	10.0	2) <u> </u>	4,7
N	OTE: STA	BILIZATION	N TEST IS C	OMPLETE WHE	N 3 SU	CCESSIVI	E READINGS	ARE WITHI	N THE FOLL	OWING L	JMITS:
pH: +/- <b>0</b>	.1 (	COND.: +/-	3 % OF	RP: +/- <b>10</b>	D.O.:	+/- 0.3	TURB: +/-	<b>10</b> % or	= 10</td <td>TE</td> <td>MP.: +/-</td>	TE	MP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODE	S A-NONE	В-	HNO3	C - H2SO4	D - NaC	Н Е	- HCL	F
NUMBER	SIZE	TYPE	PRESERV	ATIVE FILTE	RED	NUMBER	SIZE	TYPE	PRESER	RVATIVE	FILTERED
ı j	250 mL	PLASTIC	А	□ Y [	Ž N		125 mL	PLASTIC	[	)	□Y □N
<u> </u>	125 mL	PLASTIC	А	☐ Y [	N		40 mL	VOA	E		□ Y □ N
	60 mL	VOA	А	Y	N						□Y □N
	125 mL	PLASTIC	В	□ Y [	N						□ Y □ N
,	125 mL	PLASTIC	С	☐ Y [	N						Y
SHIPPING M	ETHOD:	Fed	EX	DATE SHIPPED	): }	6/2	4	AIRBILL	NUMBER:		
COC NUMBI	 ER:			SIGNATURE:			7	DATE S	IGNED:	2/16	1124

### TRC WATER SAMPLE LOG (CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Weadock LF: 2024 GW Co		PREPARED	CHE	CKED
PROJECT NUMBER:	553828.0000.0000	BY:	JJ DATE 3/14/2	BY: AW	DATE ZUZY

SAMPLE	ID: 70	W MU	1800						
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
ઉલ્લેક	100	الودا	1573	0.0	1,0	19	(oil	1063	5
070°7		400	15774	5.6	1.6	17	lad	(003	5.0
704		4.70	1576	1.1		15	(gr)	1065	<b>(</b>
6713		600		- 8.0	090	10	lect	OLOY	Vit
0714		19.70	استعمر مراح تسمر د ا	- 83	087	9.5	Vel	10.10	7
0733		(p.70	1601	- 6.5	085		61	10.10	フィて
		9,70	TAY .			<u> </u>			
	1								
<del></del>					***************************************				
		-							
		Angelow by the disk							
		-							

) 3/14b 5

DATE SIGNED:

♦ TRO	-
PROJECT NAME:	(
PROJECT NUMBER	₹: १
SAMPLE ID: () W	- 5
WELL MATERIAL:	<b>√</b> F
SAMPLE TYPE:	<u>v</u>
PURGING	ТІМ
PURGE METHOD:	PUN BAIL
DEPTH TO WATER:	<u>ئ</u>
DEPTH TO BOTTOM	<u> </u>
WELL VOLUME:	1
VOLUME REMOVED:	
COLOR:	_(
NONE ∏ SLI	GHT

PROJECT	PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED											
PROJECT	NUMBER	R: 55382	8.000.0000		BY:		JJ	DATE: 3	hulser A	<b>い</b>	DATE 3 121124	
SAMPLE	ID: () (Le	-57 R	lout	WE	LL DIA	ИEТ	ER: 🗸	2" 4"	6" OTHE	R		
WELL MAT		✓ PVC	ss 🗌	IRON	☐ GAI	LVA	NIZED S	TEEL	OTHE	R		
SAMPLE T	YPE:	☑ GW	□ww □	sw	☐ DI			LEACHATE	OTHE	R		
PUR	GING	TIME: O	740 0	ATE:3 {	بداي	Ĺ	SAMPLE TIME: OOIC DATE: 3 C					
PURGE METHOD	· _	PUMP BAILER	PERISTALTIC	PUMP			PH: 7		SU CONDUCT	IVITY: <u> </u>		
DEPTH TO	) WATER:	842	T/ PVC				TURBIC	DITY: 5.	NTU			
DEPTH TO	ВОТТОМ:	19.46	ŽT/ PVC				NON-	NE SLI	IGHT 🗌 N	ODERATE	☐ VERY	
WELL VOL	UME:	NA	LITERS	☐ GA	LLONS		TEMPE	RATURE: <u>L</u>	າເ∫_°C F	ERROUS Fe	mg/L	
VOLUME F	REMOVED:	_3	LITERS	☐ GA	LLONS		COLOR	<u>د رابو</u>	o w	DOR: 🏌	ON	
COLOR:		()0	اللام ٥٦	OR: 🅦	770		FILTRA	TE (0.45 um)	YES [	$\mathcal{M}_0$	1	
		TUR	BIDITY				FILTRAT	TE COLOR:	F	ILTRATE ODOR:		
NONE	SLI	GНТ Д	MODERATE		VERY		QC SAI	MPLE: 🗌 MS	MSD [	DUP-		
DISPOSAL	METHOD:	☑ GRŎUI	ND 🗌 DRUM	ОТ	HER		СОММІ	ENTS:				
TIME	PURGE	PH	CONDUCTIVITY		RP		D.O.	TURBIDITY	TEMPERATUR	WATER	CUMULATIVE	
''''	RATE (ML/MIN)	(SU)	(umhos/cm)		nV)		mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)	
เว็บน์เว	100	7.3%	1147	<del></del>	1.9		0	lec	<b>ゴ</b> 、フ	957	INITIAL	
07 V	i	719	1168	1	0.5	2	-	16	Care	10.2	. 5	
0750		7. 8		3	<u> </u>		1	7.60	6.9	1125		
07 7		7 19		3	.,,,	t	10	U.U	6.	1195	1,5	
0800		7,14	تهانیا ( )	4	<del>`</del>	ì	44	5.8	6,4	7 7.0	2	
CSOC 5		7.19	11/07	4	).<	į	1.3	5. 7	6.5	1295	5.5	
voic		7.19	1167	42	5. O	i	4.3	りつ	6,5	134×	7	
					·						3,7	
								·····			4	
					***************************************						4,5	
L	LOTE: STAL	DIL IZATION	TEST IS COM	DI ETE I	A/LIEN 2		ICCESS!	VE DEADINGS	ADE WITHIN T	HE FOLLOWING		
pH: +/-		COND.: +/-		+/- 10			+/- 0.3	TURB: +/-			TEMP.: +/-	
BOTTLES	SFILLED	PRESERV	ATIVE CODES	A - NO	NE	В-	HNO3	C - H2SO4	D - NaOH	E- HC	L F-	
NUMBER	SIZE	TYPE	PRESERVAT		ILTERE		NUMBE		TYPE	PRESERVATIV	<del></del>	
ī	250 mL	PLASTIC	А		Y <b>Z</b>	N		125 mL	PLASTIC	D	□Y □N	
i	125 mL	PLASTIC	А		Y [	N		40 mL	VOA	E	□ Y □ N	
	60 mL	VOA	Α		Y 🗆	l N		U V DN				
1	125 mL	PLASTIC	В		Y 🗹	N				·····	□Y □N	
	125 mL	PLASTIC	С		Y 🗆	N					Y N	
SHIPPING	METHOD:	Fed E	<b>y</b> D,	ATE SHI	PPED:		3661z	4	AIRBILL NU	IMBER:		
COC NUMI	BER:		7	GNATU	 RE:				DATE SIGN	ED: マ//	0120	

<b>{</b> }	TR	C

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED													
PROJECT	T NUMBER	R: 55382	8.0000.0000		BY:	JJ		DATE 3[4	M BY:	Aci	7	DA	TESIZI124
SAMPLE	ID: \Cu	1-Mu	)- 1800	υ <b>ί</b> ω   ν	VELL DIA	METER: [	<u></u>	4"	6" OT	HER			
WELL MAT		✓ PVC	ss [	IRON		LVANIZED		EL .	П ОТ	HER			
SAMPLE T	YPE:	☑ GW	□ ww [	] sw	☐ DI		LEA	CHATE	то	HER			
PUR	GING	TIME: 0	687	DATE:*3	16/2	ι		IPLE	TIME: 06				क्री ए। २०
PURGE	_	PUMP .	PERISTALTI	C PUMP			7.0		<del></del>		17:115		_ umhos/cm
METHOD		BAILER							V DO:	<u>U&amp;</u>	· / r	ng/L	
DEPTH TO		12.73	T/ PVC				BIDIT			1	DED 4 TE		
DEPTH TO BOTTOM: 33 6 T/ PVC													
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 7.6 °C FERROUS Fe mg/L													
	VOLUME REMOVED: 3 LITERS GALLONS COLOR: CLEW ODOR: 1000												
COLOR:	8, 3, 4												
TURBIDITY   FILTRATE COLOR:   FILTRATE ODOR:													
									/WISD		DOP- 7-	<i>U</i> 3	<u> </u>
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:													
TIME	PURGE RATE	PH	CONDUCTIVI	TY -	ORP	D.O.	T	URBIDITY	TEMPERAT	URE	WATER LEVEL		CUMULATIVE URGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)		(mV)	( mg/L)	┷	(NTU)	(°C)		(FEET)		(GAL OR L)
(600)	100	219	((&)	9	4,4	10	<u> </u>	701	5.7		1274	_	INITIAL
0637		7.00	1179	~3	5	2.6		50	(p. 0	7	いもく		١
0637		7.03	1114	7 - 6	57-6	1.1		11.9	フェナ		7361	`	(
०६५४		7.01	1114	، ا _ ز	45	1.0		11.0	7.6		1783	ì	1,5
<b>७</b> ४५७		7.04	114)	(	275	69)		9.5	7. 5		1387	(	3
0853		703	1157	(	i (4.3	68°		9. 5	7.6	······································	1785		7.5
0857		704	1157	ا- ر	4.3	087		9.3	7.6		1786		3
	NOTE: STA	BILIZATION	N TEST IS CO	MPLETE	E WHEN 3	SUCCES	SIVE	READINGS	ARE WITHI	N THE	FOLLOWI	NG LII	WITS:
pH: +/-	0.1	COND.: +/-	3 % OR	P: +/- <b>1</b> 0	<b>)</b> D	.O.: +/- <b>0.</b>	3	TURB: +/-	<b>10</b> % or	=</td <td>10</td> <td>TEM</td> <td><b>I</b>P.: +/-</td>	10	TEM	<b>I</b> P.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODE	<u>S</u> A - N	ONE	B - HNO3	3	C - H2SO4	D - NaC	Н	E- H	HCL	F
NUMBER	SIZE	TYPE	PRESERVA	TIVE	FILTERE	D NUM	BER	SIZE	TYPE	PI	RESERVAT	IVE	FILTERED
7	250 mL	PLASTIC	А		] Y    <b>J</b>	N		125 mL	PLASTIC		D		□ Y □ N
ړ	125 mL	PLASTIC	Α		] Y <b>[Z</b> ]	N		40 mL	VOA		E		□ Y □ N
	60 mL	VOA	А		] Y 🔲	N							□ Y □ N
7	125 mL	PLASTIC	В		] Y	N							□Y □N
a a constant a constan	125 mL	PLASTIC	С		] Y 🗀	N							□ Y □ N
SHIPPING	METHOD:	Fed	EX	DATE SH	HIPPED:	316	lzy	/	AIRBILL	NUM	BER:		
COC NUME	COC NUMBER: SIGNATURE: DATE SIGNED: 3/14/14												

ROJECT	NAME:	CEC W	eadock LF: 2	2024	sw d			PRE	PA	RED			CHECK	ED	
ROJECT	NUMBER:	553828	.0000.0000			BY:		JJ	D	ATEZ (14	1/24 B	(Aw		DATE SIZIE	.4
SAMPLE ID	):Mw	58	1	-	WELL I	DIAM	ETE	R: 🗸	2" [	4"	6" 🔲 🤇	THER			
VELL MATE	RIAL:	√ PVC [	_ss _	IRO	۷ 🔲	GAL'	VAN	IZED S	TEEL	-		THER			
SAMPLE TY	PE: [	기 GW [	_ww [	SW		DI			LEAC	HATE		THER			
PURG	ING	TIME: D C	090	 ر:ATE	Sto	124		S	٩MF	PLE	TIME:	393		1E:3 (4/2)	i
PURGE METHOD:			PERISTALTIC	PUMI				PH:	7. C				TY: <u>219</u> <u>64</u> mg/l		cm
DEPTH TO	WATER:	5-33_	T/ PVC					TURBI	OITY:	5,5	_ NTU			_	
DEPTH TO		उहिंदी	T/ PVC					<u>†</u> пои	ΝE	SLIC		MOI	DERATE	☐ VERY	
WELL VOLU		NA [	LITERS	<u></u>	GALLC	NS		TEMPE	RAT			FER	ROUS Fe		mg/
VOLUME R	EMOVED:	<u> </u>	ITERS		GALLO		-+	COLOF		Cla		ODO		10 VC	_
COLOR:	<u></u>	10 V		DOR:	<i>∧</i> €	2V_	-	FILTRA	TE (C	).45 um)	YES		NO		
_		_	BIDITY		¬	D) (		GC SA			/MSD		TRATE ODOR: DUP-		
NONE	SLIC		MODERATE	<u> </u>	OTHE		-	COMM			IVIOD				
DISPOSAL		✓ GROUN	DRUM		OTHER	_		COMM	LIN).	<del></del>			WATER I	CUMULATIN	/E
TIME	PURGE RATE	PH	CONDUCTIVIT	Y	ORP		[	0.0.	TU	RBIDITY	TEMPER		LEVEL	PURGE VOLU	JME
Δ Δ	(ML/MIN)	(SU)	(umhos/cm)	_	(mV)			ng/L)		(NTU)	<u> </u>		5.3c	(GAL OR L INITIAL	<u>.)                                    </u>
1904:	2 cp	7.34	193 3		<u>4. 1</u>		_	5. 7		5.7			1,59		
3114		(29)	9496 2-6	<u> -</u>	<u> 3ૄૄૄ.</u>	4		<u>.7                                    </u>		7-4	رو,		533	3	
919			138 r	<u> </u>	59	<u>, T</u>	l	<u>,co</u>	C		(e. 4	<u> </u>	333		
6934			1724	<u> </u>	75	8_	Ö	95		3.5 ====================================	φr)	<u> </u>	333	3	
0976		7.00	3312		<u>74</u>	0	<del></del>	86		5. r	(ب،		533	<u> ५</u>	
6934		7.08	2195	-	つし	.0	C	84°		5 - Y	(Pi-	)	5.32	<u> </u>	
				+											
				1											
				+											
		DU 1747103	TEST IS CO	MDI E		IEN 3	SII	CCESS	IVF	READINGS	ARE WI	THIN TH	E FOLLOWING	LIMITS:	
pH: +/-		COND.: +/-		P: +/-				+/- 0.3		TURB: +/-		or =</td <td></td> <td>TEMP.: +/-</td> <td></td>		TEMP.: +/-	
BOTTLES	FILLED	PRESERV	ATIVE CODES	§ A-	NONE		В-	HNO3		C - H2SO4	D - 1	NaOH		L F	
NUMBER	SIZE	TYPE	PRESERVA	TIVE	FIL	TERE	D	NUMB	ER	SIZE	TYPI	<u> </u>	RESERVATIV		•1
ŧ.	250 mL	PLASTIC	А		Y		N			125 mL	PLAS1	TIC	D		N
,	125 mL	PLASTIC	А		□ Y		N			40 mL	VOA	`	E		N
	60 mL	VOA	А		□ Y		N								N
	125 mL	PLASTIC	В		□ Y	Z	N								N
	125 mL	PLASTIC	С		Y		N	<u> </u>							N
SHIPPING	METHOD:	Fed	Ex	DATE	SHIPF	ED:	(	36	124	/	AIRE	BILL NUN	MBER:		
														. ,	-

<≯ 7	RC	Liver	rles_	WAIL	K 2	AWI	LE LO	- 		
PROJECT	NAME:	CEC K	PAPAVSP	: Additiona		PRI	EPARED		CHEC	
PROJECT	NUMBER	553814	.0002.0000		BY: AW,	JJ, JK,	ER DATE 7 Vi	(h) BY: /-	tw	DATE 3/21/24
SAMPLE II	o: IC	01		WELL D	IAMETI	ER: 🗸	2" 4"	6" OTHE	R	
WELL MATE	ERIAL:	√ PVC [	]ss 🗌	IRON 🔲	GALVAI	NIZED S	TEEL	OTHE	R	
SAMPLE TY	PE: [	☑ GW [	_ww _	sw 🗌	DI		LEACHATE	OTHE	R	
PURG	ING	TIME:	DA	TE:		S	AMPLE	TIME: OG		DATE: 7/16/24
PURGE METHOD:		PUMP F	PERISTALTIC	PUMP					TVITY: <u> </u>	umhos/cm
DEPTH TO	WATER:		T/ PVC /			TURBI		ити		
DEPTH TO	воттом		T// PVC			Ø-NO		<u> </u>	ODERATE	☐ VERY
WELL VOL	JME:	NA J	LITER	GALLO	NS	TEMPE	RATURE: 🔼		ERROUS Fe	mg/L
VOLUME R	EMOVED:	- $L$ [	LITER	GALLO	NS	COLO	e Cice			
COLOR:	<u></u>		OD	OR:		FILTRA	TE (0.45 um)	∐ YES	NO	
			BIDITY				TE COLOR:		FILTRATE ODO	R:
NONE	SLIC		MODERATE	VEI	₹Y 	<del> </del>	MPLE: MS	/MSD [	DUP	
DISPOSAL	METHOD:	✓ GROUN	ID 🗌 DRUM	OTHER	<u> </u>	COMM	IENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ļ		D.O.	TURBIDITY	TEMPERATUR	I LEVEL	CUMULATIVE PURGE VOLUME (GAL OR L)
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(	mg/L)	(NTU)	(°C)	(FEET)	INITIAL
		a de la companya de l								
						/				
				<del></del>	_					
				-						
				-						
Amagada							<u></u>			
	NOTE: STA	BILIZATION	N TEST IS CON	IPLETE WH	EN 3 S	JCCESS	SIVE READING	S ARE WITHIN		
pH: +/-	0.1	COND.: +/-	3 % ORP	: +/- 10	D.O.	: +/- 0.3	3 TURB: +/-	- <b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В	- H <b>N</b> O3	C - H2SO	4 D - NaOH	E-	HCL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILT	ERED	NUM	BER SIZE	TYPE	PRESERVA	TIVE FILTERED
	250 mL	PLASTIC	А	ΠY	□ N		125 mL	PLASTIC	D	□ Y □ N
ſ	125 mL	PLASTIC	A	□ Y	Z N	1	40 mL	VOA	E	□Y □N
-	60 mL	VOA	A	ΠY	□ N					□ Y □ N
1	125 mL	PLASTIC	В		N					U Y U N
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	125 mL	PLASTIC	<del> </del>		□ N					□ Y □ N
CHIDDING		<u></u>	<del></del>	DATE SHIPP	ED:	51,	124	AIRBILL	NUMBER:	
	METHOD:	1-00				<u></u>		DATE SIG	SNED: 7/	11/24
COC NUM	IRFK:			SIGNATURE	·	=	1			14 157

ROJECT N	IAME:	CEG Ka	m RAP7WSP	Addition		PRE	PARED		CHECKED			
ROJECT N	NUMBER:	5,53814.	0002.000		BY: AW,	JJ, JK, E	RDATE:3	ルル BY: A	w	DATE: Stril 24		
AMPLE ID	: 81	240	1	WELL C	IAMETE	R: 🗸 2	2"	6" OTHE	R			
VELL MATE	RIAL:	PVC [	_ss _	IRON 🗌	GALVAN	NZED ST	EEL	OTHE	R			
AMPLE TYP	PE:	gw [	_ww □	sw 🗌	DI	L	EACHATE	OTHE	R —————			
PURGI	ING 1	TIME:	DA	TE:		SA	MPLE	TIME: 09c		TEG COTAL		
PURGE METHOD:	_	PUMP F	PERISTALTIC F	PUMP	ļ	PH: 🔨			TIVITY:	umhos/cm		
DEPTH TO	WATER:		T/ PVC				ITY: A	_ NTU		<b>—</b>		
DEPTH TO		1	T/ PVC			∰₩⊙N			MODERATE	☐ VERY		
VELL VOLU	ME:	NA \[	LITERS	☐ ĞALLO	NS		RATURE:		ERROUS Fe	mg/		
VOLUME RI	EMOVED: _		TERS !	☐ GALLO	NS	COLOR			JDON <del>-</del>			
COLOR:				OR:		FILTRAT	ΓΕ (0.45 um)		<del>Z</del> NO			
		TURE	BIDITY				E COLOR:		FILTRATE ODOR:			
NONE	SLIG		MODERATE	VE		QC SAM		MSD [	DUP-			
DISPOSAL	METHOD:[	☑ GROUN	D DRUM	OTHER	<del></del>	COMM	ENIS:			0.18.11.0.77./5		
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPERATUR	RE WATER LEVEL	CUMULATIVE PURGE VOLUME		
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(	mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)		
	Quarter									INITIAL		
										and the same of th		
					_							
										IO L INNITO:		
N	OTE: STA	BILIZATION						MARE WITHIN 10 % or	THE FOLLOWIN	TEMP.: +/-		
pH: +/-	0.1 (	COND.: +/-	3 % ORP	: +/- <b>10</b>	D.O.	: +/- 0.3	TURB. +/-	10 % 01				
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	В	- HNO3	C - H2SO4			CL F		
NUMBER	SIZE	TYPE	PRESERVAT	IVE FIL	TERED	NUMB	ER SIZE	TYPE	PRESERVATI			
	250 mL	PLASTIC	А	□ Y	□ N		125 mL	PLASTIC	D	Y U N		
	125 mL	PLASTIC	А	□ Y	<b>✓</b> N		40 mL	VOA	Е	N N		
	60 mL	VOA	А	□Y	□ N					N N		
(	125 mL	PLASTIC	В	□ Y	Z N					☐ Y ☐ N		
	125 mL	PLASTIC	С	ΠY	□ N					UY UN		
	<del>'</del>		<u> </u>			$\overline{}$	<b>.</b>					
SHIPPING	METHOD:	Fed	EV	DATE SHIPE	PED:	Elil	24	AIRBILL	NUMBER:			

PROJECT NAME:	CEC K	arn RAPAVS	P: Additiona		EPARED		CHECI	KED			
PROJECT NUMBER	577	2 7.0005 -0002.0000			ERDATE:31	εΔ. ( BY: <b>Δ</b>		DATES -1-4			
			B1.	AVV, 33, 314,	311	4)~   5 · <i> </i>	W	2000			
SAMPLE ID: CH	-103	K	WELL DIAN	/IETER: 🔽	2" 4"	6" OTHE					
WELL MATERIAL:	✓ PVC	ss [		VANIZED S		OTHEI					
SAMPLE TYPE:	☑ GW	□ww L	SW DI		LEACHATE	U OTHE	R				
PURGING	TIME: 10	03 0	ATE: 5 UI	<b>પ</b> ક	AMPLE	TIME: \C	<u>, , , , , , , , , , , , , , , , , , , </u>	TE:3 /ce 124			
PURGE  METHOD:	PUMP BAILER	PERISTALTIC	PUMP	PH: ORP:	CU	CONDUCT	1VITY: 279 06) mg	diffico/ciff			
DEPTH TO WATER:	21.08	T/ PVC		TURBI	DITY: 4.	Y NTU					
DEPTH TO BOTTOM	334	T/ PVC		J-NO			ODERATE	☐ VERY			
WELL VOLUME:	NA	LITERS	GALLONS	TEMPE	RATURE: 9		ERROUS Fe	mg/			
VOLUME REMOVED: U STATERS GALLONS COLOR: COLOR: ODOR:											
COLOR: B	14 ch,	<u>5</u> 0	DOR: (	_ FILTRA	ATE (0.45 um)	YES E	MO	•			
	TUR	BIDITY	•		TE COLOR:		ILTRATE ODOR				
NONE SLI	GHT 🗌	MODERATE	<b>Æ</b> VERY	QC SA	MPLE: H		# <b>D</b> UP-				
DISPOSAL METHOD	GROUN	ND DRUM	1 OTHER	COMM	IENTS: L	L Ha					
TIME PURGE RATE (ML/MIN)	PH	CONDUCTIVIT	ORP (mV)	D.O. ( mg/L)	TURBIDITY (NTU)	TEMPERATURI	E WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)			
	(SU) <b>フロ</b> 子	(umhos/cm) ろひらく	-37,0	4.6	1170	7,3	21.37	INITIAL			
	10.99	2903	-43.8		13.6	8.7	21.57	15			
100%		7 886	<del> </del>	3.0	13/6	8.4.	21.60	76			
1012	6.99	2479	~ 77.0 # (E/)	1.35	<i>J.</i> 1	8,9		7			
1018	( 999 )		- 25.0	(,10	5.3		2161	1.6			
1033	Cur	2649	- 10.0	011	5.0	8.9	2167	9.0			
1076	698	2000	-46.3	088	4.9	90	2162	3.4			
1033	666	7791	218,5	687	4.9	9.0	2163	(B)			
								1			
•	<b>BILIZATION</b> COND.: +/-		MPLETE WHEN 3 2: +/- 10 D	SUCCESS .O.: +/- 0.3				G LIMITS: TEMP.: +/-			
BOTTLES FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F			
NUMBER SIZE	TYPE	PRESERVA	TIVE FILTERE	D NUMB	BER SIZE	TYPE	PRESERVATIV	/E FILTERED			
250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	☐ Y ☐ N			
Į 125 mL	PLASTIC	А		N	40 mL	VOA	Е	□ Y □ N			
60 mL	VOA	А	□ Y □	N 4	250	Glass	AE	□ Y <b>ZQ</b> N			
125 mL	PLASTIC	В	□ Y Z	N		-	-	Y N			
125 mL	PLASTIC	С		N				□ Y □ N			
SHIPPING METHOD:			OATE SHIPPED:			AIRBILL NU	JMBER:				
COC NUMBER:		-	SIGNATURE:			DATE SIGN	VED: 3	(14)4			

<b>(&gt;)</b>	てんし
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PROJECT	PROJECT NAME: CEC Karn RAP/WSP: Additiona PREPARED CHECKED										
PROJECT	NUMBER	R: 553814	1.0002.0000	BY:	AW, JJ, JK,	ER DATE: 3	WHEY:	4w	DATE: \ZIZ		
SAMPLE I	D: LH	104		WELL DIAM	∕IETER: ✓	2" 4"	6" 🗌 ОТН	ER			
WELL MAT	ERIAL:	√ PVC	ss 🗆	IRON GAI	VANIZED S	TEEL	🗌 отн	ER			
SAMPLE T	PE:	☑ GW	□ww □	SW DI		LEACHATE	□ отн	ER			
PURC	SING	TIME:	20 DA	ATE:3 (4/2		SAMPLE TIME: \150 DATE: 3					
PURGE METHOD	. =	PUMP BAILER	PERISTALTIC I	PUMP	PH: ORP:		U CONDUC	TIVITY: <u>938</u>			
DEPTH TO	WATER:	BOT	T/ PVC		TURBI		NTU				
DEPTH TO			T/ PVC			4E SLI		MODERATE	☐ VERY		
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: E. FERROUS Femg/L											
VOLUME REMOVED: 3 LITERS GALLONS COLOR: COLOR: ODOR:											
COLOR: ODOR: OCA FILTRATE (0.45 um) YES NO											
		TURI	BIDITY		FILTRA	TE COLOR:		FILTRATE ODOR:			
NONE	SLI		MODERATE	☐ VERY	QC SA	MPLE: MS	/MSD	DUP-			
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:											
	PURGE			000		TUDDIDITY	TEMPERATU	DE WATER	CUMULATIVE		
TIME	RATE (ML/MIN)	PH (SU)	(umhos/cm)	ORP (mV)	D.O. ( mg/L)	TURBIDITY (NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)		
1170	10.0	8.38	963	240	10	9.0	7.4	79.	INITIAL		
1125	100	4.77	444	.19.1	(4,70	58	7.8	9.50	, T		
1130		877	930	-18.7	5.5	59	7.9	8.55			
1135		8,4	926	-36	34	5.5	80	8,65	1, 0		
ijuc		6.55	926	-50.5	2.5	5.5	8.1	9.Les	<u> </u>		
1145		8.14	976	- 51.0	2,5	5.5	6.1	865	3,		
1147		8:55	926	- 51.3	2.5	5,5	4.0	865	3		
	. 1000000000								7.5		
								1			
	1										
<u> </u>	IOTE: STA	BIL IZATION	LTEST IS COM	DI ETE WHEN 3	SUCCESSI	VE READINGS	ARF WITHIN	THE FOLLOWING	G LIMITS		
pH: +/-		COND.: +/-			0.0.: +/- <b>0.3</b>	TURB: +/-			TEMP.: +/-		
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	I E- HC	L F		
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUMBI	ER- SIZE	TYPE	PRESERVATIV	E FILTERED		
1	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	☐ Y ☐ N		
	125 mL	PLASTIC	Α		N	40 mL	VOA	E	OY N		
	60 mL VOA A 🔲 Y 🔲 I		N 4	250	<b>Glass</b>	E	□ Y ☑ N				
1	125 mL	PLASTIC	В		N			· ' »	□Y □ N		
	125 mL	PLASTIC	С		N				□Y □N		
SHIPPING	METHOD:	Fed 1	Ey D	ATE SHIPPED:	_ 3/	6/24	AIRBILL N	NUMBER:			
COC NUME	BER:		SI	GNATURE:		2	DATE SIG	SNED:	3/1424		
<u> </u>											

# <u> → TR</u>C

PROJECT	NAME:	CEC K	arn LF: 2024	GW Comp	PARED			CHEC	KED		
PROJECT	NUMBER	R: <del>-55381</del> 4	1.0000.0000	553825	BY: AW	, JJ, JK, EI	RDATE: 3	5/24 BY:	Aw		DATE: Yzılz4
SAMPLE I	D: Mu	1-150	08	WELL D	DIAMET	ER: 🗸 2"	4" 🗌	6" OT	HER		
WELL MAT	ERIAL:	✓ PVC	ss [	IRON	GALVA	NIZED ST	EEL	🗌 от	HER		
SAMPLE T	/PE:	☑ GW	□ww □	sw 🗆	DI		ACHATE	ОТ	HER		
PURG	SING	TIME: 8	43 0	ATE: 1		SAI	MPLE		9/9		TES KIZY
PURGE	_	PUMP	PERISTALTIC	PUMP		PH:			CTIVITY: _		
METHOD		BAILER				ORP:		V DO:	1.51	mg,	/L
DEPTH TO			T/ PVC	<u> </u>		TURBIDI			MODED		□ VERY
DEPTH TO	воттом:	17.42	T/ PVC			NONE		GHT	MODERA		7 ~
WELL VOLUME: NA LITERO CALEGRO TEMPERATURE.											
				☐ GALLO		COLOR:			ODOR:		<i>U</i>
COLOR:	yel	aoish		DOR: Us		FILTRATE	E (0.45 um)	∐ YES	NO NO		
<u> </u>	_		BIDITY			FILTRATE			FILTRAT		
NONE	☑ SLI		MODERATE	VEF		QC SAMI		/MSD	DUP	- 13	ackground
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:											
TIME	PURGE RATE	PH	CONDUCTIVIT	Y ORP		D.O	TURBIDITY	TEMPERAT	1 IRF 1	ATER EVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(	mg/L)	(NTU)	(°C)	1	EET)	(GAL OR L)
843	200	6.61	1931.1	-80.4	( 1.		1.15	8.80	1 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		54	8.92	8.67			1.2
852		6.7	1547.5	-110.4	! 1	.53	2.18	8.56			1.8
855		6.71	1415.3	-112.9		.53	88.41	8.43		<del></del>	2.4
958		6.71	1484.3	-113.4		57	0.0	8.48	_	_	3.0
901		6.71	1496.9	-112.7	1.	60 2	22.44	8.41			3.6
904		6.71	1488.9	-113.4	1.	57	0.0	8.48	_	\	4.2
967		6.7	1485.7	-113.3	1.	57	3.29	8.46		//	4.8
910		6.7	1492.3	-1/3.6	1.	68	16.23	8.52		V	5.4
	NOTE: STA		N TEST IS CO	MPLETE WHE	EN 3 SU	ICCESSIVI	E READINGS	ARE WITHI	N THE FOI	LOWING	G LIMITS:
pH: +/-		COND.: +/-		P: +/- 10		+/- 0.3	TURB: +/-		= 10</td <td></td> <td>TEMP.: +/-</td>		TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - NaC	н І	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVAT	TIVE FILTI	ERED	NUMBER	R SIZE	TYPE	PRESE	ERVATIV	E FILTERED
42	250 mL	PLASTIC	Α	□ Y	<b>Z</b> N		125 mL	PLASTIC		D	□ Y □ N
42	125 mL	PLASTIC	Α	□ Y	<b>∠</b> N		40 mL	VOA		Е	□ Y □ N
	60 mL	VOA	A	ΠY	□N		4				□Y □N
42	125 mL	PLASTIC	В	□Y	<b>⊿</b> N		-				Y N
PT	125 mL	PLASTIC	С	□ Y	□N						□ Y □ N
SHIPPING	METHOD:	Costie	_	DATE SHIPPE	D: 3	15/2	4	AIRBILL	NUMBER:		<del>-</del>
	COC NUMBER: SIGNATURE: 3/5/24										

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### **WATER SAMPLE LOG**

(CONTINUED FROM PREVIOUS PAGE)

TROSECT WANTE. CECTAIN EL. 2021 GVV GOMPI.								
	ROJECT NAME:	CEC Karn LF: 2024 GW Compl	i	PREPARED			CHECKED	
PROJECT NUMBER: 553814.0000.0000 \$53617 BY: W, JJ, JK, DATE: 3/5/24 BY: AW DATE	ROJECT NUMBER:	R: 553814.0000.0000 558628	BY:	W, JJ, JK, EDATE: 3/5	1/24	BY: AW	DATE:	<b>4</b> 124

SAMPLE ID: MW - 15008

	711	, - /	3008						
TIME	PURGE RATE (ML/MIN)	PH	CONDUCTIVITY	ORP (mV)	D.O.	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
617		(SU)	(umhos/cm)	1	( mg/L)	1	1	4.25	
913	200	6.7	1463.2	-113.0	1.59	0.0	8.52		
916	4	6.7	1494.9	<u> </u>		6.0	8.49	V	6.6
919	<b>W</b>	6.7	1505.7	-115.1	1.51	0.0	8.48	W	7.2
				-					
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					Name of the state				
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SIGNATI IDE:

*H M M* DAT

ESIGNED: 3/5/24

**REVISED 04/2019** 

### **♦ TRC**

PROJECT	NAME:	CEC K	Carn LF: 2024	GW Comp	PREPARED CHECKED			KED			
PROJECT	NUMBE	R: <del>- 55381</del> -	4.0000.0000-\$	53858	BY: AW	/, JJ, JK, <b>(</b> (	RDATE 3/5	24 BY:	Aw		DATE   IZUZ4
SAMPLE	ID: MW	- 150	019	WELL (	DIAMET	ER: 🗸 2	2"	] 6" 🔲 ОТН	IER		
WELL MAT	ERIAL:	✓ PVC	ss 🗆	IRON 🗌	GALVA	NIZED ST	reel	□ отн	IER		
SAMPLE T	YPE:	☑ GW	□ ww □	sw 🗆	DI		EACHATE	□ отн	IER		
PURGING TIME: 951 DATE: A						SA	MPLE	TIME: 10:			TE: U
PURGE ☑ PUMP PERISTALTIC PUMP METHOD: ☐ BAILER							6.72 S			1765 mg/	
DEPTH TO WATER: 5.33 T/ PVC							ITY: <u>6. C</u>				
DEPTH TO	воттом	16.85	T/ PVC			NON	E 🗌 SLI	IGHT 🗌	MODERAT	E	☐ VERY
WELL VOL	UME:	NA	LITERS	GALLO	NS	TEMPER	RATURE: 7	.27 °C	FERROUS	Fe _ <b>6</b>	<b>6.0</b> mg/L
VOLUME F	REMOVED:	1.8	✓ LITERS	GALLO	NS	COLOR	yellowis	d_	ODOR:	<u> </u>	ryh
COLOR:	_ydl	rish	OE	OR: 5/144	1	FILTRAT	E (0.45 um)	YES	☐ NO		
	•	TUR	BIDITY			FILTRAT	E COLOR:		FILTRATE	ODOR:	
NONE	∠ SLI	GHT 🗌	MODERATE	☐ VEF	₹Y	QC SAM	IPLE: MS	S/MSD	DUP-		
DISPOSAL	METHOD:	:☑ GROUI	ND 🗌 DRUM	OTHER	1	СОММЕ	NTS:		•		
TIME	PURGE RATE	PH	CONDUCTIVITY	1		D.O.	TURBIDITY	TEMPERATU	I FEA	/EL	CUMULATIVE PURGE VOLUME
6.41	(ML/MIN)		(umhos/cm)	-75.1	1	mg/L)	(NTU)	(°C)	(FEI		(GAL OR L) INITIAL
951	260	6.75	1763.1			34	0.0	7.51	5.		
954	_	6.72	1765.3	_	i	.76	3.65	7.46	5.	43	0.6
957		6.72	1765.4	-86.5		.65	0.0	7.35			1. 2
1000		6.72	1765.1	-87.9	1	.63	0. O	7,27			1.8
											2.4
											_3.0
pH: +/-		BILIZATION	N TEST IS COM	PLETE WHE		+/- 0.3	/E READINGS TURB: +/-		I THE FOLL( = 10</td <td></td> <td>E LIMITS: TEMP.: +/-</td>		E LIMITS: TEMP.: +/-
BOTTLES	FILLED		ATIVE CODES			HNO3	C - H2SO4	1	r		
NUMBER	SIZE	TYPE	PRESERVATI	IVE FILTE	ERED	NUMBE	R SIZE	TYPE	PRESER	VATIV	E FILTERED
1	250 mL	PLASTIC	Α	Y	<b>∠</b> N		125 mL	PLASTIC	D	)	☐Y ☐N
1	125 mL	PLASTIC	Α	□ Y	N 🔀		40 mL	VOA	E		□ Y □ N
	60 mL	VOA	Α	□ Y	□ N						YDN
1	125 mL	PLASTIC	В	□ Y	N						□ Y □ N
	125 mL	PLASTIC	С	□ Y	□ N						□
SHIPPING	METHOD:	Cosri	1. / D/	ATE SHIPPE	D:	3/5/	24	AIRBILL I	NUMBER:		
COC NUME	BER:			GNATURE:	Way Wy DA				DATE SIGNED: 3/5/29		

# 

PROJECT NAME: CEC Karn LF: 2024 GW Comp PREPARED CHECKED									
PROJECT	NUMBER	R: <del>5538</del> 1	4.0000:0000	553828 BY	AW, JJ, JK	EPDATE: 3/	5/24 BY: A	tu)	DATE 3/21/24
SAMPLE	ID: Mん	1 - 15	002	WELL DIA	METER: 🗸	2" 4"	6" 🗌 ОТНІ	ER	
WELL MAT	ERIAL:	✓ PVC	ss [	IRON GA	LVANIZED S	STEEL	□ отні	ER	
SAMPLE T	YPE:	☑ GW	ww	SW 🗌 DI		LEACHATE	□ отні	ER	1977
PURC	SING	TIME: /	025 01	ATE: W	S	AMPLE	TIME: /O.	5-7 D	ATE:
PURGE METHOD	· =	PUMP BAILER	PERISTALTIC	PUMP	PH: ORP:			TIVITY: <u>4727</u>	
DEPTH TO WATER: 1/ PVC TURBIDITY: 0.0 NTU									
DEPTH TO	воттом	16.88	T/ PVC		□ [ NO	NE SL	IGHT 🗌	MODERATE	☐ VERY
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE: _6	5.25 °C	FERROUS Fe _	<b>6. ७</b> mg/L
VOLUME F	REMOVED:	5.2	LITERS	☐ GALLONS	COLO	R: Drange		ODOR:	styht
COLOR:	_00	any	OD	OR: Styll	_ FILTRA	TE (0.45 um)	YES	☑ NO	
			BIDITY	•	FILTRA	TE COLOR:		FILTRATE ODOR	t:
NONE			MODERATE	VERY	QC SA	MPLE: MS	S/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROUI	ND DRUM	OTHER	COMM	IENTS:	•••		
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE WATER LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
1025	201	7.46	576. Y	* 85.9	7.52	7.64	8.18	6.61	INITIAL
1028		6.82	3062.1	-61.U	1.73	511.66	1.22	6.81	0.6
1131		6.76	3747.5	-63.2	1.65	273.06	8.14	6. \$5	1.2
1034		6.74	4010.2	-64.5	1.61	177.1	8.07	6.86	1.5
1032		6.73	4231.1	-65.9	1.61	0.0	8.2		2.4
1040		6.72	4367.6	-67.6	1.6	6.0	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	A	6.71	4727.6	-69.2	1.76	6.6	8.25	ü	5.2
, ,	NOTE: STA	BILIZATION	N TEST IS COM	PLETE WHEN :	SUCCESS	IVE READINGS	ARE WITHIN	THE FOLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10	0.O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUMB	ER SIZE	TYPE	PRESERVATI\	/E FILTERED
1	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	□Y □N
1	125 mL	PLASTIC	Α	□ Y <b>Z</b>	N	40 mL	VOA	E	□ Y □ N
	60 mL	VOA	А		N				□ Y □ N
l	125 mL	PLASTIC	В		N				□Y □N
	125 mL	PLASTIC	С		N				M M Y
SHIPPING	METHOD:	Cara	D/	ATE SHIPPED:	3/5-	124	AIRBILL N	IUMBER:	
									3/5/24

# **⇒** TRC

PROJECT	NAME:	CEC F	(arn LF: 2024	GW Comp		PREPARED CHECKED				)			
PROJECT NUMBER: 553814.0000.0000 BY						/, JJ, JK,	BOATE: 3	5/24 BY:	Aci	١	DAT	ESlz	ılz4
SAMPLE	ID: /U	/ - در	50/6	WELL (	DIAMET	ER: 🗸 2	2"	6" OTH	IER				
WELL MAT		☑ PVC	□ss □	IRON 🗌	GALVA	NIZED ST	EEL	□ отн	IER				
SAMPLE T	YPE:	☑ GW	ww	sw 🗌	DI	L	EACHATE	□ от⊦	IER				
PURGING TIME: ///4 DATE: 3/5/20							MPLE	<u> </u>	40		DATE:	4	
PURGE ✓ PUMP PERISTALTIC PUMP METHOD: ☐ BAILER								U CONDUC	1.5	TY: <u>13/</u> 53	<b>/7.</b> 8 mg/L	umh	ios/cm
DEPTH TO	) WATER:	3.12		TURBID	ITY: <b>0.0</b>	NTU							
DEPTH TO	о воттом	7.76	T/ PVC			Non	E 🗌 SLI	GНТ 🔲	MOD	ERATE	[	VEF	RY
WELL VOL	UME:	NA	LITERS	☐ GALLO	NS	TEMPER	ATURE: 5	<u>. 84</u> ℃	FERI	ROUS Fe	<u>_3.</u>	6	mg/L
VOLUME F	REMOVED:	4.8	LITERS	☐ GALLO	NS	COLOR	Cleri	<u>sh</u>	ODO	R:	N.	· · · · · · · · · · · · · · · · · · ·	
COLOR:	Clas	rish	0	OOR: <u>//)</u>		FILTRAT	E (0.45 um)	YES		NO			
		TUR	BIDITY			FILTRAT	E COLOR:		FILT	RATE OD	OR:		
NONE	SLI	GHT 🗌	MODERATE	VEF	RY	QC SAM	IPLE: MS	/MSD		DUP-		_	
DISPOSAL	METHOD	GROU!	ND  DRUM	OTHER		COMME	NTS:						
TIME	PURGE RATE	PH	CONDUCTIVITY			D.O.	TURBIDITY	TEMPERATU	JRE	WATER	PL	RGE V	DLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)		mg/L)	(NTU)	(°C)		(FEET)	1	(GAL O INITI	
1116	200	6.99	936.92	-70.3			215.9	7.12		3.12			
/1 /9	9i	7.03	1076.3	-86. 2	1.	75	98.16	6.07		<u> </u>		0.6	
1122		7.0	1269.0	-91.4		61	45.75	5.95				1.2	
1125		6.99	1246.2	-94.5	1	.58	21.35	5.91				1.8	
1128		6.99	1264.8	-96.6	Įł.	.56	8.3	5.88				2.4	, 
1131		6.99	1266.7	-98.3	,	59	5.35	5.83				3.0	2
1/34		6.98	1307.7	- 100.3	1.	54	0.09	5.79				3.6	
1137		1.98	1312.9	-101.3		.53	0.0	5.84				7. C	
1140	V	6.98	1317.8	-/02.4		.53	0.6	5.84		V	1	1.8	
77.0	Y			1	<u> </u>								
<u> </u>	NOTE: STA	BILIZATION	N TEST IS COM	IDI ETE WHE	N 3 SII	ICCESSIV	E DEADINGS	ARE WITHIN	I THE	FOLLOW	INGII	NITS:	
pH: +/-		COND.: +/-		: +/- 10		+/- 0.3	TURB: +/-		=</td <td></td> <td></td> <td>P.: +/-</td> <td></td>			P.: +/-	
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - NaOl	1	E- !	HCL	F	
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTE	ERED	NUMBE	R SIZE	TYPE	PR	RESERVA	TIVE	FILTI	ERED
l	250 mL	PLASTIC	Α	Y	<b>Z</b> N		125 mL	PLASTIC		D		_ Y	N
į į	125 mL	PLASTIC	А	□ Y	<b>7</b> N		40 mL	VOA		Е		<b>□</b>  Y	□N
	60 mL	VOA	А	□ Y	□ N							] Y	□N
1	125 mL	PLASTIC	В	□ Y	ΖN							<b>□</b> Y	□N
	125 mL	PLASTIC	С		N						[	<b>□</b> Y	□и
SHIPPING	METHOD:	Coscie	~ D.	ATE SHIPPE	:D: _ <b>3</b>	15/2	1	AIRBILL I	NUME	BER:			
COC NUME	COC NUMBER: SIGNATURE:				Es	20	MI	DATE SIG	GNED	:	3/5	124	<u></u>

PROJECT	NAME:	CEC W	eadock LF: 20	024 GW C	PR	PREPARED CHECKED			ED
PROJECT	NUMBER	: 553828	.0000.0000	BY:	IJ	DATE:3(1)	124 BY: Au	ا ر	DATE 3/2/124
SAMPLE ID	): <b>\( \( \)</b> i	1) 5		WELL DIAM	ETER: 🗸	2"	6" OTHER	2	
WELL MATE		<i>√</i> √ PVC	iger Tiss □	IRON GAL	VANIZED S	STEEL	OTHER	₹	
SAMPLE TY	PE: [	√ GW	ww	SW 🗌 DI		LEACHATE	OTHER	·	
PURG	ING	TIME: (3	30 DA	TE3/5/24	S	AMPLE	TIME: 135		7100
PURGE		PUMP I	PERISTALTIC I	PUMP	PH:	<u>7∞}_s</u>	_		35 umhos/cm
METHOD: BAILER ORP: 15.0 mV DO: 0 mg/L									
DEPTH TO		16.00			TURBI		NTU GHT □ M	ODERATE	☐ VERY
DEPTH TO			T/ PVC	☐ GALLONS		RATURE: 2	7.	ERROUS Fe	mg
WELL VOLU		NA [	LITERS	GALLONS	COLO	3			OIL
VOLUME R		<u></u>		OOR: NOIL	_	ATE (0.45 um)	YES	NO	
COLOIK.			BIDITY	1.1.		TE COLOR:	F	ILTRATE ODOR:	
NONE	SLIC		MODERATE	☐ VERY	QC SA	AMPLE: MS	/MSD	DUP	
DISPOSAL	METHOD:	✓ GROUN	ID 🗌 DRUM	OTHER	COM	MENTS:			
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUM
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
[330	100	7.03	1562	-5.9	9.0	60	7.3	15.70	INITIAL
1335		7.20	1605	5.4	2.6	43	7.8	1585	, 0
1330		7,10	1619	4.6	17	37	7.9	1585	
1335		7.00	1476	<u>~ 3.5</u>	1,2	16	7.9	1587	1.1
1340		707	1637	- 14.5	1.0	10	7.8	1587	<u> </u>
BUT		503	1633	- 14,5	1.0	io	7.8	1585	
j350		7.03	1635	-15.0	1.0	10	7.8	1585	3
	V								
	IOTE: STA	BILIZATION	I TEST IS COM	PLETE WHEN 3	SUCCESS	SIVE READINGS	S ARE WITHIN T	HE FOLLOWING	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP	: +/- <b>10</b> D	.O.: +/- <b>0.</b> 3	3 TURB: +/-	<b>10</b> % or <	/= 10	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTERE	D NUMI	BER SIZE	TYPE	PRESERVATIV	E FILTERED
	250 mL	PLASTIC	А		N	125 mL	PLASTIC	D	
1	125 mL	PLASTIC	А		N	40 mL	VOA	E	OY ON
	60 mL	VOA	А	Y □	N				OY ON
l l	125 mL	PLASTIC	В		N			······	
	125 mL	PLASTIC	С		N				OY UN
SHIPPING		Fed	C 4	ATE SHIPPED:	57	olz4	AIRBILL N	IMBER:	

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PAGE	OF



#### **WELL INSPECTION REPORT**

PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance	
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PROJECT NO.: 553828.0000.0000

SAMPLER NAME: Javier Jason 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
JCW-MW-1800)	Good	Good	No mobility	Legible	\ \ ,	<b>√</b>	No resistence	Slight	,
5cw-0w-1800	Good	Good	Slight Mobility	begibbe	V,	<b>V</b>	W/A	slight	Bolland's Move easily by hand
MW-50	Good	Good	. <i>J</i>	Legible	V	V		Stight	
In-on-1300	Good	Good	Slight Mobility	Legible	V	V	N/A (	3) Hyprie	Bollards Move easily by honor
Mw-51	600 d	Good	No mobility	Legible	V	V	W/A	None	``
ow 51	Good	Good	No mobility	Legible	$\checkmark$	V	N/A	None	Stainless Steel casing
MW-52	Gold	Good	No mobility	hegible	V		NIA	None	,
2cm-on-18003	Good	Good	No Mobility	begible	<b>/</b>	V	4	None	
5cw-mw-18022	Good	Good	No mobilify	Legible	1	V		N/A	Bedrock Well over 120 Beep
MW-53	Good	Good	No mobility	Legible	1	1		pone	No. 1
0w-53	Good	Good	No mobility	Legible	V	V		None	
MW-53R	Good	Godd	No nobility	Legible	V	V		None	Bollard's move stightly by hand
SW-MW-15002	Good	Good	NO mobility	Legible	V	V		NA	A land was top' h.
SW-MW-15002 MW-16R MW-54/H6R	6004	Good	No Mobility	Legible				None	Renemed nw-54?
mw-54R	Good	Good	slight Mobility	Legibbe	<b>V</b>	V		None	
Ov-54	Good	Good	No Mobility	Legible	V,	V		None	L L
LH-104R	Good	Good	Moderate/High Mobility		\ \		V	None	2

SIGNED

3-15-24

DATE

CHECKED BY

3/21/24

DATE

REVISED 06/2011

<del></del>										
lhto	ĺ									
350				<u></u>						
s well	Proteetime!	Surfa	el pro cousing	1		•		A		
d ID	Casing Condition	Seal	mobility	well lable	L L	ock	corp	o Sec	diment	Comments
	Condition		, 2001111	12041			١.,			
2cm-2nn-18001	Good	Good	No Mobility	Legible	V		V	None	. [	
Scw-ow-18004	Good	Good	No mobility	hegible	U		V	none		
Jew-MW-15021	Good	Good	No mobility	Legible	V		$\sqrt{}$	NIA	- 1	
icw-mw-18006	bood	Good	slight Mobility	Legible	1		V	None	Daile	when the state of
Bcw-02-13006	Good	Good	No mobility	heg!ble	10		V		15010	rds easily moved by hand
ich-mh-18065	6000	Good	slight Mobility	Legible	-		V	None	0.11	
w-20/5cw-mw-20	Geod	Good	No Mobility	Legible	1			Wore	Bolla	rds easily moved by hand
LH-103R	Good	Good	No mobility	Legible	1		V	Moderate		le I
ow-56	Good	Good	No mobility	,	+		7	None	Cover	k to close pro cover, pro Sunk around well ny "
0W-56R		Good		hegible	NO			None		
2W-57IN	Good		No Mobility	Legible	NO	1		None		
0w-570UT		Good	No Mobility	hegibbe	NO	12	/		<del>                                     </del>	
	Good	Good	No mobility	Legible	1	1		None		
JW-57RIN	Good	Good	No Mobility	Legible	+	+	,	None		
ow-57800T	Good	Good		Ly: Ne	NO	IV		Nome		
5cw-mw-15010	1 - 1		No Mobility	Kegible	/	1				
	Good	Good	No nobility	Legible	+./-	1	1	vone		<u>,                                      </u>
ow-61	ලගුර	Good	High Mobility				٨	lone		
ew-MW-15009	Good		No Mobility	Legible	V	V	In	one	No conc	rete pad around for Cover
cw-mw-15003	Good	Good	J	Legible	V	1	1	one		The cover
MW-106A/ :W-MW-15028			No mobility	Legible	J	1				
	Good	Good	No mobility	hegible		-	\ \	1/14	Bedrock w	ell, over 102' deep
IW-106B		C .	No Mobility	/	V	V	NE			easily moved by hand
			ve mobility	hes! ble	NO		No	ne 1	sollards ,	easily moved by hand
LW-MW-15001	Good	^	high mobility	hegible		V			Lock Broh	e when opened
IW-15002			, , , , , , , , , , , , , , , , , , ,	Legible		V		VIA	Bedrock w	ell, over 102' Leep
10007 1	bood	(20Ad)	No Mahilita	1 1 ]			Н			

well ID	Proteethel Cusing Coudition	Seal	fro casing mobility	well   lable	Loc	k]	Corp	o Sedia	(ment) Comments
m-mn-18001	Cood	Good	No Mobility	Legible		7	V	none	
N-QM-18004	Good	Good	No mobility	begibbe	U		V	none	
w-mw-15021	Coach	Cool	No mobility	Legible	J		1	10/04	
n- mm - 18006	Cool	Geod	slight Mobility	Legible	1		V	None	Bollerds easily moved by hand
20081-100-V	Good	Good	No mobility	I hegible	V		V	None	
J-MW-18025	6000	Cood	Slight Mubility	Legible	1	7	V	None	Rollards easily moved by hand
20/5cm-mw-20	Coot	Good	No Mobility	Legible	+ 1	- V	1	Moderate	y went
4-103R	Good	Good	No mobility	Legible	1	ν	<del>-,- -</del>	None	unable to close en comes in
w-56	Good	600d	No mobility	Legible	NO	1	1	None	Cover Sunk around well my"
w-56R	Good	Good	No Mobility		NO	V	十		
J-57IN	Good	Good	No Mobility	hegibhe hegibhe		1		None	
n-5700T	Good	Good	No Mobility	Legible	NO	1		None	
J-57RIW	Good	Good	No mobility	Legible	140	1		Nove	
J-57ROUT	bood		No Mobility		NO	1	1	None	
w-mw-15010	Good		No nobility	Kegible		V	1_1	None	
ow-61	Good	C		Legible	1		1	None	
1-17W-15009	Good		tigh mobility	Legible	V	V	-	none 1	No concrete pard erround for Cover Co
1-14W-15003	Good	Coal	up mobility	Legible	ν,	V	-	ione	井
W-106A/	Good	0	vo mobility	Legible		V			bedrock well, over 102' deep &
1-106B		A STATE OF THE PARTY OF THE PAR	eo mobility	hegible	V	V			Rollards Pasily moved L. 1
u- MW-15007	Good	, , , , , , , , , , , , , , , , , , , ,	Vo Mobility	Legible	NO	1		B. C.	Collards each waved to 1 1
N-MW-15001	Good		o mobility	1 111	7		100	one Be	total broke when opened by hand &
		Good Hi	igh mobility	Legible		V	# 7		Bedrock well over 102' deep
1-15002	Cool	Good N	Vo Mobility	Lrailk			-	Now	AW SIZVIZY

PAGE	OF	

# TRC

#### **WELL INSPECTION REPORT**

	/ WEDGOLFE BOLKA (DUTA	
PROJECT NAME:	CEC Karn LF: 2024 GW Compilance	S₽
PROJECT NO.:	553814.0000.0000 /SCXXX & com and	D/

SAMPLER NAME: Jake Krenz, Javier Jasso, Andrew Whaley

	<del></del>	1	I				I		
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	<b>V</b>	7	NA	None	whathe to fully close pro cover As it has such cround the well.
MW-15018	Good	Good	No Mobility	Legible	NO	V	NA	None	
MW-15019	Good	Good	No Mobility	Legible		V	NA	None	
MW-15024	Good	Good	No mobility	Legiphe	/	V	NA	Slight	
MW-15027	St Good	Good	No mobility	Legible	V	V	N/A	none	
MW-116B	Good	Good	No robility	hey; ble		V	NIA	None	
MW-15020	Good	Good	No mobility	Legible	V_	V	NIA	slight	
MW-15008	Good	Good	No mobility	Legible	V	V	( )	None	
				•					
,									
									77
								/	

SIGNED BY

3-15-24

:

CHECKED BY

3/21/24

DATE



#### CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 2

SAMPLING SITE / CUSTOMER:					PROJECT NUMBER:	SAP CC or WC	#:						A]	VAL.	YSIS	REC	QUES	STEL	)		QA REQUIREMENT	۲.
Q1-202	4 Weadock P	orewater Wells			24-0132	REQUESTER:	Haro	ld Re	giste	er							pace is				QA REQUIREMENT	
SAMPL	ING TEAM:				TURNAROUND TIME REQUIRED:																☐ NPDES	
					□ 24 HR □ 48 HR □ 3 DAYS □ ST	ANDARD 🖾 OTH	IER_									İ		i			⊠ TNI	
SEND	REPORT TO:	Joseph Firlit			email:	phone:															□ ISO 17025	
C	OPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other			CO	NTA:	INER	s						İ				□ 10 CFR 50 APP. B	
		TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air	e		PF	ESE	RVA	ΓΙVE	tals			>						$\square$ INTERNAL INFO	
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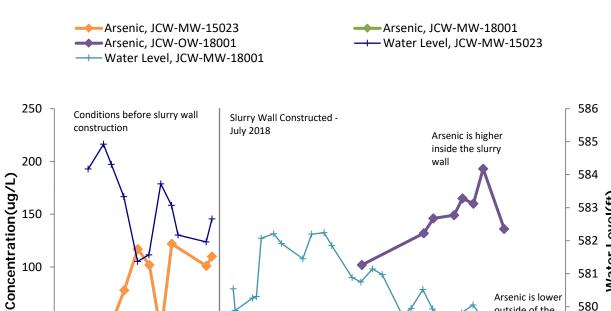
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# Appendix G Alternate Source Demonstration Supporting Information

Figure G1: Time Series Plots for JCW-MW-18001 ASD



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Apr-15

Aug-16

Dec-17

Arsenic is lower

Nov-24

outside of the

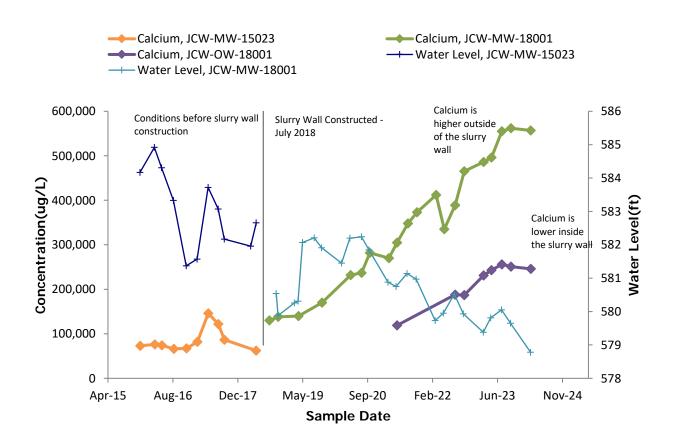
slurry wall

Jun-23

580

579

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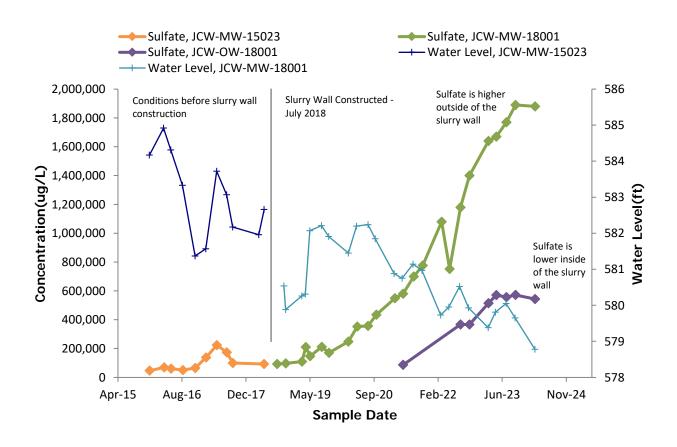
May-19

Sep-20

Sample Date

Feb-22

Figure G1: Time Series Plots for JCW-MW-18001 ASD



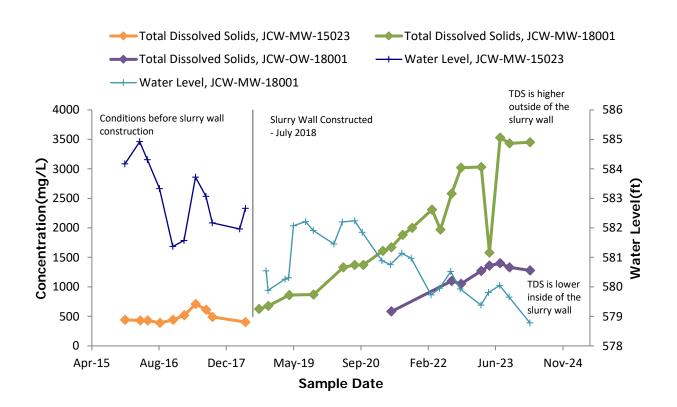


Figure G1: Time Series Plots for JCW-MW-18001 ASD

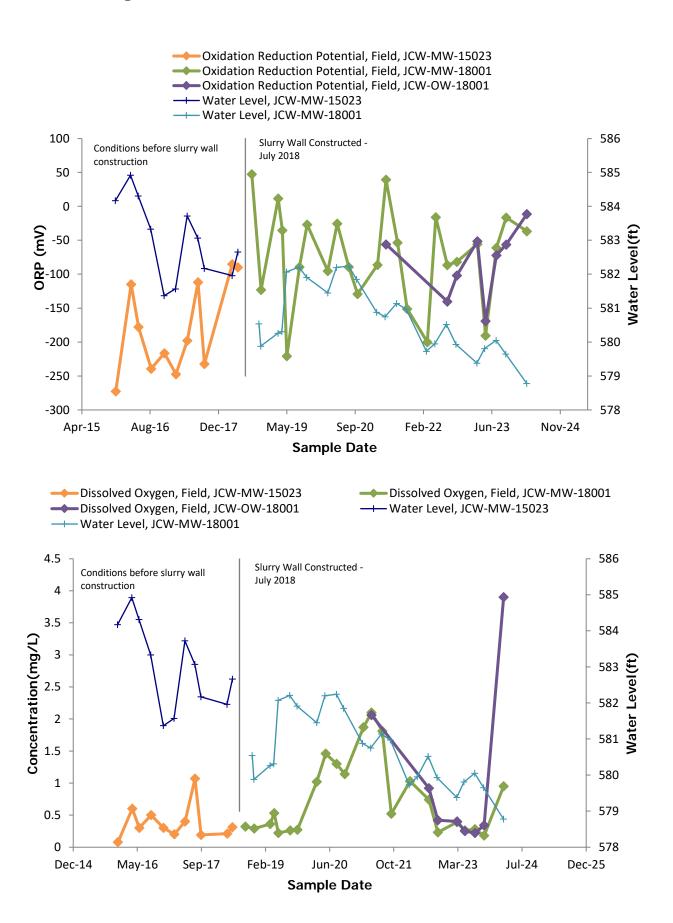
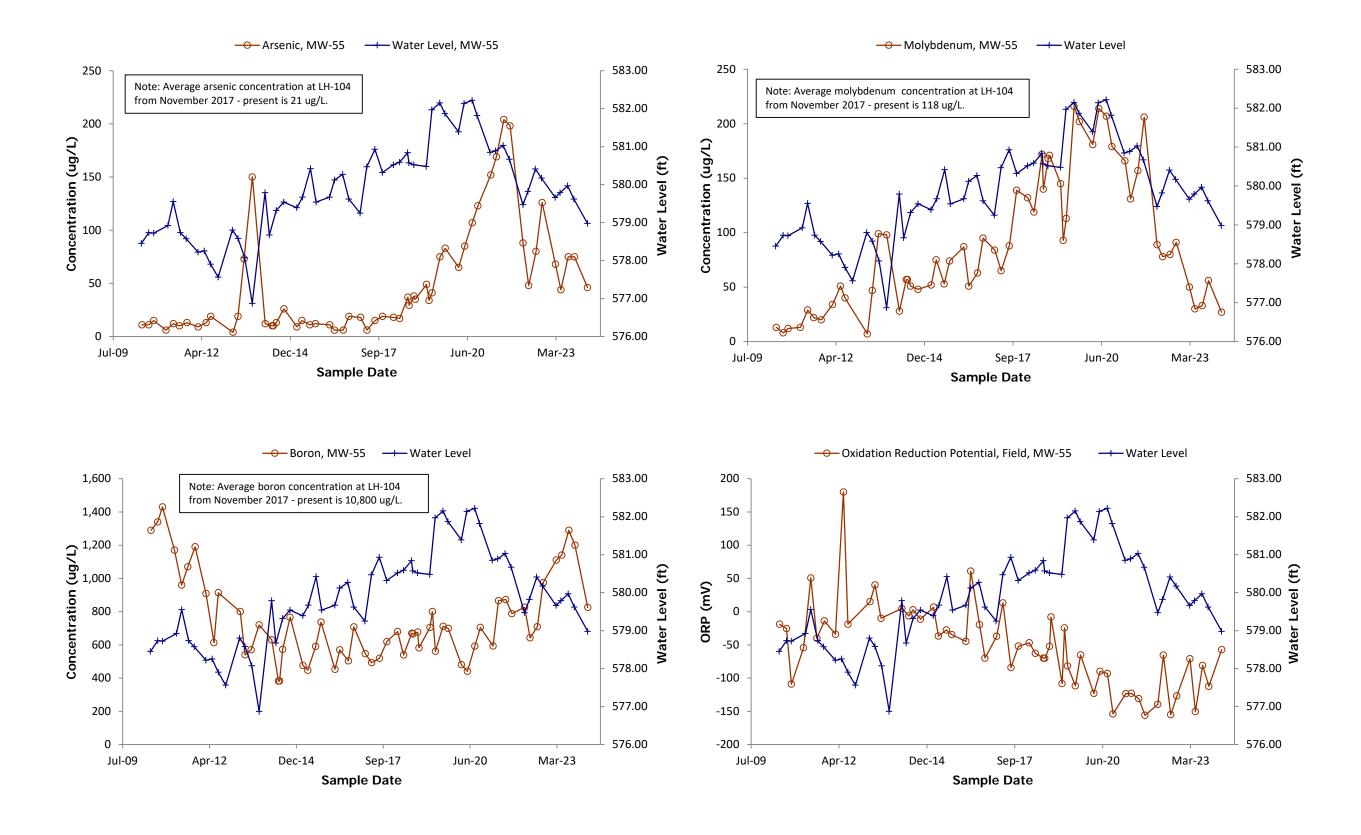


Figure G2: Time Series Plots for MW-55 ASD





### **Enclosure 2**

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

**Prepared For:** 

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

**Prepared By:** 

TRC

1540 Eisenhower Place Ann Arbor, Michigan 48108

Darby Litz

Project Manager/Hydrogeologist

Kristin Lowery, P.E Project Engineer



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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 INOW-61OW-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
рН	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 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 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<sup>™</sup> 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 ■ 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 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.

<sup>&</sup>lt;sup>1</sup> 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 onsite. 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.



Table 1

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

	тос		Screen Interval	May 6, 2024				
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water	Groundwater Elevation			
				(ft BTOC)	(ft)			
<b>Background Monitori</b>	ng 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: Do	wngradient Monito	oring 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: Downgradie	nt Monitoring Wells	s (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							
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 He								
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.

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

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction pH Potential		Specific Conductivity	Temperature	Turbidity
		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(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.

## 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
				MI Non-			Dooles	round	
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^		Баско	ground	
Appendix III <sup>(1)</sup>									
Boron	ug/L	NC	500	500	4,000	21	142	398	241
Calcium	mg/L	NC	NC	NC	500EE	55.9	121	243	173
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500EE	7.53	2.57	194	93.8
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	358	1,280	1,190	1,340
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	7.7	7.0	7.1	7.0
Appendix IV <sup>(1)</sup>									
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 11	1 <b>5</b> <sup>(2)</sup>								
Iron	ug/L	300**	300€	300 <sup>E</sup>	500,000EE	526	16,900	21,900	23,100
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	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	5,000E	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.

## 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:	5/7/2024	5/8/2024	5/8/2024	5/8/2024	5/7/2024	5/7/2024
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Downgradient	Downgradient/ GSI	Downgradient	Downgradient	Downgradient/ GSI	Downgradient/ GSI
Appendix III <sup>(1)</sup>													
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	500EE	NC	NC	537	213	302	148	184	128
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500EE	NC	NC	1,790	484	475	122	425	262
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	NC	NC	3,370	1,130	1,390	864	1,250	958
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	NC	NC	6.8	6.9	6.8	7.1	7.5	7.4
Appendix IV <sup>(1)</sup>													
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 11	5 <sup>(2)</sup>												
Iron	ug/L	300**	300E	300 <sup>E</sup>	500,000EE	NC	NC	2,630	73	6,550	10,400	834	760
Copper	ug/L	1,000**	1,000 <sup>E</sup>	1,000 <sup>E</sup>	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 <sup>E</sup>	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.

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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}

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- 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.

July 2024

### Summary of Groundwater Sampling Results (Analytical)

JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program

Essexville, Michigan

	ESSEXVIIIE, IVIICIIIYAII													
							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	
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Chronic-Based Mixing Zone GSI Criteria^	Acute-Based Mixing Zone GSI Criteria^	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient/ GSI	Downgradient	
Appendix III <sup>(1)</sup>														
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 <sup>EE</sup>	NC	NC	236	134	166	161	161	119	
Chloride	mg/L	250**	250 <sup>E</sup>	250 <sup>E</sup>	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 <sup>E</sup>	250 <sup>E</sup>	500 <sup>EE</sup>	NC	NC	550	2	48	51	236	78	
Total Dissolved Solids	mg/L	500**	500 <sup>E</sup>	500 <sup>E</sup>	500	NC	NC	1,430	942	880	792	934	790	
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 <sup>E</sup>	6.5 - 8.5 <sup>E</sup>	6.5 - 9.0	NC	NC	7.0	7.5	7.1	7.2	6.9	7.2	
Appendix IV <sup>(1)</sup>														
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	11	2	11	2	4	11	
Thallium	ug/L	2	2.0	2.0	2.0	NC	NC	< 2	< 2	< 2	< 2	< 2	< 2	
Additional MI Part 1														
Iron	ug/L	300**	300 <sup>E</sup>	300 <sup>E</sup>	500,000EE	NC	NC	3,680	665	761	87	14,700	94	
Copper	ug/L	1,000**	1,000E	1,000E	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 <sup>E</sup>	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.

Page 2 of 2 July 2024

#### Summary of Confidence Interval Evaluation: Second Quarter 2024 JC Weadock Solid Waste Disposal Area – Hydrogeological Monitoring Program Essexville, Michigan

Assessment Mor	ssessment Monitoring Statistical Evaluation																							
Constituent	Constituent Units GWPS MW-50		MW	MW-51 M		MW-52 MW-53		MW	MW-53R		MW-54R		MW-55		'R OUT	JCW-MW-18001		JCW-MW-18005		JCW-MW-18006				
Constituent	Units	GWF3	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL	LCL	UCL
Boron <sup>(1)</sup>	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								==					(2)	(2)							13	28
Molybdenum	ug/L	73													<sup>(2)</sup>	<b></b> <sup>(2)</sup>								

GSI Monitoring S	GSI Monitoring Statistical Evaluation											
Constituent	Units	GSI	MW	<i>l-</i> 55								
Constituent	Offics	GSI	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.,

## 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

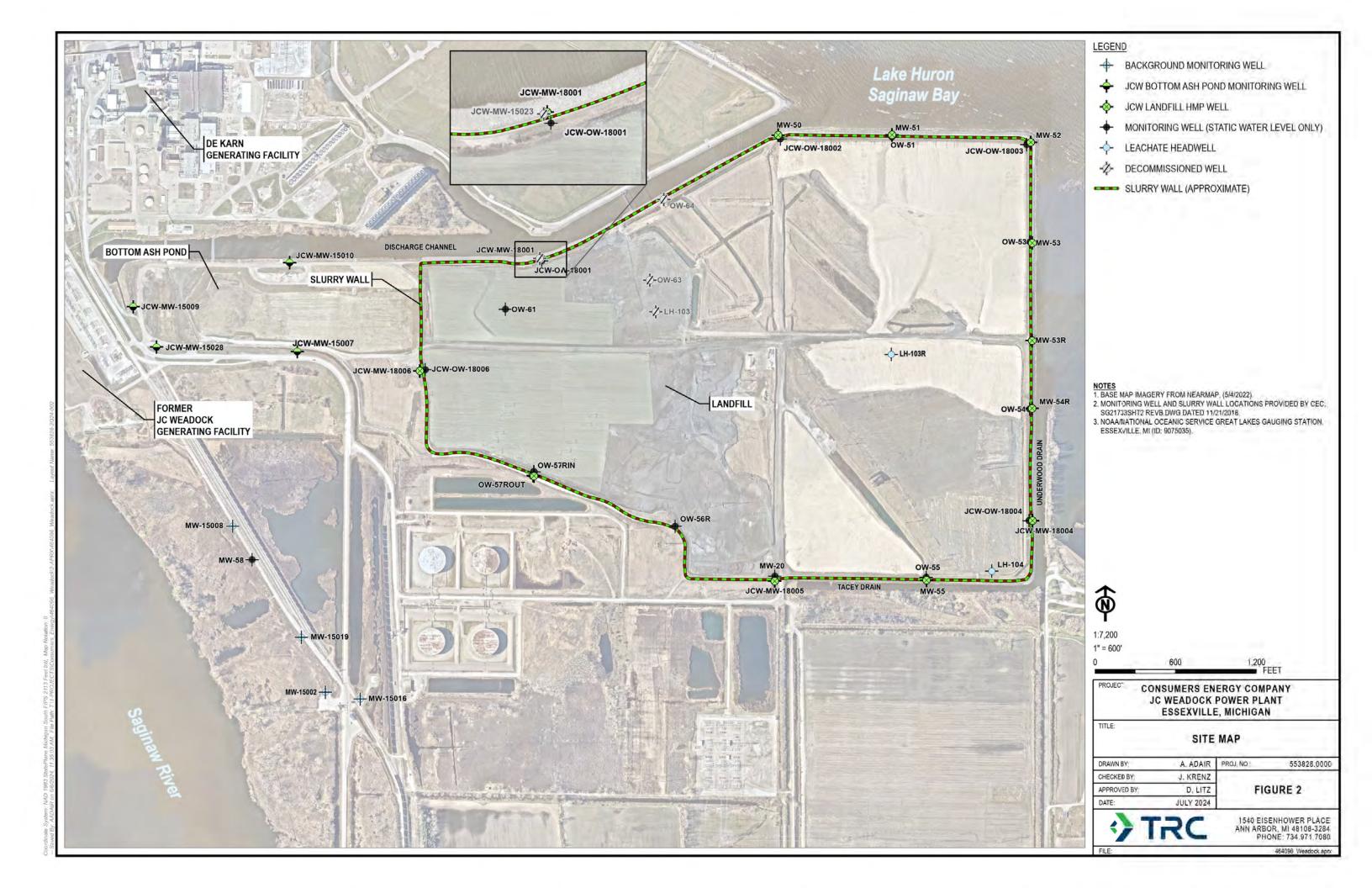
Data is in	(X) ug/L	or	
	( ) mg/L		
unless otherwi	se stated		

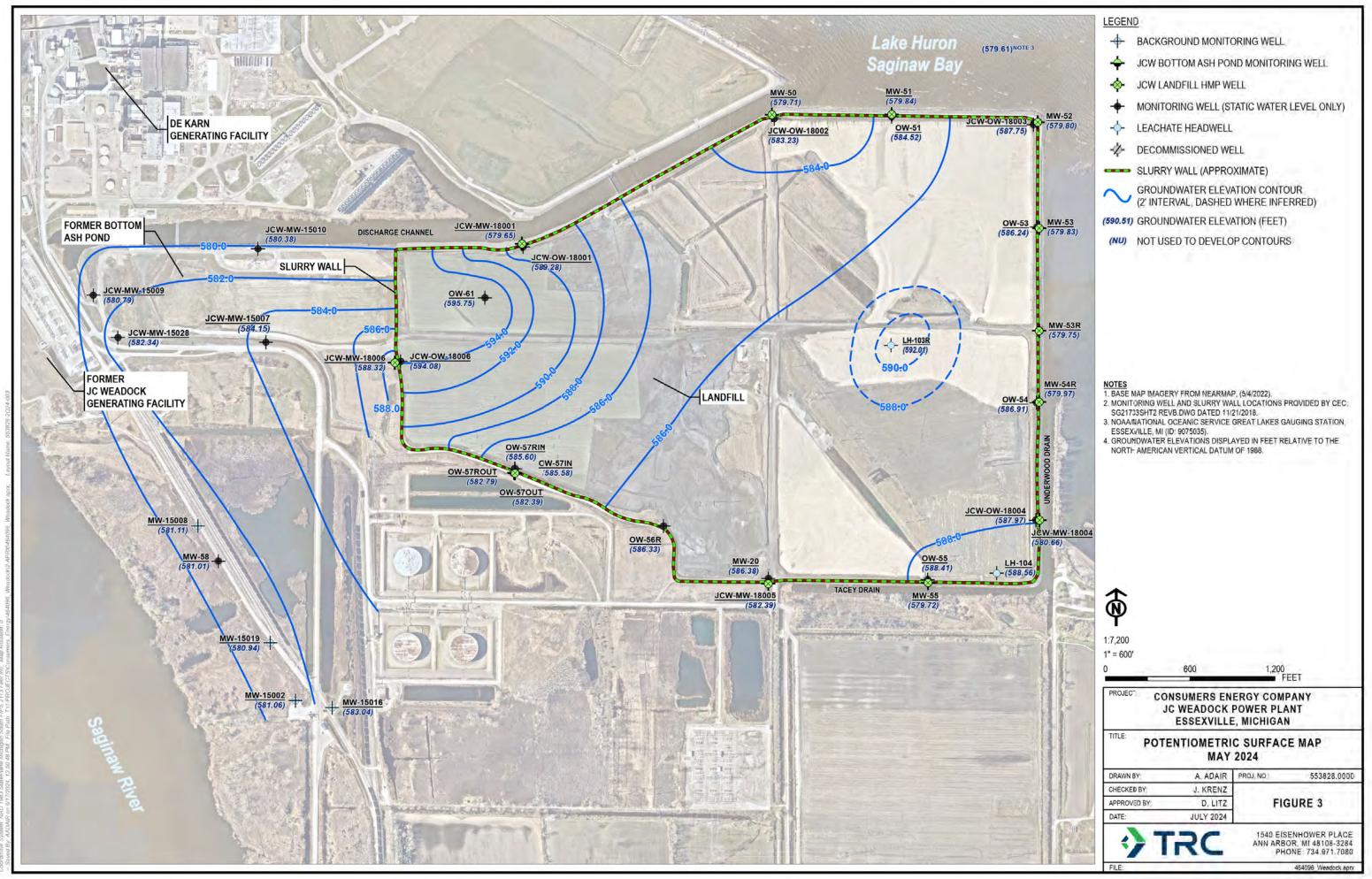
Facility: JC Weadock - WDS# 395457

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



## **Figures**







# 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) <sup>(1)</sup>
MW-50	5/6/2024	579.71		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	579.61	0.22
MW-53R	5/6/2024	579.75	579.01	0.14
MW-54R	5/6/2024	579.97		0.36
MW-55 JCW-MW-18004	5/6/2024	579.72		0.11
	5/6/2024	580.66		1.05
Averag	e:	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	SWL MW	X <sub>wells</sub>	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Discharge Channel	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
JCW-OW-18001	589.28	,	22.4	4.30E-01	2.00	2.88	1,010	,	0.43	2,904	8.15E-02	0.61	223
JCW-MW-18001		579.65			3.75			2.30E-08	0.43	2,904	6.15E-02	0.61	223
JCW-OW-18002	583.23		28.9	1.22E-01	4.00	4.25	970	2.30L-00	0.12	4,123	3.28E-02	0.25	89
MW-50		579.71			4.50				0.12	7,120	0.20L 02	0.20	00
Monitoring Well Pair	SWL Obs Well	SWL MW	X <sub>wells</sub>	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Adjacent Zone	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
OW-51	584.52		14.4	3.25E-01	4.00	4.27	1,850		0.33	7,900	1.68E-01	1.25	458
MW-51		579.84			4.54				0.00	7,300	1.002-01	1.20	430
JCW-OW-18003	587.75		33.9	2.35E-01	3.50	3.76	740	2.30E-08	0.23	2,779	4.25E-02	0.32	116
MW-52		579.80	00.4	0.405.04	4.01	4.00	700			, -			
OW-53 MW-53	586.24	579.83	20.1	3.18E-01	1.25 1.99	1.62	730		0.32	1,183	2.45E-02	0.18	67
Monitoring Well Pair	SWL Obs Well	SWL MW	$x_{wells}$	i	Saturated	Mean	Section	K	i	Area	Flow	Flow	Flow
Non-Adjacent Zone	(ft NAVD 88)	(ft NAVD 88)	(ft)	(ft/ft)	Thickness (ft)	Thickness (ft)	Length (ft)	(cm/sec)	(ft/ft)	(ft <sup>2</sup> )	ft <sup>3</sup> /day	Gal/day	Gal/yr
OW-54	586.91		21.2	3.27E-01	2.00	2.25	510		0.33	1.148	2.45E-02	0.18	67
MW-54R		579.97			2.50				0.55	1,140	2.43L-02	0.10	01
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			2.30E-08	0.27	3,392	0.44L-02	0.40	170
OW-55	588.41		24	3.63E-01	2.00	1.86	1,220	2.00L-00	0.36	2,269	5.37E-02	0.40	147
MW-55		579.72			1.72				0.30	2,209	J.J1 L-02	0.40	1+7
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				0.10	1,540	3.7 JL-03	0.07	<b>4</b> 1

Calculated Groundwater Discharge from JC Weadock (gal per day) =

(cubic ft per day) = 0.50 (cubic ft per min) 3.5E-04

3.75

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

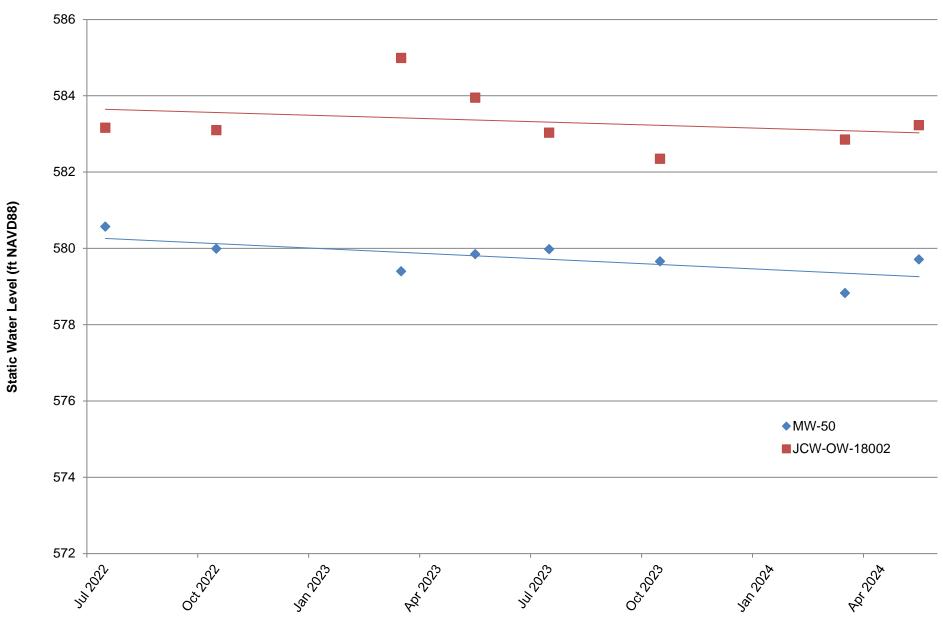
- 1. Monitoring Well Zones based on Phase II Evaluation, Appendix K Groundwater Discharge Calculations, September 30, 2005. Representative wells based on the Landfill Hydrogeological Monitoring Plan, February 2021.
- 2. Saturated thickness will be the thickness of the sand unit when the observed SWL 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.
- 3. 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
- 4. Arithmetic average used to develop geometric properties of each section/zone (e.g. discharge channel, adjacent, and non-adjacent)
- 5. 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

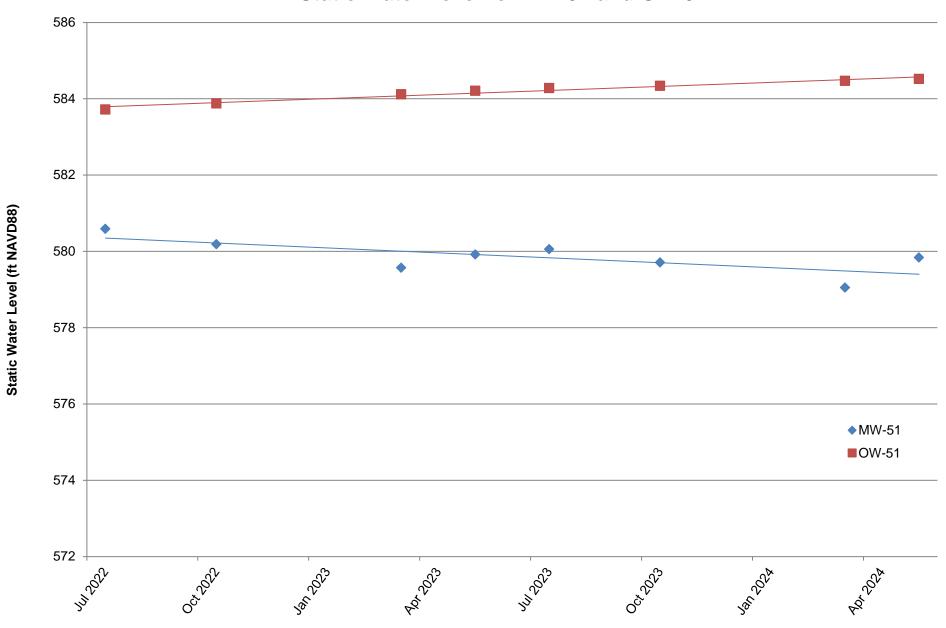
ft/ft = feet per foot; cm/sec = centimeters per second; ft<sup>2</sup> = square feet; ft<sup>3</sup>/day = cubic feet per day; Gal/day = gallons per day; Gal/yr = gallons per year

i = hydraulic gradient; K = hydraulic conductivity; x<sub>wells</sub> = distance between well pairs

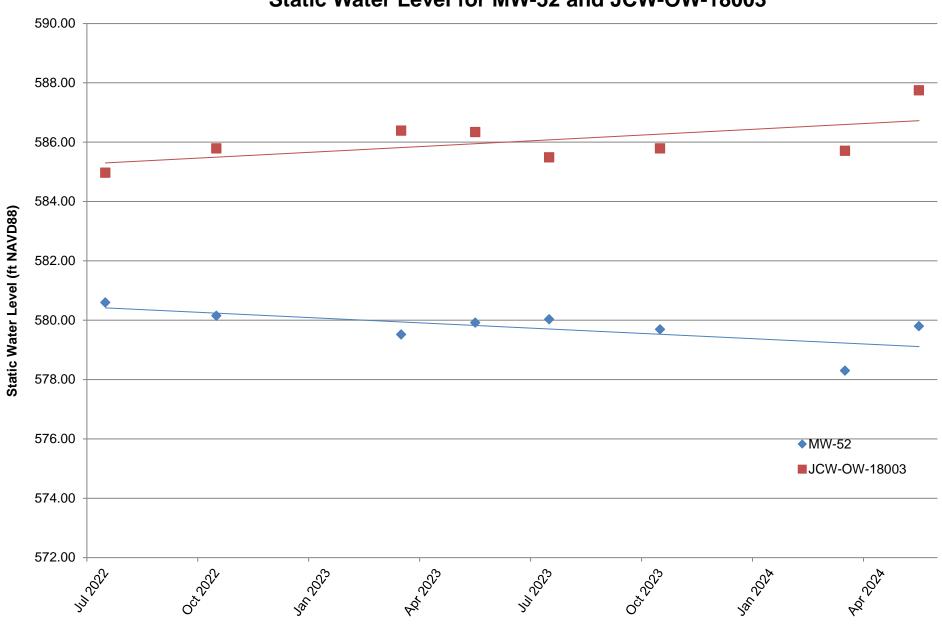
Appendix A
Static Water Level for MW-50 and JCW-OW-18002



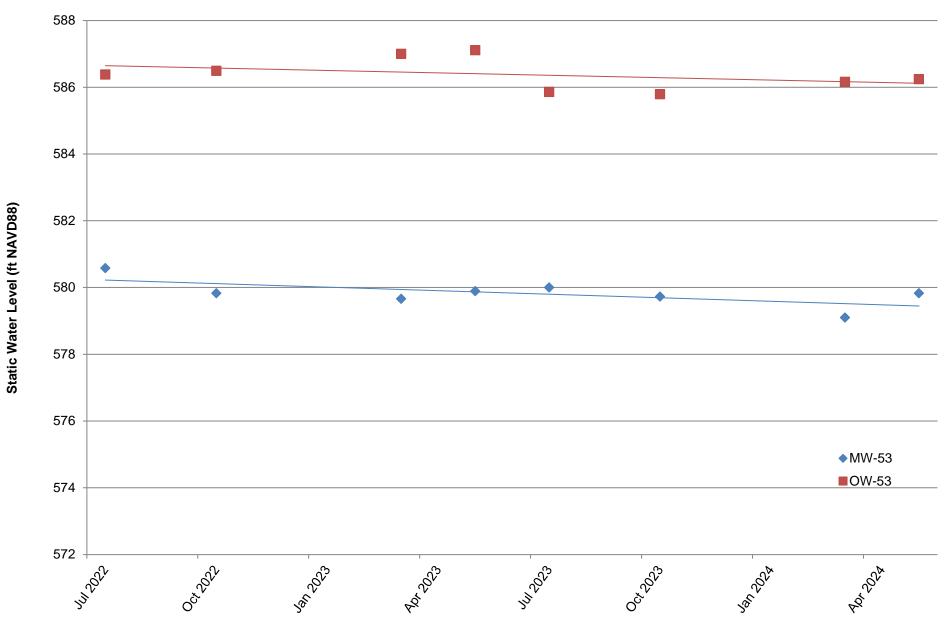
Appendix A
Static Water Level for MW-51 and OW-51



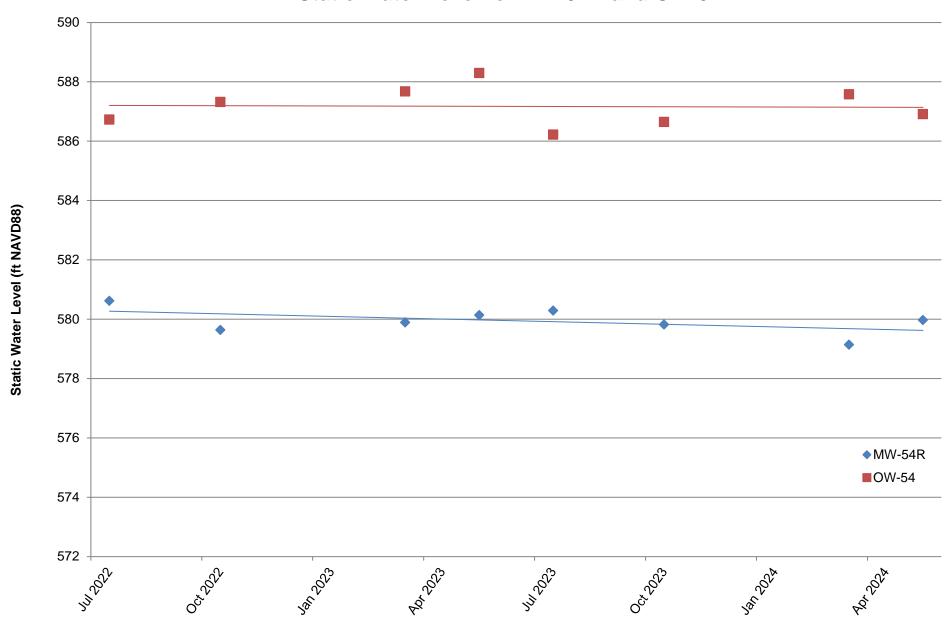
Appendix A
Static Water Level for MW-52 and JCW-0W-18003



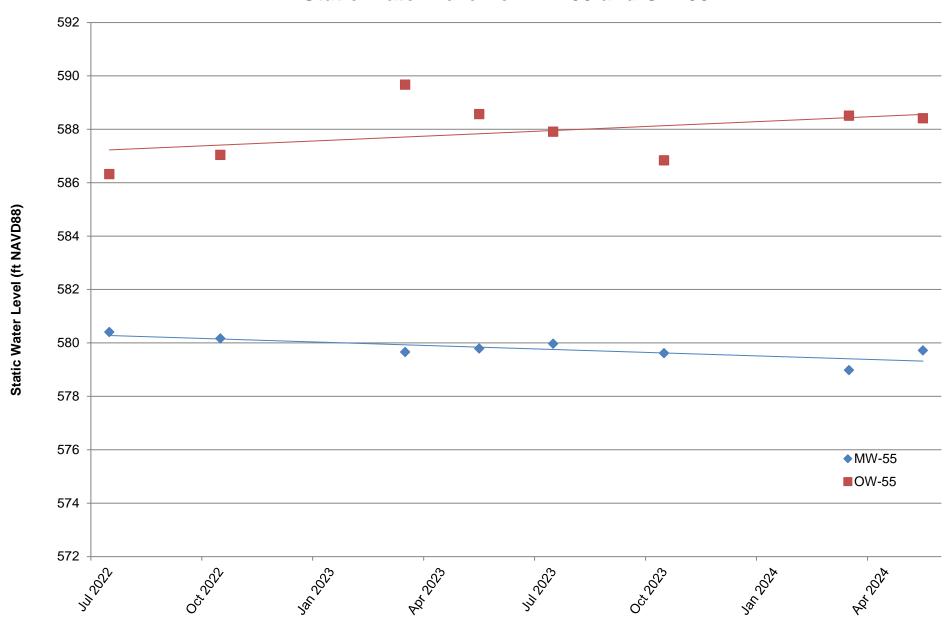
Appendix A
Static Water Level for MW-53 and OW-53



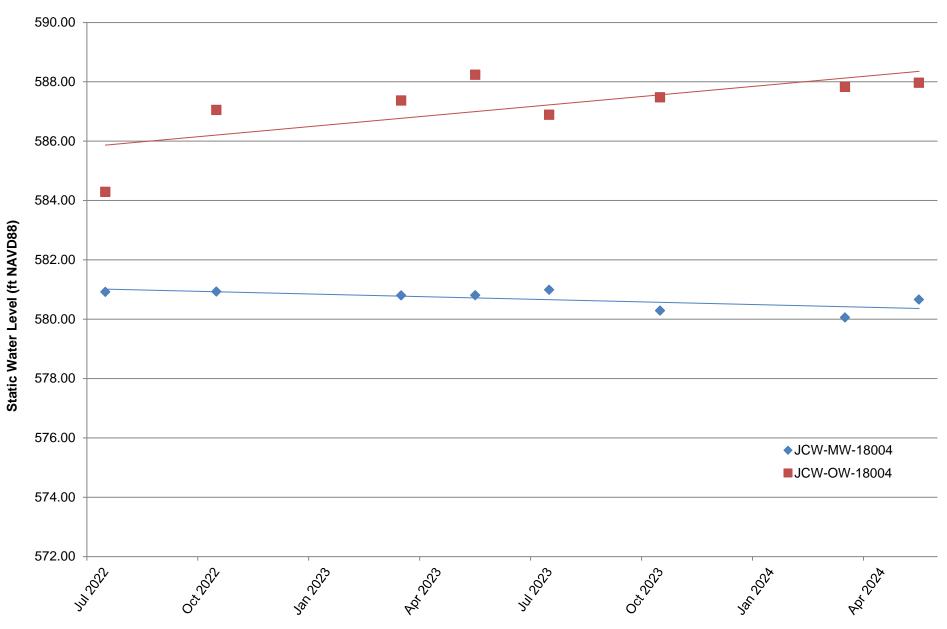
Appendix A
Static Water Level for MW-54R and OW-54



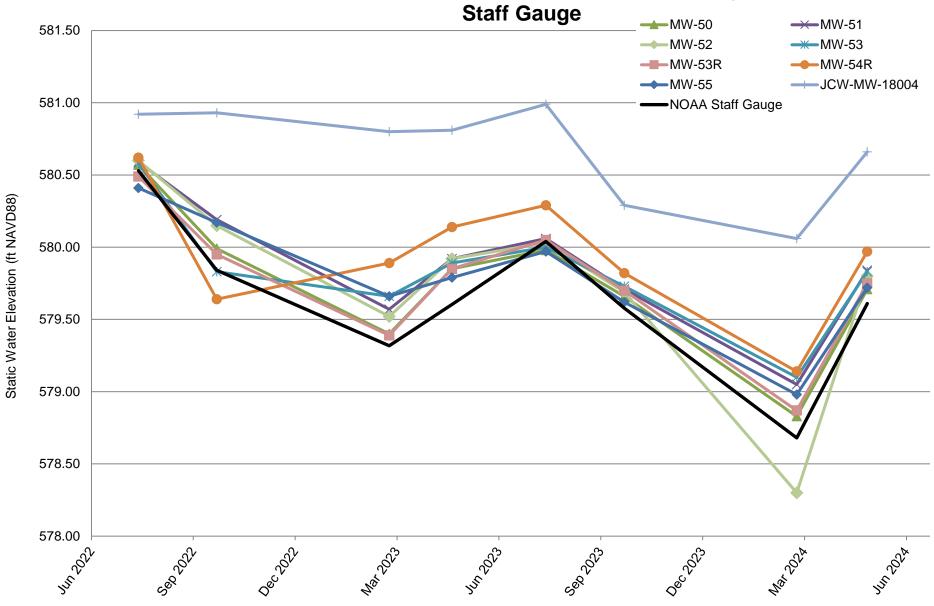
Appendix A
Static Water Level for MW-55 and OW-55



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





# 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	<ul><li>JCW-MW-18005</li></ul>
<b>-</b> JCVV-IVIVV-18001	<b>-</b> JCVV-IVIVV-18004	<b>-</b> JCVV-IVIVV-18005

JCW-MW-18006
 MW-50
 MW-51

■ MW-52 ■ 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  $\mu$ g/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		
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	Copper	Equipment blank contamination; potential false positive.
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 <sup>(1)</sup>	0	0	0	0	0	<b>↓</b>					
Calcium	↑ <sup>ASD</sup>	0	0	<b>^*</b>	0	<b>↓</b>					
Chloride	↓*	0	0	↓*	0	↓*					
Fluoride	O*	O*	O*	O*	O*	O*					
Iron	1	0	0	0	0	0					
pH/Corrosivity <sup>(1)</sup>	0	0	0	<b>^*</b>	0	0					
Sulfate	↑ <sup>ASD</sup>	0	0	1	0	$\downarrow$					
Total Dissolved Solids	0	0	0	<b>^*</b>	0	<b>↓</b>					

#### 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 <sup>(1)</sup>	0	<b>↑</b> *	0	0	0	0					
Calcium	0	0	0	0	0	<b>↑</b> *					
Chloride	0	0	0	0	0	0					
Fluoride	O*	O*	O*	O*	O*	O*					
Iron	0	0	0	0	0	0					
pH/Corrosivity <sup>(1)</sup>	0	0	<b>↑</b> *	0	0	<b>↑</b> *					
Sulfate	<b>+</b>	<u></u>	0	0	0	0					
Total Dissolved Solids	0	0	0	0	0	0					

#### Notes:

O\* = Non-detect (70%)

O = No trend

↑ = Upward trend, continuous

↑\* = Upward trend, new

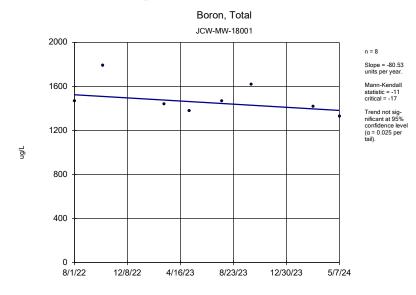
↑ = Upward trend, confirmed

↓ = Downward trend, continuous

↓\* = Downward trend, new

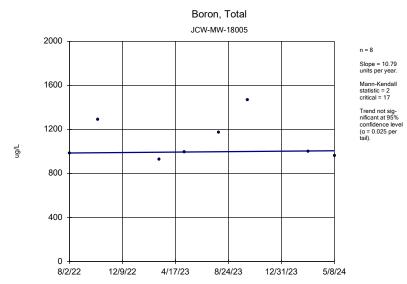
↑ ASD = Alternate Source Demonstration (Second Quarter 2024 Hydrogeological Monitoring Report for the Weadock Landfill, TRC, July 2024).

(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).



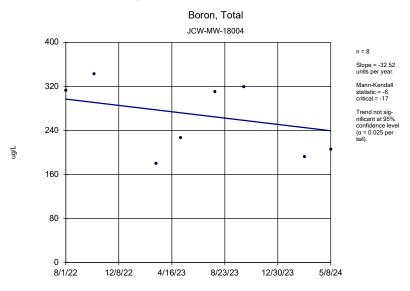
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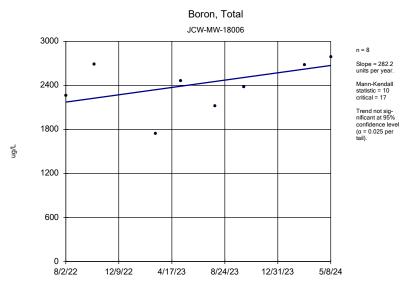


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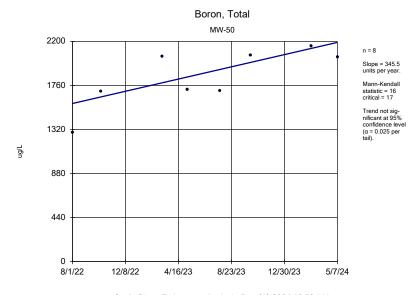


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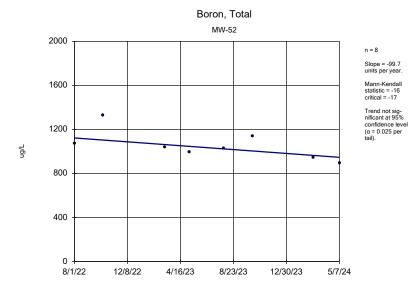


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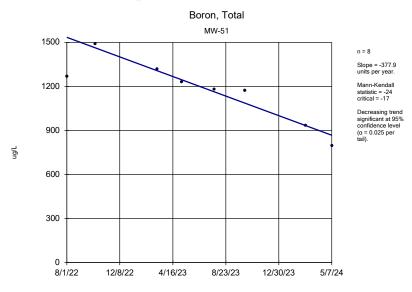


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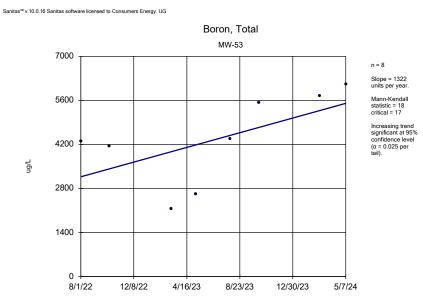


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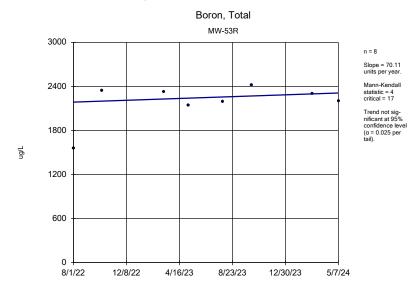


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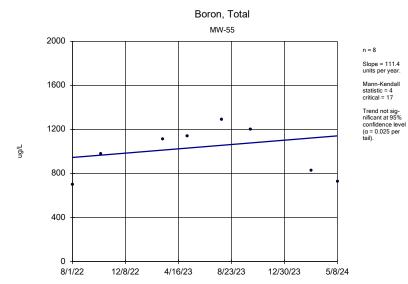
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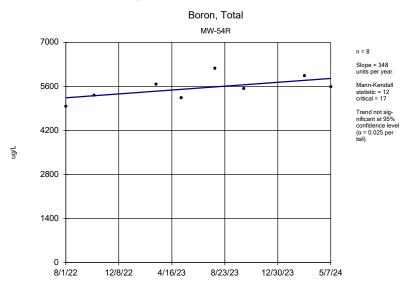
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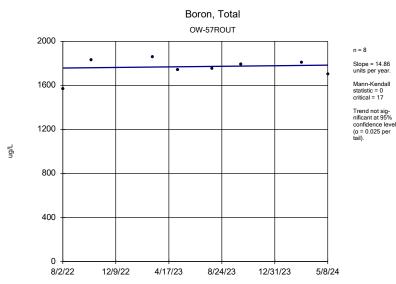
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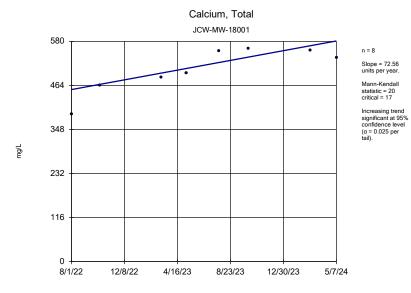
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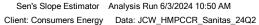
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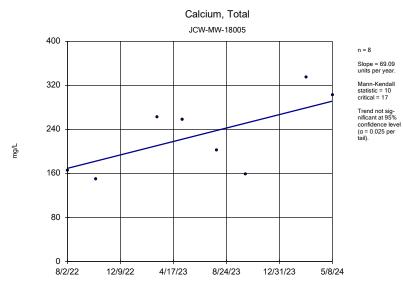


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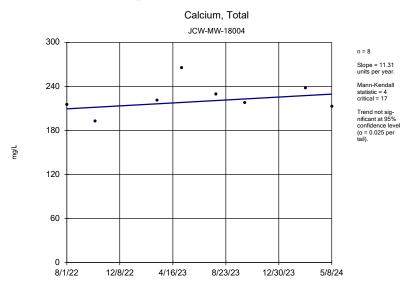






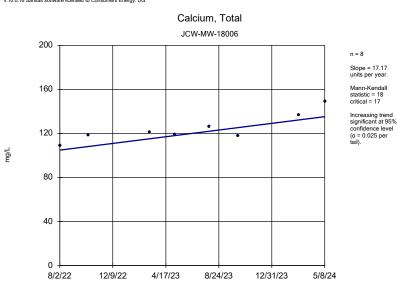
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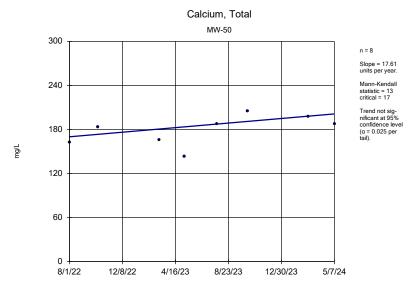
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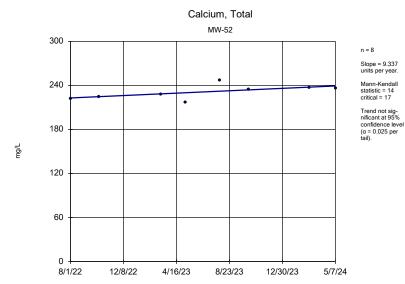
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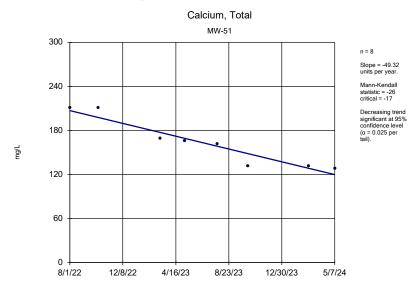
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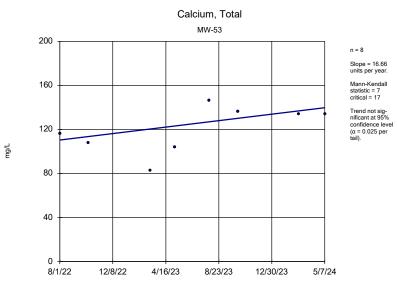


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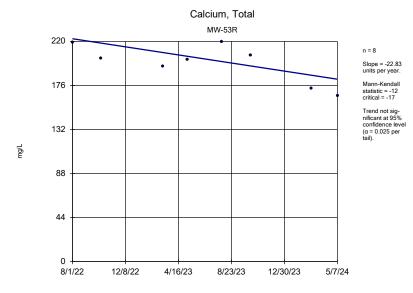


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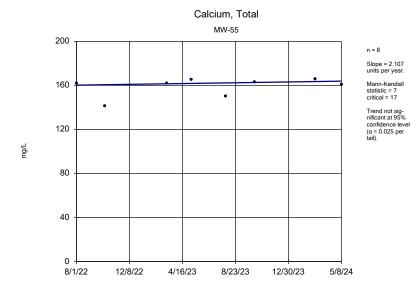
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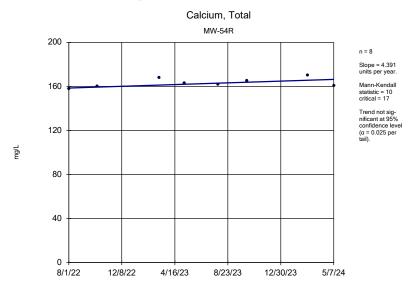
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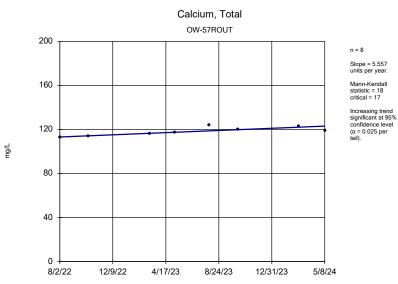
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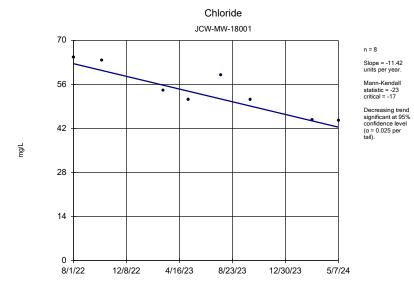
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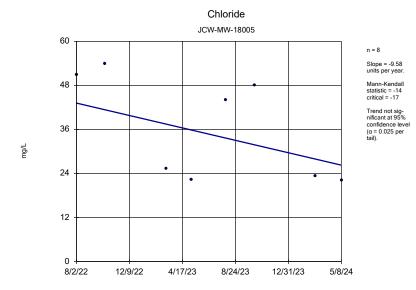
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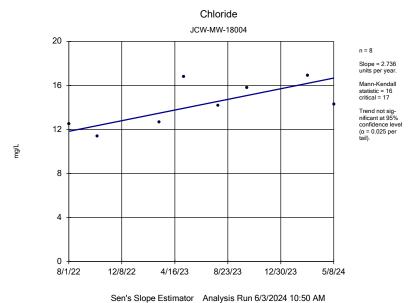
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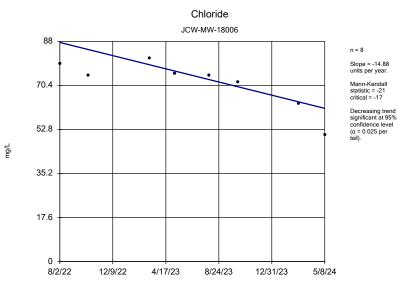


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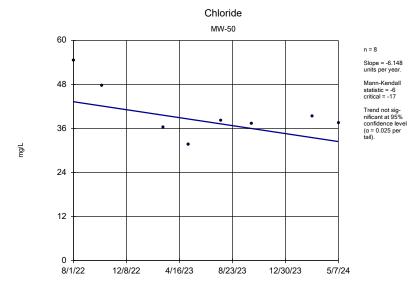


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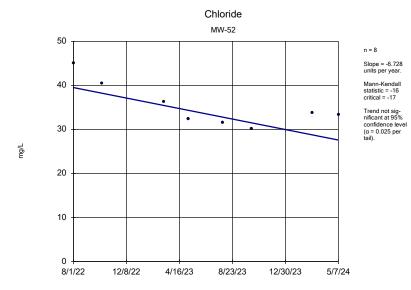
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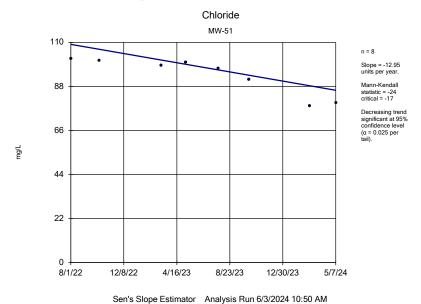
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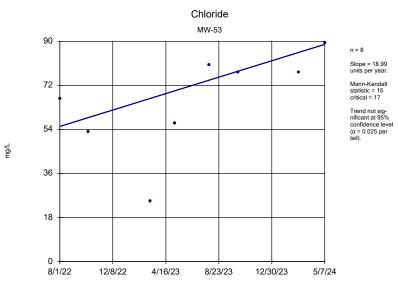


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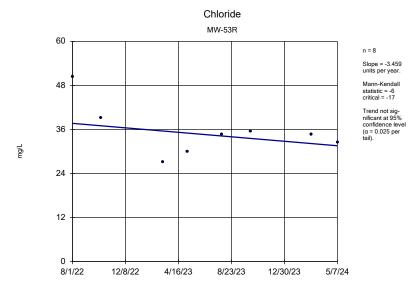


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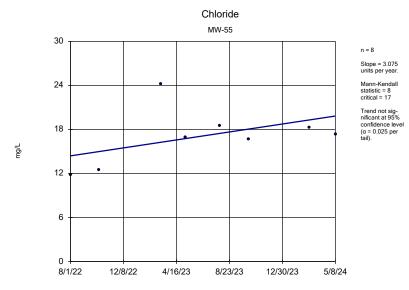
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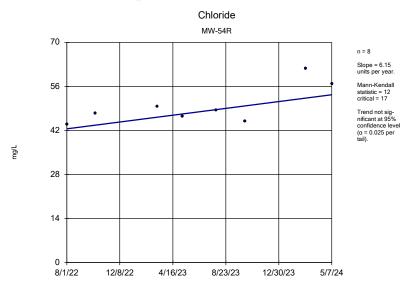
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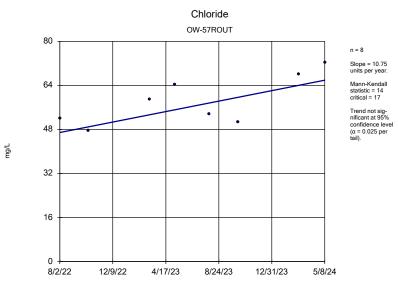
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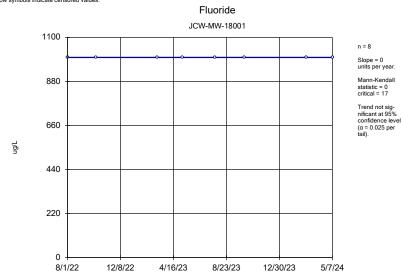
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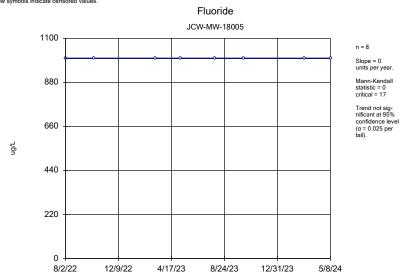
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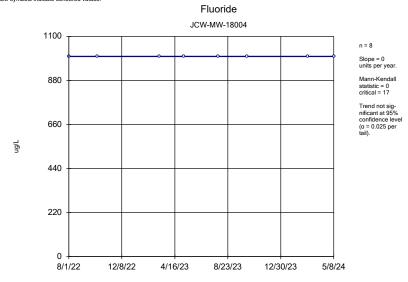
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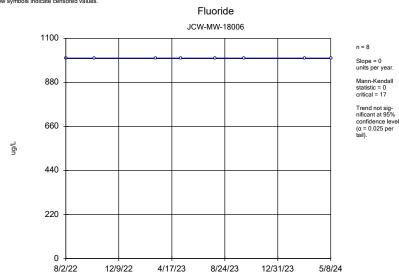
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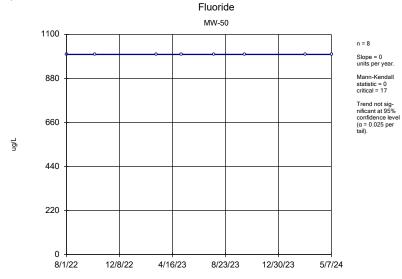
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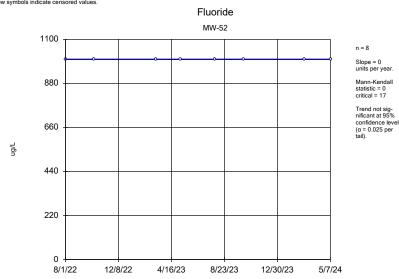
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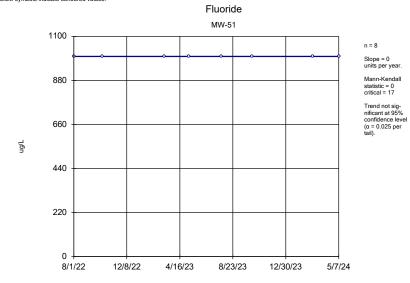
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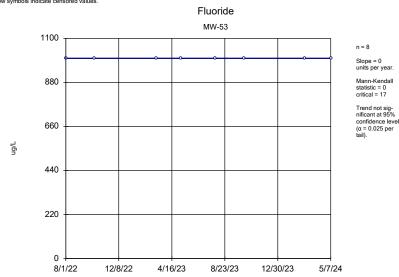
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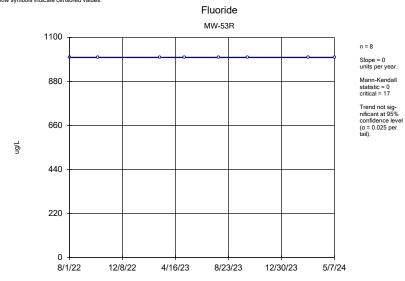
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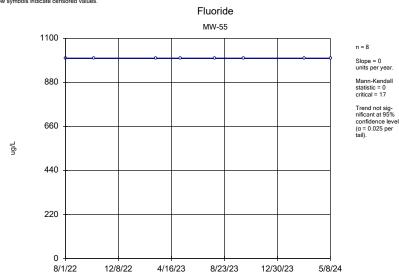
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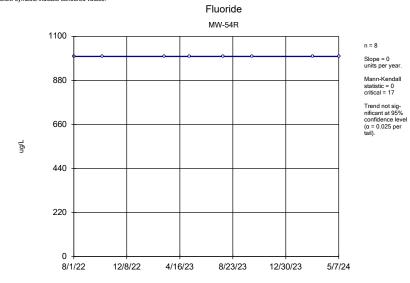




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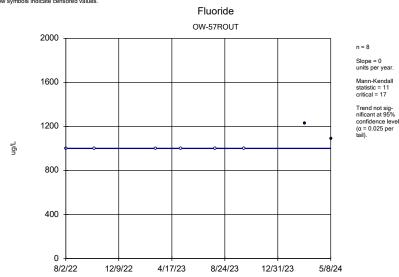
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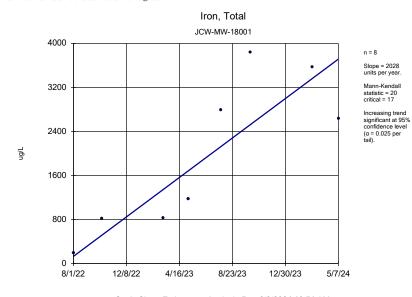
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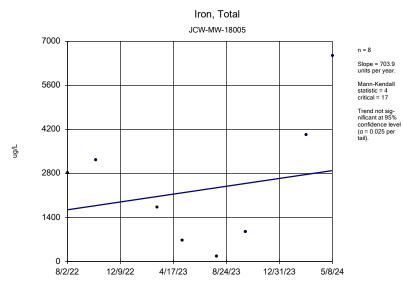


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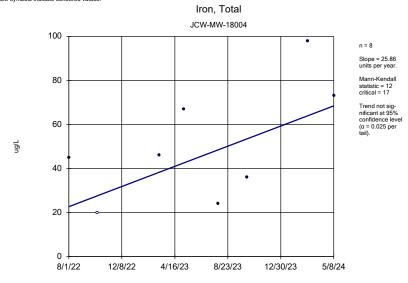


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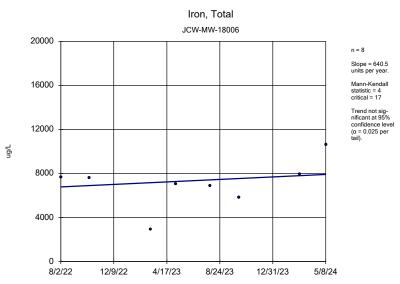
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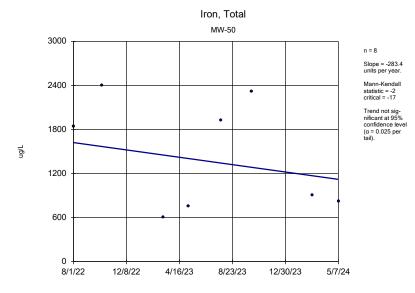
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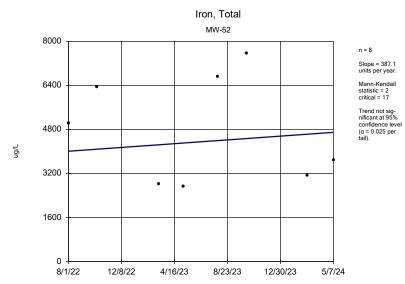
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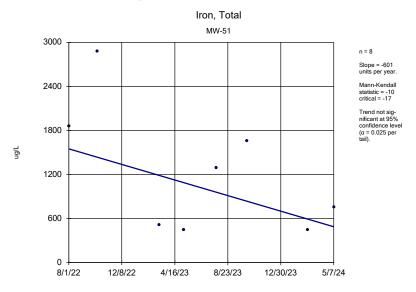
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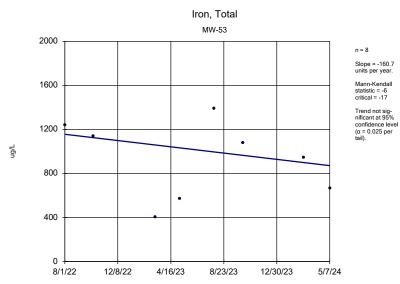
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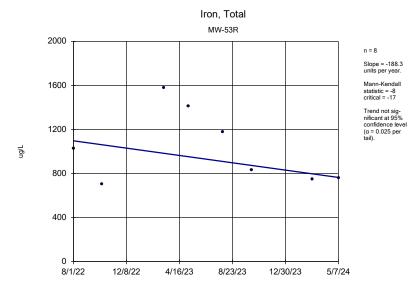
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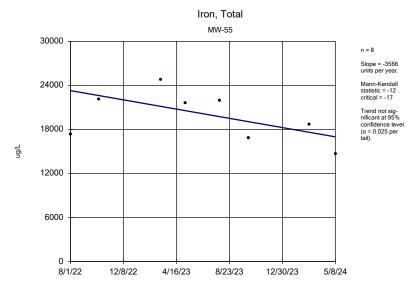
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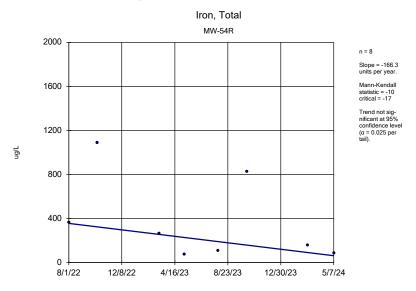
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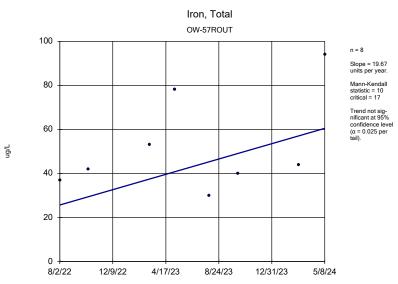
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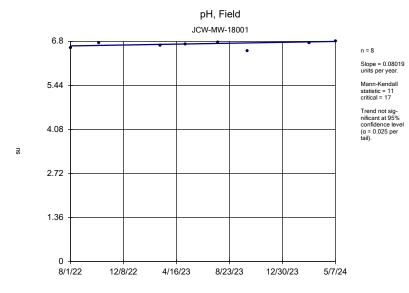
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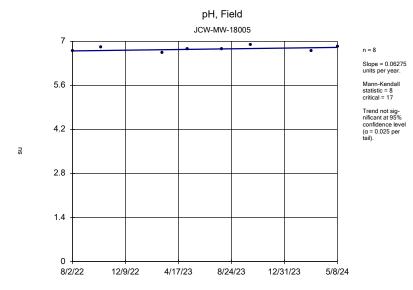
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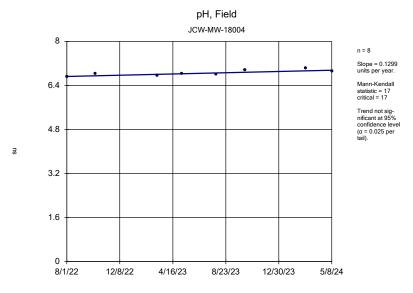
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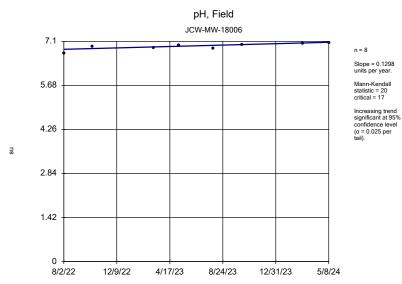
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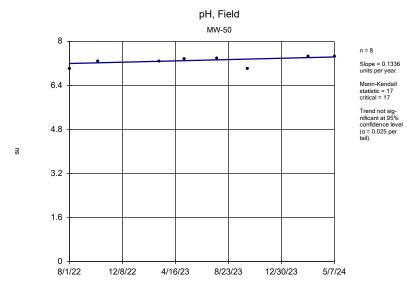
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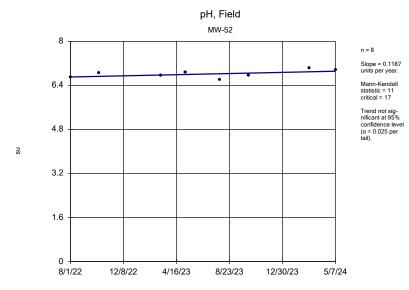
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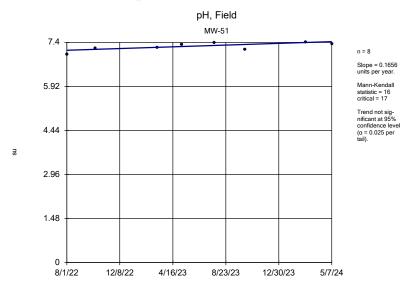
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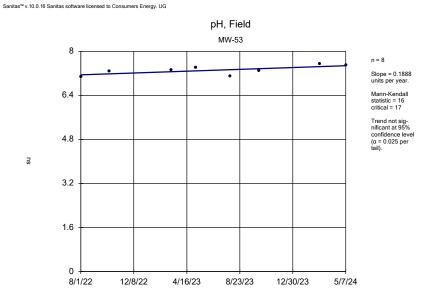


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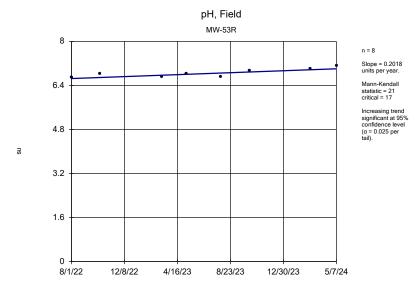


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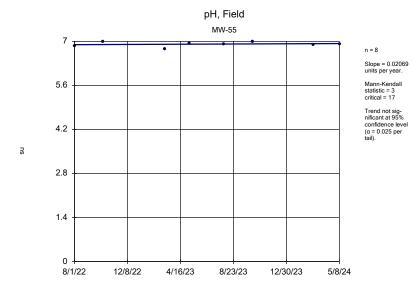
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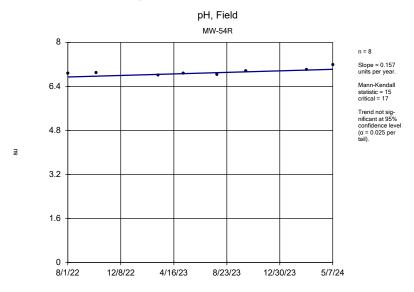
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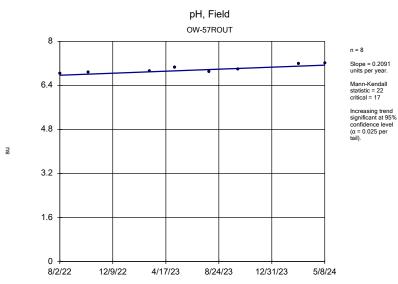
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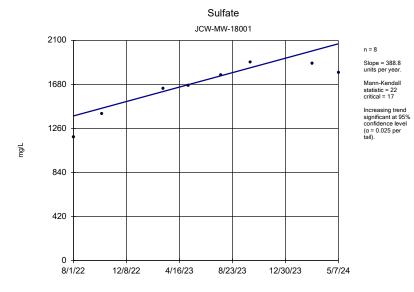
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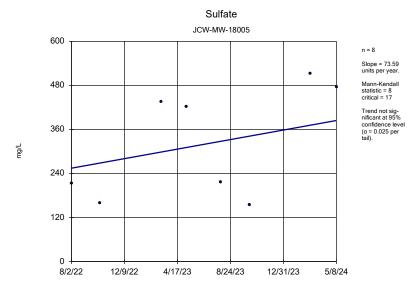


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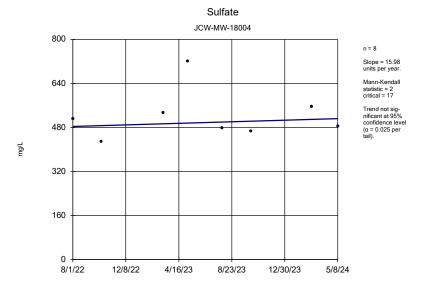


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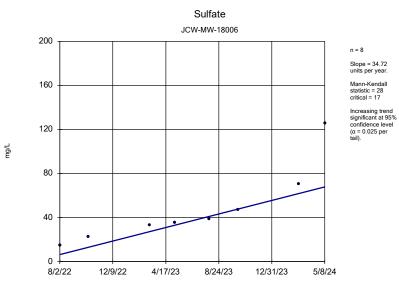
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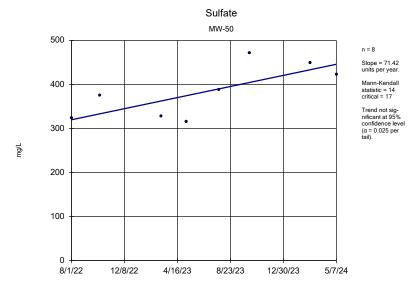
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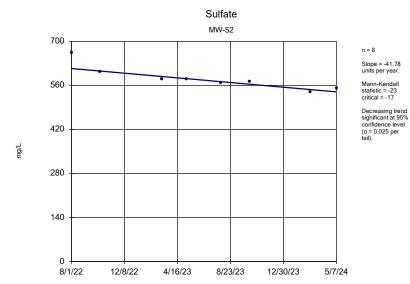


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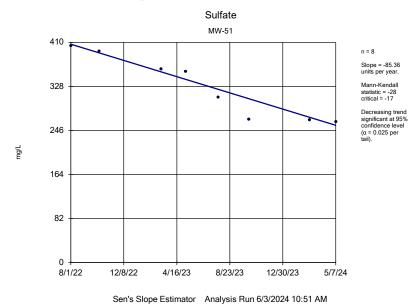


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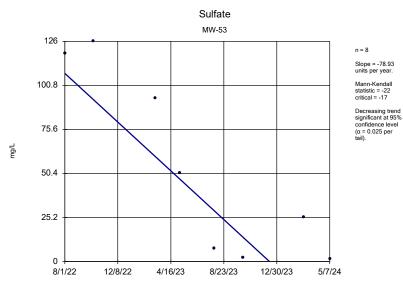


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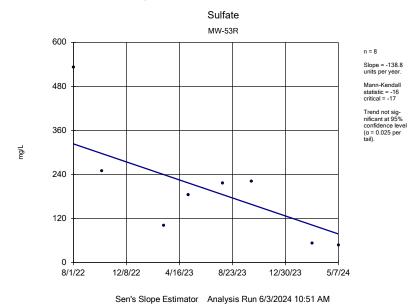


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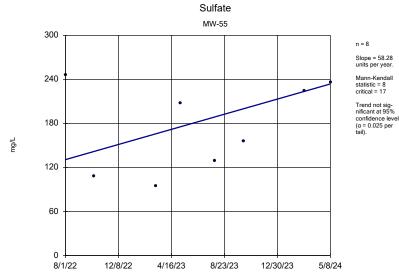


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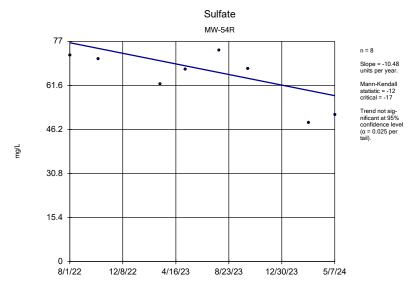


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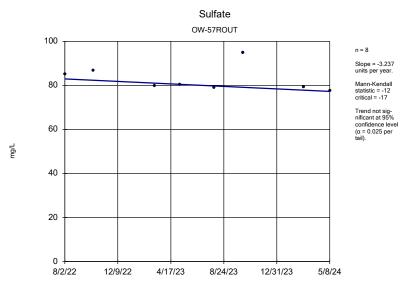
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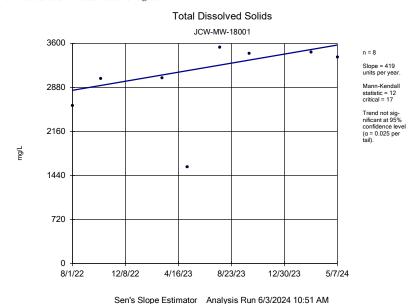
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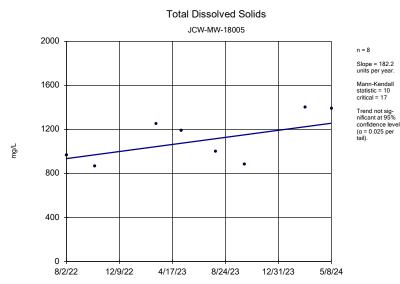
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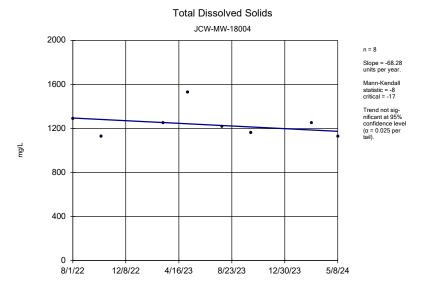


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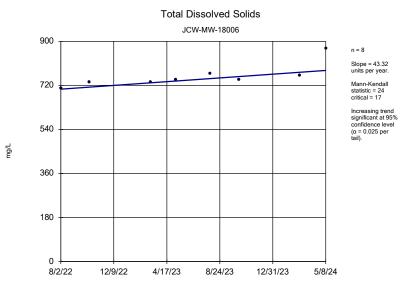
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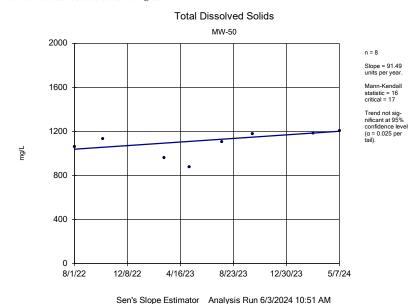
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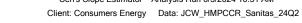
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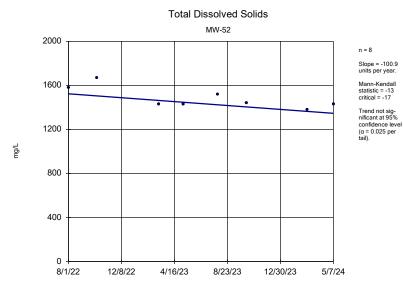
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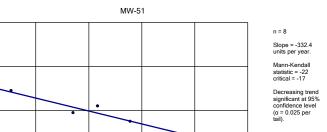


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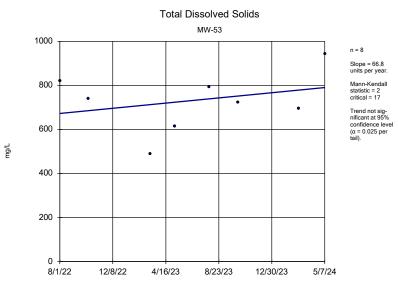
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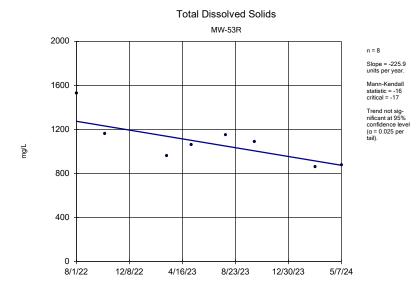
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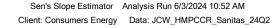
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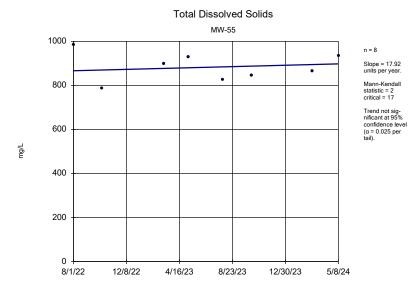


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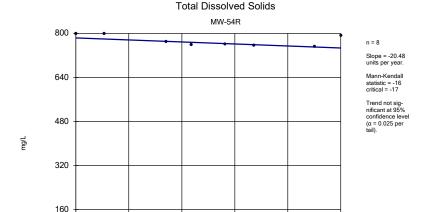






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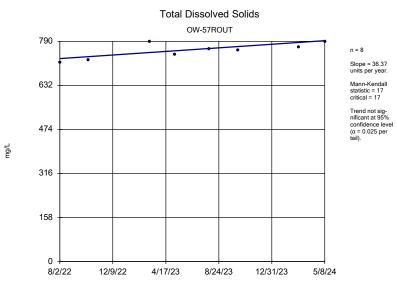
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# Appendix D Assessment Monitoring and GSI Statistical Evaluation



**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

<sup>&</sup>lt;sup>1</sup> 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).

<sup>&</sup>lt;sup>2</sup> TRC. 2021. First Quarter 2021 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area, Essexville, Michigan. Prepared for Consumers Energy Company. April.

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 Guidance 3, 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

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

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<sup>TM</sup> statistical software. Sanitas<sup>TM</sup> is a software tool that is commercially available for performing statistical evaluation consistent with procedures outlined in the Unified Guidance. Within the Sanitas<sup>TM</sup> 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 test<sup>4</sup> 99 percent confidence level, i.e., a significance level ( $\alpha$ ) of 0.01. The following narrative describes the methods employed, the results obtained and the Sanitas<sup>TM</sup> 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<sup>TM</sup> 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.

<sup>&</sup>lt;sup>4</sup> Confidence level is assessed for each individual comparison (i.e., per well and per constituent).

The Sanitas<sup>™</sup> 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.

The Sanitas<sup>™</sup> 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				
	Boron at JCW-MW-18001, JCW-MW-18006, MW-50, MW-52, MW-53, MW-54R, MW-55, and OW-57R OUT				
Normal	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				
Not Applicable – confidence bands used	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 guarter 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.

# **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<sup>™</sup> 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 <sup>(1)</sup>				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	SÜ	6.5 - 8.5	7.0		7.3		7.3		7.4		7.4		7.0		7.5		7.5	
Appendix IV <sup>(1)</sup>																		
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	6	6	5	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)																	1
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.

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# 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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

		Sample Location:				MW	<i>I</i> -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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

		Sample Location:				MV	V-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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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	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.

July 2024

		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
		·					U.			l .
Constituent	Unit	GWPS								
Appendix III <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

July 2024

		-			s, Michigan					
		Sample Location:					-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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

					L33exville, iviiciliga						
		Sample Location:		T	T		MW-55			T	
		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 <sup>(1)</sup>				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 <sup>(1)</sup>											
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

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### 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.

		Sample Location:				OW-57	'R 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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

										,
		Sample Location:					W-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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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	1	0.525
Radium-226/228	pCi/L	5.0		0.893		< 0.547		0.886	1	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.

						1011111				1
		Sample Location:	0/4/0000	40/40/0000	0/0/0000		W-18004	40/0/0000	0/5/0004	5/0/0004
		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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

		Sample Location:		, ,			W-18005	1		1
		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 <sup>(1)</sup>										
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 <sup>(1)</sup>										
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.

Table 1

Comparison of Groundwater Sampling Results to Groundwater Protection Standards

JC Weadock Landfill – Hydrogeological Monitoring Program

Essexville, Michigan

		Sample Location:							,	JCW-MW-1800	6						
		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															
Appendix III <sup>(1)</sup>					Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup	T	Field Dup
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	sŭ	6.5 - 8.5	6.7	6.9		6.9		7.0		6.9		7.0		7.0		7.1	
Appendix IV <sup>(1)</sup>																	†
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

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

					Sample Location:								MW	<i>I</i> -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^	Chronic-Based Mixing Zone GSI Criteria*	Acute-Based Mixing Zone GSI Criteria*	GSI**												•				
Appendix III <sup>(1)</sup>							Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup		Field Dup
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 <sup>F</sup>	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 <sup>(1)</sup>																					
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 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>																				
Iron	ug/L	500,000 <sup>EE</sup>	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.

^ - 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) .
- <sup>H</sup> 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.

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					Sample Location:				MV	V-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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	15	18	10	8	10	18	10	13
Chromium	ug/L	11 <sup>H</sup>	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 Parame	ters <sup>(2)</sup>							•					
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  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.

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					Sample Location:				MV	V-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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>	_						-					
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  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.

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					Sample Location:				MV	V-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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	1	2	< 1	< 1	1	1	1	1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>	_						-					
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  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.

					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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	17	20	17	14	17	16	9	10
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ers <sup>(2)</sup>				_								
Iron	ug/L	500,000 <sup>EE</sup>	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

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.
- <sup>F</sup> 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) addtional

assessment monitoring constituents (vanadium and zinc) are reported.

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					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 <sup>(1)</sup>													
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 <sup>F</sup>	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 <sup>(1)</sup>													ĺ
Arsenic	ug/L	10	100	680	100	2	2	1	< 1	< 1	1	1	1
Chromium	ug/L	11 <sup>H</sup>	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 Paramete	ers <sup>(2)</sup>	•						•					
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  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.

h														
					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**									
Appendix III <sup>(1)</sup>							Field Dup							
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 <sup>F</sup>	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 <sup>(1)</sup>														
Arsenic	ug/L	10	100	680	100	80	78	126	68	44	75	75	46	39
Chromium	ug/L	11 <sup>H</sup>	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 Parame	ters <sup>(2)</sup>					•			•					
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  Chromium GSI criterion based on hexavalent chromium per footnote {H}.
- $^{\mbox{\scriptsize EE}}$  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.

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					Sample Location:				JCW-M	W-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 <sup>(1)</sup>													
Boron	ug/L	4,000	44,000	69,000	44,000	313	343	180	227	310	319	192	206
Sulfate	mg/L	1,200 <sup>F</sup>	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 <sup>(1)</sup>													
Arsenic	ug/L	10	100	680	100	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Chromium	ug/L	11 <sup>H</sup>	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 Paramet	ters <sup>(2)</sup>	_			_	_							
Iron	ug/L	500,000 <sup>EE</sup>	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) .
- $^{\rm H}$  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.

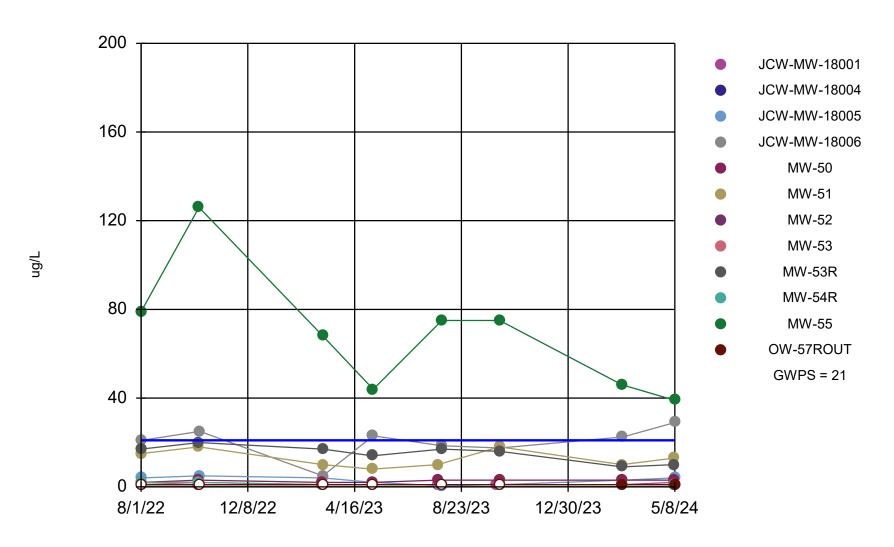
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendments Public Act No. 640 of 2018 Section 11519b(2) additional

assessment monitoring constituents (vanadium and zinc) are reported.

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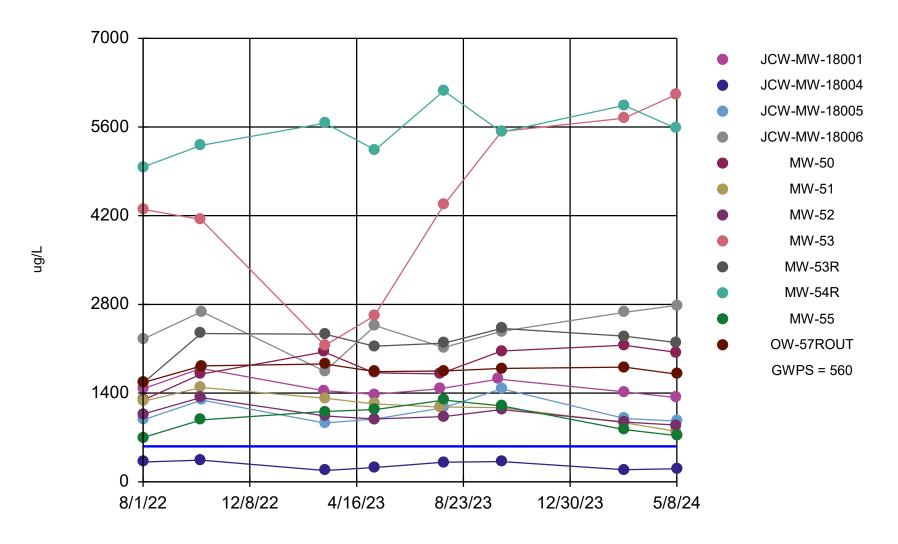
### Attachment 1 Assessment Monitoring Sanitas™ Output Files

### Arsenic Comparison to GWPS



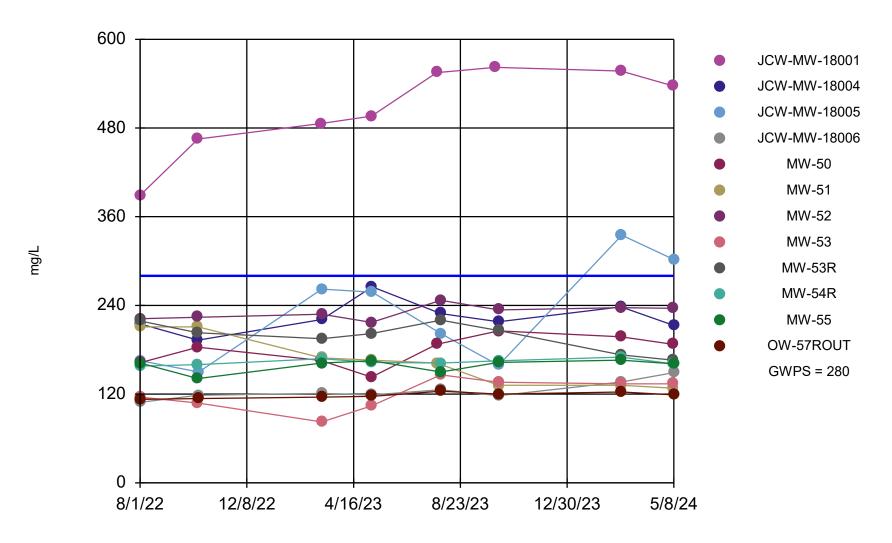
Time Series Analysis Run 6/13/2024 3:14 PM

### Boron Comparison to GWPS



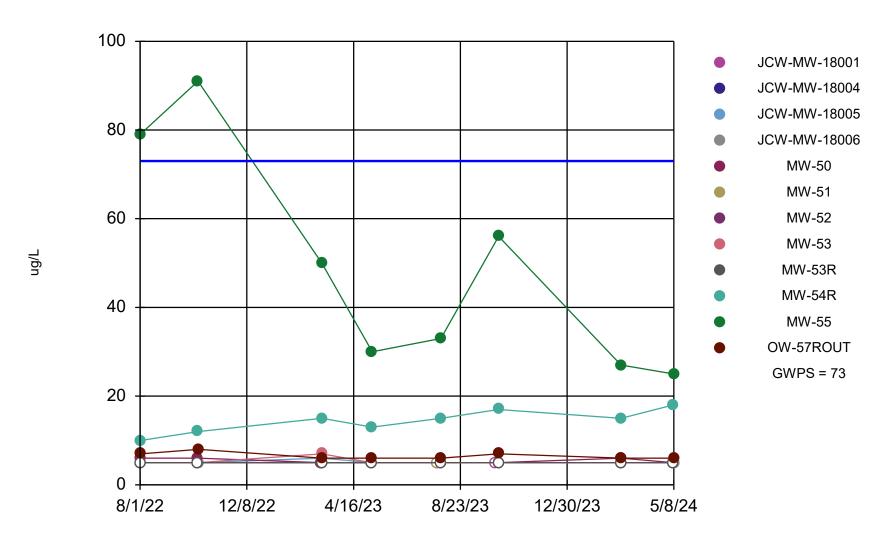
Time Series Analysis Run 6/13/2024 3:20 PM

### Calcium Comparison to GWPS



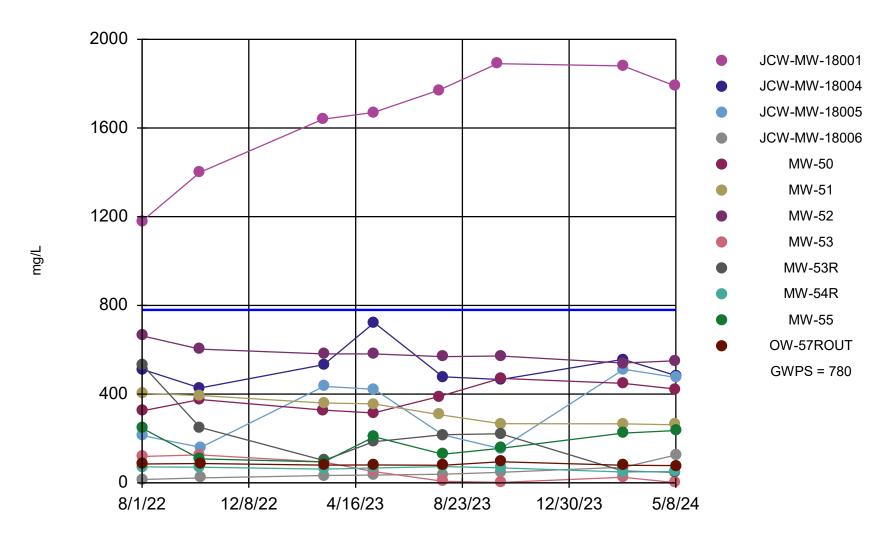
Time Series Analysis Run 6/13/2024 3:22 PM

### Molybdenum Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:23 PM

### Sulfate Comparison to GWPS



Time Series Analysis Run 6/13/2024 3:25 PM

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	<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

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<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

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

Well	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<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

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

Coefficient of Variation Skewness = 4.132

MW-55

OW-57ROUT

8

8

0%

0%

25

6

<u>Well</u>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<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

48.88

6.5

41.5

25.05

0.7559

0.5124

0.1163

0.6577

1.061

91

8

Constituent: Sulfate Analysis Run 6/13/2024 3:27 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2

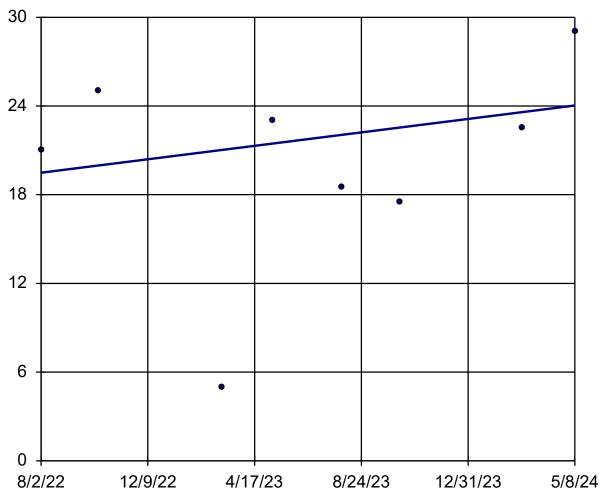
For observations made between 8/1/2022 and 5/8/2024, a summary of the selected data set:

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>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<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



n = 8

Slope = 2.573 units per year.

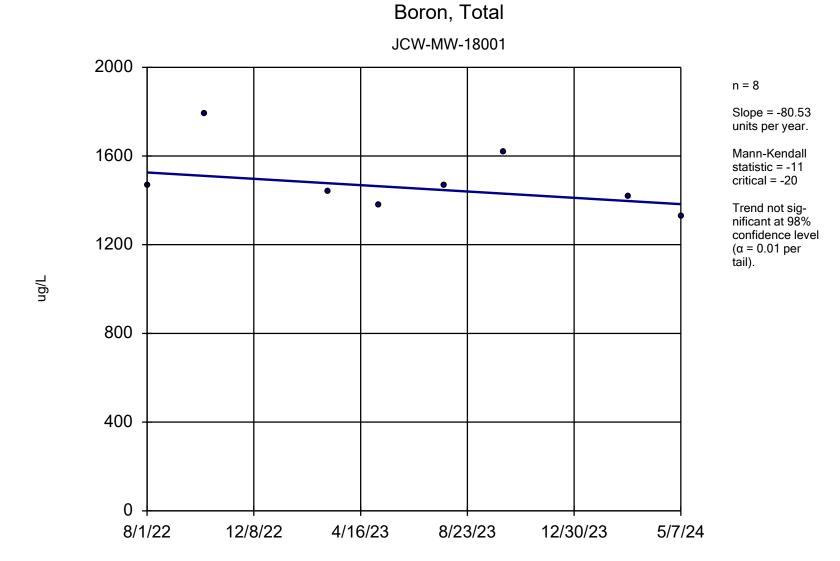
Mann-Kendall statistic = 4 critical = 20

Trend not significant at 98% confidence level ( $\alpha = 0.01$  per tail).

Sen's Slope Estimator Analysis Run 6/13/2024 3:40 PM

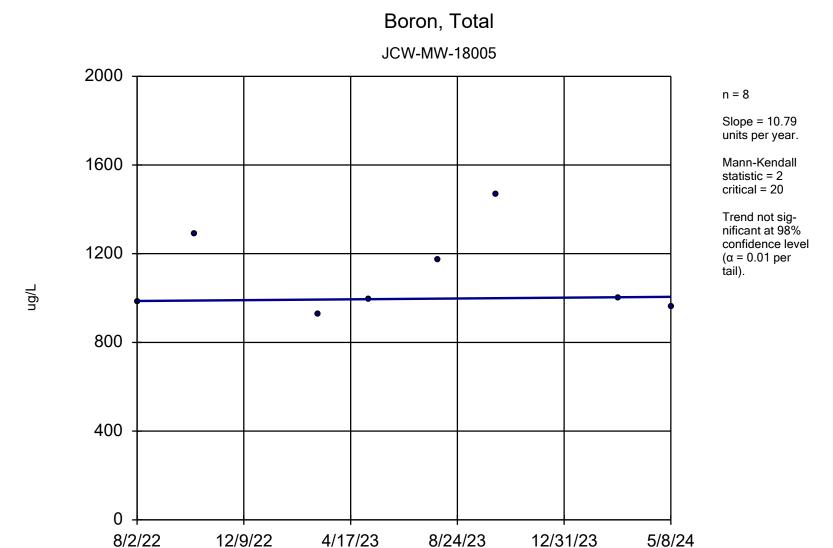
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2

ng/L

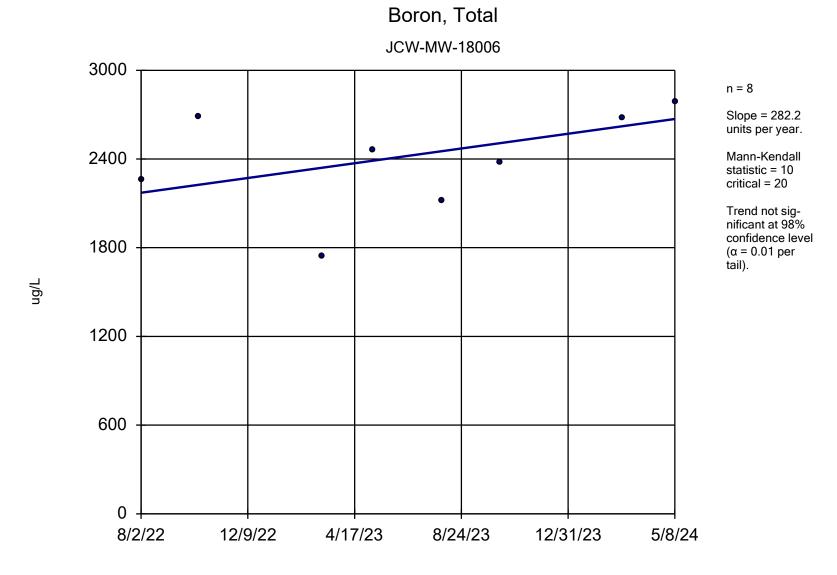


Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM

Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2

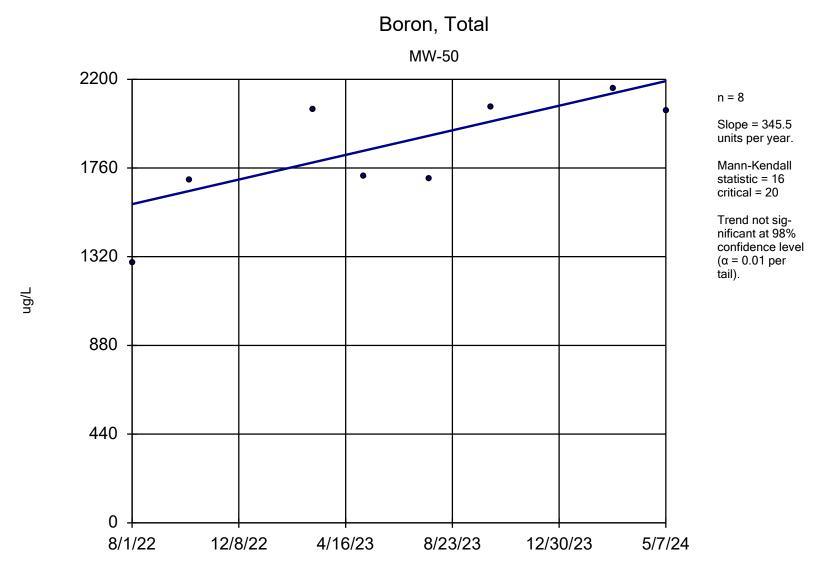


Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2

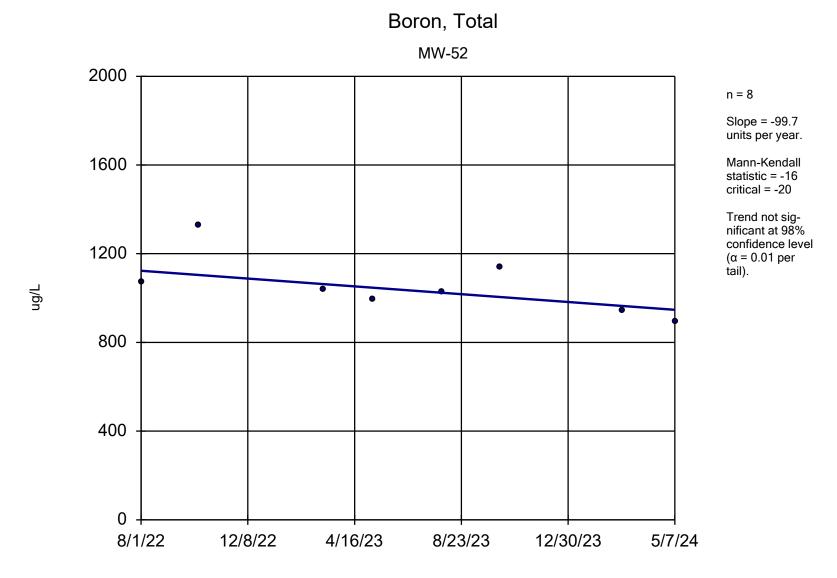


Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM

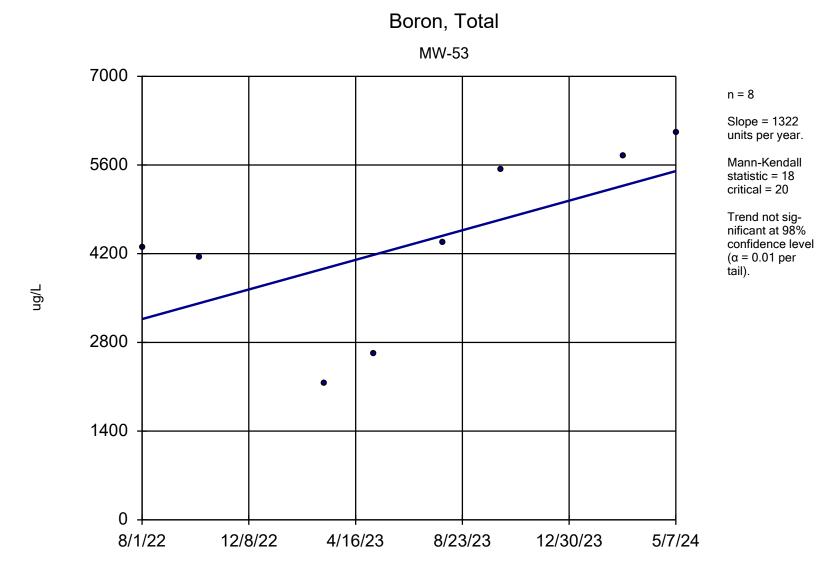
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



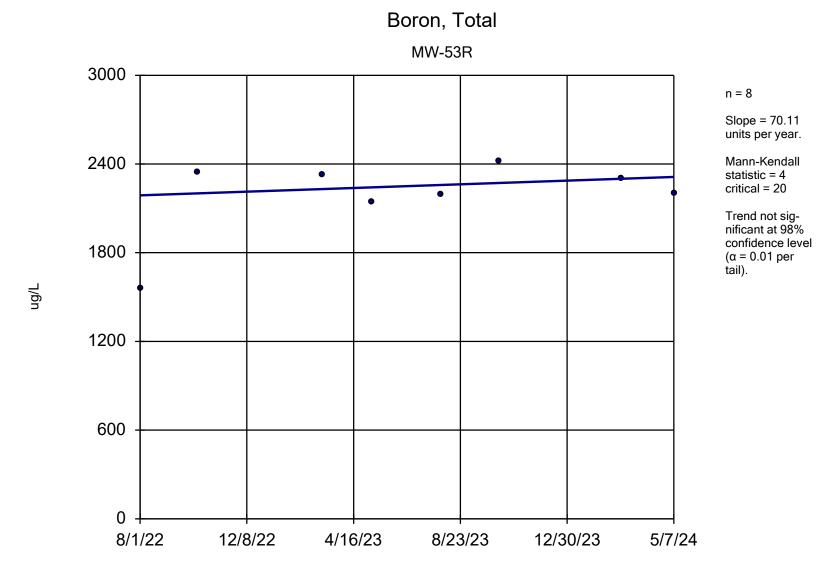
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



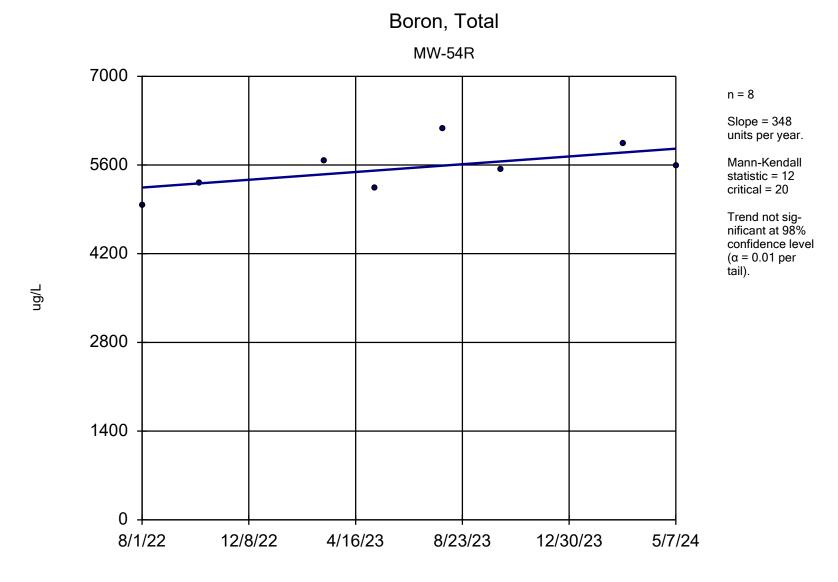
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



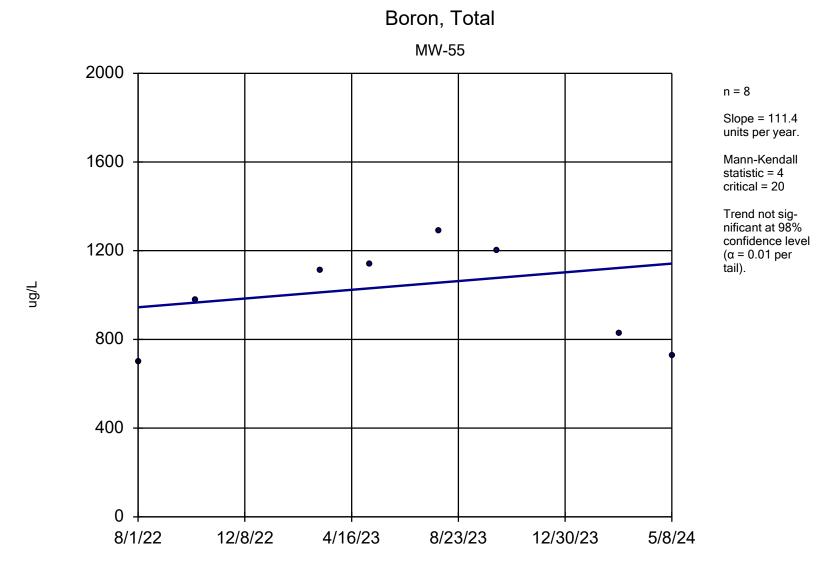
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



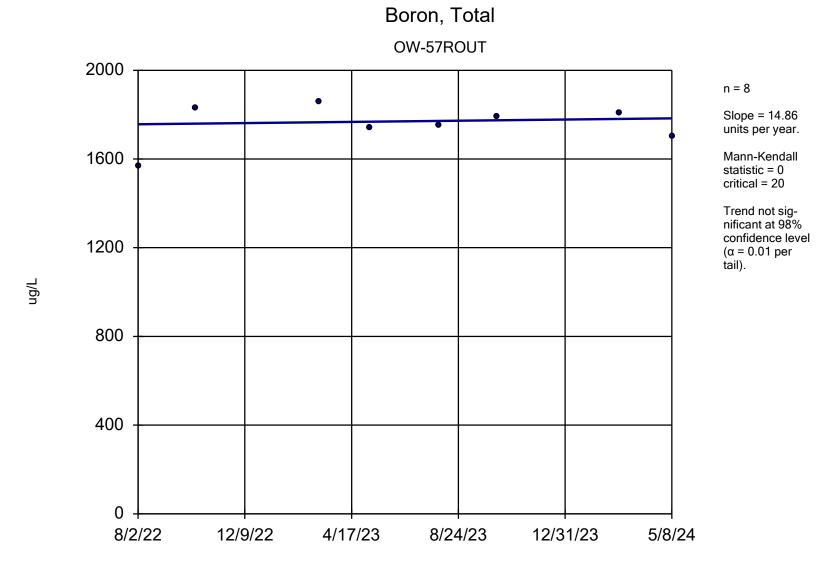
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



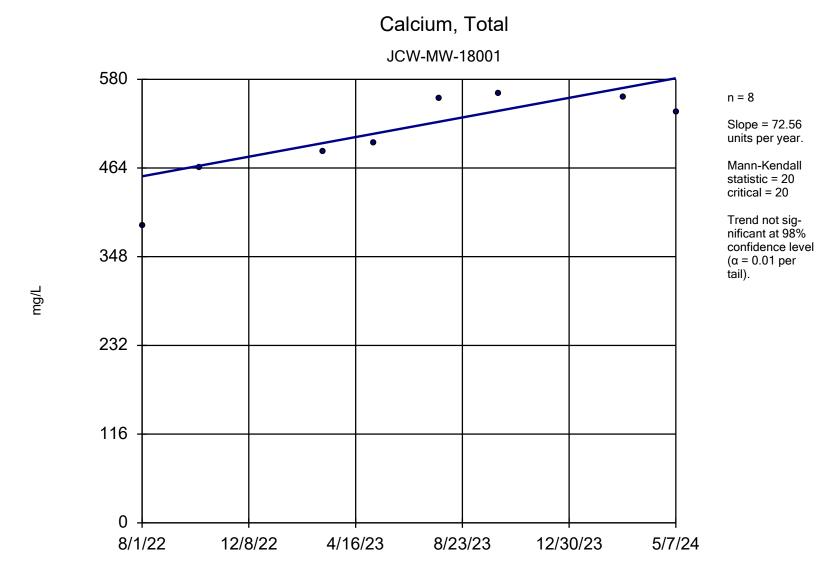
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



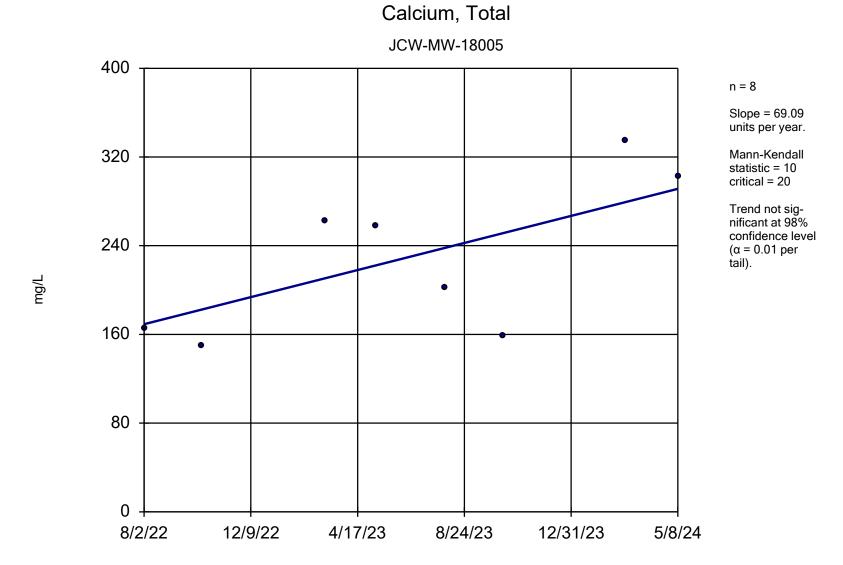
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



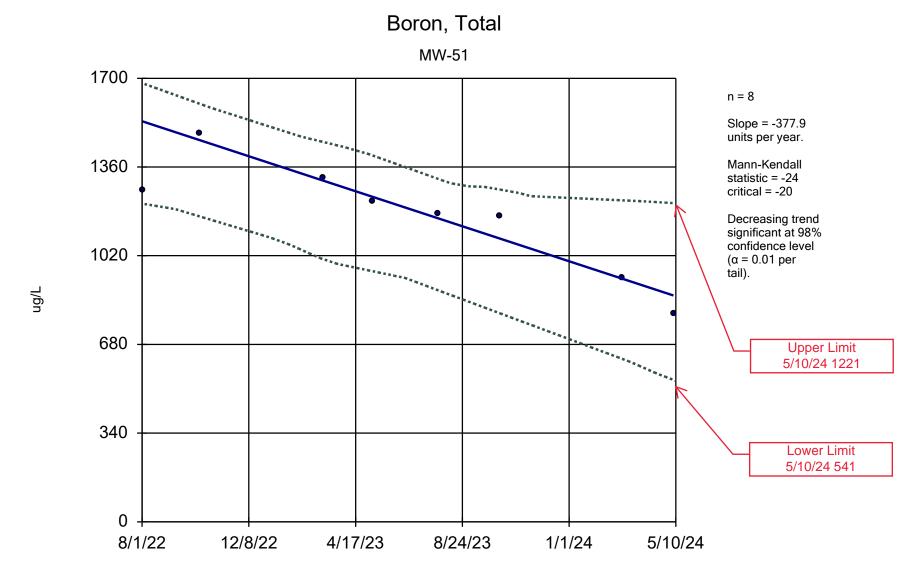
Sen's Slope Estimator Analysis Run 6/13/2024 3:45 PM
Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



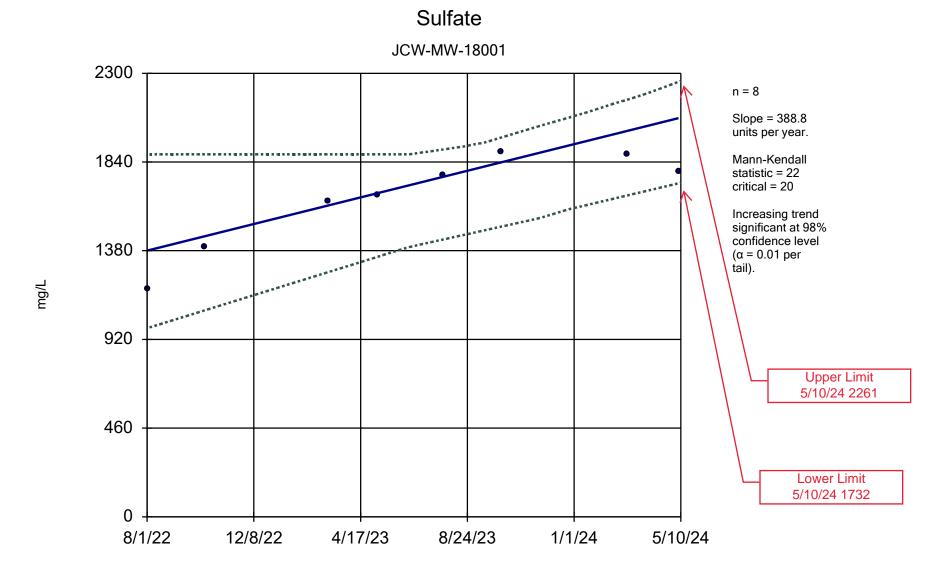
Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 12:19 PM Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 12:19 PM Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



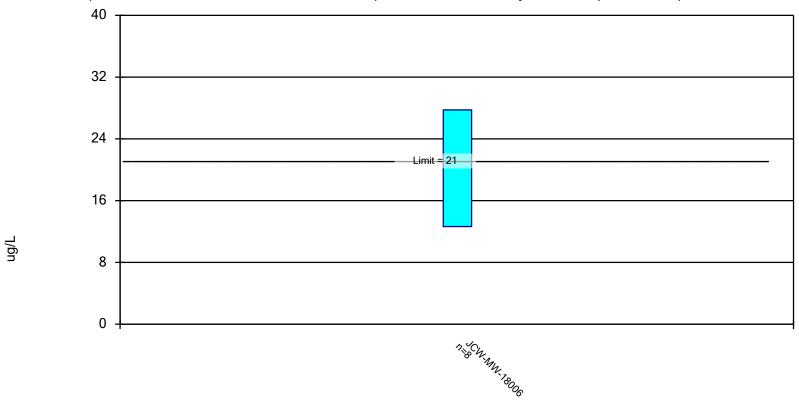
Sen's Slope and 98% Confidence Band Analysis Run 6/14/2024 11:49 AM Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



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

## **Confidence Interval**

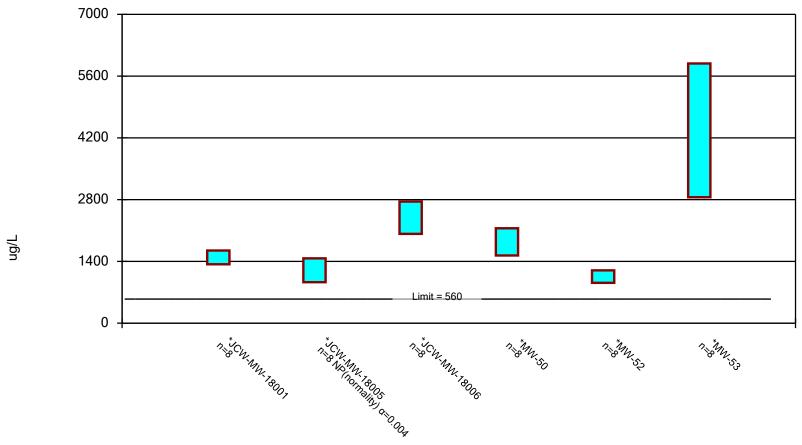
Constituent: Arsenic, Total (ug/L) Analysis Run 6/14/2024 1:05 PM

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

## **Confidence Interval**

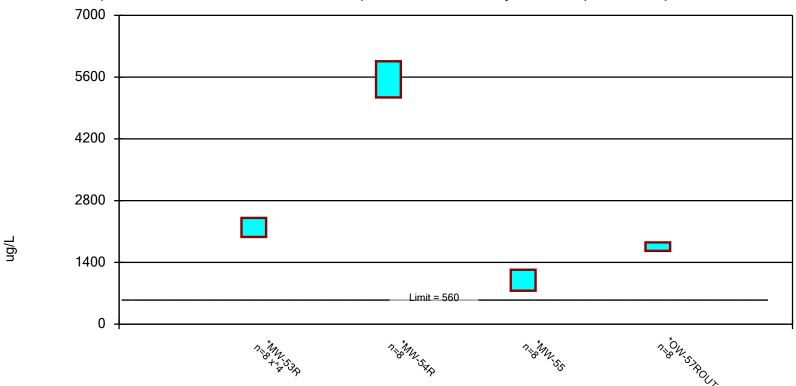
Constituent: Boron, Total (ug/L) Analysis Run 6/14/2024 1:04 PM

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

## **Confidence Interval**

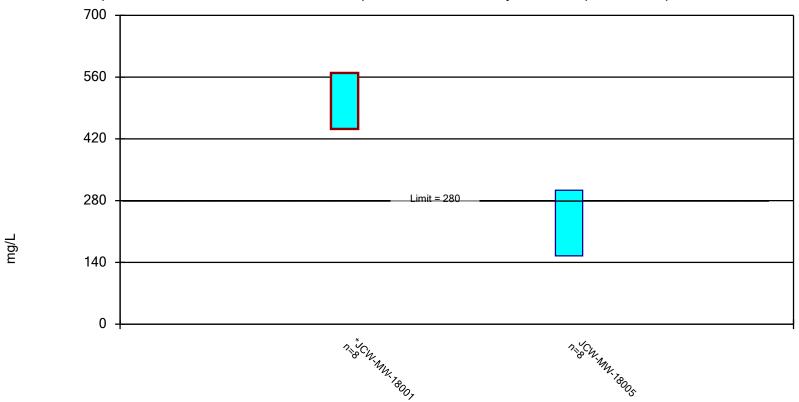
Constituent: Boron, Total (ug/L) Analysis Run 6/14/2024 1:04 PM

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

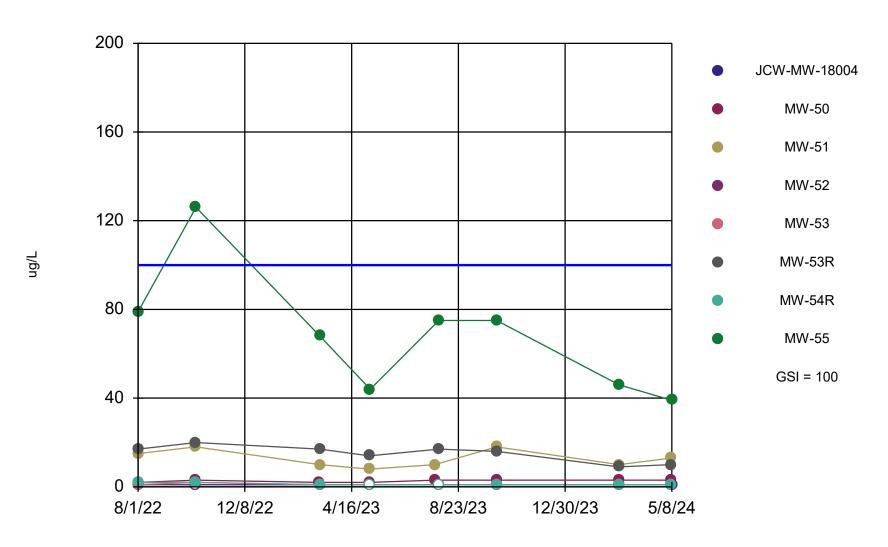
## **Confidence Interval**

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

#### **Summary Report**

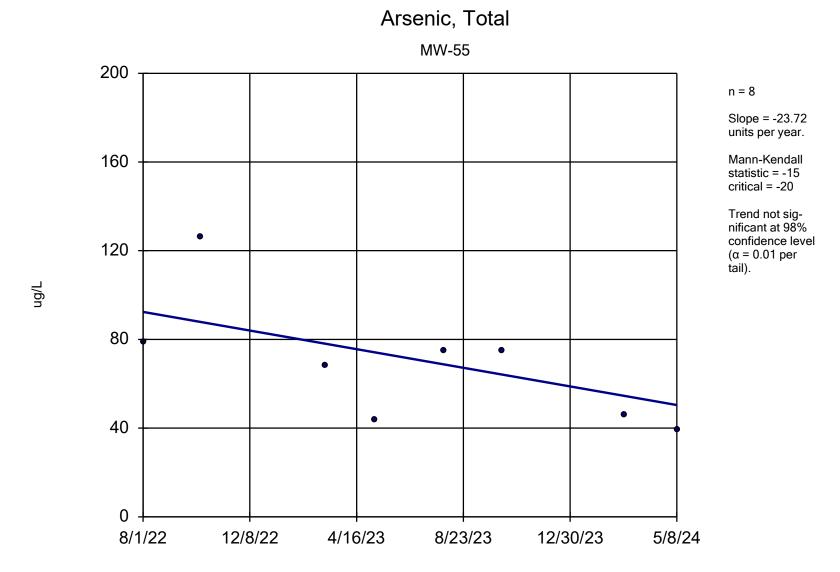
Constituent: Arsenic, Total Analysis Run 6/19/2024 2:04 PM Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2

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

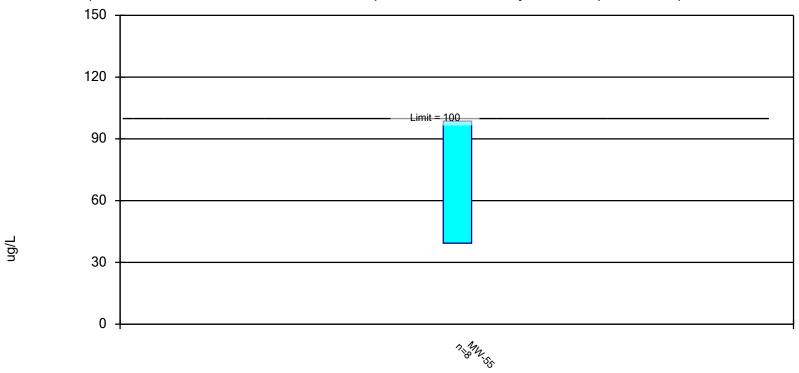
<u>Well</u>	#Obs.	<u>NDs</u>	<u>Min</u>	<u>Max</u>	<u>Mean</u>	<u>Median</u>	Std.Dev.	CV	<u>Skewness</u>
JCW-MW-18004	8	100%	1	1	1	1	0	0	NaN
MW-50	8	0%	2	3	2.625	3	0.5175	0.1972	-0.5164
MW-51	8	0%	8	18	12.75	11.5	3.882	0.3045	0.3426
MW-52	8	100%	1	1	1	1	0	0	NaN
MW-53	8	25%	1	2	1.125	1	0.3536	0.3143	2.268
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



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

#### **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



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 2<sup>nd</sup> 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 accredidation specified in the listed certificate.

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#### **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, 22<sup>nd</sup> 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

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	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
Н	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 DEK-JCW Background Wells

**Date Received:** 5/10/2024 **Chemistry Project:** 24-0343

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<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



Report Date:

05/23/24



Sample Site: **DEK JCW Background** Laboratory Project: **24-0343** 

 Field Sample ID:
 MW-15002
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-01
 Collect Time:
 02:51 PM

Metals by EPA 6020B: CCR Rule Appe	11012 111-14 10	tai wictai.	,	Aliquot #: 24-0	343-01-C01-A01	Analyst: EE
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, Aqueou	S			Aliquot #: 24-0	343-01-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Analyte	e List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-01-C02-A01	Analyst: KDF
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 #: 24-0	343-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking



Report Date:

05/23/24



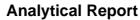
Count on US

Sample Site: **DEK JCW Background** Laboratory Project: **24-0343** 

 Field Sample ID:
 MW-15008
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-02
 Collect Time:
 01:15 PM

Parameter(s) Antimony	Result	<b>-</b> 1				
Antimony		Flag	Units	RL	Analysis Date	Tracking
· ········	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, Aqueou	s			Aliquot #: 24-0	343-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking
Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	343-02-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 #: 24-0	343-02-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





A CENTURY OF EXCELLENCE

Count on Us® Affairy tical Report Report Report Date: 05/23/24

Sample Site: **DEK JCW Background** Laboratory Project: **24-0343** 

 Field Sample ID:
 MW-15016
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-03
 Collect Time:
 02:47 PM

Arsenic 17 ug/L 1.0 05/14/2024 AB2- Barlum 157 ug/L 5.0 05/14/2024 AB2- Beryllium ND ug/L 1.0 05/14/2024 AB2- Boron 398 ug/L 20.0 05/14/2024 AB2- Cadmium ND ug/L 0.2 05/14/2024 AB2- Cadmium ND ug/L 0.2 05/14/2024 AB2- Cadmium ND ug/L 1000.0 05/14/2024 AB2- Calcium 243000 ug/L 1000.0 05/14/2024 AB2- Chromium 1 ug/L 1.0 05/14/2024 AB2- Chomium 1 ug/L 1.0 05/14/2024 AB2- Copper 2 ug/L 1.0 05/14/2024 AB2- Copper 2 ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 20.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lithium 68 ug/L 1.0 05/14/2024 AB2- Lithium 68 ug/L 10.0 05/14/2024 AB2- Magnesium 39200 ug/L 100.0 05/14/2024 AB2- Mickel 10 ug/L 5.0 05/14/2024 AB2- Nickel 10 ug/L 5.0 05/14/2024 AB2- Nickel 10 ug/L 5.0 05/14/2024 AB2- Selenium 1 ug/L 1.0 05/14/20	tals by EPA 6020B: CCR Rule	Appendix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	343-03-C01-A01	Analyst: EE
Arsenic 17 ug/L 1.0 05/14/2024 AB2- Barlum 157 ug/L 5.0 05/14/2024 AB2- Beryllium ND ug/L 1.0 05/14/2024 AB2- Boron 398 ug/L 20.0 05/14/2024 AB2- Cadmium ND ug/L 0.2 05/14/2024 AB2- Cadmium ND ug/L 0.2 05/14/2024 AB2- Cadmium ND ug/L 0.2 05/14/2024 AB2- Calcium 243000 ug/L 1000.0 05/14/2024 AB2- Chromium 1 ug/L 1.0 05/14/2024 AB2- Chromium 1 ug/L 1.0 05/14/2024 AB2- Copper 2 ug/L 1.0 05/14/2024 AB2- Copper 2 ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lead ND ug/L 1.0 05/14/2024 AB2- Lithium 68 ug/L 10.0 05/14/2024 AB2- Magnesium 39200 ug/L 1000.0 05/14/2024 AB2- Magnesium 39200 ug/L 1000.0 05/14/2024 AB2- Mickel 10 ug/L 2.0 05/14/2024 AB2- Nickel 10 ug/L 2.0 05/14/2024 AB2- Nickel 10 ug/L 1.0 05/14/2024 AB2- Selenium 1 ug/L 1.0 05/14	ameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Barium         157         ug/L         5.0         05/14/2024         AB2           Beryllium         ND         ug/L         1.0         05/14/2024         AB2           Boron         398         ug/L         20.0         05/14/2024         AB2           Cadmium         ND         ug/L         100.0         05/14/2024         AB2           Calcium         243000         ug/L         1000.0         05/14/2024         AB2           Chromium         1         ug/L         1.0         05/14/2024         AB2           Cobalt         ND         ug/L         1.0         05/14/2024         AB2           Copper         2         ug/L         1.0         05/14/2024         AB2           Iron         21900         ug/L         1.0         05/14/2024         AB2           Lead         ND         ug/L         1.0         05/14/2024         AB2           Lithium         68         ug/L         1.0         05/14/2024         AB2           Magnesium         39200         ug/L         1.0         05/14/2024         AB2           Nickel         10         ug/L         2.0         05/14/2024         AB2 <t< td=""><td>Antimony</td><td>ND</td><td></td><td>ug/L</td><td>1.0</td><td>05/14/2024</td><td>AB24-0515-01</td></t<>	Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Beryllium         ND         ug/L         1.0         05/14/2024         AB2-Boron         398         ug/L         20.0         05/14/2024         AB2-Cadmium         ND         ug/L         20.0         05/14/2024         AB2-Cadmium         ND         ug/L         0.2         05/14/2024         AB2-Cadmium         ND         ug/L         0.2         05/14/2024         AB2-Cadmium         ND         ug/L         1.0         05/14/2024         AB2-Cadmium         ND         ug/L         1.0 <td>Arsenic</td> <td>17</td> <td></td> <td>ug/L</td> <td>1.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Arsenic	17		ug/L	1.0	05/14/2024	AB24-0515-01
Boron   398	Barium	157		ug/L	5.0	05/14/2024	AB24-0515-01
Cadmium         ND         ug/L         0.2         05/14/2024         AB2-Calcium         243000         ug/L         1000.0         05/14/2024         AB2-CALCIUM         243000         ug/L         1000.0         05/14/2024         AB2-CALCIUM         ND         ug/L         1.0         05/14/2024         AB2-CALCIUM         ND         ug/L         1.0         05/14/2024         AB2-CALCIUM         ND         ug/L         1.0         05/14/2024         AB2-CALCIUM         AB2-CALCIUM         ND         ug/L         1.0         05/14/2024         AB2-CALCIUM         AB2-CALCIUM<	Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Calcium         243000         ug/L         1000.0         05/14/2024         AB2-Chromium           Chromium         1         ug/L         1.0         05/14/2024         AB2-Cobalt           Cobalt         ND         ug/L         6.0         05/14/2024         AB2-Copper           Copper         2         ug/L         1.0         05/14/2024         AB2-Incompose           Iron         21900         ug/L         1.0         05/14/2024         AB2-Incompose           Lead         ND         ug/L         1.0         05/14/2024         AB2-Incompose           Lithium         68         ug/L         10.0         05/14/2024         AB2-Incompose           Magnesium         39200         ug/L         10.0         05/14/2024         AB2-Incompose           Molybdenum         ND         ug/L         5.0         05/14/2024         AB2-Incompose           Molybdenum         ND         ug/L         5.0         05/14/2024         AB2-Incompose           Molybdenum         ND         ug/L         10.0         05/14/2024         AB2-Incompose           Potassium         9050         ug/L         10.0         05/14/2024         AB2-Incompose           Silver	Boron	398		ug/L	20.0	05/14/2024	AB24-0515-01
Chromium         1         ug/L         1.0         05/14/2024         AB2-Cobalt           Cobalt         ND         ug/L         6.0         05/14/2024         AB2-Copper         2         ug/L         1.0         05/14/2024         AB2-Copper         2         ug/L         1.0         05/14/2024         AB2-Copper         2         ug/L         1.0         05/14/2024         AB2-Copper         4         AB2-Copper         2         ug/L         1.0         05/14/2024         AB2-Copper         4         AB2-Copper         AB2-Copper <t< td=""><td>Cadmium</td><td>ND</td><td></td><td>ug/L</td><td>0.2</td><td>05/14/2024</td><td>AB24-0515-01</td></t<>	Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Cobalt         ND         ug/L         6.0         05/14/2024         AB2-COpper           Copper         2         ug/L         1.0         05/14/2024         AB2-Iron           Lead         ND         ug/L         20.0         05/14/2024         AB2-Lead           Lead         ND         ug/L         1.0         05/14/2024         AB2-Lead           Lithium         68         ug/L         1.0         05/14/2024         AB2-Lead           Magnesium         39200         ug/L         1000.0         05/14/2024         AB2-Lead           Molybdenum         ND         ug/L         5.0         05/14/2024         AB2-Lead           Nickel         10         ug/L         2.0         05/14/2024         AB2-Lead           Nickel         10         ug/L         2.0         05/14/2024         AB2-Lead           Selenium         1         ug/L         1.0         05/14/2024         AB2-Lead           Silver         ND         ug/L         1.0         05/14/2024         AB2-Lead           Sodium         96000         ug/L         100.0         05/14/2024         AB2-Lead           Vanadium         2         ug/L         2.0	Calcium	243000		ug/L	1000.0	05/14/2024	AB24-0515-01
Copper         2         ug/L         1.0         05/14/2024         AB2-Iron           Iron         21900         ug/L         20.0         05/14/2024         AB2-Iron           Lead         ND         ug/L         1.0         05/14/2024         AB2-Iron           Lead         ND         ug/L         1.0         05/14/2024         AB2-Iron           Lithium         68         ug/L         10.0         05/14/2024         AB2-Iron           Magnesium         39200         ug/L         1000.0         05/14/2024         AB2-Iron           Mickel         10         ug/L         5.0         05/14/2024         AB2-Iron           Nickel         10         ug/L         100.0         05/14/2024         AB2-Iron           Potassium         9050         ug/L         100.0         05/14/2024         AB2-Iron           Silver         ND         ug/L         1.0         05/14/2024         AB2-Iron           Silver         ND         ug/L         1000.0         05/14/2024         AB2-Iron           Sodium         96000         ug/L         1000.0         05/14/2024         AB2-Iron           Thallium         ND         ug/L         2.0	Chromium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Iron	Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01
Lead         ND         ug/L         1.0         05/14/2024         AB2-Lithium         68         ug/L         10.0         05/14/2024         AB2-Lithium         68         ug/L         10.0         05/14/2024         AB2-Lithium         AB2-Lithium         39200         ug/L         1000.0         05/14/2024         AB2-Lithium         AB2-	Copper	2		ug/L	1.0	05/14/2024	AB24-0515-01
Lithium         68         ug/L         10.0         05/14/2024         AB2-           Magnesium         39200         ug/L         1000.0         05/14/2024         AB2-           Molybdenum         ND         ug/L         5.0         05/14/2024         AB2-           Nickel         10         ug/L         2.0         05/14/2024         AB2-           Potassium         9050         ug/L         100.0         05/14/2024         AB2-           Selenium         1         ug/L         1.0         05/14/2024         AB2-           Silver         ND         ug/L         0.2         05/14/2024         AB2-           Sodium         96000         ug/L         100.0         05/14/2024         AB2-           Sodium         96000         ug/L         2.0         05/14/2024         AB2-           Vanadium         2         ug/L         2.0         05/14/2024         AB2-           Zinc         ND         ug/L         10.0         05/14/2024         AB2-           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date           Mercury by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Al	iron	21900		ug/L	20.0	05/14/2024	AB24-0515-01
Magnesium       39200       ug/L       1000.0       05/14/2024       AB2-         Molybdenum       ND       ug/L       5.0       05/14/2024       AB2-         Nickel       10       ug/L       2.0       05/14/2024       AB2-         Potassium       9050       ug/L       100.0       05/14/2024       AB2-         Selenium       1       ug/L       1.0       05/14/2024       AB2-         Silver       ND       ug/L       0.2       05/14/2024       AB2-         Sodium       96000       ug/L       1000.0       05/14/2024       AB2-         Sodium       ND       ug/L       2.0       05/14/2024       AB2-         Vanadium       2       ug/L       2.0       05/14/2024       AB2-         Zinc       ND       ug/L       10.0       05/14/2024       AB2-         Mercury by EPA 7470A, Total, Aqueous       Result       Flag       Units       RL       Analysis Date         Mercury by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous       Aliquot #: 24-0343-03-C02-A01       Ana         Parameter(s)       Result       Flag       Units       RL       Analysis Date         Chloride       175000       u	Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01
Molybdenum         ND         ug/L         5.0         05/14/2024         AB2-Nickel           Nickel         10         ug/L         2.0         05/14/2024         AB2-Nickel           Potassium         9050         ug/L         100.0         05/14/2024         AB2-Nickel           Selenium         1         ug/L         1.0         05/14/2024         AB2-Nickel           Silver         ND         ug/L         0.2         05/14/2024         AB2-Nickel           Sodium         96000         ug/L         1000.0         05/14/2024         AB2-Nickel           Thallium         ND         ug/L         2.0         05/14/2024         AB2-Nickel           Vanadium         2         ug/L         2.0         05/14/2024         AB2-Nickel           Vanadium         2         ug/L         10.0         05/14/2024         AB2-Nickel           Vanadium         2         ug/L         10.0         05/14/2024         AB2-Nickel           Mercury by EPA 7470A, Total, Aqueous         Result Flag Units         RL         Analysis Date           Mercury by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result Flag Units <td>Lithium</td> <td>68</td> <td></td> <td>ug/L</td> <td>10.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Lithium	68		ug/L	10.0	05/14/2024	AB24-0515-01
Nickel	Magnesium	39200		ug/L	1000.0	05/14/2024	AB24-0515-01
Potassium         9050         ug/L         100.0         05/14/2024         AB2-2           Selenium         1         ug/L         1.0         05/14/2024         AB2-2           Silver         ND         ug/L         0.2         05/14/2024         AB2-2           Sodium         96000         ug/L         1000.0         05/14/2024         AB2-2           Thallium         ND         ug/L         2.0         05/14/2024         AB2-2           Vanadium         2         ug/L         2.0         05/14/2024         AB2-2           Zinc         ND         ug/L         10.0         05/14/2024         AB2-2           Mercury by EPA 7470A, Total, Aqueous         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB2-2           Mercury         ND         ug/L         0.2         05/20/2024         AB2-2           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0	Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01
Selenium         1         ug/L         1.0         05/14/2024         AB2-           Silver         ND         ug/L         0.2         05/14/2024         AB2-           Sodium         96000         ug/L         1000.0         05/14/2024         AB2-           Thallium         ND         ug/L         2.0         05/14/2024         AB2-           Vanadium         2         ug/L         2.0         05/14/2024         AB2-           Zinc         ND         ug/L         10.0         05/14/2024         AB2-           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB2-           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB2-           Fluoride         ND         ug/L         1000.0         05/15/2024         AB2-           Sulfate         194000         ug/L	Nickel	10		ug/L	2.0	05/14/2024	AB24-0515-01
Silver         ND         ug/L         0.2         05/14/2024         AB2-           Sodium         96000         ug/L         1000.0         05/14/2024         AB2-           Thallium         ND         ug/L         2.0         05/14/2024         AB2-           Vanadium         2         ug/L         2.0         05/14/2024         AB2-           Zinc         ND         ug/L         10.0         05/14/2024         AB2-           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB2-           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/15/2024         AB2-           Fluoride         ND         ug/L         1000.0         05/15/2024         AB2-           Sulfate         194000         ug/L         1000.0         05/15/2024         AB2-           Total Dissolved Solids by SM 2540C         Aliquot	Potassium	9050		ug/L	100.0	05/14/2024	AB24-0515-01
Sodium	Selenium	1		ug/L	1.0	05/14/2024	AB24-0515-01
Thallium         ND         ug/L         2.0         05/14/2024         AB2-2           Vanadium         2         ug/L         2.0         05/14/2024         AB2-2           Zinc         ND         ug/L         10.0         05/14/2024         AB2-2           Mercury by EPA 7470A, Total, Aqueous         Aliquot #: 24-0343-03-C01-A02         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB2-2           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB2-2           Fluoride         ND         ug/L         1000.0         05/15/2024         AB2-2           Sulfate         194000         ug/L         1000.0         05/15/2024         AB2-2           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Ana           Parameter(s)         Aliquot #: 24-0343-03-C03-A01         Ana	Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01
Vanadium         2         ug/L         2.0         05/14/2024         AB2-2           Zinc         ND         ug/L         10.0         05/14/2024         AB2-2           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB2-2           Fluoride         ND         ug/L         1000.0         05/15/2024         AB2-2           Sulfate         194000         ug/L         1000.0         05/15/2024         AB2-2           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date	Sodium	96000		ug/L	1000.0	05/14/2024	AB24-0515-01
Zinc         ND         ug/L         10.0         05/14/2024         AB2-4           Mercury by EPA 7470A, Total, Aqueous         Aliquot #: 24-0343-03-C01-A02         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB2-4           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB2-4           Fluoride         ND         ug/L         1000.0         05/15/2024         AB2-4           Sulfate         194000         ug/L         1000.0         05/15/2024         AB2-4           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date	Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01
Mercury by EPA 7470A, Total, Aqueous         Aliquot #: 24-0343-03-C01-A02         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB24           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB24           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date	√anadium	2		ug/L	2.0	05/14/2024	AB24-0515-01
Parameter(s)         Result         Flag         Units         RL         Analysis Date           Mercury         ND         ug/L         0.2         05/20/2024         AB24           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB24           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date	Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01
Mercury         ND         ug/L         0.2         05/20/2024         AB24           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Parameter(s)         Result Result Flag Units RL Analysis Date         Analysis Date           Chloride         175000         ug/L 1000.0 05/16/2024         AB24           Fluoride         ND ug/L 1000.0 05/15/2024         AB24           Sulfate         194000 ug/L 1000.0 05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result Flag Units RL Analysis Date	rcury by EPA 7470A, Total, A	queous			Aliquot #: 24-0	343-03-C01-A02	Analyst: CLI
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-03-C02-A01         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB24           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date	ameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Parameter(s)         Result         Flag         Units         RL         Analysis Date           Chloride         175000         ug/L         1000.0         05/16/2024         AB24           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date	Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05
Chloride         175000         ug/L         1000.0         05/16/2024         AB24           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag Units         RL         Analysis Date	ions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-03-C02-A01	Analyst: KDF
Fluoride         ND         ug/L         1000.0         05/15/2024         AB24           Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Ana           Parameter(s)         Result         Flag         Units         RL         Analysis Date	ameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag Units         RL         Analysis Date	Chloride	175000		ug/L	1000.0	05/16/2024	AB24-0514-08
Sulfate         194000         ug/L         1000.0         05/15/2024         AB24           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-03-C03-A01         Analysis Date           Parameter(s)         Result         Flag         Units         RL         Analysis Date	Fluoride	ND		ug/L	1000.0	05/15/2024	AB24-0514-08
Parameter(s) Result Flag Units RL Analysis Date	Sulfate	194000		-		05/15/2024	AB24-0514-08
•	tal Dissolved Solids by SM 25	40C			Aliquot #: 24-0	343-03-C03-A01	Analyst: CLE
T. (18) 1 10 11	ameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
i otal Dissolved Solids 1190 mg/L 10.0 05/10/2024 AB24	Total Dissolved Solids	1190		mg/L	10.0	05/10/2024	AB24-0510-10



Report Date:

05/23/24



A CENTURY OF EXCELLENCE

Sample Site: **DEK JCW Background** Laboratory Project: **24-0343** 

 Field Sample ID:
 MW-15019
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0343-04
 Collect Time:
 02:13 PM

Antimony ND ug/L 1.0 05/14/2024 AB24-0515- Arsenic 2 ug/L 1.0 05/14/2024 AB24-0515- Barium 364 ug/L 5.0 05/14/2024 AB24-0515- Beryllium ND ug/L 1.0 05/14/2024 AB24-0515- Beryllium ND ug/L 2.0 0 05/14/2024 AB24-0515- Boron 2411 ug/L 2.0 0 05/14/2024 AB24-0515- Cadmium ND ug/L 1.0 05/14/2024 AB24-0515- Cadmium ND ug/L 1.0 05/14/2024 AB24-0515- Calcium 17/3000 ug/L 1000.0 05/14/2024 AB24-0515- Chromium ND ug/L 1.0 05/14/2024 AB24-0515- Cobalt ND ug/L 1.0 05/14/2024 AB24-0515- Cobalt ND ug/L 1.0 05/14/2024 AB24-0515- Iron 23100 ug/L 1.0 05/14/2024 AB24-0515- Lead ND ug/L 1.0 05/14/2024 AB24-0515- Lead ND ug/L 1.0 05/14/2024 AB24-0515- Lead ND ug/L 1.0 05/14/2024 AB24-0515- Lead ND ug/L 1.0 05/14/2024 AB24-0515- Lead ND ug/L 1.0 05/14/2024 AB24-0515- Lithium 14 ug/L 1.0 05/14/2024 AB24-0515- Magnesium 40900 ug/L 1.0 0.0 05/14/2024 AB24-0515- Molybdenum ND ug/L 5.0 05/14/2024 AB24-0515- Nickel 5 ug/L 2.0 05/14/2024 AB24-0515- Nickel 5 ug/L 2.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.00 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.00 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.00 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.00 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.00 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14/2024 AB24-0515- Sodium 221000 ug/L 1.0 0.0 05/14	Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp  Aliquot #: 24-0343-04-C01-A01										
Arsenic 2 ug/L 1.0 05/14/2024 AB24-0515- Barlum 364 ug/L 5.0 05/14/2024 AB24-0515- Berlyllium ND ug/L 1.0 05/14/2024 AB24-0515- Berlyllium ND ug/L 20.0 05/14/2024 AB24-0515- Boron 241 ug/L 20.0 05/14/2024 AB24-0515- Cadmium ND ug/L 0.2 05/14/2024 AB24-0515- Calcium 173000 ug/L 1000.0 05/14/2024 AB24-0515- Chromium ND ug/L 1.0 05/14/2024 AB24-0515- Chromium ND ug/L 1.0 05/14/2024 AB24-0515- Cobalt ND ug/L 1.0 05/14/2024 AB24-0515- Copper ND ug/L 1.0 05/14/2024 AB24-0515- Iron 23100 ug/L 1.0 05/14/2024 AB24-0515- Liead ND ug/L 1.0 05/14/2024 AB24-0515- Liead ND ug/L 1.0 05/14/2024 AB24-0515- Lithium 14 ug/L 10.0 05/14/2024 AB24-0515- Magnesium 40900 ug/L 10.0 05/14/2024 AB24-0515- Molybdenum ND ug/L 1.0 05/14/2024 AB24-0515- Nickel 5 ug/L 2.0 05/14/2024 AB24-0515- Nickel 5 ug/L 2.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Selenium ND ug/L 1.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1000.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1.0 05/14/2024 AB24-0515- Solium 221000 ug/L 1.0 05/14/2024 AB24-0515- Solium 3 ug/L 2.0 05/14/2024 AB24	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking				
Barium         364         ug/L         5.0         05/14/2024         AB24-0515-Beryllium           Boron         241         ug/L         1.0         05/14/2024         AB24-0515-Boron         241         ug/L         20.0         05/14/2024         AB24-0515-Boron         241         ug/L         20.0         05/14/2024         AB24-0515-Boron         AB24-0515-Boron         241         ug/L         1.00         0.5/14/2024         AB24-0515-Boron         AB24-0515-Boron         241         ug/L         1.00         0.5/14/2024         AB24-0515-Boron         AB24-051	Antimony	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Beryllium         ND         ug/L         1.0         05/14/2024         AB24-0515-Boron         241         ug/L         20.0         05/14/2024         AB24-0515-Cadmium         ND         ug/L         20.0         05/14/2024         AB24-0515-Cadmium         ND         ug/L         0.2         05/14/2024         AB24-0515-Cadmium         ND         ug/L         1.0         05/14/2024         AB24-0515-Cadmium         ND         ug/L         1.0         05/14/2024         AB24-0515-Chromium         AB24-0515-ND         ND         ug/L         1.0         05/14/2024         AB24-0515	Arsenic	2		ug/L	1.0	05/14/2024	AB24-0515-01				
Boron	Barium	364		ug/L	5.0	05/14/2024	AB24-0515-01				
Cadmium         ND         ug/L         0.2         05/14/2024         AB24-0515-Calcium           Calcium         173000         ug/L         1000.0         05/14/2024         AB24-0515-Chromium         ND         ug/L         1.0         05/14/2024         AB24-0515-Chromium         <	Beryllium	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Calcium         173000         ug/L         1000.0         05/14/2024         AB24-0515-Chromium         ND         ug/L         1.0         05/14/2024         AB24-0515-Chromium         ND         ug/L         6.0         05/14/2024         AB24-0515-Chromium         ND         ug/L         1.0         05/14/2024         AB24-0515-Chromium         AB24-0515-Chromium         ND         ug/L         1.0         05/14/2024         AB24-0515-Chromium	Boron	241		ug/L	20.0	05/14/2024	AB24-0515-01				
Chromium         ND         ug/L         1.0         05/14/2024         AB24-0515-Cobalt           Cobalt         ND         ug/L         6.0         05/14/2024         AB24-0515-Copper           Copper         ND         ug/L         1.0         05/14/2024         AB24-0515-Copper           Iron         23100         ug/L         20.0         05/14/2024         AB24-0515-Copper           Lead         ND         ug/L         10.0         05/14/2024         AB24-0515-Copper           Lithium         14         ug/L         10.0         05/14/2024         AB24-0515-Copper           Magnesium         40900         ug/L         1000.0         05/14/2024         AB24-0515-Copper           Molybdenum         ND         ug/L         5.0         05/14/2024         AB24-0515-Copper           Nickel         5         ug/L         10.0         05/14/2024         AB24-0515-Copper           Nickel         5         ug/L         10.0         05/14/2024         AB24-0515-Copper           Selenium         ND         ug/L         10.0         05/14/2024         AB24-0515-Copper           Silver         ND         ug/L         10.0         05/14/2024         AB24-0515-Copper      <	Cadmium	ND		ug/L	0.2	05/14/2024	AB24-0515-01				
Cobalt         ND         ug/L         6.0         05/14/2024         AB24-0515-COpper           Copper         ND         ug/L         1.0         05/14/2024         AB24-0515-Iron         23100         ug/L         20.0         05/14/2024         AB24-0515-Iron         23100         ug/L         10.0         05/14/2024         AB24-0515-Iron         AB24-0515-Iron         AB24-0515-Iron         05/14/2024         AB24-0515-Iron         AB24-0515-Iron <td>Calcium</td> <td>173000</td> <td></td> <td>ug/L</td> <td>1000.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Calcium	173000		ug/L	1000.0	05/14/2024	AB24-0515-01				
Copper         ND         ug/L         1.0         05/14/2024         AB24-0515-170           Iron         23100         ug/L         20.0         05/14/2024         AB24-0515-16-120           Lead         ND         ug/L         1.0         05/14/2024         AB24-0515-16-120           Lithium         14         ug/L         10.0         05/14/2024         AB24-0515-16-120           Magnesium         40900         ug/L         10.00         05/14/2024         AB24-0515-16-120           Molybdenum         ND         ug/L         5.0         05/14/2024         AB24-0515-16-120           Nickel         5         ug/L         2.0         05/14/2024         AB24-0515-16-120           Potassium         815         ug/L         1.0         05/14/2024         AB24-0515-16-120           Selenium         ND         ug/L         1.0         05/14/2024         AB24-0515-15-120           Selver         ND         ug/L         1.0         05/14/2024         AB24-0515-15-120           Soldium         221000         ug/L         10.0         05/14/2024         AB24-0515-120           Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-120	Chromium	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Iron	Cobalt	ND		ug/L	6.0	05/14/2024	AB24-0515-01				
Lead	Copper	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Lithium         14         ug/L         10.0         05/14/2024         AB24-0515-Magnesium         A0900         ug/L         1000.0         05/14/2024         AB24-0515-Magnesium         A0900         ug/L         5.0         05/14/2024         AB24-0515-Magnesium         AB24-0515-Magnesium         ND         ug/L         5.0         05/14/2024         AB24-0515-Magnesium         AB24-0514-Magnesium         AB24-0515-Magnesium	Iron	23100		ug/L	20.0	05/14/2024	AB24-0515-01				
Magnesium         40900         ug/L         1000.0         05/14/2024         AB24-0515-           Molybdenum         ND         ug/L         5.0         05/14/2024         AB24-0515-           Nickel         5         ug/L         2.0         05/14/2024         AB24-0515-           Potassium         815         ug/L         100.0         05/14/2024         AB24-0515-           Selenium         ND         ug/L         1.0         05/14/2024         AB24-0515-           Silver         ND         ug/L         0.2         05/14/2024         AB24-0515-           Sodium         221000         ug/L         1000.0         05/14/2024         AB24-0515-           Sodium         221000         ug/L         2.0         05/14/2024         AB24-0515-           Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-           Zinc         ND         ug/L         10.0         05/14/2024         AB24-0515-           Mercury by EPA 7470A, Total, Aqueous         Aliquot #: 24-0343-04-C01-A02         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking           Chloride         374	Lead	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Molybdenum         ND         ug/L         5.0         05/14/2024         AB24-0515-0515-06           Nickel         5         ug/L         2.0         05/14/2024         AB24-0515-0515-05           Potassium         815         ug/L         100.0         05/14/2024         AB24-0515-05           Selenium         ND         ug/L         1.0         05/14/2024         AB24-0515-05           Silver         ND         ug/L         0.2         05/14/2024         AB24-0515-05           Sodium         221000         ug/L         1000.0         05/14/2024         AB24-0515-05           Thallium         ND         ug/L         2.0         05/14/2024         AB24-0515-05           Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-05           Zinc         ND         ug/L         10.0         05/14/2024         AB24-0515-05           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date         Tracking           Mercury by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-04-C02-A01         Analysis: C           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-04-C02-A01	Lithium	14		ug/L	10.0	05/14/2024	AB24-0515-01				
Nickel         5         ug/L         2.0         05/14/2024         AB24-0515-Potassium         AB24-0515-Potassium         AB15         ug/L         100.0         05/14/2024         AB24-0515-AB24-0515	Magnesium	40900		ug/L	1000.0	05/14/2024	AB24-0515-01				
Potassium	Molybdenum	ND		ug/L	5.0	05/14/2024	AB24-0515-01				
Selenium         ND         ug/L         1.0         05/14/2024         AB24-0515-514           Silver         ND         ug/L         0.2         05/14/2024         AB24-0515-515-52           Sodium         221000         ug/L         1000.0         05/14/2024         AB24-0515-51-51           Thallium         ND         ug/L         2.0         05/14/2024         AB24-0515-51-51-51           Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-51-51-51-51-51-51-51-51-51-51-51-51-	Nickel	5		ug/L	2.0	05/14/2024	AB24-0515-01				
Silver         ND         ug/L         0.2         05/14/2024         AB24-0515-50dium           Sodium         221000         ug/L         1000.0         05/14/2024         AB24-0515-70dium           Thallium         ND         ug/L         2.0         05/14/2024         AB24-0515-70dium           Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-70dium           Zinc         ND         ug/L         10.0         05/14/2024         AB24-0515-70dium           Mercury by EPA 7470A, Total, Aqueous         Result         Flag         Units         RL         Analysis Date         Tracking           Mercury         ND         ug/L         0.2         05/20/2024         AB24-0515-70dium           Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-04-C02-A01         Analysis KI           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking           Chloride         374000         ug/L         1000.0         05/16/2024         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium         AB24-0514-70dium <td>Potassium</td> <td>815</td> <td></td> <td>ug/L</td> <td>100.0</td> <td>05/14/2024</td> <td>AB24-0515-01</td>	Potassium	815		ug/L	100.0	05/14/2024	AB24-0515-01				
Sodium	Selenium	ND		ug/L	1.0	05/14/2024	AB24-0515-01				
Thallium         ND         ug/L         2.0         05/14/2024         AB24-0515-0515-0515-0515-0515-0515-0515-051	Silver	ND		ug/L	0.2	05/14/2024	AB24-0515-01				
Vanadium         3         ug/L         2.0         05/14/2024         AB24-0515-0515-0515-0515-0515-0515-0515-051	Sodium	221000		ug/L	1000.0	05/14/2024	AB24-0515-01				
Zinc         ND         ug/L         10.0         05/14/2024         AB24-0515-05-05-05-05-05-05-05-05-05-05-05-05-05	Thallium	ND		ug/L	2.0	05/14/2024	AB24-0515-01				
Mercury by EPA 7470A, Total, Aqueous         Aliquot #: 24-0343-04-C01-A02         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking           Mercury         ND         ug/L         0.2         05/20/2024         AB24-0515-0515-0516-0516-0516-0516-0516-0516	Vanadium	3		ug/L	2.0	05/14/2024	AB24-0515-01				
Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking           Mercury         ND         ug/L         0.2         05/20/2024         AB24-0515-00-0515-00-05-05-05-05-05-05-05-05-05-05-05-05	Zinc	ND		ug/L	10.0	05/14/2024	AB24-0515-01				
Mercury         ND         ug/L         0.2         05/20/2024         AB24-0515-05-05-05-05-05-05-05-05-05-05-05-05-05	Mercury by EPA 7470A, Total, A	Aqueous			Aliquot #: 24-0	343-04-C01-A02	Analyst: CLE				
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous         Aliquot #: 24-0343-04-C02-A01         Analyst: KI           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracki           Chloride         374000         ug/L         1000.0         05/16/2024         AB24-0514-           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24-0514-           Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracki	Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking				
Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking           Chloride         374000         ug/L         1000.0         05/16/2024         AB24-0514-1000.0           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24-0514-1000.0           Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-1000.0           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking	Mercury	ND		ug/L	0.2	05/20/2024	AB24-0515-05				
Chloride         374000         ug/L         1000.0         05/16/2024         AB24-0514-           Fluoride         ND         ug/L         1000.0         05/15/2024         AB24-0514-           Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracki	Anions by EPA 300.0 CCR Rule	Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	343-04-C02-A01	Analyst: KDF				
Fluoride         ND         ug/L         1000.0         05/15/2024         AB24-0514-           Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracking	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking				
Fluoride         ND         ug/L         1000.0         05/15/2024         AB24-0514-           Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracki	Chloride	374000		ug/L	1000.0	05/16/2024	AB24-0514-08				
Sulfate         93800         ug/L         1000.0         05/15/2024         AB24-0514-           Total Dissolved Solids by SM 2540C         Aliquot #: 24-0343-04-C03-A01         Analyst: C           Parameter(s)         Result         Flag         Units         RL         Analysis Date         Tracki	Fluoride	ND		-	1000.0	05/15/2024	AB24-0514-08				
Parameter(s) Result Flag Units RL Analysis Date Tracki	Sulfate	93800		ug/L	1000.0	05/15/2024	AB24-0514-08				
	Total Dissolved Solids by SM 2	540C			Aliquot #: 24-0	343-04-C03-A01	Analyst: CLE				
Total Dissolved Solids 1340 mg/L 10.0 05/10/2024 AB24-0510-	Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking				
	Total Dissolved Solids	1340		mg/L	10.0	05/10/2024	AB24-0510-10				





Report Date: 05/23/24

Analyst: EB

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

Aliquot #: 24-0343-05-C01-A01

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

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	S			Aliquot #: 24-0	343-05-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 Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	343-05-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 #: 24-0	343-05-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





Report Date: 05/23/24

Sample Site: **DEK JCW Background** 

Laboratory Project: 24-0343 Collect Date: Field Sample ID: FB- Background 05/08/2024 Lab Sample ID: 24-0343-06 Collect Time: 04:05 PM

Matrix: Water

Metals by EPA 6020B: CCR R	Aliquot #: 24-0	343-06-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 #: 24-0	343-06-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





**Report Date:** 05/23/24

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 4 ATTACHMENT A

Project Log-In Number: 24-6343	
Inspection Date: 511624	Inspection By:
Sample Origin/Project Name:	Background
Shipment Delivered By: Enter the type of shipment of	
Pony FedEx U Other/Hand Carry (whom)	PS Airborne
Tracking Number:	Shipping Form Attached: Yes No
Shipping Containers: Enter the type and number of s	hipping containers received.
Cooler Cardboard Box	Custom Case Envelope/Mailer _
Loose/Unpackaged Containers	Other
Condition of Shipment: Enter the as-received condit	ion of the shipment container.
Damaged Shipment Observed: None	
Shipment Security: Enter if any of the shipping conta	ainers were opened before receipt.
Shipping Containers Received: Opened	Sealed
Enclosed Documents: Enter the type of documents en	nclosed with the shipment.
CoC Work Request	Air Data Sheet Other
Temperature of Containers: Measure the temperatur	
	Samples Received on Ice: Yes Vo
M&TE # and Expiration 615402	
Number and Type of Containers: Enter the total num	mber of sample containers received.
Container Type Water Soil	Other Broken Leaki
VOA (40m) an (0m)	

	VOA (40mL or 60mL)			-	-
	Quart/Liter (g/p)		_	 	
	9-oz (amber glass jar)		_	-	_
FSP pit 0-14	2-oz (amber glass)				
# 13-640-508	125 mL (plastic)	11	_		
101: 205522	24 mL vial (glass)		_	 	
exp: 2-15-52	250560 mL (plastic)	5			
	Other				

# **CHAIN OF CUSTODY**



#### CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 1 of 1

SAM	PLING SITE / CU	JSTOMER;			PROJECT NUMBER:	SAP CC or W	O#:							Δ	NA	IVSI	S RE	OUE	STED	
Q2-2	2024 JCW-DEK	Background W	ells		24-0343	REQUESTER: Harold Register										ist if N	QA REQUIREMENT:			
SAMPLING TEAM:					TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ⋈ OTHER										□ NPDES  ⊠ TNI					
SEN	D REPORT TO:	Joseph Firlit			email: phone:														☐ ISO 17025	
COPY TO:		Harold Register TRC			MATRIX CODES:  GW = Groundwater OX = Othe		CONTAINERS												☐ 10 CFR 50 APP. B	
					WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air	ge		PRESERVATIVE				VE	tals							☐ INTERNAL INFO
		SAMPLE COLI	LECTION	RIX	S = Soil / General Solid WP = Wip O = Oil WT = Gen	e eral Waste	TOTAL#	None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub>		H H	я н н.		ıl Metals	suc						□ OTHER
S	AMPLE ID	DATE TIME		MATRIX	FIELD SAMPLE ID / LO	CATION	TO.	None	HNO	NaOl	HCI	MeOF	Total 1	Anions	TDS					REMARKS
	24-0343-01	5/8/24	1451	GW	MW-15002		3	2	1				х	х	х					
	-02	3/8/24	-	GW	MW-15008		3	2	1				х	х	x					
	-03	5/8/24	1497	GW	MW-15016		3	2	1				x	x	x					
	-04	5/8/24	1	GW	MW-15019		3	2	1				x	x	x					
	-05	3/8/DL		GW	DUP-Background		3	2	1				х	x	x					
	-06	5/8/24	1605	W	FB- Background		1		$\dagger$				х							
												+			۰	+				
									+	H		+			H					
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									+		-	+								
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RELI	VQUISHEO BY:		r	DATE/I		ECCIVED BY: 4-0343 Page 13 of	12											□ No		015402 Date: 5-23-24

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# **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 180 S. Van Buren Avenue Barberton OH 44203



# **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

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#### **Definitions/Glossary**

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

#### **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

**Eurofins Cleveland** 

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#### **Case Narrative**

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR Background Well

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** 

Job ID: 240-204358-1

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# **Method Summary**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

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

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Job ID: 240-204358-1

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# **Sample Summary**

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Background Well

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

Job ID: 240-204358-1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

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 (GFP	C)							
		·	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	ium-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15008

Date Collected: 05/08/24 13:15 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-2

**Matrix: Water** 

Method: EPA 903	3.0 - Radium	-226 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.03		0.540	0.545	5.00	0.847	pCi/L		06/13/24 11:50	1

Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15016

Date Collected: 05/08/24 14:57 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-3

**Matrix: Water** 

Method: EPA 90	03.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

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Client: TRC Environmental Corporation. Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15019

Lab Sample ID: 240-204358-4 Date Collected: 05/08/24 14:13 Date Received: 05/11/24 08:00

**Matrix: Water** 

Method: EDA 903.0 - Radium-226 (GEDC)

Wethod: EPA 903	s.u - Radium	-226 (GFP	•	Tatal						
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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
Ra Carrier	92.8		30 - 110					05/16/24 09:22	06/12/24 10:00	

Mothod: EDA 004.0 Podium 229 (CEDC)

Method: EPA 904.0	- Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

	<u>-</u>		Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation.

Job ID: 240-204358-1

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: DUP-BACKGROUND

Date Collected: 05/08/24 00:00 Date Received: 05/11/24 08:00 Lab Sample ID: 240-204358-5

Matrix: Water

Method: EPA 90	3.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

**Client Sample ID: EQ-BACKGROUND** 

Date Collected: 05/08/24 16:05

Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-6

**Matrix: Water** 

Job ID: 240-204358-1

Method: EPA 903.0	- Radium	-226 (GFP	C)							
			Count	Total						
Δnalvto	Rosult	Qualifier			RI	MDC	Unit	Prenared	Analyzed	Dil Fac
			<del>`</del> _	<del>`</del>						Dillac
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
	Analyte Radium-226	Analyte Result Radium-226 0.0109  Carrier %Yield	Analyte Result Qualifier Radium-226 0.0109 U  Carrier %Yield Qualifier	Analyte         Result Radium-226         Qualifier Uncert.         (2σ+/-)           Carrier         %Yield Qualifier Units         Limits	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Analyte         Result Radium-226         Qualifier         (2σ+/-)	Analyte         Result Radium-226         Qualifier View         (2σ+/-) (2	Analyte         Result Radium-226         Qualifier Vield         (2σ+/-) (

Method: EPA 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	ium-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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)
		Ва	
Lab Sample ID	Client Sample ID	(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 Legen	d		

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(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

**Eurofins Cleveland** 

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Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

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** 

Job ID: 240-204358-1

Prep Batch: 662015

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 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

Total

MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 94.3 30 - 110 05/16/24 09:22 06/12/24 09:56

**Client Sample ID: Lab Control Sample** 

Prep Type: Total/NA

Prep Batch: 662015

**Matrix: Water** Analysis Batch: 665824

Total

LCS LCS %Rec **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits MDC Unit Radium-226 11.3 11.29

Count

1.15 1.00 0.0974 pCi/L

100

75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 89.6 30 - 110

Lab Sample ID: LCS 160-662015/2-A

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

Total Count MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ 

**MDC** Unit RL Prepared Analyzed Dil Fac Radium-228 -0.02553 Ū 0.303 0.303 1.00 0.568 pCi/L 05/16/24 09:27 05/22/24 16:21

> MB MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac 05/16/24 09:27 05/22/24 16:21 Ba Carrier 94.3 30 - 110 30 - 110 05/16/24 09:27 05/22/24 16:21 Y Carrier 81.9

1.39

1.00

0.473 pCi/L

Lab Sample ID: LCS 160-662016/2-A

**Matrix: Water** 

Radium-228

**Analysis Batch: 662959** 

**Client Sample ID: Lab Control Sample** 

117

75 - 125

Prep Type: Total/NA

Prep Batch: 662016

Total **Spike** LCS LCS Uncert.

8.92

Analyte Added Result Qual  $(2\sigma + / -)$ RL MDC Unit %Rec Limits

10.45

LCS LCS

Carrier %Yield Qualifier Limits 30 - 110 Ba Carrier 89.6 Y Carrier 81.5 30 - 110

**Eurofins Cleveland** 

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# **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	<del></del>
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	

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#### **Lab Chronicle**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

Client Sample ID: MW-15002

Date Collected: 05/08/24 14:51 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204358-1

Lab Sample ID: 240-204358-3

Lab Sample ID: 240-204358-4

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

**Matrix: Water** 

Job ID: 240-204358-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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 Sample ID: 240-204358-2 Client Sample ID: MW-15008

Date Collected: 05/08/24 13:15

Date Received: 05/11/24 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

Date Collected: 05/08/24 14:57

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

Date Collected: 05/08/24 14:13

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	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

**Eurofins Cleveland** 

#### **Lab Chronicle**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Background Well

**Client Sample ID: DUP-BACKGROUND** Lab Sample ID: 240-204358-5 **Matrix: Water** 

Date Collected: 05/08/24 00:00 Date Received: 05/11/24 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

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662961 SCB

666196 FLC

EET SL

EET SL

05/22/24 16:39

06/13/24 11:50

-	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	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

**Laboratory References:** 

Analysis

Analysis

904.0

Ra226\_Ra228

Total/NA

Total/NA

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

#### **Laboratory: Eurofins St. Louis**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	<b>Identification Number</b>	<b>Expiration Date</b>
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
lowa	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

Job ID: 240-204358-1

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 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

#### **Eurofins Cleveland**

180 S. Van Buren Avenue Barberton, OH 44203

**Chain of Custody Record** 

eurofins |

Phone: 330-497-9396 Fax: 330-497-0772										10	<b>,</b> U				Environme	ent lesting
Client Information	Sampler:	z- J	ASSE	Lab F	PM: oks, Kris	s M				Carrier	Tracking N	lo(s):		COC No: 240-120140-332	92.1	
Client Contact: Jacob Krenz	Phone:	904	3310		II:					State o	Origin:			Page:	02.1	
Company:	1/77	(८५	PWSID:	Kris.	Brooks	@et.e	eurofinsu	us.com						Page 1 of 1 Job #:		
TRC Environmental Corporation.			10.5.					Ana	lysis R	equest	ed			300 m.		
Address: 1540 Eisenhower Place	Due Date Request	ed:			191				TT					Preservation Cod D - HNO3	es:	
City: Ann Arbor	TAT Requested (d	ays):			5 60	Ш			11							
State, Zip: MI, 48108-7080	Compliance Proje	nt: A Vec	4 No.		- 8											
Phone:	PO#:	с. д төз	A NO													
734-971-7080(Tel) 734-971-9022(Fax)	TBD WO#:				ĝ.											
JKrenz@trccompanies.com					S or h								2			
Project Name: Karn/Weadock CCR Background Well	Project #: 24024154				욹다	ပ္မ	LIST					11	ıtaine			
Site:	SSOW#:				Sample ( SD (Yes	28 G	Targe				11		of cor	Other:		
Sample Identification	Sample Date	Sample Time	Туре	Matrix (W-weter, 3-solid, -waste/oll, (Issue, A-Air)	Field Filtered S Perform MS/M		904.0 - Standard Target List						Total Number		structions/N	lote:
		$\geq \leq$	Preservation	Code:	XX	DC	0			_ I			X		$\sim$	
MW-15002	5/8/24	1451	0	Water	~	+	t	240					3			
MW-15008	5/8/24	1315	6	Water	NV	1	+	240-204358					2			
MW-15016	5/8/24	1457	6	Water	NV		+	358								
MW-15019	5/8/24	1413	6	Water	A ^	N	+	+ (					9			
DUP-Background	5/8/24	_		Water	un	1	4						7			
EQ-Backgroud	5/6/25	(40-		Water	111	7	1	<u> </u>	Cust		++		2			
		1401		Water		7			stody		+		1			
					$\Box$							++				
						+	-	H								
							+	$\vdash$	=							·
					+		+		1 1	1	1					
Possible Hazard Identification					San	nole C	Disposa	I ( A fee	may be	assesse	d if san	nles are n	etaine	d longer than 1	month)	•••
Non-Hazard Flammable Skin Irritant Pois	son B Unkno	own 🗆 F	Radiological				turn To (			Disposa	By Lah		Archiv		Months	
Deliverable Requested: I, II, III, IV, Other (specify)	0	7	(adiological		Spe				Requirem	ents:	by Lau		AICINV		MONUS	
Empty Kit Relinquished by:		Date:			Time:					Me	thod of Sh	ipment:				
Relinquished by	Date/Time:	/)	Con Con	Day o	T	Receive	ed by:	1.11	1. 11	111	0	ate/Time/	La		Company	<b>YA</b>
Relinquished by:	Date/Time: 5/10/3	- 0	815 COR	27A		Receive	ESS		OROS	// N	0	S/10	1		Company	N1 
Relinquished by:	3/10/3 Date/Time:	14 U		pany		Receive		E UM	0 7 0 3	N U		25/// rate/Time: *	120	4 0802	Company	ice
Custody Seals Intact: Custody Seal No.: Δ Yes Δ No				1,32				ture(s) °C	and Other I	Remarks:			etar			

VOA Sample Preservation Date/Time VOAs Frozen.
Sample(s)were further preserved in the laboratory  Time preservedPreservative(s) added/Lot number(s)were further preserved in the laboratory
20 SAMPLE PRESERVATION
Sample(s)were received after the recommended holding time had expired.  Sample(s)were received with bubble >6 mm in diameter (Notify PM)
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Concerning
Contacted PM Date by via Verbal Voice Mail Other
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  17 Was a LL Hg or Me Hg trip blank present? Yes No
13 Were all preserved sample(s) at the correct pH upon receipt?  Yes (No)  Yes (No)
11. Sufficient quantity received to perform indicated analyses?  12. Are these work share samples and all listed on the COC?  15 ves. Ouestions 13-17 have been checked at the originating laboratory.
For each sample, does the COC specify preservatives (YN), # of containers (YN), and said Were correct bottle(s) used for the test(s) indicated?
Did all bottles arrive in good condition (Unbroken)?  Could all bottle labels (ID/Date/Time) he reconciled with the COC?  Could all bottle labels (ID/Date/Time) he reconciled with the COC?
npromisea?  Yes No NA
-Were the seals on the outside of the cooler(s) signed & dated?  Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?  Yes (No)
2 Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity (Vee) No.
perature upon receipt  See Multiple Cooler Form
Packing material used Bubble Wrap Foam Plastic Hag None Other  COOLANT: Wester Blue Ice Dry Ice Water None
Drop-off Date/Time Storage Location
on OO 11 24 Opened on 05 11 24  Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Othe
Chent TQC Site Name Cooler unpacked by.
Eurofins - Cleveland Sample Receipt Form/Narrative - Login # : - *- Barberton Facility

WI NC-099-041724 Cooler Receipt Form

Temp °C

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

Login#

5/11/2024

# **Login Container Summary Report**

240-204358

EQ-BACKGROUND 240-204358-B-6 Plastic 1 liter - Nitric Acid <2	EQ-BACKGROUND 240-204358-A-6 Plastic 1 liter - Nitric Acid <2	DUP-BACKGROUND 240-204358-B-5 Plastic I liter - Nitric Acid <2	DUP-BACKGROUND 240-204358-A-5 Plastic 1 liter - Nitric Acid <2	MW-15019 240-204358-B-4 Plastic 1 liter - Nitric Acid <2	MW 15019 240 204358-A-4 Plastic 1 liter - Nitric Acid <2	MW-15016 240-204358-B-3 Plastic 1 lter - Nitric Acid <2	MW-15016 240-204358 A-3 Plastic 1 liter - Nitric Acid <2	MW-15008 240-204358-B-2 Plastic 1 liter - Nitric Acid <2	MW-15008 240-204358-A-2 Plastic 1 ltter - Nttric Acid <2	MW-15002 240-204358-B-1 Plastic 1 liter - Nitric Acid <2	MW 15002 240-204358 A-1 Plastic 1 liter - Nitric Acid <2	Client Sample ID       Lab ID       Container Type       Emp / P	Temperature readings
	\$	\$   	\$	\$     	\$	۵	۵     	۵	\$	\$	\$		

Ver: 06/08/2021

# Chain of Custody Record

**Eurofins Cleveland** 180 S. Van Buren Avenue Barberton, OH 44203

**Environment Testing** 

💸 eurofins

COC No. Phone: 330-497-9396 Fax: 330-497-0772

Client Information (Sub Contract Lab)				Brook	Brooks, Kris M	Σ					(c)or filmon		240	240-184582.1	_
Client Contact	Phone:			E-Mail						State of Origin	rigin:		Рась	96	_
Shipping/Receiving			į	Kris.E	rooks@	et.eu	Kris. Brooks@et.eurofinsus.com	.com		Michigan			Pa	Page 1 of 1	_
Company TestAmerica Laboratories, Inc.					ccredita	ions Re	Accreditations Required (See note)	ee note):					340 #	Job #:	_
Address: 13715 Bider Trail North	Due Date Requested:	:pe											Pre	Preservation Codes:	_
יסי יסי וימון ויסיונון,	0/ 12/2024							Analy	is Rec	Analysis Requested	_				
City. Earth City	TAT Requested (days)	ays):													
State, Zrp: MO, 63045															
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO#:				- (										
Email.	,#OM												S		
Project Name Karn/Weadock CCR Background Well	Project #: 24024154				Harris II								nenisi		
Sie	SSOW#:												of con	er:	
		Sample	Sample Type (C=comp,	Matrix (wwwster, Smeolid, Owweste/oll,	benetlii bla M/SM mroh		226Ra228_G						19dmuM Is		
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab) B	ন	_	-	-						юТ	Special Instructions/Note:	_
	$\bigvee$	X	Preservation Code:	on Code:	X	題							X		_
MW-15002 (240-204358-1)	5/8/24	14:51 Eastern		Water		×	×						2 5.0	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	_
MW-15008 (240-204358-2)	5/8/24	13:15 Eastern		Water		×	×					-	2 TV 5.0	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	_
MW-15016 (240-204358-3)	5/8/24	14:57 Eastern		Water		×	×						1 TV	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
MW-15019 (240-204358-4)	5/8/24	14:13 Eastern		Water		×	×						2 TV 5.0	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
DUP-BACKGROUND (240-204358-5)	5/8/24	Eastern		Water		×	×						2 TV/	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
EQ-BACKGROUND (240-204358-6)	5/8/24	16:05 Eastern		Water		×	×						1 TV/	TVA protocol - Ra-226+228 action limit at 5.0 pCi/L.	
						-									
						-									
Note: Since Jaboratory accreditations are subject to chance. Furniting Environment Testing North Central	t Testing North Centra		o select bottom to circumstance of second of			- 1			]						

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyze & accreditation compliance upon our subcontract laboratory or other instructions will be provided. Any changes to laboratory or other instructions will be provided. Any changes to analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC aboratory or other instructions will be provided. Any changes to accreditation is also 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 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 attention immediately. Possible Hazard Identification

		•	Sample Disposal ( A fee may be assessed it samples are retained longer than 1 month)	samples are retained longer than 1 n	onth)
Unconfirmed			Return To Client Disposal By Lab		1444
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2		Redu		Months
Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by: MÄLISSÄ LOAR	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Record	Daw Inv. 1 1 2021	company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact:  Custody Seal No.:			Tomore Towns 10 (a) (a) (a) (a) (a) (a) (a) (a) (a) (a)		
△ Yes △ No			Cooler remperature(s) Carlo Orner Nemarks		

# **Login Sample Receipt Checklist**

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358
List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/14/24 05:18 PM

Creator: Thornley, Richard W

Creator. Thorniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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	

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# **Login Sample Receipt Checklist**

Client: TRC Environmental Corporation.

Job Number: 240-204358-1

Login Number: 204358
List Source: Eurofins St. Louis
List Number: 3
List Creation: 05/15/24 08:08 AM

Creator: Thornley, Richard W

Creator. Morniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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	

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135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 2<sup>nd</sup> 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 accredidation specified in the listed certificate.

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#### **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

Qualifier	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
В	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
Н	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

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<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) Labora

Laboratory Project: **24-0344**Collect Date: 05/07/2024

Report Date:

05/29/24

Field Sample ID: JCW-MW-18001 Lab Sample ID: 24-0344-01

Collect Time: 06:20 AM

naix III-IV Tot	ai wetais	s Exp	Aliquot #: 24-0	344-01-C01-A01	Analyst: EB
Result	Flag	Units	RL	Analysis Date	Tracking
ND		ug/L	1.0	05/16/2024	AB24-0516-03
2		ug/L	1.0	05/16/2024	AB24-0516-03
46		ug/L	5.0	05/16/2024	AB24-0516-03
ND		ug/L	1.0	05/16/2024	AB24-0516-03
1330		ug/L	20.0	05/16/2024	AB24-0516-03
ND		ug/L	0.2	05/16/2024	AB24-0516-03
537000		ug/L	1000.0	05/16/2024	AB24-0516-03
ND		ug/L	1.0	05/16/2024	AB24-0516-03
ND		ug/L	6.0	05/16/2024	AB24-0516-03
4		ug/L	1.0	05/16/2024	AB24-0516-03
2630		ug/L	20.0	05/16/2024	AB24-0516-03
ND		ug/L	1.0	05/16/2024	AB24-0516-03
102		ug/L	10.0	05/16/2024	AB24-0516-03
133000		ug/L	1000.0	05/16/2024	AB24-0516-03
ND		ug/L	5.0	05/16/2024	AB24-0516-03
4		ug/L	2.0	05/16/2024	AB24-0516-03
16100		ug/L	100.0	05/16/2024	AB24-0516-03
2		ug/L	1.0	05/16/2024	AB24-0516-03
ND		ug/L	0.2	05/16/2024	AB24-0516-03
238000		ug/L	1000.0	05/16/2024	AB24-0516-03
ND		ug/L	2.0	05/16/2024	AB24-0516-03
2		ug/L	2.0	05/16/2024	AB24-0516-03
ND		ug/L	10.0	05/16/2024	AB24-0516-03
IS			Aliquot #: 24-0	344-01-C01-A03	Analyst: CLE
Result	Flag	Units	RL	Analysis Date	Tracking
ND		ug/L	0.2	05/16/2024	AB24-0516-09
te List, Cl, F, S	SO4, Aqı	ieous	Aliquot #: 24-0	344-01-C02-A01	Analyst: KDR
Result	Flag	Units	RL	Analysis Date	Tracking
44500		ug/L	1000.0	05/15/2024	AB24-0514-08
ND		ug/L	1000.0	05/15/2024	AB24-0514-08
1790000		ug/L	1000.0	05/16/2024	AB24-0514-08
			Aliquot #: 24-0	344-01-C03-A01	Analyst: CLE
					<u> </u>
Result	Flag	Units	RL	Analysis Date	Tracking
	Result  ND 2 46 ND 1330 ND 537000 ND ND 4 2630 ND 102 133000 ND 4 16100 2 ND 238000 ND 238000 ND 2 ND 238000 ND 2 ND 2 Result ND  te List, CI, F, S Result 44500 ND	Result   Flag   ND   2   46   ND   1330   ND   537000   ND   4   2630   ND   102   133000   ND   4   16100   2   ND   238000   ND   2	ND ug/L  2 ug/L  46 ug/L  ND ug/L  1330 ug/L  ND ug/L  537000 ug/L  ND ug/L  ND ug/L  A ug/L  2630 ug/L  ND ug/L  102 ug/L  133000 ug/L  ND ug/L  102 ug/L  102 ug/L  102 ug/L  102 ug/L  102 ug/L  ND ug/L  2 ug/L  ND ug/L  4 ug/L  238000 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  2 ug/L  ND ug/L  4 ug/L  44500 ug/L  44500 ug/L  44500 ug/L  ND ug/L	Result   Flag   Units   RL	Result   Flag   Units   RL   Analysis Date



**Report Date:** 05/29/24

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457)

Laboratory Project: **24-0344**Collect Date: 05/07/2024

Field Sample ID: JCW-MW-18001 Lab Sample ID: 24-0344-01

Collect Time: 06:20 AM

Alkalinity by SM 2320B			Aliquot #: 24-0	344-01-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 JCW-MW-18004
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-02
 Collect Time:
 08:08 AM

Metals by EPA 6020B: CCR Rule Appe	EIIUIX III-IV TO	lai Wiciai		Aliquot #: 24-0	344-02-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueou	us			Aliquot #: 24-0	344-02-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 Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-02-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 #: 24-0	344-02-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 JCW-MW-18005
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-03
 Collect Time:
 09:02 AM

Metals by EPA 6020B: CCR Rule	Appendix III-IV 10	lai Wiciai		Aliquot #: 24-0	344-03-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aq	ueous			Aliquot #: 24-0	344-03-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 A	nalyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-03-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 254	0C			Aliquot #: 24-0	344-03-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 JCW-MW-18006
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-04
 Collect Time:
 10:55 AM

Metals by EPA 6020B: CCR Rule App	endix III-IV 10	tai wetai	- Lxp	Aliquot #: 24-0	344-04-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueo	us			Aliquot #: 24-0	344-04-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 Analy	rte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-04-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 #: 24-0	344-04-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

Report Date:

05/29/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-50
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-05
 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	<b>Analysis Date</b>	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

Report Date:

05/29/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-51
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-06
 Collect Time:
 09:20 AM

Metals by EPA 6020B: CCR Rule Appe	FIIGIX III-IV TO	otal Wictal		Aliquot #: 24-0	344-06-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqueou	ıs			Aliquot #: 24-0	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 Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-06-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 #: 24-0	344-06-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

Report Date:

05/29/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-52
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-07
 Collect Time:
 10:21 AM

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	dix III-IV Total Metals Exp			344-07-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, Aqueou	ıs			Aliquot #: 24-0344-07-C01-A03 Analyst:		
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 Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-07-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 #: 24-0	344-07-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

Report Date:

05/29/24



# **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-53
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-08
 Collect Time:
 11:30 AM

Metals by EPA 6020B: CCR Rule Ap	pendix iii-iv 10	rtai Wictai		Aliquot #: 24-0	344-08-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aque	ous			Aliquot #: 24-0	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 Ana	llyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-08-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 25400	<b>,</b>			Aliquot #: 24-0	344-08-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-53R
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-09
 Collect Time:
 12:27 PM

Metals by EPA 6020B: CCR Rule Ap	pendix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	Aliquot #: 24-0344-09-C01-A01		
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, Aque	ous			Aliquot #: 24-0344-09-C01-A03		Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking	
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09	
Anions by EPA 300.0 CCR Rule Ana	llyte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-09-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 25400	<b>&gt;</b>			Aliquot #: 24-0	344-09-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	

Report Date:

05/29/24



**Laboratory Services** 

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-54R
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-10
 Collect Time:
 01:25 PM

Metals by EPA 6020B: CCR Rule App	Metals by EPA 6020B: CCR Rule Appendix III-IV Total Met				Aliquot #: 24-0344-10-C01-A01		
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, Aqueo	ous			Aliquot #: 24-0344-10-C01-A03		Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	Tracking	
Mercury	ND		ug/L	0.2	05/16/2024	AB24-0516-09	
Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-10-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 #: 24-0	)344-10-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) Labor.

Laboratory Project: 24-0344
Collect Date: 05/08/2024

Collect Time:

Report Date:

05/29/24

07:12 AM

Lab Sample ID: 24-0344-11 Matrix: Groundwater

Field Sample ID: MW-55

Metals by EPA 6020B: CCR Rule Appe	Metals by EPA 6020B: CCR Rule Appendix III-IV Total Metals Exp					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, Aqueou	ıs			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 Analy	te List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 24-0	344-11-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 #: 24-0	344-11-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

Field Sample ID: OW-57ROUT Collect Date: 05/08/2024
Lab Sample ID: 24-0344-12 Collect Time: 09:47 AM

Metals by EPA 6020B: CCR Rule A	Appendix III-IV TO	tai wetai	- Lxp	Aliquot #: 24-0	344-12-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aq	ueous			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 A	nalyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-12-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 254	0C			Aliquot #: 24-0	344-12-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 MW-58
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-13
 Collect Time:
 11:51 AM

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	s Ехр	Aliquot #: 24-0	344-13-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, Aqueou	ıs			Aliquot #: 24-0344-13-C01-A03 Analyst		
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 Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	344-13-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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 #: 24-0	344-13-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

Field Sample ID: DUP-JCW-LF-01 Collect Date: 05/07/2024 Collect Time: 05/07/2024 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	344-14-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, Aqueou	ıs			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 Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 24-0	344-14-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 #: 24-0	344-14-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

Report Date:

05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 DUP-JCW-LF-02
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-15
 Collect Time:
 12:00 AM

Metals by EPA 6020B: CCR Rule A	ppendix ili-iv 10	tai wetai	- LXP	Aliquot #: 24-0	344-15-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, Aqu	eous			Aliquot #: 24-0344-15-C01-A03 Analy		
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 An	alyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 24-0	344-15-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 2540	С			Aliquot #: 24-0	344-15-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



05/29/24



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 JCW-MW-18001 MS
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-16
 Collect Time:
 06:20 AM

Metals by EPA 6020B: CCR R	ule Appendix III-IV To	tal Metals Exp	Aliquot #: 24-0	344-16-C01-A01	Analyst: EE
Parameter(s)	Result	Flag Uni	ts 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 #: 24-0	344-16-C01-A03	Analyst: CLE
Parameter(s)	Result	Flag Uni	ts RL	Analysis Date	Tracking
Mercury	97.0	%	0.2	05/16/2024	AB24-0516-09
Anions by EPA 300.0 CCR Ru	le Analyte List, Cl, F,	SO4, Aqueous	Aliquot #: 24-0	344-16-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag Uni		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



05/29/24



**Laboratory Services** A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

Field Sample ID: JCW-MW-18001 MSD

Collect Date: 05/07/2024 Lab Sample ID: 24-0344-17 Collect Time: 06:20 AM

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals Exp	Aliquot #: 24-0	344-17-C01-A01	Analyst: EB
Parameter(s)	Result	Flag Unit	ts 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, Tota	al, Aqueous		Aliquot #: 24-0	344-17-C01-A03	Analyst: CLE
Parameter(s)	Result	Flag Unit	ts RL	Analysis Date	Tracking
Mercury	96.0	%	0.2	05/16/2024	AB24-0516-09
Anions by EPA 300.0 CCR R	ule Analyte List, Cl, F,	SO4, Aqueous	Aliquot #: 24-0	344-17-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag Unit	-	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



05/29/24



## **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 FB-01
 Collect Date:
 05/08/2024

 Lab Sample ID:
 24-0344-18
 Collect Time:
 12:15 PM

Matrix: Water

Metals by EPA 6020B: CCR	Rule Appendix III-IV 10	tai wetais	= Exp	Aliquot #: 24-0	344-18-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	<b>Analysis Date</b>	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, To	tal, Aqueous			Aliquot #: 24-0	344-18-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, Aqu	ieous	Aliquot #: 24-0	344-18-C02-A01	Analyst: KDF
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



05/29/24



## **Laboratory Services**

A CENTURY OF EXCELLENCE

Sample Site: JCW Solid Waste Disposal Area, Porewater (395457) Laboratory Project: 24-0344

 Field Sample ID:
 EB-01
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0344-19
 Collect Time:
 12:20 PM

Matrix: Water

Metals by EPA 6020B: CCR R	ule Appendix III-IV 10	iai wetais	⊏xb	Aliquot #: 24-0	344-19-C01-A01	Analyst: El
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Arsenic	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Barium	ND	ι	ug/L	5.0	05/16/2024	AB24-0516-03
Beryllium	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Boron	ND	ι	ug/L	20.0	05/16/2024	AB24-0516-03
Cadmium	ND	ι	ug/L	0.2	05/16/2024	AB24-0516-03
Calcium	ND	ι	ug/L	1000.0	05/16/2024	AB24-0516-03
Chromium	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Cobalt	ND	ι	ug/L	6.0	05/16/2024	AB24-0516-03
Copper	3	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Iron	ND	ι	ug/L	20.0	05/16/2024	AB24-0516-03
Lead	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Lithium	ND	ι	ug/L	10.0	05/16/2024	AB24-0516-03
Magnesium	ND	ι	ug/L	1000.0	05/16/2024	AB24-0516-03
Molybdenum	ND	ι	ug/L	5.0	05/16/2024	AB24-0516-03
Nickel	ND	ι	ug/L	2.0	05/16/2024	AB24-0516-03
Potassium	ND	ι	ug/L	100.0	05/16/2024	AB24-0516-03
Selenium	ND	ι	ug/L	1.0	05/16/2024	AB24-0516-03
Silver	ND	ι	ug/L	0.2	05/16/2024	AB24-0516-03
Sodium	ND	ι	ug/L	1000.0	05/16/2024	AB24-0516-03
Thallium	ND	ι	ug/L	2.0	05/16/2024	AB24-0516-03
Vanadium	ND	ι	ug/L	2.0	05/16/2024	AB24-0516-03
Zinc	ND	ι	ug/L	10.0	05/16/2024	AB24-0516-03
Mercury by EPA 7470A, Total	, Aqueous			Aliquot #: 24-0	344-19-C01-A03	Analyst: CLI
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND	ι	ug/L	0.2	05/16/2024	AB24-0516-09
Anions by EPA 300.0 CCR Ru	lle Analyte List, Cl, F,	SO4, Aque	ous	Aliquot #: 24-0	344-19-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	ND	ι	ug/L	1000.0	05/16/2024	AB24-0514-08
Fluoride	ND	ι	ug/L	1000.0	05/16/2024	AB24-0514-08



A CENTURY OF EXCELLENCE

# **Analytical Report**

**Report Date:** 05/29/24

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 4 ATTACHMENT A

#### TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Inspection Date: OSlibla	ч		Inspection Rv. (1)	ę	
Sample Origin/Project Name:					
Shipment Delivered By: Ente	er the type of	shipment car	rier.		
			USPS USPS		orne
Other Hand Carry (wh Tracking Number:			Shipping Form A	attached: Yes	
Shipping Containers: Enter the					-
					64-11
Cooler (					/Mailer
Loose/Unpackaged Co	ontainers		Other		
Condition of Shipment: Enter	r the as-recei	ved condition	of the shipment contain	er.	
Damaged Shipment O	bserved: No	ne	Dented	Leak	ing
Other					
	rk Request_		Air Data Sheet		
Temperature of Containers:					
As-Received Tempera	nture Range	2.1-4.2 2	Samples Received	on Ice: Yes N	0
M&TE # and Expirati		3.24			
Number and Type of Contain			er of sample containers i	eceived.	
Container Type	Water	Soil	Other	Broken	Leakin
Container Type					
VOA (40mL ox 60mL)	2		-		_
	2				_
VOA (40mL or 60mL)					*
VOA (40mL ox 60mL) Quart/Liter (g/p)					*
VOA (40mL or 60mL) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic)					×
VOA (40mL of 60mL) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic) 24 mL vial (glass)	38				, ·
VOA (40mL of 60mL) Quart/Liter (g/p) 9-oz (amber glass jar) 2-oz (amber glass) 125 mL (plastic)					×

# **CHAIN OF CUSTODY**



## CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

Page 1 of 2

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMI	LING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or W	/O#:						ANALYSIS REQUESTED (Attach List if More Space is Needed)  QA REQUIR			OA REOLUBEMEN	T.					
Q2-20	024 JC Weadoo	k Porewater W	ells		24-0344	REQUESTER	R: Hard	old	Reg	ister				(At	tach L	ist if	More	Space	e is Ne	eded)	QA REQUIREMEN	13
SAMI	PLING TEAM:				TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD 🛛 O	THER _														□ NPDES  ⊠ TNI	
SENI	O REPORT TO:	Joseph Firlit			email:	phone:							1								☐ ISO 17025	
	COPY TO:	Harold Regis	ster		MATRIX CODES: GW = Groundwater OX = Other			C	ONT	AIN	ER	S									☐ 10 CFR 50 APP. B	
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air				PRE:	SER	VAT	TIVE	200								☐ INTERNAL INFO	
	LAB	SAMPLE COL	LECTION	XIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene	ral Waste	TOTAL#	1		7 -		Ŧ	Total Metals	aut		Albalinity					□ OTHER	
SA	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	TOT	None	HNO3	H <sub>2</sub> SO	HCI	MeOl	Tota	Anione	TDS	Alle	, and				REMARKS	
12	24-0344-01	5/7/24	dero	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							
1	-03	5/8/24	6907	GW	JCW-MW-18005		3	2	1				x	x	x							
	-04	5/8/24	DIT	GW	JCW-MW-18006		3	2	į				х	x	x							
	-05	5/7/20	0807	GW	MW-50		3	2	1				x	x	x							
	-06	5/124	0930	GW	MW-51		3	2	ì				x	x	x							
	-07	3/7/24	1021	GW	MW-52		3	2	1				x	x	x							
	-08	5/7/24	1130	GW	MW-53		3	2	1		Ĺ		x	x	x							
	-09	517/24	[46]	GW	MW-53R		3	2	1				x	x	x							
	-10	5/7/34	1331	GW	MW-54R		3	2	1				x	x	x							
	-11	5/6/24	0717	GW	MW-55		3	2	1				x	x	x							
	-12	5/8/24	0947		OW-57ROUT		3	2	1				x		1							
RELIN	QUISHED BY:		I	DATE/	TIME:	ECEIVED BY:							C	MMC	ENT	S:						
	-		5/10	124	0700												1				5.00.00	
RELIN	QUISHED BY		I	DATE/	TIME: RE	ECHIVED BY:												es □ 2°C			#: 015402 ne Date: 5-23-24	
					24-	0344R Page 27 o	of 28		_		-		1				_	_				

# **CHAIN OF CUSTODY**



#### CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page 2 of 2

SAMI	PLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or W	/O#:							A	NAI	YSI	SREC	UES:	ren		Constant of the
Q2-2	024 JC Weadoo	k Porewater W	ells		24-0344	REQUESTER	R: Hard	old I	Regi	ster									Needed)		QA REQUIREMENT:
SAME	PLING TEAM:				TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ S	TANDARD ⊠ OT	THER_														□ NPDES ⊠ TNI
SENI	D REPORT TO:	Caleb Batts			email:	phone:							1								☐ ISO 17025
	COPY TO:	Harold Registe	er		MATRIX CODES: GW = Groundwater OX = Othe	r		C	ONT	AIN	ERS	3									☐ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Slud W = Water / Aqueous Líquid A = Air	ge			PRES	SERV	AT	IVE	tals			*					☐ INTERNAL INFO
1	LAB	SAMPLE COL	LECTION	RIX	S = Soil / General Solid WP = Wi O = Oil WT = Ge	pe neral Waste	TOTAL#		None HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH HCI MeOH		Total Metals	suc	**	Alkalinity	М				□ OTHER		
SA	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TO	None	HNC	H <sub>2</sub> SC NaO	HCI	MeOH	Tota	Anions	TDS	Alk					REMARKS
2	24-0344-13	5/8/24	1151	GW	MW-58		3	2	1				x	x	x						3337333
	-14	5/7/24	-	GW	DUP-JCW-LF-01		3	2	1			F	x	x	x						
	-15	5/8/124	-	GW	DUP-JCW-LF-02		3	2	1				x	х	x		Ħ			T	
1.	-16	7/124	Cièr	GW	JCW-MW-18001 MS		2	1	1				x	x							
	-17	5/7/24	olex	GW	JCW-MW-18001 MSD		2	1	1				x	x							
	-18	5/8/24	7121	W	FB-01		2	1	1				x	x							
	-19	518/24	(2)0	w	EB-01		2	1	1				x	x	1.1						
	QUISHED BY:	7		DATE/	10700	RECEIVED BY:							Rec		on Ic	ce? 🔼	Yes 4.2				015402 ate: 5-23-24
					2	4-0344R Page 28	of 28						1000					19			



135 W. Trail St. Jackson, MI 49201 phone 517-788-1251 fax 517-788-2533

To: JJFirlit, 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 2<sup>nd</sup> 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 accredidation specified in the listed certificate.

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#### **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

Qualifier	Description
*	Generic data flag, applicable description added in the corresponding notes section
В	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
Н	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 ASD

**Date Received:** 5/10/2024 **Chemistry Project:** 24-0345

Sample # Field Sample ID Matrix Sample Date Site

24-0345-01 JCW-OW-18001 Groundwater 05/07/2024 07:20 JC Weadock ASD



05/23/24



Sample Site: JC Weadock ASD Laboratory Project: 24-0345

 Field Sample ID:
 JCW-OW-18001
 Collect Date:
 05/07/2024

 Lab Sample ID:
 24-0345-01
 Collect Time:
 07:20 AM

Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 24-0	345-01-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 Appe	endix III-IV To	tal Metals	s Exp	Aliquot #: 24-0	345-01-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 Analys	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 24-0	345-01-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 #: 24-0	345-01-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



**Report Date:** 05/23/24

A CENTURY OF EXCELLENCE

Sample Site: JC Weadock ASD

Field Sample ID: JCW-OW-18001

Laboratory Project: 24-0345

Collect Date: 05/07/2024

Collect Date: 05/07/2024 Collect Time: 07:20 AM

Lab Sample ID: 24-0345-01 Matrix: Groundwater

Alkalinity by SM 2320B			Aliquot #: 24-0	345-01-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



A CENTURY OF EXCELLENCE

Analytical Report Report Date: 05/23/24

Data Qualifiers	Exception Summary
	No exceptions occurred.

CONSUMERS ENERGY

lot: 205622

Other\_

### Chemistry Department

General Standard Operating Procedure

PROC CHEM-1.2.01 PAGE 1 OF 2 **REVISION 4** ATTACHMENT A

Proje	ect Log-In Number:	24-0	345			
	ection Date:5 10 2			Inspection By: C16		
Sam	ole Origin/Project Name:	JCI				
	ment Delivered By: Ente					
Surp	THE RESERVE OF THE PARTY OF THE		200 - Con 1 2 10 10 10 10 10 10 10 10 10 10 10 10 10	USPS	A Sub-	own a
				USFS		
	Tracking Number:					
or i					ched, res	
Ship	ping Containers: Enter th					
	Cooler (			Custom Case		
	Loose/Unpackaged Co	ontainers		Other		
Conc	lition of Shipment: Enter	the as-rece	ived condition	of the shipment container.		
	Damaged Shipment O	bserved: No	one	Dented	Leal	ing
	Other					
Shin	ment Security: Enter if a	ny of the sh	ipping contain	ers were opened before rece	int.	
			11.12.1.0	Sealed		
					-	
Encl	osed Documents: Enter the	ne type of de	ocuments encl	osed with the shipment.		
	CoC Wo	rk Request_		Air Data Sheet	Other	
Tem	perature of Containers: 1	Measure the	temperature o	f several sample containers.		
	As-Received Tempera		75 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to 100 to	Samples Received on		o
	M&TE # and Expirati	on Ois	402			
Num	ber and Type of Contain	ers: Enter	23・2リ the total numb	er of sample containers rece	eived.	
	Container Type	Water	Soil	Other	Broken	Leaki
	VOA (40mL of 60mL)	2	5011	Cilici	Dioxen	Denti
	Quart/Liter (g/p)					
	9-oz (amber glass jar)					
	3-OZ (allioci glass lai)					
14						
14 0-508	2-oz (amber glass)	2	_			-
0-508 22 .25		2				=

# **CHAIN OF CUSTODY**



#### CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

SAMPLING SITE / CU	ISTOMER:			PROJECT NUMBER:	SAP CC or W	O#:							A	NAI	VSI	SRE	OUE	STED		11.000
Q4-2024 JC Weadoo	k ASD			24-0345	REQUESTER	: Haro	old I	Regis	ter			1.0						s Need	ed)	QA REQUIREMENT:
SAMPLING TEAM:				TURNAROUND TIME REQUIRED:	TANDARD ⊠ OT	HER_														□ NPDES ⊠ TNI
SEND REPORT TO:	Joseph Firlit			email:	phone:															□ ISO 17025
COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Oth	er		CC	ONTA	INE	RS	1									☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Slu W = Water / Aqueous Liquid A = Air	dge		F	PRES	ERV.	АТГ	VE	Metals				Н				☐ INTERNAL INFO
LAB	SAMPLE COLL	ECTION	XIX	S = Soil / General Solid $WP = WO = Oil$ $WT = Go$	ipe eneral Waste	TOTAL #						I Me	sue		dinity			Ш		□ OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	ID / LOCATION			HNC H <sub>2</sub> SC	HNC H <sub>2</sub> SC	H <sub>2</sub> SO <sub>4</sub>	HCI MeOF Other	Total	Anions	TDS	Alka	Alkalinity			REMARKS	
24-0345-01	5/7/24	0730		JCW-OW-18001		5	4	1				x	x	x	x					
										1	П									
										Ī	П									
							7		П	ī										
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# **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 180 S. Van Buren Avenue Barberton OH 44203



# **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

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#### **Definitions/Glossary**

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

Qualifiers

Rad

Qualifier **Qualifier Description** 

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

Duplicate Error Ratio (normalized absolute difference) **DER** 

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)

Estimated Detection Limit (Dioxin) **EDL** 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 Method Quantitation Limit MQL

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** 

Relative Error Ratio (Radiochemistry) **RER** 

Reporting Limit or Requested Limit (Radiochemistry) RL

**RPD** Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC** 

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#### **Case Narrative**

Client: TRC Environmental Corporation.

Project: Karn/Weadock CCR JCW Landfill

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** 

Job ID: 240-204359-1

Page 5 of 39 6/14/2024

## **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

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## **Client Sample Results**

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

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	3.0 - Radium	-226 (GFP	C)							
		`	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	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. Job ID: 240-204359-1 Project/Site: Karn/Weadock CCR JCW Landfill

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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226	0.434	U	0.419	0.421	5.00	0.672	pCi/L		06/13/24 11:27	1

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

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	3.0 - Radium	-226 (GFP	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

	4.0 - Radium	(0	•							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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	3.0 - Radium	-226 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	ium-226 an	d Radiur	n-228				
			Count	Total						
Analyte	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	1.47		0.440	0.454	5.00	0.512	pCi/L	_ <del></del>	06/13/24 11:27	1

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**Client Sample ID: MW-51** Lab Sample ID: 240-204359-6

Date Collected: 05/07/24 09:20 **Matrix: Water** Date Received: 05/11/24 08:00

Method: EPA 903	.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra2	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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	3.0 - Radium	-226 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**Client Sample ID: MW-53** Lab Sample ID: 240-204359-8

**Matrix: Water** 

Date Collected: 05/07/24 11:20 Date Received: 05/11/24 08:00

Method: EPA 903	3.0 - Radium	-226 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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	3.0 - Radium	-226 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.674		0.383	0.386	5.00	0.567	pCi/L		06/13/24 11:27	1

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

Date Received: 05/11/24 08:00

Client Sample ID: MW-54R Lab Sample ID: 240-204359-10 Date Collected: 05/07/24 12:25

**Matrix: Water** 

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**Client Sample ID: MW-55** Lab Sample ID: 240-204359-11

Date Collected: 05/08/24 07:12 **Matrix: Water** Date Received: 05/11/24 08:00

Method: EPA 903	.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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 (GFP	C)							
		·	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	ium-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium	0.845		0.441	0.446	5.00	0.636	pCi/L		06/13/24 11:27	1

Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**Client Sample ID: DUP-01** Lab Sample ID: 240-204359-13

Date Collected: 05/07/24 00:00 **Matrix: Water** Date Received: 05/11/24 08:00

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 90	4.0 - Radium	-228 (GFP	C)							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

**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

Method: EPA 903	3.0 - Radium	-226 (GFP	C)							
		•	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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	4.0 - Kadium	-220 (GFP	•							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 F	Ra226_Ra	228 - Com	bined Radi	um-226 an	d Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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** 

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(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	
	Method Blank	90.0	

Method: 904.0 - Radium-228 (GFPC)

**Matrix: Water** Prep Type: Total/NA

				Percent Yield (Acceptance Li
		Ва	Υ	
_ab Sample ID	Client Sample ID	(30-110)	(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	
_CS 160-662014/2-A	Lab Control Sample	93.8	80.7	
	Method Blank	90.0	80.7	

Y = Y Carrier

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Client: TRC Environmental Corporation. Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

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

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac 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

Total

MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 90.0 30 - 110 05/16/24 09:14 06/12/24 07:58

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 662013

Lab Sample ID: LCS 160-662013/2-A **Matrix: Water** 

Analysis Batch: 665832

Total LCS LCS %Rec **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits 1.10 Radium-226 11.3 10.77 1.00 0.0949 pCi/L 95 75 - 125

Count

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 93.8 30 - 110

Lab Sample ID: 240-204359-10 DU Client Sample ID: MW-54R

**Matrix: Water** 

**Analysis Batch: 665830** 

Prep Type: Total/NA Prep Batch: 662013 Total

DU DU **RER** Sample Sample Uncert. Analyte Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Result Qual RER Limit Radium-226 0.180 0.0848 1.00 0.108 pCi/L 0.19 0.1486

DU DU Carrier %Yield Qualifier Limits Ba Carrier 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-662014/1-A **Matrix: Water** 

Analysis Batch: 662961

Prep Batch: 662014 Count Total

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 Ū 0.348 1.00 0.522 pCi/L 05/16/24 09:20 05/22/24 16:45 0.4879 0.351

MB MB Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 90.0 30 - 110 05/16/24 09:20 05/22/24 16:45 30 - 110 Y Carrier 80.7 05/16/24 09:20 05/22/24 16:45

# **QC Sample Results**

Client: TRC Environmental Corporation.

Job ID: 240-204359-1

Project/Site: Karn/Weadock CCR JCW Landfill

LCS LCS

83.0

Y Carrier

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-662014/2-A Client Sample ID: Lab Control Sample

Matrix: Water Prep Type: Total/NA Analysis Batch: 662961 Prep Batch: 662014

				Total				
	Spike	LCS	LCS	Uncert.				%Rec
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits
Radium-228	8.92	10.33		1.37	1.00	0.468 pCi/L	116	75 - 125

 Carrier
 %Yield
 Qualifier
 Limits

 Ba Carrier
 93.8
 30 - 110

 Y Carrier
 80.7
 30 - 110

30 - 110

Lab Sample ID: 240-204359-10 DU Client Sample ID: MW-54R

Matrix: Water Prep Type: Total/NA Analysis Batch: 662960 Prep Batch: 662014

					Iotai						
	Sample	Sample	DU	DU	Uncert.						RER
Analyte	Result	Qual	Result	Qual	(2σ+/-)	RL	MDC	Unit		RER	Limit
Radium-228	0.184	U	0.3497	U	0.348	1.00	0.558	pCi/L		0.20	1

**Eurofins Cleveland** 

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10

4.6

12

14

# **QC Association Summary**

Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

#### Job ID: 240-204359-1

#### **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	<del>-</del>
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	

**Eurofins Cleveland** 

6/14/2024

Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Client Sample ID: JCW-MW-18001

Analysis

Ra226\_Ra228

Lab Sample ID: 240-204359-1

**Matrix: Water** 

Job ID: 240-204359-1

Date Collected: 05/07/24 06:00 Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

Lab Sample ID: 240-204359-2 Client Sample ID: JCW-MW-18004

Date Collected: 05/08/24 06:08 **Matrix: Water** Date Received: 05/11/24 08:00

Batch **Batch** Dilution Batch **Prepared Prep Type** Method Number Analyst or Analyzed Type Run **Factor** Lab Total/NA PrecSep STD 05/16/24 09:14 Prep 662013 MLT EET SL Total/NA Analysis 903.0 1 665830 SWS **EET SL** 06/12/24 10:05 Total/NA Prep 662014 MLT 05/16/24 09:20 PrecSep\_0 **EET SL** Total/NA Analysis 904.0 662961 SCB **EET SL** 05/22/24 16:45 1

Client Sample ID: JCW-MW-18005 Lab Sample ID: 240-204359-3

666196 FLC

EET SL

06/13/24 11:27

Date Collected: 05/08/24 09:02 **Matrix: Water** Date Received: 05/11/24 08:00

1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	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

Total/NA

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

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Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Lab Sample ID: 240-204359-6

**Matrix: Water** 

Job ID: 240-204359-1

Client Sample ID: MW-51 Date Collected: 05/07/24 09:20 Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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 Sample ID: 240-204359-7

**Matrix: Water** 

Date Collected: 05/07/24 10:21 Date Received: 05/11/24 08:00

Client Sample ID: MW-52

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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 Sample ID: 240-204359-8 **Client Sample ID: MW-53** 

Date Collected: 05/07/24 11:20 **Matrix: Water** 

Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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 Sample ID: 240-204359-9 **Client Sample ID: MW-53R** Date Collected: 05/07/24 12:27 **Matrix: Water** 

Date Received: 05/11/24 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

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Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Lab Sample ID: 240-204359-10

**Matrix: Water** 

Job ID: 240-204359-1

Client Sample ID: MW-54R Date Collected: 05/07/24 12:25 Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

Lab Sample ID: 240-204359-11

**Matrix: Water** 

Date Collected: 05/08/24 07:12 Date Received: 05/11/24 08:00

**Client Sample ID: MW-55** 

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD	<del></del> -		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** 

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Туре	Method	Run	Factor	Number	Analyst	Lab	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
	<b>Matrix: Water</b>

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

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Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Lab Sample ID: 240-204359-14

**Matrix: Water** 

Job ID: 240-204359-1

Date Collected: 05/08/24 12:20 Date Received: 05/11/24 08:00

**Client Sample ID: EB-1** 

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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 Sample ID: 240-204359-15 **Client Sample ID: DUP-02** 

Date Collected: 05/08/24 00:00 **Matrix: Water** Date Received: 05/11/24 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

## **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	<b>Expiration Date</b>
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
lowa	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
_ouisiana	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

Job ID: 240-204359-1

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Eurofins Cleveland

 $<sup>{}^{\</sup>star}\operatorname{Accreditation/Certification\ renewal\ pending\ -\ accreditation/certification\ considered\ valid}.$ 

#### **Eurofins Cleveland**

180 S. Van Buren Avenue

**Chain of Custody Record** Barberton, OH 44203

eurofins

**Environment Testing** 

Phone: 330-497-9396 Fax: 330-497-0772 Carrier Tracking No(s): Samples Lab PM: 240-120141-29048.1 Client Information Brooks, Kris M Phone: >34 964 3316 State of Origin: Page: Client Contact: F-Mail: Page 1 of 2 Jacob Krenz Kris.Brooks@et.eurofinsus.com Job #: Company: **Analysis Requested** TRC Environmental Corporation. Preservation Codes: Due Date Requested: 1540 Eisenhower Place TAT Requested (days): Ann Arbor State, Zip: MI, 48108-7080 Compliance Project: A Yes A No 734-971-7080(Tel) 734-971-9022(Fax) TBD WO #: 5533828.0000 JKrenz@trccompanies.com Total Number of containers Project Name: Proiect #: 904.0, Ra226Ra228\_GFPC Kam/Weadock CCR JCW Lanfill 24024154 Other: SSOW#: Sample Type Sample (C=comp, BT=Tissue, Special Instructions/Note: Sample Identification Sample Date Time G=grab) Preservation Code: 5/7/24 JCW-MW-18001 16XX Water JCW-MW-18004 1000 Water 6 JCW-MW-18005 Water JCW-MW-18006 Water MW-50 Water 0 MW-51 Water MW-52 Water MW-53 1130 Water MW-53R Water 1227 MW-54R Water MW-55 5/8/24 0717 Water Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month) Possible Hazard Identification Disposal By Lab Non-Hazard Flammable Skin Irritant Poison B Unknown Radiological Return To Client Archive For Months Deliverable Requested: I, II, III, IV, Other (specify) Special Instructions/QC Requirements: Method of Shipment: Empty Kit Relinquished by: Relinquished by Received by: Relinquished by ReTESSE MOROSKO Relinquished by: Cooler Temperature(s) °C and Other Remarks: Custody Seals Intact: Custody Seal No.: Page 32 of 3 6/14/2024 Δ Yes Δ No

#### **Eurofins Cleveland**

180 S. Van Buren Avenue Barberton, OH 44203 **Chain of Custody Record** 

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💸 eurofins

**Environment Testing** 

Phone: 330-497-9396 Fax: 330-497-0772														
Client Information	Samples Air a	~Jiks	SÜ		PM: oks, Kri	is M			C	arrier Track	ing No(s):		COC No: 240-120141-29048	3.2
Client Contact: Jacob Krenz	Phone: 734 4			E-M Kris		s@et	.eurofinsu	s.com	s	tate of Origi	n:		Page: Page 2 of 2	
Company: TRC Environmental Corporation.	1 / 5 - (		PWSID:		T			Analysis	Regu	ested			Job#:	
Address:	Due Date Request	ed:			1 15			Analysis					Preservation Codes	S:
1540 Eisenhower Place				,									D - HNO3	
city: Ann Arbor	TAT Requested (d	ays):			60	ш								
State, Zip: MI, 48108-7080	Compliance Project	ct: A Yes	Δ No											
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO#: TBD													
Email:	WO#:		-		S   S   S								l	
JKrenz@trccompanies.com	5533828.0000				S 08		_					ers	l .	
Project Name: Karn/Weadock CCR JCW Lanfill	Project #: 24024154				) io so	FP	Target List					containe		
Site:	SSOW#:				Samp SD (Y	. 8 . G						05 60	Other:	
		Sample	Sample Type (C=comp,	Matrix (w-water, 3=solid, 0=waste/oll,	Field Filtered S	904.0, Ra226Ra228_GFPC	903.0 - Standard					Total Number		
Sample Identification	Sample Date	Time		BT=Tissue, A=Alt	القام	7							Special Inst	ructions/Note:
			Preserva	tion Code:	<del> YY</del>	D	D	( ) ( ) ( ) ( )						
OW-57ROUT	5/8/24	6447	ص	Water	MN	4 1	4					9		
DUP-01	5/7/27		0	Water	MV	1	1					2		
EB1	5/8/24	1750	Q	Water	Mi	1	Ť					2		
Dy p-62	5/8/27		Ç	Water	14.1	17	4							
MW-58	5/8/24	usi	6	Water	NV	17	6					()	X	
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Possible Hazard Identification	1				1   6.		Disposi	I / A foo may	he as	sessed if	samnles a	re retair	ned longer than 1 n	nonth)
	on B Unkni	🗀 .	Radiological			_	Return To	Cliant 1	χ,	posal By	, ab	Arch	ive For	Months
Deliverable Requested: I, II, III, IV, Other (specify)	OH B O OHKIN	OWII P	Kaulological		Sp			ns/QC Require			Lau	Aidi		_ WOULD
Empty Kit Relinquished by:		Date:			Time:	:				Method	of Shipment:			
Relinquished by:	Date/Tjme:	<u> </u>	15	Company			eived by:	11111	1/1/		Date/Tipre:	1,01	54	Company IA
Relinquished by:	5 (c l)	<u> </u>	. 1	Company		Rec	eived by:	My	012		Date/Time	<i>i</i>		Company
	Date/Time:	4 0	1915	17	714		eived by:	E MORO	<u> </u>		Date/Time			25/10
Relinquished by:	Date/Time:			Company		Rec	eived by:				Date/Time:	:		Company
Custody Seals Intact: Custody Seal No.:					1	Coo	ler Tempera	ture(s) °C and Ot	ther Rer	narks:				

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VOA Sample Preservation Date/Time VOAs Frozen
Sample(s)were further preserved in the laboratory Time preservedPreservative(s) added/Lot number(s)were further preserved in the laboratory
20 SAMPLE PRESERVATION
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)
18 CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Additional next page Samples processed by:
Contacted PM Date by via Verbal Voice Mail Other
13 Were all preserved sample(s) at the correct pH upon receipt?  14. Were VOAs on the COC?  15 Were air bubbles >6 mm in any VOA vials?  16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #
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
9 For each sample, does the COC specify preservatives (YN), # of containers (YN), and sample type of grab/comp(YN)?  10 Were correct bottle(s) used for the test(s) indicated?  11 Sufficient quantity received to perform indicated analyses?
Did all bottles arrive in good condition (Unbroken)?  Could all bottle labels (ID/Date/Time) be reconciled with the COC?
Were the custody papers relinquished & signed in the appropriate place?  Was/were the person(s) who collected the samples clearly identified on the COC?  Yes No
- Were tamper/custony seats infact and uncompromised?  3 Shippers' packing slip attached to the cooler(s)?  4. Did outlody papers accompany the sample(s)?  7 Yes No VA  VOAs  Oil and Grease
of If Yes Quantity 1 (Yes) No dated? (Yes) No (LLHg/MeHg)? Yes (No
Olored Cooler
rial used. Bubble Wrap Foam Plastic Hag None NT Wet Ict Blue Ice Dry Ice Water None rature upon receipt
Drop-off Date/Time Storage Location Foam Box Client Cooler Box Other
Chent 1/2C Site Name  Cooler Received on OS 11/04  Opened on OS 11/04  FedRy: 1st Grd Fan 1795 FAS Warpoint Client Drop Off Furnishes Courses Other
ins — Cleveland Sample Receipt Form/Narrative ————————————————————————————————————
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Page 34 of 39

6/14/2024

Wellice Bluelice Drylice			IR GUN #:	Box Other	Citent B	EC
. Le			IR GUN #:	Box Other	Client B	23
Wet Ice Blue Ice Dry Ice Water None			IR GUN #:	Box Other	Client B	EC.
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			IR GUN #:	Box Other	Client 8	 
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Ice None			IR GUN #:	Box Other	Client B	EC
le Ice None			IR GUN #:	Box Other	Client B	€C
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None			IR GUN #:	Box Other	Client B	EC
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Je Ice None			IR GUN #:	Box Olher	Client B	EC
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9			IR GUN #:	Box Olher	Client B	స
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re Ice None			IR GUN #:	Box Olher	Client B	EC.
lue Ice None			IR GUN #:	Box Olher	Client B	77
∥ើ			IR GUN #:	Box Other	Client B	53
lue Ice None			IR GUN #:	Box Olher	Client B	EC.
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Wet Ice Blue Ice Dry Ice Water None	3.9	39	IR GUN #:	x Other	Client Box	FC)
O	1.8	3.4	IR GUN # - / 8 .	x Olher	Client Box	)ä
Wette Blue Ice Dry Ice Water None	77	1.7	IR GUN #: 18	x Other	Client Box	
Coolant (Circle)	Corrected Temp °C	IR Gun # Observed Corrected (Circle) Temp °C Temp °C	IR Gun # (Circle)	ription )	Cooler Description (Circle)	$)^{\delta}$

WI-NC-099 Cooler Receipt Form Page 2 Multiple Coolers

Page 35 of 39

5/11/2024	Logir	Login Container Summary Report	a	240-20435	မ	14/2024
Temperature readings	The state of the s				6.4	6/
Client Sample ID	<u>Lab ID</u>	Container Type	Container pH Temp	Preservation Added	Preservation Lot Number	
1000 MW 18001	240-2042<0-A-1	Dioctio 1 liter - Nitrio Asid	2			

\$	Plastic 1 liter Nitrıc Acıd	240-204359-B-16	MW-58
\$	Plastic 1 liter - Nitric Acid	240-204359-A-16	MW-58
\$	Plastic 1 liter - Nitric Acid	240-204359-B 15	DUP-02
\$	Plastic 1 liter - Nitric Acid	240-204359-A-15	DUP-02
\$	Plastic 1 liter - Nitric Acid	240-204359-B-14	EB-1
\$	Plastic 1 liter - Nitric Acid	240-204359-A-14	EB-1
\$	Plastic 1 liter - Nitric Acid	240-204359-B-13	DUP-0
\$	Plastic 1 liter - Nitric Acid	240-204359-A 13	DUP-0
\$2	Plastic 1 liter - Nitric Acid	240-204359-B-12	OW-57ROUT
\$	Plastic 1 liter - Nitric Acid	240-204359 A-12	OW-57ROUT
\$	Plastic 1 liter - Nitric Acid	240-204359-B-11	MW-55
\triangle	Plastic 1 liter - Nitric Acid	240-204359-A-11	MW-55
\$   	Plastic 1 liter - Nitric Acid	240-204359-B-10	MW-54R
\$	Plastic 1 liter - Nitric Acid	240-204359-A-10	MW-54R
\[ \begin{align*} \be	Plastic 1 liter - Nitric Acid	240-204359-B-9	MW-53R
∆   	Plastic 1 liter - Nıtric Acıd	240-204359-A-9	MW-53R
\$	Plastic 1 liter - Nitric Acid	240-204359-B-8	MW-53
	Plastic 1 liter - Nitric Acid	240 204359-A-8	MW-53
\$ 2	Plastic 1 liter - Nitric Acid	240-204359 B-7	MW-52
\$	Plastic 1 liter - Nitric Acid	240-204359-A-7	MW-52
\$	Plastic 1 liter - Nitric Acid	240-204359-B-6	MW 51
\$	Plastic 1 liter - Nitric Acid	240-204359-A-6	MW-51
<2	Plastic 1 liter - Nıtric Acid	240-204359-B-5	MW-50
\$	Plastic 1 liter - Nitric Acid	240-204359-A-5	MW-50
\$	Plastic 1 liter - Nitric Acid	240-204359-B-4	JCW-MW-18006
\$	Plastic 1 liter - Nitric Acid	240-204359-A-4	JCW-MW-18006
\$	Plastic 1 liter - Nitric Acid	240-204359-B-3	JCW MW-18005
<2	Plastic 1 liter - Nitric Acid	240-204359-A-3	JCW-MW 18005
\$	Plastic 1 liter - Nitric Acid	240-204359-B-2	JCW-MW-18004
<2	Plastic 1 liter - Nitric Acid	240-204359-A-2	JCW-MW-18004
\$2	Plastic 1 liter - Nitric Acid	240 204359-B 1	JCW-MW-18001
\$	Plastic 1 liter - Nitric Acid	240-204359-A-1	JCW-MW 18001
Container Preservation Preservation pH Temp Added Lot Number	Container Type	Lab ID	Client Sample ID

Ver: 06/08/2021

Environment Testing

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# **Chain of Custody Record**

Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

**Eurofins Cleveland** 180 S. Van Buren Avenue

Simple   Command   Comma					MEDON									1777 1777 1
Sample   Concessory   Concess		Dhone			ה ביים ה	2	2				+			240-104002.1
Company	Shipping/Receiving	9			E-Mail: Kris.B	rooks	Det.e.	irofins	us.com		State of Michigan	Origin:		Page.
Sample Identification - Client 10 (Lab ID)   Sample   Coronaviers   Co	Company					ccredit	tions F	equired	(See note)		2			2 00 - 00 mg - 10 mg -
Annie   Propert   Proper	TestAmerica Laboratories, Inc.													240-204359-1
Earth City   State 2005   Earth City   State 2004   Earth City   State 2004   Earth City   Ear	Address. 13715 Rider Trail North,	Due Date Request 6/12/2024	:pe						Anal	vsis R	equeste	-		Preservation Codes:
Sample Identification - Client ID (Lab ID)   Sample   Georgea   Sample Identification - Client ID (Lab ID)   Sample   Georgea   Sample Identification - Client ID (Lab ID)   Sample   Georgea   Sample	City. Earth City	TAT Requested (d.	ays):			8		-						
Proper   P	State, Zip. MO, 63045	1					-	_	-> /					
Project #   No	Phone: 314-298-8566(Tel) 314-298-8757(Fax)	#0d						11						
Sample   January   January   Sample   Sample   January   Sample   Sample   January   Sample   Sample   Sample   Sample   January   Sample   Samp	Email:	# OM						SIT 1a6						
Sample Identification - Client ID (Lab ID)         Sample Date Time         Type (www.ns.) (www.ns.)         Matrix (www.ns.)<	Project Name Karn/Weadock CCR JCW Landfill	Project #: 24024154						פום ופונ						ainers
Sample Identification - Client ID (Lab ID)         Sample Date         Type (Version, Edge)         Matrix red (Version, Edge)         Page (Version, Edge)	Site:	#MOSS												
Sample Identification - Client ID (Lab ID)         Sample Date Time         Time (=cont) (=co				Sample	T								-	mber o
CW-MW-18001 (240-204359-1)         5/17/24         Eastern Eastern Eastern MW-53 (240-204359-1)         F/17/24         Eastern Eastern Eastern MW-53 (240-204359-1)         Mater Eastern Eastern MW-53 (240-204359-1)         X         <	Samula Idantification . Client ID (1 at ID)	2	Sample										14 1-4	uli lese
JCW-MW-18001 (240-204359-1)         5/7/24         G6:06 Eastern DCW-MW-18004 (240-204359-2)         Water DCW-MW-18004 (240-204359-2)         X	•	Calliple Date		_	3		-	+	1		1		-	Special Instructions/Note:
UCW-MW-18001 (240-204359-1)         5/1/24         O6:00 of 06:08 of 0			$\langle$	Freservati	on Code:	X							_	$\bigvee_{X}$
JCW-MW-18005 (240-204359-2)         5/8/24         66:08 teastern (above the control of the control	, 1	5/7/24	06:00 Eastern		Water			_						TVA protocol - Ra-226+228 action limit at 5.0 p.Ci/l
JCW-MW-18005 (240-204359-3)         5/8/24         69:02 bit leastern         Water         X	,	5/8/24	06:08 Eastern		Water									
5/7/24       08:07 bits       Water       X       X       X       X       X       Y       1         5/7/24       Eastern Eastern       Water       X		5/8/24	09:02 Eastern		Water		_	-						_
5/7/24       11:20 Eastern       Water       X       X       X       X       X       Z         5/7/24       12:27 Eastern       Water       X       X       X       X       Z         5/8/24       Eastern       Water       X       X       X       X       Z	MVV-50 (240-204359-5)	5/7/24	08:07 Eastern		Water									JUNE DOM:
5/7/24       12:27       Water       X       X       X       X       X       X       X       X       Z         5/7/24       Eastern       Water       X       X       X       X       Z         5/8/24       Eastern       Water       X       X       X       X       Z	MW-53 (240-204359-8)	5/7/24	11:20 Eastern		Water		-	-					.,	
5/7/24	MW-53R (240-204359-9)	5/7/24	12:27 Eastern		Water		<u> </u>							
5/8/24 07:12 Water X X X X 2 2	MW-54R (240-204359-10)	5/7/24	12:25 Eastern		Water		-							
	MW-55 (240-204359-11)	5/8/24	07:12 Eastern		Water		$\vdash$	<u> </u>						
5/8/24 Eastern Water X X X X	OW-57ROUT (240-204359-12)	5/8/24	09:47 Eastern		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/tests/mairix being analyzes/tests/mairix being analyzes/tests/mairix being analyzes/tests/mairix being analyzes/tests/mairix being analyzes/tests/mairix being analyzes/tests/mairix being 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 attention immediately. Possible Hazard Identification

				Sample Uisposal ( A fee may be assessed if samples are retained longer than 1 month)	noles are retained longer than 1 i	nonthi
	Unconfirmed			Betum To Client		
	Deliverable Requested 1.11 III IV Other (specify)	Primary Deliverable Dank: 2		Carial to Cheft	Arcnive For	Months
		The state of the s		Special instructions/QC Requirements:		
	Empty Kit Relinquished by:	Date:	1	Time: Method of Shipment:	hipment:	
	Relinquished by: MALISSA LOAR	Date/Time:	Company	Received by		
	0.00			6		Company
6/	reintquisned by:	Date/Time:	Company	- oftome I was	DatMAN 1 4 2024 CC Company	Company
14/2	Relinquished by:	Date/Time:	Company	M	Date/Time:	Company
20	Custody Seals Infact:   Custody Seal No			000		
24	Δ Yes Δ No			Cooler Temperature(s) "C and Other Remarks:		

Ver: 06/08/202

13

# Chain of Custody Record

Phone: 330-497-9396 Fax: 330-497-0772

Barberton, OH 44203

**Eurofins Cleveland** 180 S. Van Buren Avenue

NA protocol - Ra-226+228 action limit at TVA protocol - Ra-226+228 action limit at 5.0 pci/L. TVA protocol - Ra-226+228 action limit at 5.0 pCi/L. VA protocol - Ra-226+228 action limit at 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 occurrently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC attention in the State of Origin isted above for analysis/tests/matrix being analyzed, the samples must be shipped back to the 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. Special Instructions/Note: Months mpany Company Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont Preservation Codes: COC No: 240-184582.2 240-204359-1 2020CD Page 2 of 2 5.0 pCi/L pp # Total Number of containers 2 2 MAY 1 Date/Time Method of Shipment Carrier Tracking No(s) State of Origin Michigan **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: Special Instructions/QC Requirements: Accreditations Required (See note) Kris.Brooks@et.eurofinsus.com × × × × 39226Ra228\_GFPC aceived by Received by × × × × 04.0/PrecSep\_0 Standard Target List Lab PM: Brooks, Kris M 903.0/PrecSep\_STD Standard Target List × × × × Perform MS/MSD (Yes or No) me Field Filtered Sample (Yes or No) BT=Tissue, A=Air) (W=water, S=solid, O=waste/oil, Matrix Preservation Code: Water Water Water Water Sompany Company (C=comp, G=grab) Sample Type Sample Eastern Eastern Eastern Primary Deliverable Rank: Eastern 12:20 Time 11:51 Date: FAT Requested (days): Due Date Requested: 6/12/2024 Sample Date 5/7/24 5/8/24 5/8/24 5/8/24 24024154 Date/Time Project #: Jate/Time Phone Client Information (Sub Contract Lab) Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No. Sample Identification - Client ID (Lab ID) 314-298-8566(Tel) 314-298-8757(Fax) elinquished by: WALISSA LOAR Karn/Weadock CCR JCW Landfill Possible Hazard Identification estAmerica Laboratories, Inc Empty Kit Relinquished by: DUP-01 (240-204359-13) DUP-02 (240-204359-15) Custody Seals Intact: MW-58 (240-204359-16) 13715 Rider Trail North EB-1 (240-204359-14) △ Yes △ No Shipping/Receiving elinquished by: State, Zip. MO, 63045 elinquished by Project Name Earth City

# **Login Sample Receipt Checklist**

Client: TRC Environmental Corporation.

Job Number: 240-204359-1

List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/15/24 08:08 AM

Creator: Thornley, Richard W

Creator: Inorniey, Richard W		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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	

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# **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** 180 S. Van Buren Avenue Barberton OH 44203



# **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

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## **Definitions/Glossary**

Client: TRC Environmental Corporation. Job ID: 240-204359-2

Project/Site: Karn/Weadock CCR JCW Landfill

**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

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#### **Case Narrative**

Client: TRC Environmental Corporation. Project: Karn/Weadock CCR JCW Landfill

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** 

Page 5 of 15 7/16/2024

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Job ID: 240-204359-2

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# **Method Summary**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR JCW Landfill

Protocol	Laboratory
EPA	EET SL
EDA	EET OI

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

7/16/2024

## **Sample Summary**

Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Job ID: 240-204359-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-204359-4	JCW-MW-18006	Water	05/08/24 10:55	05/11/24 08:00

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## **Client Sample Results**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR JCW Landfill

Client Sample ID: JCW-MW-18006

Date Collected: 05/08/24 10:55 Date Received: 05/11/24 08:00

Lab Sample ID: 240-204359-4

**Matrix: Water** 

Job ID: 240-204359-2

Method: EPA 90	3.0 - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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 R	a226_Ra	228 - Com	bined Radi	um-226 an	d Radiun	n-228				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(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)
		Ва	
₋ab Sample ID	Client Sample ID	(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 Legen	d		
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(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

7/16/2024

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Job ID: 240-204359-2

Client: TRC Environmental Corporation. Project/Site: Karn/Weadock CCR JCW Landfill

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-667247/1-A Client Sample ID: Method Blank

**Matrix: Water** 

**Matrix: Water** 

**Analysis Batch: 669953** Count Total

**Prep Type: Total/NA** Prep Batch: 667247

MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.01667 Ū 0.0420 0.0421 1.00 0.0794 pCi/L 06/20/24 08:11 07/10/24 16:08

MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 98.3 30 - 110 06/20/24 08:11 07/10/24 16:08

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 667247

Analysis Batch: 669953 Total LCS LCS %Rec **Spike** Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL %Rec Limits MDC Unit Radium-226 11.3 10.65 1.09 1.00 0.0838 pCi/L 94 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 97.0 30 - 110

Lab Sample ID: LCS 160-667247/2-A

Lab Sample ID: 240-204359-4 DU Client Sample ID: JCW-MW-18006

**Matrix: Water Analysis Batch: 669953** 

Total

Prep Type: Total/NA Prep Batch: 667247

Sample Sample DU DU **RER** Uncert. Analyte Result Qual  $(2\sigma + / -)$ RL **MDC** Unit Result Qual RER Limit Radium-226 0.218 0.0910 1.00 0.0923 pCi/L 0.06 0.2281

DU DU Carrier %Yield Qualifier Limits Ba Carrier 96.5 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-667248/1-A Client Sample ID: Method Blank **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 668352

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier  $(2\sigma + / -)$  $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 0.2344 Ū 0.418 1.00 pCi/L 06/20/24 08:13 06/27/24 16:45 0.418 0.724

MB MB Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 98.3 30 - 110 06/20/24 08:13 06/27/24 16:45 30 - 110 Y Carrier 81.1 06/20/24 08:13 06/27/24 16:45

**Eurofins Cleveland** 

## **QC Sample Results**

Client: TRC Environmental Corporation. Job ID: 240-204359-2

Total

Project/Site: Karn/Weadock CCR JCW Landfill

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

LCS LCS %Rec Spike Uncert. Analyte Added Result Qual  $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-228 8.81 8.518 1.42 1.00 0.848 pCi/L 75 - 125

LCS LCS

%Yield Qualifier Carrier Limits Ba Carrier 97.0 30 - 110 Y Carrier 82.2 30 - 110

Lab Sample ID: 240-204359-4 DU Client Sample ID: JCW-MW-18006

**Matrix: Water** 

Analysis Batch: 668352

Prep Type: Total/NA Prep Batch: 667248

Total Sample Sample DU DU Uncert. **RER** Limit Analyte Result Qual Result Qual  $(2\sigma + / -)$ RL **MDC** Unit RER Radium-228 0.229 U 0.01773 U 1.00 0.835 pCi/L 0.22 0.446

DU DU

Carrier	%Yield	Qualifier	Limits
Ba Carrier	96.5		30 - 110
Y Carrier	80 7		30 - 110

**Eurofins Cleveland** 

## **QC Association Summary**

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR JCW Landfill

#### Rad

#### **Prep Batch: 667247**

Lab Sample ID 240-204359-4	Client Sample ID  JCW-MW-18006	Prep Type Total/NA	Matrix Water	Method PrecSep STD	Prep Batch
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	

Job ID: 240-204359-2

#### **Lab Chronicle**

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR JCW Landfill

Lab Sample ID: 240-204359-4

Matrix: Water

Job ID: 240-204359-2

Client Sample ID: JCW-MW-18006

Date Collected: 05/08/24 10:55 Date Received: 05/11/24 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	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

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## **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.

	ate	20-001	05-06-25
ANAB De			00 00-20
	ept. of Defense ELAP	L2305	04-06-25
ANAB De	ept. of Energy	L2305.01	04-08-25
ANAB IS	O/IEC 17025	L2305	04-06-25
Arizona St	ate	AZ0813	12-08-24
	os Angeles County Sanitation istricts	10259	06-30-22 *
Connecticut St	ate	PH-0241	03-31-25
Illinois NI	ELAP	200023	11-30-24
Iowa St	ate	373	12-01-24
Kansas NI	ELAP	E-10236	10-31-24
Kentucky (DW)	ate	KY90125	12-31-24
Kentucky (WW) St	ate	KY90125 (Permit KY0004049)	12-31-24
Louisiana NI	ELAP	04080	06-30-22 *
Louisiana (All)	ELAP	04080	06-30-25
Louisiana (DW)	ate	LA011	12-31-24
Maryland St	ate	310	09-30-24
Missouri St	ate	780	06-30-25
Nevada St	ate	MO00054	07-31-24
New Jersey NI	ELAP	MO002	06-30-25
New York Ni	ELAP	11616	03-31-25
North Carolina (DW)	ate	29700	07-31-24
Oklahoma NI	ELAP	9997	08-31-24
Oregon Ni	ELAP	4157	09-01-24
Pennsylvania Ni	ELAP	68-00540	02-28-25
Texas NI	ELAP	T104704193	07-31-24
US Fish & Wildlife US	S Federal Programs	058448	07-31-24
USDA US	S Federal Programs	P330-17-00028	05-18-26
Utah NI	ELAP	MO00054	07-31-24
Virginia NI	ELAP	460230	06-14-25
Washington St	ate	C592	08-30-24
West Virginia DEP St	ate	381	10-31-24

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 $<sup>^{\</sup>star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$ 

**Eurofins Cleveland** 

## **Login Sample Receipt Checklist**

Client: TRC Environmental Corporation.

Job Number: 240-204359-2

List Source: Eurofins St. Louis
List Number: 2
List Creation: 05/15/24 08:08 AM

Creator: Thornley, Richard W

Creator: Thornley, Richard W	_	•
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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	

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## Appendix F Field Records

# TRC

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 S (F) 124
PURPOSE OF FIELDWORK:	Second Quarter 2024 Groundwater Sampling
	Javier Jasso
WORK PERFORMED BY:	

513134 DATE

REVISED 04/2019

SIGNED



## **GENERAL NOTES**

PROJECT NAME:	CEC Weadock LF: 2024	GW Com	DATE: 5 /7	124	TIME ARRIVI	ED053/		
PROJECT NUMBER:	553828.0000.	0000	AUTHOR: AV		TIME LEFT:	TIME LEFT: 1400		
			<u></u>			* *		
			WEATHER		-			
TEMPERATURE: 3	°F WIND:	15	MPH	VISIBIL	.ITY: <u>८००५</u> ८ (४	al_		
			MPLING PERF					
wells SA	mpleo=sco	- Mu	1000 l	imsfms	n Jew-ou	v 11800l		
MW-50, Du	D#01 mw 4	A6	min 57	, B) W 5	3, MW - 53	R		
mw SYR		,						
			and the state of t					
			-,01					
				X.,				
PROE	BLEMS ENCOUNTERE	:D		CORRECT	IVE ACTION TAKE	N		
	-1-1-1		***	A-400-7-7-				
	<i>y</i>							
		CO	MMUNICATION					
NAME	REPRESENTING	T	MINO(NIOATION	SUBJECT / COM	MENTS			
Darby Litz	TRC	PM/Ur	odates	<u>.</u>				
Jon Gaeth	Consumers	Site Co						
			- ^-					
	•							
	INVESTI	CATION	DERIVED WAS	TE SUMMARY	***			
WASTE MATRIX	QUANTITY		DEIGITED TIAC	COMMEN	TS			
Groundwater	NM	To Gro	ound	***************************************				
					<u>,</u>			
				***************************************				
				Λ				
	) 13/29</td <td></td> <td></td> <td>// 🔺</td> <td><i>_</i> .</td> <td></td>			// 🔺	<i>_</i> .			



## **GENERAL NOTES**

PROJECT NAME:	CEC Weadock LF: 202	4 GW Com DATE:	5/8/24	TIME ARRIVED: 653
PROJECT NUMBER	553828.0000	.0000 AUTHO	DR: AW JK	TIME LEFT: りつの
		WEATH	ER .	
TEMPERATURE: 5	°F WIND:			ITY: OUS MEW
TEMPERATURE				
		ORK / SAMPLING		
Jew Min	1,40087	nw 58,	Jen-ma- 1800	5,00 - 57ROW 3,41 EB +1
150 mu- 19	2006 Dy'p	140,7 181	m 28, Fil	3,7 ( 2071
		nha v -		
		. = 1		
	- 10			
PROF	BLEMS ENCOUNTERI	ΞD	CORRECTI	VE ACTION TAKEN
		COMMUNIC	ATION	
NAME	REPRESENTING		SUBJECT / COM	IMENTS
Darby Litz	TRC	PM/Updates		
Jon Gaeth	Consumers	Site Contact		
			92	
	INVEST	ICATION DERIVE	D WASTE SUMMARY	
WASTE MATRIX	QUANTITY	ISATION DERIVE	COMMENT	TS
Groundwater	NM	To Ground		
	15			
	<u> </u>		1 -	
	5/13/0	4	120	5-13-
	711/10		CHECKED BY	<del>'                                    </del>

REVISED 04/2019



## **EQUIPMENT SUMMARY**

PROJECT NAME:	CEC Weadock LF: 2024 GW Co	SAMPLER NAME: J. Jasso,					
PROJECT NO.:	553828.0000.0000	SAMPLER MAINE. J. Jasso,					
WATER LEVEL MEASU	REMENTS COLLECTED WITH:						
HER	ON DIPPER-T	TRC A2					
NAME AND MODEL OF IN	STRUMENT	SERIAL NUMBER (IF APPLICABLE)					
PRODUCT LEVEL MEA	SUREMENTS COLLECTED WITH	l:					
	NA	NA					
NAME AND MODEL OF IN	STRUMENT	SERIAL NUMBER (IF APPLICABLE)					
DEPTH TO BOTTOM O	F WELL MEASUREMENTS COLL	ECTED WITH:					
HER	ON DIPPER-T	TRC A2					
NAME AND MODEL OF IN	STRUMENT	SERIAL NUMBER (IF APPLICABLE)					
PURGING METHOD							
PERIS	STALTIC PUMP	TRC A2					
NAME AND MODEL OF PU	JMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)					
SAMPLING METHOD	-						
PERI	STALTIC PUMP	TRC A2					
NAME AND MODEL OF PU	JMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)					
GEOTECH	DISPOSABLE FILTER	0.45 MICRON					
NAME AND MODEL OF FI	LTERATION DEVICE	FILTER TYPE AND SIZE					
DEDICA <sup>-</sup>	FED POLY TUBING	LOW-FLOW SAMPLING EVENT					
TUBING TYPE							
PURGE WATER DISPO	SAL METHOD						
✓ GROUND	☐ DRUM ☐ POTW	DOLYTANK OTHER					
DECONTAMINATION A	ND FIELD BLANK WATER SOUR	CE.					
		· · · · · · · · · · · · · · · · · · ·					
POTABLE WATER SOURCE	DRE BOUGHT	LABORATORY PROVIDED  DI WATER SOURCE					
	) 5/13/24	Al My 5-13-24					
SIGNED	DATE	CHECKED BY DATE					

## ⊕ **≯**TRC

## WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GV	N Complian	ice	MODEL:	Dro	DSZ	SAMPLER:	JJ	
PROJECT NO.:	553828.0000.0000			SERIAL:	#: <i>v</i> A	1	DATE: 5 /8	124	
PH	CALIBRATION CHECK				SF	PECIFIC CONDU	JCTIVITY CALIB	RATION CI	HECK
(LOT #): 365616	pH 4 / 10 (LOT #): 7 6 50 15	CAL. RANGE	TIME		(LOT#):36	L READING 50103 10124	TEMPERATURE	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	IVANGE			l	READING / STANDARD	(°CELSIUS)	IVANGE	
700 /700	40 / Ha	WITHIN RANGE	050		1360	1 (360	23	WITHIN	056
1	1	RANGE				1		WITHIN	
1	1	WITHIN RANGE				1		WITHIN	
1	1	WITHIN RANGE				1		WITHIN	
	CALIBRATION CHECK						IBRATION CHE		
CAL. READING (LOT #):73 6 10006	TEMPERATURE				CAI	L. READING	TEMPERATURE	1	
(EXP. DATE): 71)	(°CELSIUS)	CAL. RANGE	TIME				(°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD	00	MITHIN	- 6 6		POST-CAL. RI	EADING /SATURATED AIR		WITHIN	~~~
232 / 224	23	RANGE	026		( 0	( <del>^</del> )	7	RANGE	Use
/		RANGE WITHIN				1		RANGE WITHIN	
/		RANGE WITHIN						RANGE WITHIN	
		RANGE						RANGE	
TURBID	ITY CALIBRATION CHEC	CK					COMMENTS		
CALIBRATION	READING (NTU)				AUTO	CAL SOLUTION	✓ STANDARD	SOLUTION (	S)
(LOT #): #301 (EXP. DATE): U()	(LOT#): (EXP. DATE):	CAL. RANGE	TIME		(LOT#): (EXP. DATE)	<b>)</b> :	LIST LOT NUMBERS . UNDER CALI	AND EXPIRATION CHEC	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD				CALIBRA	TED PARAMETERS	CALIBRATI	ION RANGES (1)	
0 10	1	WITHIN RANGE	05%			pΗ	pH: +/- 0.2 S.		
						рπ	pn: +7- 0.2 3.	.U.	
le / w	1	WITHIN	USCe	ŀ		COND		.u. F CAL. STANI	DARD
le / w	/		USCE			•		F CAL. STANI	DARD
le 1 ico	/ / /	RANGE WITHIN	USCE			COND	COND: +/- 1% O	F CAL. STANI	DARD
1	/ / / NOTES	RANGE WITHIN RANGE WITHIN	USCE			COND	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES	F CAL. STANI	
1	/ / / NOTES	RANGE WITHIN RANGE WITHIN	USCE			COND ORP D.O.	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES	F CAL. STANI V F CAL. STANI	DARD
1	/ / NOTES	RANGE WITHIN RANGE WITHIN	USCE			COND ORP D.O.	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
1	/ / NOTES	RANGE WITHIN RANGE WITHIN	USCE			COND ORP D.O.	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
	/ / NOTES  PROBLEMS ENCOUNTERED	RANGE WITHIN RANGE WITHIN	isce			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
		RANGE WITHIN RANGE WITHIN	<i>i</i> sce			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O  (1) CALIBRATION RAI THE MODEL OF THE	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
		RANGE WITHIN RANGE WITHIN	isce			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O  (1) CALIBRATION RAI THE MODEL OF THE	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
		RANGE WITHIN RANGE WITHIN	<i>isce</i>			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O  (1) CALIBRATION RAI THE MODEL OF THE	F CAL. STANI   F CAL. STANI  NGES ARE SPE	DARD CIFIC TO
		RANGE WITHIN RANGE WITHIN	USCE			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O  (1) CALIBRATION RAI THE MODEL OF THE	F CAL. STANI  F CAL. STANI  NGES ARE SPE  WATER QUALI	DARD CIFIC TO Y METER
		RANGE WITHIN RANGE WITHIN	<i>isce</i>			COND ORP D.O. TURB	COND: +/- 1% O ORP: +/- 25 m\ D.O.: VARIES TURB: +/- 5% O  (1) CALIBRATION RAI THE MODEL OF THE	F CAL. STANI  F CAL. STANI  NGES ARE SPE  WATER QUALI	DARD CIFIC TO

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## WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Weadock LF: 2024 GV	N Compliar	ice	MODEL	inc	\S5	SAMPLER:	JJ
PROJECT NO.:	553828.0000.0000	-		SERIAL	7 7	1	DATE: S 13	121
PH (	CALIBRATION CHECK			<u> </u>	SP	FCIFIC CONDI	ICTIVITY CALIBI	RATION CHECK
PH 7 (LOT #): 36 59 68 (EXP. DATE): 1 6 17	pH 4 / 10 (LOT #): 363 0806 (EXP. DATE): (013	CAL. RANGE	ТІМЕ		CAL (LOT#): <b>3</b>	READING	TEMPERATURE (°CELSIUS)	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	WITHIN	Ti Cra			READING/STANDARD	00	D WITHIN OS CE
100 1100	140,400	□ WITHIN	030		ا ر بود	/ / <b>\</b> 3@c	25	WITHIN
/	/	RANGE WITHIN RANGE				,		RANGE WITHIN RANGE
/	/	WITHIN RANGE				1		WITHIN RANGE
	CALIBRATION CHECK	I		1			IBRATION CHE	
CAL. READING (LOT #): 3 (6 (000000) (EXP. DATE): 7 / 20  POST-CAL. READING / STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE	TIME			READING  ADING /SATURATED AIR	TEMPERATURE (*CELSIUS)	CAL. TIME
223/223	35.0	WITHIN RANGE	0300	₽	8.51	18.51	37	WITHIN 65C
/		RANGE WITHIN				/ , /		RANGE
/		RANGE WITHIN RANGE				1		RANGE WITHIN RANGE
TURBID	ITY CALIBRATION CHEC	<del></del>	l	l			COMMENTS	RANGE
CALIBRATION	READING (NTU)	-		Ī	AUTOC	AL SOLUTION	✓ STANDARD	SOLUTION (S)
(LOT #)A 3087 (EXP. DATE): 4/2	(LOT#): (EXP. DATE):	CAL. RANGE	TIME		(LOT#): (EXP. DATE):	•		AND EXPIRATION DATES BRATION CHECK
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD				CALIBRAT	ED PARAMETERS	CALIBRATI	ON RANGES <sup>(1)</sup>
0 10	1		056			Н	pH: +/- 0.2 S.	U.
w/ce	1	WITHIN RANGE	050			COND	COND: +/- 1% OI	F CAL. STANDARD
1	1	WITHIN				)RP	ORP: +/- 25 mV	/
/	/	WITHIN RANGE				0.0.	D.O.: VARIES	
<b></b>	NOTES			l		URB	TURB: +/- 5% OF	F CAL. STANDARD
								NGES ARE SPECIFIC TO WATER QUALITY METER
Р	ROBLEMS ENCOUNTERED					CORRECTI	VE ACTIONS	
	5/13/24	j			1	l 9	K s	5-13-24
SIGNED		DATE	•		<b>¢</b> H <b>≢</b> CI	KED BY		DATE



#### WATER LEVEL DATA

PROJECT NAME:	CEC Weadock LF: 2024 GW Compliance	DATE: 5 6 24
PROJECT NUMBER:	553828.0000.0000	AUTHOR: Javier Jasso

TROJECT NOMBER.	333020.00			AOTHC	/N. Javiei Jassu	
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
JCW-MW-18001	16 G DG	тос	17.090	23.75	, NA	NM
JCW-MW-18004	616	TOC	12-360	14.71	NA	NM
JCW-MW-18005	0739	TOC	650	14.33	NA	NM
JCW-MW-18006	0500	TOC	12-40	23.70	NA	NM
JCW-OW-18001	6630	TOC	656	20.26	NA	NM
JCW-OW-18002	Jes le	TOC	10.40	19-80	NA	NM
JCW-OW-18003	deit	TOC	46.0)	(8.42	NA	NM
JCW-OW-18004	0713	TOC	(6-9)-	14.64	NA	NM
JCW-OW-18006	0001	TOC	6.53	23.45	NA	NM
LH-103R	6733	TOC	20.69	33.46	NA	NM
LH-104	0719	TOC	8.60	14.05	NA	NM
<b>W-MW-</b> 20	0741	TOC	6.35	14.00	NA	NM
MVV-50	G634	тос	13-let	19.42	NA	NM
MVV-51	0640	TOC	14.45	20.00	NA	NM
MVV-52	مالمان	тос	19.10	19.90	NA	NM
MVV-53	9623	TOC	13.85	18.18	NA	NM
MW-53R	6700	тос	14.50	18-67	NA	NM
MW-54R	0704	тос	1397	13.33	NA	NM .
MW-55	2650	тос	14.10	16.40	NA	NM A
MVV-58	0690	тос	292	1625	NA	NM
OW-51	OQ41	TOC	4	[7.27]	NA	NM
OW-53	cte 55	TOC	7.40	[8.00	NA	NM
OW-54	0707	TOC	7.19	14.50	NA .	NM
OW-55	047	TOC	(e.)6	600	NA	ММ
OW-56	0745	TOC	5.65	1921	NA	NM

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

5/(3/)4 SIGNED DATE

- CHECK

5-13-24

DATE



#### **WATER LEVEL DATA**

PROJECT NAME:	CEC Wead	lock LF: 2024 GV	V Compliance		DATE: 5/6(24				
PROJECT NUMBER:	553828.00	00.0000			AUTHOR: Javier Jasso				
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)		DEPTH TO PRODUCT (FEET)	WATER ELEVATION		
OW-56R	0744	тос	5.60	20 -2	ور	NA	NM		
OW-57 IN	いてて	TOC	5.0	19-1	QO	NA	NM		
OW-57R IN	0754	TOC	5.24	20.1	40	NA	NM		
OW-57 OUT	5750	тос	8,89	19.0	$t^{c_{\mathcal{O}}}$	NA	NM		
OW-57R OUT	いろう	TOC	82(	20.	46	NA	NM		
JCW-MW-15007	0816	TOC	3.25	180	10	NA	NM		
JCW-MW-15009	060	TOC	8.85	130	00	NA	NM		
JCW-MW-15010	060	TOC	17.38	19.0	5	NA	NM		
JCW-MW-15028	0813	TOC	7.30	25	10	NA	NM		
MW-15002	0840	TOC	6.67	168	39	NA	NM		
MW-15008	1630	TOC	4.25	17.6	(7)	NA	NM		
MW-15016	6641	TOC	345	7.7	1	NA	NM		
MW-15019	£34	TOC	5.23	166	07	NA	NM		
15003 - MW 15003	0612		8.41	ONQ'	M				
ou-iel	ccery	:	6.40	2(e.	10				
JC4 mie 150 25	<sub>ઉ</sub> હય છે		15.10	DN	W				
50 MV (503U	670(		13.10	DWI	M				
Me-lleR	Mok	·	14.20	WH.	5				
Jumu 15021	0116		14.78	Na Na	M				
CW-54	0745		5.65	(G.	39				
MW-194 MW-104A	000T		6.42	20.					
mu loup	0813		7.60	41.					
MW-15020	0033	•	4.95	17.	25				
Mw-llui3	8630		4-50	<b>3</b> 2.	80				
MW-15024	630		5.74	17.	(				

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED 5/13/94 DATE

CHECKED 5-1

5-13-24

DATE



#### **WATER LEVEL DATA**

PROJECT NAME:	CEC Weadock LF: 2023 GW Compliance DATE: \$\int \( \begin{align*} \begin{align*} \text{DATE:} \\ \end{align*} \end{align*}								
PROJECT NUMBER:	514403.000	00.000		AUTH	AUTHOR: Javier Jasso				
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION			
OW-57 IN		TOC			NA	NM			
· OW-57R IN		TOC			NA.	NM			
OW-57 OUT		тос			NA NA	NM			
OW-57R OUT		IOC			NA	NM			
OW-61		TOC			NA	NM			
OW-63		TOC			MA	NM			
Me-15018 January	0637		536		1005				
sciumin (500)	certy		7801		Dum				
				-					
						- Santage			
			I						

ALL WATER LEVELS MUST INCLUDE REFERENCE POINT AND TAPE CORRECTION FACTOR (E.G., 1.1 + 0.00 T/PVC).

SIGNED 5/13/24 DATE

CHECKED

5-13-24

DATE

<b>&lt;&gt;</b>	T	2	C

PROJECT	PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED										
PROJECT	T NUMBE	R: 55381	4.0001.0000	E	3Y: A	W, JK, JJ	DATE: 5 (	3/2 B	BY:	JK	DATE: 5-13-24
SAMPLE	SAMPLE ID: M W. (500 ) WELL DIAMETER: 2" 4" 6" OTHER										
WELL MAT	WELL MATERIAL:  PVC SS IRON GALVANIZED STEEL OTHER										
SAMPLE T	SAMPLE TYPE: GW WW SW DI LEACHATE OTHER										
PURGING TIME: 143 ( DATE: 5 18 24 SAMPLE TIME: 145/ DATE: 5 8 121									ATE: J & ILII		
PURGE METHOI	PURGE PUMP PERISTALTIC PUMP  METHOD: BAILER  BAILER  PH: 7-60 SU CONDUCTIVITY: 46 umhos/cm  ORP:-111. mV DO: 1.3 mg/L										
	O WATER:	BAILER	T/ PVC			TURBIDIT		NTU	1.	<b>7</b> mg	/L
	D BOTTOM	-	T/ PVC			NONE		GHT	□ мо	DERATE	☐ VERY
WELL VOL		NA	LITERS	GALLON	NS	TEMPERA	TURE: 10	۰(	C FEF	RROUS Fe	mg/L
VOLUME I	REMOVED:	<u> </u>	LITERS	GALLON	1S	COLOR:	<u></u>	<u>u</u>	OD	OR:	1010
COLOR:		ran	ge on	OR: 101	2	FILTRATE	(0.45 um)	YES	X	NO	<del></del>
		TUR	BIDITY	· · · · · · · · · · · · · · · · · · ·		FILTRATE	COLOR:		FIL	TRATE ODOR	: <u> </u>
NONE	☐ SLI	GHT [	MODERATE	<b>Ø</b> VER	Υ	QC SAMP		/MSD		DUP-	
DISPOSAL	_ METHOD:	☑ GROUI	ND DRUM	OTHER		COMMEN	ITS:				
TIME	PURGE	PH	CONDUCTIVITY	ORP		D.O. T	URBIDITY	TEMPER	ATLIDE	WATER	CUMULATIVE
I IIVIE.	RATE (ML/MIN)	(SU)		(mV)	Ι,	mg/L)	(NTU)	(°C		LEVEL (FEET)	PURGE VOLUME (GAL OR L)
(431	$2c\rho$	7.70	(umhos/cm)	~[03.	<del> </del>		3.0		<u>"</u> ゔ.フ	(a) (c)	INITIAL
	29	7611		-1110			وي. ويارون	•	-6	383	1
(436		7.79	521		<del></del>	32					
1441		7.69	511	- 111-1	<del></del>	.33	8.5	13		685	3
1446		7.68	500	-111.	<u> </u>	. 25	8.5		.6	661	3
1451		7,60	495	-111.	$\leq l$	,25	B. 5	( ]	<u> </u>	685	φ
											COLUMN TO THE CO
					al butter						and the second s
	IOTE: STAT	PILIZATION	TEST IS COMP		13611	CESSIVE	DEADINGS	ADE WIT		EOLI OWING	· IMITS:
pH: +/-		COND.: +/-		+/- 10		+/- 0.3	TURB: +/-		or =</td <td></td> <td>TEMP.: +</td>		TEMP.: +
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - N	laOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTE	RED	NUMBER	SIZE	TYPE	PI	RESERVATIV	'E FILTERED
1	250 mL	PLASTIC	A	<del>-   -   -  </del>	X N		125 mL	PLAST	IC	D	□ Y □ N
	125 mL	PLASTIC	А	Y	X N		40 mL	VOA		Е	☐ Y ☐ N
-	60 mL	VOA	А	Y [	N	2	1 L	PLAST	IC	В	☐ Y 🔀 N
7	125 mL	PLASTIC	В	□ Y [	Σ <mark>α</mark> Ν	T					□ Y □ N
	125 mL	PLASTIC	С	□ Y	_  N						□ Y □ N
SHIPPING	METHOD:	Lab Dro	p off DA	TE SHIPPEI	D:	5-10-2	4	AIRBI	ILL NUM	BER:	
COC NUM	BER:	-	SIG	GNATURE:				DATE	SIGNE	D: 51	13/14

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED											
PROJECT	NUMBE	ER: 55381	4.0001.0000	BY:	AW, JK, JJ	DATE: \$1	3/24 BY:	JK	DATE: 5-13-24		
SAMPLE ID: MW-1500 & WELL DIAMETER: 2" 4" 6" OTHER											
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER											
SAMPLE T	SAMPLE TYPE:										
PUR	PURGING TIME: 1245 DATE: 5/8/24 SAMPLE TIME: 13/5 DATE: 5/8/24										
PURGE PUMP PERISTALTIC PUMP  METHOD: BAILER  DRP: 42 SU CONDUCTIVITY: 176 umhos/cm  ORP: -125. mV DO: 576 mg/L											
DEPTH TO WATER: 45 T/ PVC TURBIDITY: 49 NTU											
DEPTH TO	DEPTH TO BOTTOM: 17.42 T/ PVC SLIGHT MODERATE VERY										
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPER			FERROUS Fe _	mg/L		
VOLUME I	REMOVE	D: <u>le</u>	LITERS	GALLONS	COLOR:	<u></u>		_	10 K		
COLOR:		Brown	1154 OD	OR: <u>nov</u>	FILTRAT	E (0.45 um)	YES	FNO			
		TUR	BIDITY	_		E COLOR:		FILTRATE ODO			
NONE	s	LIGHT 🗌	MODERATE	VERY	QC SAM	IPLE: MS	MSD 1	DUP- B	icks round		
DISPOSAL	METHO	D: 🗸 GROUI	ND DRUM	OTHER	COMME	NTS:					
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	WATER	CUMULATIVE		
INVIE	RATE			(mV)		(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)		
1248	ML/MIN		(umhos/cm)	- ` `	8.37	215	(7.7	4,2 5	INITIAL		
1250	29			2)3	1.36	9.5	11.6	428	431		
1251		હિલદ હિલદ		-1070		10.8	115	455	2		
	-				601	10.0	11.7	43.	3		
1300		6.95		4(4,5	001	X	11.5	764	<del>ر</del> <del>-</del>		
1305		691	(157	-1250	01/	10.0	11 0-		+		
(300		6.95		-125.3		10.0	11. 7	4.31	,		
13(5		6.95	1760	-125.5	670	9.95	11.5	i (ÿ) (	اط اد		
	•										
N	OTE: ST	ABILIZATION	TEST IS COMP	LETE WHEN 3	SUCCESSIV	E READINGS	ARE WITHIN T	HE FOLLOWIN	G LIMITS:		
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> D.	O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or •	= 10</td <td>TEMP.: +</td>	TEMP.: +		
BOTTLES	FILLED	PRESERVA	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- H0	CL F		
NUMBER	SIZE	TYPE	PRESERVATIV	/E FILTERE	NUMBE	R SIZE	TYPE	PRESERVATI	VE FILTERED		
<b>Q</b>	250 mL	PLASTIC	А	□Y 🗷	N	125 mL	PLASTIC	D	□ Y □ N		
$\mathbf{Z}$	125 mL	PLASTIC	Α	□ Y <b>X</b>	N	40 mL	VOA	Е	☐ Y ☐ N		
	60 mL	VOA	Α	□ Y □	N 🔄	1 L	PLASTIC	В	□ Y 🐼 N		
2	125 mL	PLASTIC	В	□ Y <b>2</b> €	N				□ Y □ N		
	125 mL	PLASTIC	С	□ Y □	N		-		□ Y □ N		
SHIPPING	METHOD	Lab Drop	OPF DA	TE SHIPPED:	8-10-	24	AIRBILL N	UMBER:			
COC NUMI				SNATURE:			DATE SIG	NED: 1	1B 154		
						1					

L	<b>T</b>
` <b>/</b>	IRC

PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED											
PROJECT	NUMBE	R: 55381	4.0001.0000	I	BY: A	W, JK, JJ	DATE S 13	124	BY: 3	T/L	DATE: 5~13-24
SAMPLE	SAMPLE ID: MW- 150 ( WELL DIAMETER: 2" 4" 6" OTHER										
WELL MAT	ERIAL:	✓ PVC	ss 🗆	IRON [	GALVA	NIZED STE	EL		OTHER		
SAMPLE T	YPE:	☑ GW	□ww □	SW 🔲	DI	LE	ACHATE		OTHER		
PUR	SING	TIME: î 🤇	12 0/	ATES 18	24	1	/IPLE	TIME:	१५५	•	ATE: 3/6/24
PURGE PUMP PERISTALTIC PUMP METHOD:  BAILER  PH: 7.10 SU CONDUCTIVITY: 1763 umhos/cm  ORP: -117- mv DO: 0269 mg/L											
DEPTH TO WATER: 3.4C T/ PVC TURBIDITY: 9.9 NTU										-	
DEPTH TO BOTTOM: 7.75 T/ PVC NONE SLIGHT MODERATE VERY											
WELL VOL	UME:	NA	LITERS	GALLO	vs	TEMPERA		1.6	°C FEF	RROUS Fe _	mg/L
VOLUME F	REMOVED	:	T LITERS	GALLO		COLOR:	cler		OD	OR: 🗹	1010
COLOR:		Rowi	<u>n</u> 00	OR: 1001	4	FILTRATE	(0.45 um)	YES	<u> </u>	NO	
		TUR	BIDITY	_f:-		FILTRATE	COLOR:		FIL	TRATE ODO	R:
NONE	SL		MODERATE	VER	RY	QC SAMF	PLE: MS	/MSD		DUP-	
DISPOSAL	METHOL	): 🔽 GROUI	ND DRUM	OTHER		COMMEN	ITS:				
TIME	PURGE RATE	PH	CONDUCTIVITY			1	URBIDITY		RATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
0-10	(ML/MIN)	(SU)	(umhos/cm)	(mV)		mg/L)	(NTU)	15	°C)	(FEET)	(GAL OR L)  INITIAL
1517	200	750	()33	<u>-90.1</u>			<u> 260</u>			3,40	INITIAL
1517		700	1816	_93.			<u>63</u>	12		3.70	
1533		700	1297	-103.	-		3 <i>&lt;</i>	12.		3.70	2
1527		710	1715	-110.			<u>23</u>	19-	<u> </u>	3.70	
1537		7,10	1736	-114.8	3 (	278	(7	12.	6	3.70	Ψ
1537		7.10	1748	_ 117.	( (	373	(0	13		370	5
1542		7.10	1757	-117.	1 0	05	<u> </u>	12	ベ	3.80	0
1547		7.10	176)	-117.	< (	ا والماد	9-9	1 2	<u> </u>	385	
		***					-	•			
		_									
N	OTE: STA	BILIZATION	TEST IS COM	PLETE WHE	N 3 SU	CCESSIVE	READINGS	ARE WI	THIN THE	FOLLOWIN	IG LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10	D.O.:	+/- 0.3	TURB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +</td>	10	TEMP.: +
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D -	NaOH	E- H	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTE	RED	NUMBER	SIZE	TYP	E P	RESERVATI	VE FILTERED
	250 mL	PLASTIC	A		N		125 mL	PLAS		D	□ Y □ N
\	125 mL	PLASTIC	A	Y [	XN		40 mL	VO.	Α	E	□ Y □ N
	60 mL	VOA	Α	_	N	ユ	1 L	PLAS	TIC	В	□ Y 🐼 N
(	125 mL	PLASTIC	В	Y [	<b>⊠</b> N						YUN
	125 mL	PLASTIC	С	Y	N						☐ Y ☐ N
SHIPPING	METHOD:	Lab Drag	, e <del>(%</del> D/	ATE SHIPPE	D:	5-10	-24	AIR	BILL NUM	IBER:	
COC NUME	BER:		sı	GNATURE:		6	/	DAT	re signe	D: \$ 1	13/24
								<del></del>		<del></del>	- / / -

<b>;</b> }	TRC
ROJEC	T NAME:

PROJECT	PROJECT NAME: CEC Karn BAP/LI: 2024 GW C PREPARED CHECKED									
PROJECT	NUMBER	R: 553814	4.0001.0000	BY	: AW, JK, J	J DATE:	7/2/ BY:	7K	DATE: 5-13-24	
SAMPLE	SAMPLE ID: Nu-1500   WELL DIAMETER: 2" 4" 6" OTHER									
WELL MAT	ERIAL:	✓ PVC	ss 🗆	IRON GA	LVANIZED S	TEEL	□ отн	ER		
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI		LEACHATE	□ отн	ER		
PURG	SING	TIME:	46 01	ATE:5/8/		AMPLE	TIME: 1 4		TE: 5 (8/24	
PURGE PUMP PERISTALTIC PUMP METHOD:  BAILER  PH: 4 SU CONDUCTIVITY: 3044 umhos/cm ORP: 104 mV DO: 070 mg/L										
DEPTH TO WATER: 530 T/ PVC TURBIDITY: 5.6 NTU										
DEPTH TO BOTTOM: 16.87 T/ PVC SLIGHT MODERATE VERY										
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE: 👤	Q²C <sup></sup> C	FERROUS Fe	mg/L	
VOLUME F	REMOVED:	7	LITERS	GALLONS	COLOF	e <u>Cl4</u>	SON		0 K	
COLOR:	<u> </u>	QU/	OD	OR: <u>NON</u>	FILTRA	TE (0.45 um)	YES	<del>Д</del> но		
		TUR	BIDITY	_	FILTRA	TE COLOR:	·	FILTRATE ODOR	:	
NONE	SLI		MODERATE	VERY			MSD	DUP-		
DISPOSAL	METHOD:	GROUN	ND DRUM	OTHER	СОММ	ENTS:				
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATU	RE LEVEL	CUMULATIVE PURGE VOLUME	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)	
1348	200	707	2037	-106°6	8.0	(0	16.0	5.30	INITIAL	
1353		1096	2039	.94.5	1.40	5,8	11.	5.30	į	
1356		695	2041	- 97.1	098	5.8	11.4	535	2	
1463		1095	2046	-1040	1	5. V	10.6	535	3,	
1400		6,95	2046	_104.3	080	5.9	10.0		4	
1413		6.95	2644	_104.		ςĖ	10.6		7	
					'				-6-	
							}			
1										
					0.1005001	/E DE ADIMOS	A DE MATURA	THE FOLLOWING	i IMITO	
		BILIZATION COND.: +/-			0.0.: +/- <b>0.3</b>	TURB: +/-		THE FOLLOWING	TEMP.: +	
pH: +/-		г								
BOTTLES			ATIVE CODES		B - HNO3	C - H2SO4	r			
NUMBER	SIZE	TYPE	PRESERVATI	<del></del>			TYPE	PRESERVATIV		
L	250 mL	PLASTIC	A			125 mL	PLASTIC	D	□ Y □ N	
\	125 mL	PLASTIC	A	Y X	N	40 mL	VOA	E	□ Y □ N	
	60 mL	VOA	А		N 3	1 L	PLASTIC	В	□ Y <b>(X)</b> N	
1	125 mL	PLASTIC	В		N				□ Y □ N	
	125 mL	PLASTIC	С		N		Target and the same and the sam		□ Y □ N	
SHIPPING	METHOD:	Lab Bn	sp off D	ATE SHIPPED:	8-10	- 24	AIRBILL N	NUMBER:		
COC NUMI	 BER:			GNATURE:	7		DATE SIG	SNED: 7	12/24	
				·			1		<i>1.0</i> ·	

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PROJECT NAME:	(
PROJECT NUMBER:	Ę
SAMPLE ID:	<u>}</u>
WELL MATERIAL: 🗸	] F
SAMPLE TYPE:	] (
PURGING T	M
PURGE PURGE METHOD:	JM ∤IL
DEPTH TO WATER: _	1
DEPTH ТО ВОТТОМ:_	1
WELL VOLUME:	ŀ
VOLUME REMOVED: _	
COLOR:	
	JT

PROJECT	NAME:	CEC K	Carn BAP/LI:	2024 G	W C		PREF	PARED			CHE	CKED
PROJECT	NUMBEF	R: 55381	4.0001.0000	-	BA	′: A	W, JK, JJ	DATE:	() <sup>y</sup>	BY:	JK	DATE: 5-13-24
SAMPLE	ID: ¥Z	Q #c	+45F	# 0			ER: 🗸 2"		6" 🔲	OTHER	₹	
WELL MAT	ERIAL:	✓ PVC	☐ss [	RON			NIZED STE			OTHER	₹	****
SAMPLE T	YPE:	☑ GW	□ww [	sw			LE	ACHATE	. []	OTHER	۲	
PURC	SING	TIME:		DATE:		-	SAN	<b>I</b> PLE	TIME:	160	7	DATE: \$ 8/36
PURGE	Q.	PUMP	PERISTALTIO	PUMP			РН: <u>4</u>	<b>∕1</b> 1 s	su co	NDUCTI	IVITY: <u>//</u>	umhos/cm
METHOD: BAILER ORP: NO DO: No mg/L									mg/L			
DEPTH TO	WATER:		T/ PVC	4_			TURBIDIT		NTL			
	вфттом:		T/ FVC →	1	·		NONE		IGHT		ODERATE	☐ VERY
WELL VOL	<del></del>	NA NA	LITERS		ALLONS		TEMPERA	TURE:		<del></del>	ERROUS Fe	mg/L
	REMPVED:	$\overline{}$	LITERS		ALLONS		COLOR:				DOR:	
COLOR:	_ <del>`</del>			DOR: _				(0.45 um)	∐ YES		_ NO	
NONE	∏ SLI	_	BIDITY MODERATE	Г	│ VERY		FILTRATE QC SAME	, , , , , , , , , , , , , , , , , , , ,	S/MSD	F	ILTRATE OD: 7 DUP-	OR:
			ND DRUI		THER			ITS: EQ		kan	bund	
	PURGE					T	<u> </u>				WATER	CUMULATIVE
TIME	RATE	PH	CONDUCTIVIT		ORP	ı		TURBIDITY		RATURE	LEVEL	PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)		(mV)	1 (	mg/L)	(NTU)	<u> </u>	(°C)	(FEET)	(GAL OR L) INITIAL
į				-		-	#					
1				-		+						
***							an experience of the control of the				- interest	
100												
				_		-	7,7					
an interest of the control of the co				_	···	-				,		_
									<u> </u>			
			*****				9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					
						-	***				***	
N	OTE: STAE	BILIZATION	TEST IS CO	MPLETE	WHEN	3 SU	CCESSIVE	READINGS	ARE W	ITHIN <b>T</b> H	HE FOLLOW	ING LIMITS:
pH: +/-	0.1	COND.: +/-	3 % OR	P: +/- <b>1</b>	0	D.O.:	+/- 0.3	TURB: +/-	10 %	or </td <td>′= 10</td> <td>TEMP.: +</td>	′= 10	TEMP.: +
BOTTLES	S FILLED	PRESERV	ATIVE CODE	3 A - N	IONE	В-	HNO3	C - H2SO4	D -	NaOH	E-	HCL F
NUMBER	SIZE	TYPE	PRESERVA	TIVE	FILTER	ED	NUMBER	SIZE	TYF	PE	PRESERVA	TIVE FILTERED
	250 mL	PLASTIC	А		] Y [	] N		125 mL	PLAS	STIC	D	□ Y □ N
	125 mL	PLASTIC	А	Ĺ	] Y [	] N		40 mL	VO	A	Е	□ Y □ N
	60 mL	VOA	Α		] Y [	] N	2	1 L	PLAS	STIC	В	□ Y □ N
Ì	125 mL	PLASTIC	В	İ	] Y [	] N		***				□ Y □ N
·····	125 mL	PLASTIC	С		] Y [	] N		A N A O N A				□ Y □ N
SHIPPING	METHOD:	Lab D	no off	DATE S	HIPPED:		5-10	2-24	AIR	BILL NU	IMBER:	
COC NUMI			<b>-</b>	SIGNAT				<del></del>	DA	TE SIGN	ED: <i>(</i>	1/3/24
					-			/				>(1/ 1"

<b>{</b> }	T	2	C
		•	

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED										
PROJECT	NUMBEF	R: 553828	8.0000.0000	E	BY:	JJ .	DATE:5	3/1 BY:	JK	DATE: 5-13-24
SAMPLE ID	SAMPLE ID: Yiu-Mu 1800 WELL DIAMETER: 2" 4" 6" OTHER									
WELL MATE	RIAL:	✓ PVC	ss 🗌	IRON 🔲 G	SALVAN	NIZED STE	EL	□ отн	ER	
SAMPLE TYI	PE:	☑ GW	□ ww □	sw 🗆	)I	LE	ACHATE	□ отн	ER	
PURG	ING	TIME	14 DA	ATE: 5/7/	٤५	<del>- 1</del> -	/PLE			ATE: 5/7/)4
PURGE METHOD:	<b>☑</b>	PUMP BAILER	PERISTALTIC	PUMP		PH: <b>Q</b> - ORP: ~_1	310 m	U CONDUC	CTIVITY: 3 4 °	
DEPTH TO	WATER:	17,11	T/ PVC		TURBIDIT	Y: <u>5.4</u>	NTU			
DEPTH TO I	воттом:	23.75	T/ PVC,			NONE			MODERATE	☐ VERY
WELL VOLU	ME:	NA	LITERS	GALLON	ıs	TEMPERA			FERROUS Fe	mg/L
VOLUME RE	EMOVED:	<u> </u>	X LITERS	GALLON		COLOR:	_Clu		odor: <u>r</u>	16 M
COLOR:	<u> </u>	wy		OR: <b>1001</b>		FILTRATE	(0.45 um)	YES	14 NO	
			BIDITY		ļ	FILTRATE			FILTRATE ODOR	:
NONE			MODERATE	VER'	Y	QC SAMF	LE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	✓ GROU	ND DRUM	OTHER		COMMEN	TS:			
TIME	PURGE	PH	CONDUCTIVITY	ORP		D.O. T	URBIDITY	TEMPERATU	RE WATER LEVEL	CUMULATIVE PURGE VOLUME
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	( r	ng/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
0545	3 <i>0</i> 0	400	6736	223	ઇ	CT.	55	11.0	17.11	INITIAL
6550		Coler	3334	-87.5	<del></del>	3 %	6.2	(0.3	1714	l
6555	$\neg$	6.70	3776	-960			(e.)	10.3	1718	l d
6600	1	6.75	3370	-107		92	5.8	10.3	1718	3
7000		6.7-	3395	-1250	0	ون	5.7	(0.3	1718	4
كاه ال	11	k.80	3430	- 130.7		80	56	10.3	1718	
cie ( \		6.80	3446	~ 130.8		רנ	5.5	10.3	1718	6
06 X	1	6.40		-13LC	1	76	3. Y	10.3	1718	7
		-								
						7	***			
N(	OTE: STAI	BILIZATION	TEST IS COM	PLETE WHE	N 3 SU	CCESSIVE	READINGS	ARE WITHIN	THE FOLLOWIN	G LIMITS:
pH: +/- <b>0</b>		COND.: +/-		+/- 10		+/- 0.3	TURB: +/-		= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - NaOH	E- HC	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTE	RED	NUMBER	SIZE	TYPE	PRESERVATI\	/E FILTERED
l l	250 mL	PLASTIC	А	Y	PN		125 mL	PLASTIC	D	□ Y □ N
3	125 mL	PLASTIC	А	□ Y	<b>Z</b> N │		40 mL	VOA	E	□ Y □ N
2	60 mL	VOA	А	☐ Y [	Ø N ₪	<b>み</b>	1 L	PLASTIC	В	
3	125 mL	PLASTIC	В	□ Y [	N					□ Y □ N
	125 mL	PLASTIC	С	□ Y [	N					□ Y □ N
SHIPPING M	IETHOD:	Lab Dro	p off D	ATE SHIPPE	D:	5-10-	24	AIRBILL N	NUMBER:	
COC NUMBE	ER:		·	GNATURE:			$\overline{\gamma}^{-}$	DATE SIG	SNED: 37	(3/24
							J			<u> </u>

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PROJECT	NAME:	CEC V	Veadock LF: 2	024 GW C	PR	EPARED		CHEC	KED		
			8.0000.0000	BY:	JJ		3 /) of BY:	JK	DATE: 5-17-24		
									31751		
	SAMPLE ID: JCW- 1800 ( WELL DIAMETER: ☑ 2" ☐ 4" ☐ 6" ☐ OTHER										
	SAMPLE TYPE:										
SAMPLE I	YPE:	☑ GW									
PURC	GING	TIME: 66	50 0	ATES 17 134		AMPLE	LIWE: 9.23		ATE: 57124		
PURGE PUMP PERISTALTIC PUMP  METHOD: DAIL FR  PH: 4.5 SU CONDUCTIVITY: 159 umhos/cn											
DEPTH TO WATER:         \$\overline{\psi_0.5\sigma}\$ T/ PVC         TURBIDITY:         \$\overline{\psi_0.2\sigma}\$ NTU           DEPTH TO BOTTOM:         \$\overline{\psi_0.2\sigma}\$ T/ PVC         \$\psi_0.00000000000000000000000000000000000											
			T/ PVC		ДДио	sf:	<u> </u>	MODERATE	U VERY		
WELL VOL		NA TO	LITERS	GALLONS		-TONIONE		FERROUS Fe _	mg/L		
	REMOVED:	<u>3</u> ((\@\)	LITERS	GALLONS	COLO		<del></del> !	ODOR: 1\(\)  ☐ NO	016		
COLOR:				OCK: NOTO		ATE (0.45 um)	∐ YES				
NONE	∏ SLI		BIDITY MODERATE	☐ VERY		TE COLOR:\ MPLE: \ MS	<u> </u> /MSD	FILTRATE ODOR  DUP-	i. 1		
-		GROUI			_	MENTS:					
	PURGE						<u> </u>	WATER	CUMULATIVE		
TIME	RATE	PH	CONDUCTIVITY		D.O.	TURBIDITY	TEMPERATUI	LEVEL	PURGE VOLUME		
2.5.5	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L) INITIAL		
6650	100	337		-76.C	-	(11.0	9.3		1 7		
0625		6.6	1673	~ (00	3.0	9,4	9.8	le 70			
8700		685		-106	13_	8.6	9	(6. <u>7</u> 0			
0705		6.85		- 117.0	13	8.3	9,9	(e. 7c	1.0		
071c		(e. 85	1608	- 1320	089	8.5	10.0	La7c	<u></u>		
けいて		685	1601	-139-3	<u>063</u>	7.9	10.1	670	<b>⋑.</b> √		
0730		684	1597	-172.5	0.99	フ, 9	10.1	670	3		
1											
100 de companyo de	,										
,					_						
L	NOTE: STA	BILIZATION	N TEST IS COM	PLETE WHEN 3	SUCCESS	IVE READINGS	ARE WITHIN	THE FOLLOWIN	G LIMITS:		
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> D.	O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-		
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HO	 CL F		
NUMBER	SIZE	TYPE	PRESERVAT			<del></del>	TYPE	PRESERVATI\			
i	250 mL	PLASTIC	A		<b>-</b>	125 mL	PLASTIC	D	Y N		
1	125 mL	PLASTIC	A			40 mL	VOA	E	□Y □N		
3	60 mL	VOA	A		<del></del>	1 L	PLASTIC	В	TY N		
5	125 mL	PLASTIC	В						□Y □N		
1	125 mL	PLASTIC	С		N				□Y □N		
						0-24	AIDDULA	II INADED:			
		gord da		ATE SHIPPED:	3-10	V- 4-1	AIRBILL N		7,51		
COC NUMI	BER: 		SI	GNATURE:	$\overline{}$	$\rightarrow$	DATE SIG	INED:	117134		
						<b>~</b> /					

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ROJECT NAME:
ROJECT NUMBER
AMPLE ID: Mu
VELL MATERIAL:

PROJECT	NAME:	CEC V	Veadock LF:	2024 GW C	PRE	EPARED		CHEC	KED
PROJECT	NUMBE	R: 55382	8.0000.0000	BY:	JJ	DATE	3/14 BY:	71 <u>~</u>	DATE: 5-17-24
SAMPLE	ID: M	U 50		WELL DIAM	ETER: 🗸	2"	6" OTHE	R	
WELL MAT	ERIAL:	✓ PVC	ss [	] IRON   GAL	/ANIZED S	TEEL	OTHE	R	
SAMPLE T	YPE:	☑ GW	□ ww □	]sw □ di		LEACHATE	OTHE	R	
PURC	SING	TIME: 0	737 0	ATE:S/7 lay	1	AMPLE	TIME: () (%)		TE:5/7 124
PURGE METHOD		PUMP BAILER	PERISTALTIC	PUMP	PH: "	112	U CONDUCT	TIVITY: <b>\ \ \ \ \ \</b> mg	
DEPTH TO	WATER:	13.70	T/ PVC		TURBIL	DITY: <u>\$, `</u>	1 NTU		
DEPTH TO	воттом	19.42	T/ PVC		- Juon			ODERATE	☐ VERY
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE:	<u>0.C</u>	ERROUS Fe	mg/L
VOLUME F	REMOVED	<u> </u>	<b>I</b> LITERS	GALLONS	COLOF	<u>:</u>			>K
COLOR:	(	cler	<u> </u>	DORNOV	FILTRA	TE (0.45 um)	YES [	<b>₹</b> NO	
		TUR	BIDITY		FILTRAT	TE COLOR:		ILTRATE ODOR	
NONE	SL.		MODERATE	☐ VERY	QC SAI	MPLE: MS	/MSD	DUP- 🛨 C	<u>'                                    </u>
DISPOSAL	METHOD	: GROUI	ND DRUM	1 OTHER	COMM	ENTS:			
TIME	PURGE RATE	PH (SU)	CONDUCTIVIT	Y ORP (mV)	D. <b>O</b> . ( mg/L)	TURBIDITY (NTU)	TEMPERATUR	E WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
グバろつ	(ML/MIN)	741	1429	-64.5	9. l	<del>3 (.o</del>	9,4	1370	INITIAL
0717	200	7,44	144	~93.6	17	8.0	9,9	13.80	
(1)47		Sur	1458	-107	1 1	6.0	10.0	1380	à
0753		750	1461	-133.6	089	5.8	10.0	1360	3
ر کر کری از کر کری		7.48			08U	<u> </u>	10.0	1380	φ
<i>ত</i> ্তিও <i>স</i>		749		-1423	ררט	5.7	10.0	1386	+
(60)	-	7 49	1455		675	54	10.0	1380	Ç
	-1						1		
Access of the second	***************************************			I re-					
pH: +/-		ABILIZATION		MPLETE WHEN 3 :	SUCCESSI D.: +/- 0.3	VE READINGS TURB: +/-			G LIMITS: TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	3 - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVAT	TIVE FILTERED	NUMBE	ER SIZE	TYPE	PRESERVATIV	E FILTERED
7	250 mL	PLASTIC	А		V	125 mL	PLASTIC	D	□Y □N
2	125 mL	PLASTIC	Α	□ Y K(	N	40 mL	VOA	E	☐ Y ☐ N
	60 mL	VOA	A		v <u>L</u>	<b>{</b> 1 L	PLASTIC	В	☐ Y 🕱 N
2	125 mL	PLASTIC	В	□ Y K	N			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	☐ Y ☐ N
	125 mL	PLASTIC	С	_	N				ПА Пи
SHIPPING	METHOD:	Lab Da	90 off 1	ATE SHIPPED:	5-10	0-24	AIRBILL N	JMBER:	
COC NUMI	BER:	<u> </u>		GIGNATURE:			DATE SIGN	NED: 5//	3/24
L			1		-	<del>/</del>			

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PROJECT	NAME:	CEC V	Veadock LF	: 2024 GW C	PR	EPARED		CHEC	KED
PROJECT	NUMBER	R: 553828	8.0000.000	0 BY	: JJ	DATE:	3/24 BY:	7k	DATE: 5-13-24
SAMPLE	ID: <b>Λ</b> \ i. a	15	i	WELL DIA	METER: 🗸		6" \ OTHE		
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER									
SAMPLE T		☑ GW	□ww	☐ sw ☐ di		LEACHATE	OTHE		
PURG		TIME: 06			i s	AMPLE	TIME: CG	<b>)</b> 0/	ATE: 6/2 /3 V
77									7 17 19 1
PURGE METHOD	_	BAILER	PERISTALI					<u>U.G.3</u> mg	
DEPTH TO	WATER:	14.50	T/ PVC		TURBI	DITY: كور	<b>1</b> NTU		
DEPTH TO	воттом	20,00	T/ PVC		Ŭ NO	NE SL	IGHT	MODERATE	☐ VERY
WELL VOL	UME:	NA	LITERS		TEMPE	RATURE: 4	<del></del>	FERROUS Fe	mg/L
VOLUME F	REMOVED:		LITERS		COLO	R:			10/C
COLOR:	(	) weir/		ODOR 10 K	_ FILTRA	ATE (0.45 um)	YES (	<b>∄</b> -NO	
	<del>-</del>		BIDITY			TE COLOR:		FILTRATE ODOR	•
NONE	J SLI		MODERATE			MPLE: MS	S/MSD		
DISPOSAL	METHOD:	GROU	ND DRU	JM   OTHER	COMM	IENTS:			
TIME	PURGE RATE	PH	CONDUCTIV	TTY ORP	D.O.	TURBIDITY	TEMPERATUR	RE WATER	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cn	n) (mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
7430	200	7.98	1243	3 -9401	9.9	ع﴿	10.4	1450	INITIAL
08 50	ſ	つらら	コンリ	7 - 1210	2.30	જે.જ	9.1	1477	
0611		<del>1</del> .40	1250	0-1255	1,4	8.4	9.5	1459	) a
0900		7.40	1258	5-130.5	1.2	4.4	9.4	14 55	3
6905		774	1260		1.0	8.0	9.5	1451	Ý
onic		730	1767		093	70	9.5	1455	(
1915		726	126	1 -1408	087	6.9	9.5	1455	6
0920		7.35	136	9-1410	083	(20)	9.5	1400	7
6750			1 24		<u> </u>				
11111	I								
		DU IZATION	I TEST IS C	OMPLETE WHEN	2 CLICCESS	IVE DEADINGS	ADE WITHIN	THE FOLLOWIN	C I IMITS:
л pH: +/-		BILIZATION COND.: +/-			).O.: +/- <b>0.3</b>				TEMP.: +/-
		1							
BOTTLES				ATNE   FILTER	B - HNO3	C - H2SO4	r	E- HO	
NUMBER	SIZE	TYPE	PRESERV		1		TYPE PLASTIC	PRESERVATIV	
	250 mL	PLASTIC	A		<del> </del>	125 mL		D E	
	125 mL	PLASTIC	A		<del>                                     </del>	40 mL	VOA		Y N
1	60 mL	VOA	A		+ +	<u>}</u> 1L	PLASTIC	В .	☐ Y Ø N
1	125 mL	PLASTIC	В		<del></del>				LIY LIN
	125 mL	PLASTIC	С	Y <u> </u>	N		2		<u> </u>
SHIPPING	METHOD:	rap Du	b off	DATE SHIPPED:	5-16	2-24	AIRBILL N	UMBER:	
COC NUMI	BER:			SIGNATURE:			DATE SIG	NED: \	13/24
									//

<b>&lt;&gt;</b>	T	2	C
		_	

PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED									
PROJECT	NUMBER	R: 553828	3.0000.0000	BY:	JJ	DATE (13	per BY:	JK	DATE: 5-17-24
SAMPLE	ID: Mi	US	<i>e</i>	WELL DIAM	METER: 🗸	2"	6" OTH	ER	
WELL MAT	ERIAL:	✓ PVC	□ss [	RON GAL	VANIZED S	TEEL	ОТНІ	ER	
SAMPLE T	YPE:	☑ GW	□ww [	☐ SW ☐ DI		LEACHATE	□ отні	ER	
PUR	SING	TIME	પ હ	DATES 1712	∳ S,	AMPLE	,	<del></del>	TE:317/24
PURGE METHOE	_	PUMP BAILER	PERISTALTI	C PUMP	PH: ORP:		U CONDUC	TIVITY: <u>\ 7\</u> <u>079</u> mg.	) umhos/cm /L
DEPTH TO	WATER:	15,15	T/ PVC		TURBI	·	•		
DEPTH TO	воттом	19.90	T/ PVC		□ <b>J-N</b> OI			MODERATE	VERY
WELL VOL	UME:	NA	LITERS	GALLONS		TOTAL TO		FERROUS Fe	mg/L
VOLUME F	REMOVED:		LITERS	GALLONS	COLOF				
COLOR:	<u>Ch</u>	QC1/		DOOR: OK	_ FILTRA	TE (0.45 um)	∐ YES	NO	
		_	BIDITY			re color:		FILTRATE ODOR:	
<b>₩</b> ONE			MODERATE	☐ VERY			/MSD	DUP-	
DISPOSAL	METHOD:	✓ GROUI	ND DRU	M   OTHER	СОММ	ENTS:			
TIME	PURGE RATE	РH	CONDUCTIVI	TY ORP	D.O.	TURBIDITY	TEMPERATU	RE LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
3446	200	7,40	(GB)	.43. 5	86 V	18	l)	15.11	INITIAL
0951		7,00	1703	-110.0	トて	6.9	10.4	1530	<b>1</b>
09 54		699	1707	- 105.8	1.1	(g.7	10.4	1530	ۼ
100 l		697	1712	- 113.5	091	6.0	10-5	1570	3
10006		1095	1713	-114-0	086	5.0	10.5	1570	4
1011		109(e	1716	-119.0	(183	5.3	106	1530	2
1010		(696	1715	-119.3	081	5.2	106	(530	ىكر
1021		691,	$\frac{1}{1}$	-119.5		5,3	10.6	1530	7
1021		-(-, 10	· / L /						
	NOTE: STA	BILIZATION	TEST IS CO	MPLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITHIN	THE FOLLOWING	3 LIMITS:
pH: +/-		COND.: +/-			.O.: +/- <b>0.3</b>	TURB: +/-			TEMP.: +/-
BOTTLES	SFILLED	PRESERV.	ATIVE CODE	S A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTERE	D NUMBE	ER SIZE	TYPE	PRESERVATIV	E FILTERED
1	250 mL	PLASTIC	А	□ Y 🔯	N	125 mL	PLASTIC	D	□Y □N
	125 mL	PLASTIC	А	□ Y <b>K</b> (		40 mL	VOA	Е	☐ Y ☐ N
	60 mL	VOA	Α	□ Y □	N J	. 1L	PLASTIC	В	□ Y <b>⊠</b> N
,	125 mL	PLASTIC	В	□ Y <b>⊠</b>	N				☐ Y ☐ N
125 mL PLASTIC C ☐ Y ☐ N ☐ Y ☐ Y ☐ N ☐ Y ☐ X ☐ Y ☐ X ☐ Y ☐ X ☐ Y ☐ X ☐ Y ☐ X ☐ Y ☐ X ☐ Y ☐ X ☐ X							□ Y □ N		
SHIPPING	METHOD:	Lab D	rop off	DATE SHIPPED:	8-1	0-24	AIRBILL N	IUMBER:	
COC NUMI	 BER:			SIGNATURE:			DATE SIG	SNED: []	1344
					7		· · · · · · · · · · · · · · · · · · ·		

<b>&lt;&gt;&gt;</b>	T	2	C
		_	-

SAMPLE ID:   MU	PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED									
WELL MATERIAL	PROJECT	NUMBER	R: 55382	8.0000.0000	BY	: JJ	DATE: AC	3174 BY:	JK.	DATE: 5-13-24
SAMPLE TYPE	SAMPLE	ID: MU	U-5	3	WELL DIA	METER: 🗸	2"	6" 🗌 ОТНІ	ER	
PURGING TIME (\$ 5 \ DATES   7   2 \ SAMPLE TIME (\$ 3 \ DATES   7   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES   2 \ DATES	WELL MAT	ERIAL:	✓ PVC	ss [	IRON GA	LVANIZED	STEEL	□ отні	ER	
PURGE	SAMPLE TYPE:  GW WW SW DI LEACHATE OTHER									
METHOD:   BAILER	PURC	SING	TIME: (6	510	ATES 17/2	.Ψ S		TIME:		
DEPTH TO WATER   3 90   17 PVC			PUMP	PERISTALTIC	PUMP					2umhos/cm
DEPTH TO BOTTOM:									<u>017</u> mg	/L
WELL VOLUME:   NA   LITERS   GALLONS   TEMPERATURE:   C.   C   FERROUS Fe   mg/L				T/ PVC		2	<del></del>			
VOLUME REMOVED:	DEPTH TO	BOTTOM:	18.18	T/ PVC		<u> </u>		GHT 📙	MODERATE 	U VERY
COLOR	WELL VOL	UME:		<u> </u>				7		
NONE	VOLUME F	REMOVED:		<u> </u>			R: <u>U</u>			on
NONE	COLOR:	_ <u>_</u>	Con Lic	01	OOR: 10014	FILTRA	ATE (0.45 um)	∐ YES \	A-no	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:  TIME PURGE RATE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL (FEET) PURGE VOLUME (GALOR I) (MIL) (NTU) (IMBL) (NTU) (MIL) (NTU) (MIL		_			_					:
TIME PURGE RATE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL (FEET) (MILATIVE PURGE VOLUME (MILATIVE (MILATI			7					/MSD	☐ DUP-	
TIME	DISPOSAL	. METHOD:	☑ GROUI	ND   DRUM	OTHER	COM	MENTS:			
(MLMIN)   (SU)   (umhos/cm)   (mV)   (mg/L)   (NTU)   (°C)   (FEET)   (GAL OR L)   (10 ° 1 ° 20 ° 2 ° 2 ° 1 ° 52 ° 4 ° 1 ° 1 ° 2 ° 2 ° 4 ° 1 ° 1 ° 3 ° 2 ° 4 ° 1 ° 1 ° 3 ° 2 ° 4 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1 ° 1	TIME		PH	CONDUCTIVITY	ORP	D. <b>O</b> .	TURBIDITY	TEMPERATUR		l I
			(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)		I I
	1095	ನಿಂತ	7-67	524	-1 D7-5	8.3	45	15.2	1390	INITIAL
10			7.71	1179	-(101.0	2.78	28	iki	(y.ce	(
	110T		7.40	1179	-1520	62	16.6	109	14.00	l a
130	lito		りっちて	1183	-1600-0	०१४	はんら	110	i fice	3
13	1117		7.55	ાહા	-170-0	90	10-8	<del></del>	14.ce	Ý
1	1120	\	7, 50	1179	- 173.6	003	80	10.9	14cc	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</td <td></td> <td></td> <td>750</td> <td>1177</td> <td>-1733</td> <td>6K0</td> <td>8.0</td> <td>3.01</td> <td>1400</td> <td>6</td>			750	1177	-1733	6K0	8.0	3.01	1400	6
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:  pH: +/- 0.1				1176	~173.	099	79	10.8	140	7
DH: +/- 0.1   COND.: +/- 3%   ORP: +/- 10   D.O.: +/- 0.3   TURB: +/- 10%   Or = 10   TEMP.: +/-    </td <td>1.0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	1.0									
DH: +/- 0.1   COND.: +/- 3%   ORP: +/- 10   D.O.: +/- 0.3   TURB: +/- 10%   Or = 10   TEMP.: +/-    </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>										
DH: +/- 0.1   COND.: +/- 3%   ORP: +/- 10   D.O.: +/- 0.3   TURB: +/- 10%   Or = 10   TEMP.: +/-    </td <td></td> <td>IOTE, STA</td> <td>PILIZATION</td> <td>I TEST IS COM</td> <td>IDI ETE WHEN</td> <td>3 SUCCESS</td> <td>IVE READINGS</td> <td>ARE WITHIN</td> <td>THE FOLLOWING</td> <td>GLIMITS:</td>		IOTE, STA	PILIZATION	I TEST IS COM	IDI ETE WHEN	3 SUCCESS	IVE READINGS	ARE WITHIN	THE FOLLOWING	GLIMITS:
NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED    250 mL PLASTIC										
250 mL   PLASTIC   A     Y   N   125 mL   PLASTIC   D     Y   N   N   125 mL   PLASTIC   D     Y   N   N   N   N   N   N   N   N	BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
125 mL   PLASTIC   A     Y   N   40 mL   VOA   E     Y   N   N   N   M   M   VOA   E     Y   N   N   M   M   M   M   M   M   M   M	NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTER	ED NUMB	ER SIZE	TYPE	PRESERVATIV	/E FILTERED
60 mL VOA A	(	250 mL	PLASTIC	А			125 mL	PLASTIC	D	□ Y □ N
1 125 mL PLASTIC B	•	125 mL	PLASTIC	A	□ Y <b>X</b>	N	40 mL	VOA	E	□ Y □ N
SHIPPING METHOD: Lab Drop off DATE SHIPPED: 5-10-24 AIRBILL NUMBER:		60 mL	VOA	А	□ Y □	N 5	<u>}</u> 1L	PLASTIC	В	☐ Y 🔯 N
SHIPPING METHOD: Lab Drop off DATE SHIPPED: 5-10-24 AIRBILL NUMBER:	j	125 mL	PLASTIC	В	□ Y <b>八</b>	N				□ Y □ N
		125 mL	PLASTIC	С	Y	Ν				Y   N
COC NUMBER: DATE SIGNED: 5/13/124	SHIPPING	METHOD:	ab Drop	eff D	ATE SHIPPED:	5-11	७-२५	AIRBILL N	IUMBER:	
	COC NUME	BER:		s	IGNATURE:			DATE SIG	NED: 5	13/20

♦ TRO	_
PROJECT NAME:	С
PROJECT NUMBER	₹: 5
SAMPLE ID: M	U
VELL MATERIAL:	√ P
SAMPLE TYPE:	☑ G
PURGING	TIME
PURGE METHOD:	PUMI BAILE
DEPTH TO WATER:	14
DEPTH TO BOTTOM	:_18.
WELL VOLUME:	N
VOLUME REMOVED	<u> </u>
COLOR:	300

PROJECT	NAME:		Veadock LF:	2024 (	gw d		PRE	EPARED			CHEC	KED
PROJECT	NUMBER	R: 553828	3.0000.0000		В	<b>Y</b> :	JJ	DATE	BY BY	· ;	JK	DATE: 5-13-24
SAMPLE	ID: Mr	., 5	37		VELL DI	AMET	ER: 🗸	2"	6" 🔲 0	THER		
WELL MAT		<u>√</u> PVC	<u>Siz</u>	IRON	<b>1</b> □ G	ALVA	NIZED S	TEEL	o	THER		
SAMPLE T	YPE:	☑ GW	□ww □	sw		ı	1	EACHATE	_ o	THER		
PURC	SING	TIME: []	57	ATE:	17/2	ч	S/	AMPLE	TIME: 1	7.5_	<b>1</b> D/	ATE:5 7 / 3 4
PURGE		PUMP	PERISTALTIC				PH:	71 5 s	U COND	UCTIVI	TY: 126	
METHOD:   BAILER								6 7 .	V DO:	0	6 <b>4</b> mg	<u>-</u> J/L
DEPTH TO	) WATER:	1450	T/ PVC				TURBIC	OITY: گون	L NTU			
DEPTH TO	BOTTOM:	18.82	T/ PVC				MON	IE 🗌 SLI	GНТ [	_	DERATE	☐ VERY
WELL VOL	UME:	NA	LITERS		SALLON	s	TEMPE	RATURE:	$\sqrt{\Gamma_{\Omega}}$ .c	FER	ROUS Fe	mg/L
VOLUME F	REMOVED:	<u> </u>	X LITERS		SALLON	S	COLOR	<u>. U</u>	<u>e</u> w	ODC	DR: 🔼	100re
COLOR:	_P	roun	usp o	DOR:	0004	2	FILTRA	TE (0.45 um)	YES		NO	
<del></del>		TUR	BIDITY					E COLOR:	· · · · · · · · · · · · · · · · · · ·		RATE ODOR	
NONE	SLI		MODERATE	=	VERY	′			/MSD		DUP-	
DISPOSAL	METHOD:	GROUN	ND DRUM	1 🗆 (	OTHER		COMMI	ENTS:				
TIME	PURGE	PH	CONDUCTIVIT	Y	ORP		D.O.	TURBIDITY	TEMPERA	ATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
	RATE (ML/MIN)	(SU)	(umhos/cm)		(mV)		mg/L)	(NTU)	(°C)	)	(FEET)	(GAL OR L)
1157	300:	7,46	125 +	i	<b>4</b> 2. \( \( \)		8.90	500	15.3	<b>'</b>	1450	INITIAL
L061		ファイ	1764	-1	45-0	, =	3.5	2T	11.6	,	1420	1
1207		7.10	1287	- 1	W6.0	)	1.10	12.5	10.9	9	1470	Ź
1212		7.10	128	i	144.1	1	.0	11.9	(1.)		1470	3
017		7/1	1273	-	148	81	SU	70	11.5	_	1420	Ÿ
(322		7/1	136	7 _ 1	48.	7	08C	6.9	110	1	1470	7
(33)		5/3	1266		49.0		84	4.9	11.	1	1420	6
.00		7-7-5										<b>-</b>
	•											
-	NOTE: STA	DII IZATION	I TEST IS CO	MDI ET	E WHEN	1361	ICCESS!	VE READINGS	ARE WITH		FOLLOWIN	G LIMITS:
pH: +/-		COND.: +/-		P: +/- 1			+/- 0.3	TURB: +/-				TEMP.: +/-
BOTTLES	S FILLED	PRESERV.	ATIVE CODES	1 - A	NONE	В-	- HNO3	C - H2SO4	D - Na	ЮН	E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVA	ΓΙVΕ	FILTER	RED	NUMBE	ER SIZE	TYPE	PF	RESERVATI	/E FILTERED
ľ	250 mL	PLASTIC	А		_ Y [3	N		125 mL	PLASTIC		D	□ Y □ N
ſ	125 mL	PLASTIC	А		] Y <b>()</b>	Q N		40 mL	VOA		E	□ Y □ N
	60 mL	VOA	А		] Y [	N	5	) 1L	PLASTIC	0	В	□ Y 🗷 N
V 125 mL PLASTIC B □ Y N □ Y □								□ Y □ N				
•	125 mL	PLASTIC	С		] Y [	N	to complete the complete to th					☐ Y ☐ N
SHIPPING	METHOD:	Lab Doop	off	DATE S	SHIPPEC	): 	5-10	-24	AIRBIL	L NUM	BER:	
COC NUMI				SIGNA	ΓURE:				DATE	SIGNE	D:7	13/24
								/	<u></u>	**	7	17 15

◇ Tr	<b>?C</b>		WATE	R S	AMP	LE LO	G			
PROJECT NAM	E: CEC V	Veadock LF: 20	24 GW C		PRE	PARED			CHEC	KED
PROJECT NUM	BER: 553828	3.0000.0000	В	Y:	IJ	DATE:SU	3/4	BY:	31L	DATE: 5-17-20
SAMPLE ID: 📉	nw 54	R	WELL DI	AMETE	ER: 🗸 2	2"	6"	OTHER		
WELL MATERIAL	: V PVC	ss 🗆	IRON G	ALVAN	NIZED ST	EEL		OTHER		
SAMPLE TYPE:	☑ GW	□ww □	SW 🗌 🗆	)I	L	EACHATE		OTHER		
PURGING	TIMEIZ	SO DA	TE: 5/7/.	14	SA	MPLE	TIME:	325	D/	ATES 17124
PURGE	✓ PUMP	PERISTALTIC P	UMP		PH: _			NDUCTIV	- 4	umhos/cm
METHOD:	BAILER					$\overline{CO}$	V DO:	3	93 2mg	)Z
DEPTH TO WATE		T/ PVC			TURBID NON		NTU	_	DERATE	□ VERY
DEPTH TO BOTT		T/ PVC	CALLON		<del>J</del>		GHT \G			
WELL VOLUME:	NA	LITERS	GALLON GALLON		COLOR:	~1~	<u> </u>	ODO	ROUS Fe	mg/
VOLUME REMOV	B MWNI		DR: DOM			E (0.45 um)	YES		NO 1	<u></u>
GOLOIN.		BIDITY	31 (L. <b>)</b> (2) -			E COLOR:		FII.	TRATE ODOR	•
NONE		MODERATE	VER'	- +	QC SAM		/MSD	<u></u>	DUP-	
DISPOSAL METH	IOD: GROUN	ID DRUM	OTHER		COMME	NTS:				
TIME PURC	GE PH	CONDUCTIVITY	ORP	1 ,	0.0.	TURBIDITY	TEMPE	RATURE	WATER	CUMULATIVE
RAT	E   '	(umhos/cm)	(mV)		ng/L)	(NTU)		C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)
1250 20		113 6	-143.5			(0°5°)	17-	<del>ک</del>	1440	INITIAL
1255	724	1135	_114.5		30	100	13.	C	1410	1
1300	7.24	1129	-49 c		10	20	1/-	7	14(0	2
130 5	730	1130	-79.0		97	10	19.0	Ú	1410	3
310	7.30	1126	97	Τί		8	13.0	$\circ$	1410	4
1315	919	1129	- 105	03	0.0	7	12	 .	14.10	1
(કેંગ્રેંગ્રેંગ્રેંગ્રેંગ્રેંગ્રેંગ્રેંગ્ર	7-19	1125	- i05.		195	6.95	12	O	14.10	6
1335	9.19	1127	-105		2.95	1295	ii.	9	146	7
1500										
				1						
NOTE:	STABILIZATION	TEST IS COME	PLETE WHEN	N 3 SU	CESSIV	E READINGS	ARE WI	THIN THE	FOLLOWIN	G LIMITS:
pH: +/- <b>0.1</b>	COND.: +/-		+/- 10		+/- 0.3	TURB: +/-				TEMP.: +/-
BOTTLES FILLE	D PRESERVA	ATIVE CODES	A - NONE	B -	HNO3	C - H2SO4	D - 1	NaOH	E- HC	 CL F
NUMBER SIZ		PRESERVATI\			NUMBE	<u> </u>	TYPI		RESERVATIV	<del></del>
( 250 r		Α	□ Y Ø			125 mL	PLAST		D	
125 1		Α		N N		40 mL	VOA		E	□ Y □ N
60 m		A		_ N	2	L 1L	PLAST	ГІС	В	
125 г		В		_   -		40				□ Y □ N
125 :		С	□ Y [	_ ] N						□ Y □ N
SHIPPING METH	OD: 1 - h N	• • • • • • • • • • • • • • • • • • • •	TE SHIPPED	)·	<u>~</u>	2-24	ΔIPE	BILL NUM	BER.	
	OD: 40 170			,. 	0-10	× 51				7/12 /2.
COC NUMBER:		SIC	SNATURE:		/	1	DAI	E SIGNE	י. (	111111

<b>{</b> }	T	2	C
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PROJECT	NAME:	CEC V	Veadock LF: 20	024 GW C	PR	EPARED		CHEC	KED	
PROJEC1	NUMBER	R: 55382	8.0000.0000	BY:	JJ	DATES	BY:	2K	DATE: 5-13-24	
SAMPLE	ID: \(U	ر - Mi	~ 18004	WELL DIAM	ETER: 🗸	2" 4"	6" OTHE	ir		
WELL MAT		✓ PVC			VANIZED S	STEEL	OTHE	R		
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI		LEACHATE	OTHE	R		
PUR	GING	TIME: 65	46 DA	TE5/8/24		AMPLE	TIME: Ole	5 C D/	ATE:S/8/24	
	PURGE PUMP PERISTALTIC PUMP  METHOD: BAILER ORP: 30 CONDUCTIVITY: 37 umhos/cm  ORP: 30-0 mV DO: 6 mg/L									
	DEPTH TO WATER: 123 T/ PVC TURBIDITY: 40 NTU									
DEPTH TO BOTTOM: T/ PVC DEPTH TO BOTTOM: T/ PVC DEPTH TO BOTTOM: T/ PVC DEPTH TO BOTTOM: VERY										
WELL VOL		NA NA	LITERS	GALLONS	TEMPE	RATURE: _C	( <u>°</u> °C F	ERROUS Fe	mg/L	
VOLUME (	REMOVED:	<u>a</u>	<b>I</b> LITERS	GALLONS	COLOF	e Clea		DDOR: <b>N</b> ©	ir.	
COLOR:		(06A)6	OD	DR: NO IV	FILTRA	TE (0.45 um)	YES [	<b>∄</b> NO		
		TUR	<b>)</b> BIDITY		FILTRA	TE COLOR:		FILTRATE ODOR	:	
NONE	SLI	gнт <u>Љ</u>	MODERATE	☐ VERY	QC SA	MPLE: MS	/MSD [	DUP-		
DISPOSAL	METHOD:	☑ GROUI	ND DRUM	OTHER	COMM	ENTS:				
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	WATER LEVEL	CUMULATIVE PURGE VOLUME	
.r. 8 Cr.	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L) INITIAL	
034°C	(OF)	460	Tre	993	621	<u> 55 </u>	13.8	133 <	INITIAL	
6553		(e:73		0.3	831	10	(0.0)	1266	; <b>(</b>	
<u> ७</u> ५ ५ ६		6.90	1394	(g)	BLE T	60	99	1280		
දිගුවල		691	1398	200	8.6	<u>Levo</u>	9.9	130	1,5	
હિલ્લા		(fil	1390	20.0	Ele T	(QeO)	9.5	13.2 ~	<u> </u>	
									<del>2.1</del>	
	- C									
					A COLUMN TO THE PARTY OF THE PA					
	NOTE: STA	BILIZATION	N TEST IS COMP	PLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITHIN	THE FOLLOWING	G LIMITS:	
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> D.	O.: +/- <b>0.3</b>	TURB: +/-	10 % or <	:/= 10	TEMP.: +/-	
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	CL F	
NUMBER	SIZE	TYPE	PRESERVATIV	/E FILTERED	NUMBI	ER SIZE	TYPE	PRESERVATIV	/E FILTERED	
Ī	250 mL	PLASTIC	Α		N	125 mL	PLASTIC	D	☐ Y ☐ N	
(	125 mL	PLASTIC	А	□ Y <b>X</b>	N	40 mL	VOA	Е	□Y □N	
	60 mL	VOA	А		N ô	<b>)</b> 1L	PLASTIC	В	□ Y 🔀 N	
	125 mL	PLASTIC	В		N				☐ Y ☐ N	
	125 mL	PLASTIC	С		N				□Y □N	
SHIPPING	METHOD:	Las Dro	p off DA	TE SHIPPED:	5-16	2-24	AIRBILL N	JMBER:		
COC NUMI	BER:		•	SNATURE:			DATE SIGN	VED: 5	13/10	

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PROJECT	NAME:	CEC V	Veadock LF: 2	024 GW C	PRI	EPARED		CHEC	KED
PROJECT	NUMBE	R: 55382	8.0000.0000	BY:	JJ	DATE: 5	BY:	JK	DATE: 5-13-24
SAMPLE	ID:∧∩ \	115		WELL DIAM	ETER: 🗸		6" OTHE	R	
WELL MAT		√ PVC	` □ss □	IRON ☐ GAL\	/ANIZED S	TEEL	OTHE	R	
SAMPLE T		☑ ☑ GW		SW DI		LEACHATE	ОТНЕ	R	
PUR	GING	TIME:	243 DA	TE:5/8/1	f S	AMPLE	TIME: (57 (	<b>)</b> DA	TE:5/8/26
PURGE	<b>-</b>	PUMP	PERISTALTIC I		PH:	691 s	U CONDUCT	IVITY: (2)	umhos/cm
METHOD	): [	BAILER			ORP:	<u>-(७७, )                                  </u>	N DO: <u>(</u>	<b>78 4</b> mg	/L
DEPTH TO			T/ PVC		TURBII		NTU		
DEPTH TO	DEPTH TO BOTTOM: 16.40 T/ PVC SLIGHT MODERATE VERY								
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE: C	<b>0</b> ℃ F	ERROUS Fe	mg/L
VOLUME F	REMOVE	): <u> </u>	LITERS	GALLONS	COLOF	₹ <u>U</u> @		DOOR: $\sqrt{\Lambda}$	01/0
COLOR:		grang	<u> </u>	OR: <b>101</b>	FILTRA	TE (0.45 um)	YES [	NO	
		TUR	BIDITY		FILTRA	TE COLOR:	F	ILTRATE ODOR	
NONE			MODERATE	<b>√</b> VERY	QC SA	MPLE: MS	/MSD [	DUP-	
DISPOSAL	_ METHOI	D: GROUI	ND DRUM	OTHER	СОММ	ENTS:			
TIME	PUR <b>G</b> E	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	E WATER	CUMULATIVE
1	RATE (ML/MIN)		(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	LEVEL (FEET)	PURGE VOLUME (GAL OR L)
O6 43	200	703	129 6		883	340	11.0	1430	INITIAL
00 46		694	199 2	-77.1	1,80	45	0.01	1430	ì
0653		693	1231	-94	l <sub>e</sub> à	<b>3</b> 0	9.9	1470	a
ole SG		693	1733	-100	1-0	12.5	9,4	1430	3
७७०३		691	1234	- 107.0	097	8.0	9.8	1430	4
5708		691	1236	-107-3	088	&.0	9.9	1470	1
6712		691	1236	-107-5	084	8.ر	10.0	1430	بي ا
					The state of the s				
	NOTE: ST	ABILIZATIO	N TEST IS COM	PLETE WHEN 3	SUCCESSI	IVE READINGS	ARE WITHIN T	HE FOLLOWING	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- <b>10</b> D.0	D.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or <	:/= 10	TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	L F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERED	NUMBI	ER SIZE	TYPE	PRESERVATIV	E FILTERED
t	250 mL	PLASTIC	Α		N	125 mL	PLASTIC	D	☐ Y ☐ N
l	125 mL	PLASTIC	Α			40 mL	VOA	Е	П У П и
	60 mL	VOA	Α	Y	v 5	<b>)</b> 1L	PLASTIC	В	□ Y 🗷 N
1	125 mL	PLASTIC	В	□ Y KÓ I	N				□Y □N
	125 mL	PLASTIC	С	_ Y _	١ .				□Y □N
SHIPPING	METHOD	Las Dog	eff D/	ATE SHIPPED:	5-	10-24	AIRBILL N	JMBER:	
COC NUM	BER:		SI	GNATURE:			DATE SIGN	NED:	112/14
									777

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PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED									
PROJECT	NUMBER	R: 553828	8.0000.0000	ВҮ	: JJ	DATE: (	3/x/ BY:	3K	DATE: 5-17-24
SAMPLE	ID: LCiu	JMW	1800	S WELL DIA	METER: 🗸	2" 4"	6" 🔲 ОТІ	HER	
WELL MAT	ERIAL:	☑ PVC	ss [	] IRON   GA	LVANIZED S	STEEL	П ОТІ	HER	
SAMPLE T	YPE:	☑ GW	□ww [	SW DI		LEACHATE	оті	HER	
PURC	SING	TIME (C)	47 1	DATE: 5/8/2	7 1	AMPLE	TIME:		ATE: 5 6 134
PURGE	<u></u>	PUMP	PERISTALTIO	C PUMP *				сті <b>літ</b> у: <u>156</u>	umhos/cm
METHOD		BAILER					ıV DO:	<u>ර හි 3</u> mg	g/L
DEPTH TO WATER: 650 T/ PVC TURBIDITY: 10 NTU  DEPTH TO BOTTOM: 16-33 T/ PVC PNONE SLIGHT MODERATE VERY									
DEPTH TO	воттом:	16.33	T/ PVC			-17		MODERATE	☐ VERY
WELL VOL		NA (3-	LITERS	GALLONS		7	) <u>-)</u> °C	FERROUS Fe	mg/L
VOLUME F			LITERS	☐ GALLONS			<del></del> '	<u> </u>	whe
COLOR:	<u></u>	3 homus	sh c	DOR: 1001	FILTRA	ATE (0.45 um)	∐ YES	∐ NO	
			BIDITY	المال المالية	<u> </u>	TE COLOR:	- MACD	FILTRATE ODOR	t:
NONE			MODERATE	VERY			S/MSD	DUP-	
DISPOSAL	. METHOD:	☑ GROUI	ND DRUI	M OTHER	COMIN	TENTS:			
TIME	PURGE RATE	PH	CONDUCTIVIT	Y ORP	D.O.	TURBIDITY	TEMPERAT	LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)		( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
6742	16,0	7.09	1593	~ 50.	9.7	130	11.6	2,50	INITIAL
5747		(e-6)	(601	-63.5	しいて	רל	11.1	4.33	7.
0152		(e.6)	1605	- 70.5	1,30	フィ	141	9.50	
0757		683	1 (00)		1,20		11.2	9.61	(', ')
0607		५४५	1 586	, , , ,	1.0	57	10-7	9-80	<u>}</u>
0807	İ	6.64	1 562	- 65	7097	33	10-7	9,8	2.5
0617	ſ	684	1 544	95	093	18	108	9.90	3
OEIT		(285		97.5	691	15	10-8		3.7
6830		6.85	1549	-92.5	089	12	10.8		Ч
$\phi \rightarrow \gamma$		4.84	1.28	9-95-9	CEC	(600)	10-7	9645	4.5
		-			3 SUCCESS	IVE READINGS	ARE WITHII	N THE FOLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % OR	P: +/- <b>10</b> [	D.O.: +/- <b>0.3</b>	TURB: +/-	<b>10</b> % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODE	S A - NONE	B - HNO3	C - H2SO4	D - NaO	H E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVA	TIVE FILTERI	ED NUMB	ER SIZE	TYPE	PRESERVATIV	VE FILTERED
1	250 mL	PLASTIC	А	□ Y	N	125 mL	PLASTIC	D	☐ Y ☐ N
\	125 mL	PLASTIC	Α	□ Y 🗶	N	40 mL	VOA	E	□ Y □ N
	60 mL	VOA	А	□ Y □	N	ე ¹L	PLASTIC	В	☐ Y 🔀 N
ĺ	125 mL	PLASTIC	В		N				☐ Y ☐ N
	125 mL	PLASTIC	С	Y	N			Company of the Co	ПА Пи
SHIPPING	METHOD:	Lab broy	, ०१६	DATE SHIPPED:	5-10	9-24	AIRBILL	NUMBER:	
COC NUMI	COC NUMBER: SIGNATURE: DATE SIGNED: 12/24								
30 11 21									

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## WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Weadock LF: 2024 GW Co		PREF	PARED	CHEC	KED
PROJECT NUMBER:	553828.0000.0000	BY:	IJ	DATE JOIN	BY: 5175K	DATE: 5-13-24

SAMPLE ID: 200- MW- 1800 5

	40	<u> </u>	- 1000						
TIME	PURGE RATE	PH	CONDUCTIVITY		D.O.	TURBIDITY	TEMPERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
0632	iop	6-84	1556	-980	085	200	(°C) [O-8	10.10	\$
U637		6.84	1549	-100	980 780	23	10.8	(O.C	٢, ٥
ر430		6.84	1549	-101	780	18	10-8	10-0	(q.0
०६५७		1064	155)	-101	085	15	10-8	(50	(e.5)
0853		10.84	1564	_ 103.3	084	10	(0.8	10-0	7
0857		6.84	1567	-103.5	083	10	[0.5]	16-0	7. 5
90>		684	1549	- (03.8	083	lo	10.7	10.0	7. 5
					Ì				
									1
									<u>i</u>
	1								į.
	4	1					1		
	1								
		1							***
	\$				1				
	d words								
	-				1				
	1								
			Advantage of the Control of the Cont			7 11 2 2 2 2 2		İ	1

SIGNATURE:

5/13/24

DATE SIGNED:

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PROJECT	NAME:	CEC V	Veadock LF:	2024 GW	d	PRE	PARED			CHEC	KED
PROJECT	NUMBE	R: 55382	8.000.0000		BY:	JJ	DATE:	p# BY	: 7K	-	DATE: 5-13-24
SAMPLE	ال: وزي	- 57,	R Out	r WEL	L DIAMET	TER: 🗸 2	2"	6" 0	THER		
WELL MAT		✓ PVC	ss [	] IRON [	GALVA	NIZED ST	reel	o	THER		
SAMPLE T	YPE:	☑ GW	□ww □	]sw [	] DI		EACHATE	o	THER _		
PUR	SING	TIME:	ا دوو	DATE:5 6	3124		MPLE	TIME: C	947		TE:5/8/24
PURGE METHOE	_	PUMP BAILER	PERISTALTIC	PUMP	_		Λ	U COND	истіvіту: _ <b>2-3</b>	<u></u>	
DEPTH TO	WATER:	8.70	T/ PVC			TURBID	ITY: 9.2	NTU			
DEPTH TO	воттом	20.22	T/ PVC			MON	E 🗌 SLI	GНТ [	MODER	RATE	☐ VERY
WELL VOL	UME:	NA	LITERS	GALI	LONS	TEMPER		<u>√}</u> °c	FERRO	US Fe	mg/L
VOLUME F	REMOVED:		LITERS	GALI	LONS	COLOR	Clie	<u> </u>	ODOR:	_1	10W
COLOR:	(	Seed	<u> </u>	DOR: 10	<u> </u>	FILTRAT	E (0.45 um)	YES	D-NO		
	_		BIDITY			FILTRAT	E COLOR:		FILTRA	TE ODOR:	1000
NONE	<b>∏</b> SLI	GHT 🗌	MODERATE	\rightarrow \forall \tag{\chi}	/ERY	QC SAM	1PLE: MS	/MSD	☐ DU	P	
DISPOSAL	METHOD:	: GROUI	ND DRUM	<b>и</b> 🗌 ОТНІ	ER	СОММЕ	NTS:				
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVIT	Y ORI		D.O.	TURBIDITY (NTU)	TEMPERA	TURE	VATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
097	100	7.40	1097	1	-	3.2	60	15		)C	INITIAL
0833	107	723	1325		<del></del>	3,25	11.4	12.3		, le	7,
		570	1227		<del></del>	2.20	9.4	12.		1.60	1
<u> હ</u> ધુરુ		7.24		_90		1-27	95		۸ و	-	1.5
			1333					12		)30 GC	7
0947		770	1 30	- 9	J.0 0	772	9.5		~ (0	٥٥٠	<u></u>
6422					1	4					-2-17
	ι			1							
100						****			The state of the s		
pH: +/-		BILIZATION	N TEST IS CO	WPLETE W P: +/- 10		JCCESSIV +/- 0.3	'E READINGS TURB: +/-		IN THE FC		ELIMITS: FEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NON	E B-	HNO3	C - H2SO4	D - Na	 DH	E- HCI	 L F
NUMBER	SIZE	TYPE	PRESERVA		TERED	NUMBE	1	TYPE	1	ERVATIV	
1	250 mL	PLASTIC	А	Y	irt-an		125 mL	PLASTIC		D	□Y □N
ì	125 mL	PLASTIC	А	Y			40 mL	VOA		E	□Y □N
	60 mL	VOA	А	Y		3	1 L	PLASTIC		В	□ Y <b>X</b> N
1	125 mL	PLASTIC	В	Y							□ Y □ N
1	125 mL	PLASTIC		Y							Y N
SHIPPING	METHOD:	Lat Dros	ote [	DATE SHIP	PED:	5-10-	24	AIRBILI	L NUMBER	k: <b>-</b>	
COC NUME				SIGNATURI	<del></del> E:			DATE S	SIGNED: ĵ	1/2	100
	***			***						115	<del>                                     </del>

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PROJECT	PROJECT NAME: CEC Weadock LF: 2024 GW C PREPARED CHECKED									CKED
PROJECT	NUMBER	R: 553828	8.0000.0000	BY:	IJ	DATE:	()-( BY:	3	14	DATE: 5-13-24
SAMPLE	D:Jcw	-Mir	18005	WELL DIAN	IETER: 🗸	2"	6" O	THER		
WELL MAT	ERIAL:	✓ PVC	ss 🗆	IRON GAL	VANIZED S	STEEL	o	THER		
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI		LEACHATE	o	THER		
PURC	PURGING TIME: O TO DATE: 5/8/24 SAMPLE TIME: W 5 C DATE: 5/8/24									
PURGE METHOD		PUMP	PERISTALTIC	PUMP					ITY: <b>/33</b>	
		BAILER				<u> </u>	<del> </del>		).7 5 m	g/L
DEPTH TO			T/ PVC		TURBI		NTU GHT [	∃ мог	DERATE	☐ VERY
DEPTH TO		***	LITERS	GALLONS			70 °C		RROUS Fe	mg/L
WELL VOL		NA NA	LITERS	GALLONS	COLO	41	<u> </u>	ODO		nor4
VOLUME F		reur		OR: NOY	<del></del>	TE (0.45 um)	YES		_NO	1017
COLOR:	<u>_</u>			UR. TOTO			123	7		
NONE			BI <b>D</b> ITY MODERATE	VERY		TE COLOR:	/MSD		TRATE ODO	
		✓ GROUN		OTHER		IENTS:		-		· · · · · · · · · · · · · · · · · · ·
DIOI OOAL		E GROOM	TE C EROM		10011111				WATER	CUMULATIVE
TIME	PUR <b>G</b> E RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERA	TURE	WATER LEVEL	PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	( mg/L)	(NTU)	(°C)		(FEET)	(GAL OR L)
070	308	747	711	-140	6.70	250	15-	C	1260	INITIAL
(0)		7.20	1173	-1576	1.37	40.1	130	-¿C	120	ſ
1030		フィバフ	1,37	-1555	1.0	り、ひ	13.6	C	127c	コ
1037		700	1198	-1520	087	14-8	13.50	رر	1270	3
10 40		7.10	1250	-153.5	œi	150	13.70	<b>O</b>	Dre	4
1045		7.05	1293	- (55.5	ムラフ	10	13.7	O	1220	6
1090		705	1309	-155.8	075	10	13.7	<u>'</u> 6	1770	9
1055		765	3 7	- 155.8	びフィ	9.4	13.7	Ø	1270	つ
		, ,								
	IOTE: OTAL	DU IZATION	LTEST IS COM	PLETE WHEN 3	SUCCESS	IVE DEADINGS	ADE MITU	IN THE	E EOL LOWIN	ic i imite:
рН: +/-		COND.: +/-			O.: +/- <b>0.3</b>			r =</td <td></td> <td>TEMP.: +/-</td>		TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - Na	OH.	E- H	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTEREI	NUMB	ER SIZE	TYPE	P	RESERVATI	VE FILTERED
2	250 mL	PLASTIC	А		N	125 mL	PLASTIC		D	□ У □ И
ລັ	125 mL	PLASTIC	Α	□ Y 🗷	N	40 mL	VOA	rectached (1)	E	□Ү □и
	60 mL	VOA	А	□ Y □	N C	<b>{</b> 1∟	PLASTIC		В	□ Y <b>X</b> N
2	125 mL	PLASTIC	В		N		K G G G G G G G G G G G G G G G G G G G			☐ Y ☐ N
	125 mL	PLASTIC	С	Y	N					□Y □N
SHIPPING	METHOD:	had brop	off D	ATE SHIPPED:	5-11	0-24	AIRBIL	L NUM	BER:	
COC NUME	COC NUMBER: SIGNATURE: DATE SIGNED: 5/12/114									
							, , , , , , , , , , , , , , , , , , , ,			7 19 4 -

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PROJECT NAME:	
ROJECT NUMBER	₹:
SAMPLE ID: m	u
VELL MATERIAL:	7
AMPLE TYPE:	7
PURGING	TIN
PURGE METHOD:	PUN BAI
DEPTH TO WATER:	<u>S.</u>
	_

PROJECT	NAME:	CEC V	Veadock LF: 2	2024 GW C	PRE	PARED		CHE	CKED
PROJECT	NUMBER	R: 553828	3.0000.0000	BY:	JJ	DATE	())-( BY:	JK	DATE: 5-13-2-1
SAMPLE I	ERIAL:	ン PVC GW	S		METER: 🗸			THER THER THER	
				<del></del>			TIME: ()		DATE: 5/8/24
PURC		TIME: (		ATE5 (8/2)		Till s	1 1	• /	
PURGE METHOD		PUMP BAILER	PERISTALTIC	PUMP		129.5 m	IV DO:	UCTIVITY: <u>2</u>	mg/L umhos/cm
	WATER:		T/ PVC		TURBIE			_	
DEPTH TO	воттом:	18.25	T/ PVC		NON-MON	IE SLI	GHT [	MODERATE	U VERY
WELL VOL	UME:	NA	LITERS	GALLONS		RATURE: 📙	<u>.3 °</u>	FERROUS Fe	mg/L
VOLUME F	REMOVED:	_5_	LITERS	GALLONS		<u>clear</u>		<u> </u>	<u>nore</u>
COLOR:		100/	0	OOR: MON	FILTRA	ΓΕ (0.45 um)	YES	<b>₩</b> -NO	
			BIDITY	_		E COLOR:	·	FILTRATE ODG	OR:
NONE			MODERATE	VERY	QC SAM		/MSD	☐ DUP-	
DISPOSAL	METHOD:	✓ GROUN	ND DRUM	OTHER	COMME	ENTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. ( mg/L)	TURBIDITY (NTU)	TEMPERA	TURE WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1126	JOP	734	(43 5	-(((20)	8.O	10	14,0		
	7	716	2605	-170.5	1.44	5. i	1	9 53 (	
((3,1		7,00	2566		<u> </u>	5.7	163		2
1134		2, 6 \	2517 - 256	- 132	691		113		7 3
1141		7,1	2501	1-125		5.0	11.9	521	
1146		7.18	2534	-1253	083	5-0	163	527	
115		7.15	2530	-135.5	080	5-0	11.3	521	1 2
TT Manager									
<u> </u>	NOTE: STA	BILIZATION	TEST IS CON	PLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITH	IIN THE FOLLOW	ING LIMITS:
pH: +/-	0.1	COND.: +/-	3% ORP	: +/- <b>10</b> D	.O.: +/- <b>0.3</b>	TURB: +/-	<b>10 %</b> o	r = 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - Na	OH E- I	HCL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTERE	D NUMBE	R SIZE	TYPE	PRESERVA	TIVE FILTERED
)	250 mL	PLASTIC	Α	□ Y 🗷	N	125 mL	PLASTIC	D	□ Y □ N
1	125 mL	PLASTIC	А	□ Y 🔣	N	40 mL	VOA	E	□Ү□и
,	60 mL	VOA	А	□ Y □	N 2	1 L	PLASTIC	В	□ Y 🔯 N
125 mL PLASTIC B Y X N									
,	125 mL	PLASTIC	С	Y	N				□ Y □ N
SHIPPING	METHOD:	ab Drop	• <b>6</b> ₹\$ □	ATE SHIPPED:	5-10	-24	AIRBIL	L NUMBER:	
COC NUM	BER:		s	IGNATURE:	9	<b>—</b>	DATE :	SIGNED:	13/14
					_				

<b>{}</b>	T	2	C
		•	

PROJEC1	NAME:	CEC V	Weadock LF: 2	024 GW C	PREF	PARED		CHE	CKED
PROJEC1	NUMBE	R: 55382	8.000.0000	BY:	JJ	DATE:5	BY:	JK	DATE:5-17-24
SAMPLE	ID: —	CB.#	-6+FB	-0 WELL DIAMET	ΓER: ✓ 2"	4" [	] 6"	IER	
WELL MAT	ERIAL:	✓ PVC	ss 🗌	IRON GALVA	NIZED STE	EEL	□ от⊦	IER	
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI	LE	ACHATE	□ от⊦	IER	
PUR	GING	TIME:	DA	ATE:	1	MPLE	TIME: 13	15	DATE: 5 8/34
PURGE		PUMP	PERISTALTIC I	PUMP	1			CTIVITY: N A	umhos/cm
METHOD	):	BAILER	-	$\overline{}$	· · · · · · · · · · · · ·		IV DO.	<u> </u>	ng/L
DEPTH TO	/		T/ PVC		TURBIDIT		NTU	MODERATE	☐ VERY
	воттом		T/ PVC	GALLONS	TEMPERA	<del>/</del>	IGHT □	MODERATE FERROUS Fe	
WELL VOL		NA \	LITERS	GALLONS	COLOR:	7 1 . A .		ODOR:	mg/L
COLOR:	VEINIÁ VED		$\overline{\overline{}}$	OR:	<del> </del>	(0.45 um)	<u> </u>	NO NO	:
		TUR	BIDITY		FILTRATE	·		FILTRATE ODO	R:
NONE	SL		MODERATE	☐ VERY	<del></del>	PLE: MS	J/MSD	DUP-	
DISPOSAL	METHOD	: GROUI	ND 🗌 DRUM	OTHER	COMMEN	ITS:			
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O. 1	FURBIDITY	TEMPERATU	JRE WATER	CUMULATIVE PURGE VOLUME
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV) (	( mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
		Water State of the							INITIAL
							e man and a man		
							Company of the Compan		
					Provide the Provid				
Vicinity (12)							And the state of t		
4		4			-		and the same		
							The state of the s		·
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							- Parker and American		
<u> </u>	NOTE: STA	BILIZATION	N TEST IS COMI	PLETE WHEN 3 SU	JCCESSIVE	READINGS	ARE WITHIN	THE FOLLOWIN	
pH: +/-		COND.: +/-			+/- 0.3	TURB: +/-		= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE B -	- HNO3	C - H2SO4	D - NaOl	f E- H	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERED	NUMBER	SIZE	TYPE	PRESERVATI	IVE FILTERED
	250 mL	PLASTIC	Α	□ Y □ N		125 mL	PLASTIC	D	□ Y □ N
J	125 mL	PLASTIC	А	□ Y 🗷 N		40 mL	VOA	E	□ Y □ N
	60 mL	VOA	А	□ Y □ N		1 L	PLASTIC	В	□ Y □ N
i	125 mL	PLASTIC	В	□ Y 🔯 N				·	□ Y □ N
	125 mL	PLASTIC	С	□ Y □ N			the state of the s		☐ Y ☐ N
SHIPPING	METHOD:	Lab Da	op off DA	TE SHIPPED:	5-10-	24	AIRBILL I	NUMBER:	
COC NUME	 BER:				$\overline{C}$	$\supset$	DATE SIG	GNED:	112/10
3(1/2)									

<b>&lt;&gt;</b>	TR	C
		. `-

PROJECT	NAME:	CEC V	Veadock LF: 2	2024 GW C		PRE	PARED			CHEC	KED
PROJECT	NUMBE	R: 55382	8.0000.0000	В	Y:	JJ	DATE	) B	Y: _	7K	DATE: 5-13-24
SAMPLE	اD: کی ،	BA	C I	WELL DI	AMET	ER: 🗸 2	2"	6"	OTHER		
WELL MAT		✓ PVC	ss	IRON G	ALVA	NIZED ST	EEL		OTHER		
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗆 🗆	)I		EACHATE		OTHER		
PUR	SING	TIME:	D	ATE:			MPLE	TIME:	72		ATE: 5/8/21
PURGE METHOI		PUMP BAILER	PERISTALTIC	PUMP		PH: _	<u> </u>	V DO:	DUCTIVI	ITY: 10 mg	
DEPTH TO	WATER:		T/ ₽VC			JURBID	IIY: <u></u>	NTU	_		_
DEPTH TO	NOTTON	•	T//PVC			NON		GHT		DERATE	☐ VERY
WELL VOY		NA	LITERS	□ SALLON		TEMPER		) /\ <sub>~</sub>	- /	RROUS Fe	mg/L
VOLUM <b>É</b> I	REMOVED	ackslash	LITERS	GALLON	S	COLOR:		20/	ODO		100
COLOR			0	OOR:			E (0.45 um)	∐ YES		_NO	
			BIDITY		,	FILTRATI	E COLOR:	/MSD	FIL	TRATE ODOR	<u> </u>
NONE			MODERATE	VER	r .	COMME		/IVISD			
DISPOSAL		: J GROUI	ND DRUM	OTHER		COIVIIVIE	INTO.			I	T OUR WATER
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPER	RATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(	mg/L)	(NTU)	(°(	C)	(FEET)	(GAL OR L)
										and the same of th	INITIAL
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										4 postorial and a second a second and a second and a second and a second and a second and a second and a second and a second and a second and a second a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second a	and the second s
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								<u> </u>		***************************************	
i	NOTE: STA	BILIZATION	N TEST IS COM	IPLETE WHEN	1 3 SU	CCESSIV	E READINGS	ARE WIT	THIN THE	E FOLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP	: +/ <b>- 10</b>	D.O.:	+/- 0.3	TURB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +/-</td>	10	TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D- N	laOH	E- HO	CL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTER	RED	NUMBE	R SIZE	TYPE	P	RESERVATIV	VE FILTERED
	250 mL	PLASTIC	А		] N		125 mL	PLAST	IC	D	□Y □N
ı	125 mL	PLASTIC	А	□ Y 🛭	N		40 mL	VOA		Е	□ Y □ N
	60 mL	VOA	А	□ Y [	] N	5	1 L	PLAST	IC	В	□ Y 🐼 N
_	125 mL	PLASTIC	В	T Y	] N						□Y □N
1	125 mL	PLASTIC	С		ŽΝ						□Y □N
SHIPPING	METHOD:	Lab Door	c 99 D	ATE SHIPPED	).	6-	10-24	AIRR	ILL NUM	BER: -	
		TAB DIST			7	~	10 01		SIGNE		5 64
COC NUM	DEK.			IGNATURE:		$\Rightarrow$		ואט	_ OIGINEI	<u> </u>	3 HT

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### CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

Page \_ \_\_\_ of \_ \_\_\_\_

SAMP	LING SITE / CU	STOMER:			PROJECT NUMBER:	SAP CC or WC	)#:						ANALYSIS REQUESTED OA RE						O A DEOLUDE GENERAL			
Q2-20	24 JC Weadocl	k Porewater We	ells		24-0344 REQUESTER: Harold Register					(Attach List if More Space is Needed)								)	QA REQUIREMENT:			
SAMP	LING TEAM:				TURNAROUND TIME REQUIRED:	TURNAROUND TIME REQUIRED:													□NPDES			
					□ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD ⊠ OTH	IER _															⊠ TNI
SENI	REPORT TO:	Joseph Firlit			email:	phone:																□ ISO 17025
(	COPY TO:	Harold Regist	ter		MATRIX CODES: GW = Groundwater OX = Other			CO	NT	AINI	ERS											☐ 10 CFR 50 APP. B
		TRC			W = Water / Aqueous Liquid A = Air		PRESERVATI			ATI	VE	Metals							☐ INTERNAL INFO			
	LAB	SAMPLE COLL	LECTION	ΧĬΧ	S = Soil / General Solid WP = Wipe O = Oil WT = General	ral Waste	TOTAL#			2 F.		표 .		Anions		Alkalinity						□ OTHER
SA	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	Ţ [	None		NaOH	HCI	MeOF	Total ]	Anio	TDS	Alk						REMARKS
2	4-0344-01	5/7/24	06.20	GW	JCW-MW-18001		5	4	1				х	х	х	х						
	-02	5/6/24	0608	GW	JCW-MW-18004		3	2	1				х	x	х							
	-03	5/8/24	0903	GW	JCW-MW-18005		3	2	1				х	х	х							
	-04	5/8/24	WIT	GW	JCW-MW-18006		3	2	1				х	х	х							
	-05	5/7/20	U\(\tau\)	GW	MW-50		3	2	1				х	х	. x							
	-06	5/7/24	0930	GW	MW-51		3	2	1				х	х	х							
	-07	5/7/24	621	GW	MW-52		3	2	1				х	х	х							
	-08	5/7/24	1130	GW	MW-53		3	2	1				х	х	х							
	-09	5/7/24	T&6)	GW	MW-53R		3	2	1				х	x	х							
	-10	5/7/34	132	GW	MW-54R		3	2	1				х	х	х							
	-11	5/8/24	0717	GW	MW-55		3	2	1				х	х	х							
	-12		0947				3	2	1				х		х							
RELI	QUISHED BY:		]	DATE/	TIME: R	ECEIVED BY:							CC	MMI	ENTS	<b>:</b>						
5/co/2407CD																						
RELINQUISHED BY:  DATE/TIME: RECHIVED BY:					Received on Ice? □ Yes □ No M&TE#:																	
													Те	mpera	ture:			_°C		Ca	ıl. Du	e Date:

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# CONSUMERS ENERGY COMPANY – LABORATORY SERVICES 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

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SAMPLING SITE / CUSTOMER: PROJECT NUMBER: SAP CC or WO#: ANALYSIS REQUESTED **QA REQUIREMENT:** O2-2024 JC Weadock Porewater Wells 24-0344 (Attach List if More Space is Needed) REQUESTER: Harold Register SAMPLING TEAM: TURNAROUND TIME REQUIRED: ☐ NPDES ☐ 24 HR ☐ 48 HR ☐ 3 DAYS ☐ STANDARD ☒ OTHER ⊠ TNI ☐ ISO 17025 SEND REPORT TO: Caleb Batts email: phone: MATRIX CODES: COPY TO: Harold Register CONTAINERS ☐ 10 CFR 50 APP. B GW = Groundwater OX = OtherWW = Wastewater SL = Sludge ☐ INTERNAL INFO TRC PRESERVATIVE Total Metals W = Water / Aqueous Liquid A = AirAlkalinity S = Soil / General Solid WP = WipeSAMPLE COLLECTION ☐ OTHER \_\_\_\_ O = OilWT = General Waste LAB None HNO3 H2SO4 NaOH HCI MeOH SAMPLE ID DATE TIME FIELD SAMPLE ID / LOCATION REMARKS 5/8/24 24-0344-13 1191 GW MW-58 3 2 1 х х 3/2/14 DUP-JCW-LF-01 -14 2 1 х х х 5/0124 -15 GW DUP-JCW-LF-02 3 2 1 х х х 9/1/24 (-Ji)20 2 JCW-MW-18001 MS х х 5/7/24 bles -17 GW JCW-MW-18001 MSD 2 1 Х Х 5/8/24 1215 -18 FB-01 2 х х 5/8/14 -19 EB-01 х х RELINQUISHED BY: DATE/TIME: RECEIVED BY: COMMENTS: 5/10/34 07 W DATE/TIME: RELINQUISHED BY: RECEIMED BY: M&TE#:\_\_\_\_ Received on Ice? ☐ Yes ☐ No Temperature: \_\_\_\_\_°C Cal. Due Date:

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	390	F 78	,



# CONSUMERS ENERGY COMPANY – LABORATORY SERVICES 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251

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SAMPLING SITE / CU	STOMER:			PROJECT NUMBER:	SAP CC or WO			NI A I	YSI		·											
Q4-2024 JC Weadocl	k ASD			24-0345	REQUESTER:		(Atta	ch Lis	st if M		QA REQUIREMENT:											
SAMPLING TEAM:				TURNAROUND TIME REQUIRED:  □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER																□ NPDES ☑ TNI		
SEND REPORT TO:	Joseph Firlit			email: phone:																	☐ ISO 17025	
COPY TO: Harold Register				MATRIX CODES: GW = Groundwater	CONTAINERS																☐ 10 CFR 50 APP. B	
	TRC			WW = Wastewater W = Water / Aqueous Liquid	#		PRESERVATIVE					tals			>						☐ INTERNAL INFO	
LAB	SAMPLE COLLECTION		ZŢZ.	W = Water / Aqueous Liquid   A = Air   S = Soil / General Solid   WP = Wi   O = Oil   WT = Ge					الم الما	. Z H		. E	Total Metals	Anions		Alkalinity						□ OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE	ID / LOC	ATION	TOTAL	None	ONH	NaO.	HCI	MeOH	Tota	Anic	TDS	Alk						REMARKS
24-0345-01	5/7/24	<b>3730</b>	GW	JCW-OW-18001			5	4	1				x	х	х	x						
						. •																
					· · · · · · · · · · · · · · · · · · ·			-														
																-						
RELINQUISHED BY:			L DATE/	TIME:	RE	CEIVED BY:	J	.l	JI	]			CC	)MM	ENTS	3:			<u> </u>	<u> </u>		
RELINQUISHED BY:			DATE/		RE	CEIVED BY:							Re	ceive	d on I	ce? [	□ Ye	s 🗆 🗆	No	M&7	ΓE#	:
				<b>v</b>									Te	mper	ature:		Due	Oue 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



1 Hollo, 666 457 6666 1 ax. 666 457-6772	Samples	PM:							Carrier T	racking	No/e)		1/	COC No:							
Client Information	Samples AUÜ	VJA	55·6	Bro	oks,	Kris N	VI					Carre	acking	140(5).			240-120141-29048.1				
Jacob Krenz	Phone:	904	3310	E-M Kris		oks@	et.eu	rofinsı	us.con	n	·	State of	Origin:				Page: Page 1 of 2				
Company: TRC Environmental Corporation.			PWSID:						An	alysis	Req	ueste	d				Job #:				
Address: 1540 Eisenhower Place	Due Date Request	11.7												Preservation Cod D - HNO3	es:						
City: Ann Arbor	TAT Requested (d	14																			
State, Zip: MI, 48108-7080	Compliance Project: Δ Yes Δ No																				
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO#: TBD		<del></del>		(0)				$  \  $												
Emall: JKrenz@trccompanies.com	WO #: 5533828.0000				NUO	9										ż					
Project Name: Karn/Weadock CCR JCW Lanfill	Project #: 24024154				ellikes		2 1									taine					
Site:	SSOW#:				amp		28_GFPC	B								Number of containe	Other:				
	<u> </u>		Sample	Watrix (W=water,	Fred		904.0, Ra226Ra228 903.0 - Standard Ta									nber					
		Sample	Type (C=comp,	S≈solid, O=waste/oll, BT=Tissue,	d File		0, Raz 0 - Str									ja Nje					
Sample Identification	Sample Date	Time	G=grab) Preserva	A=Air)	Eie	. 127			3 3 5 8 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Marka Sark	SE 201508	\$1.00 Mg	SI VIII.S	3330 G G	as vary	Total	Special Ins	tructions/	and the second second second second		
JCW-MW-18001	5/7/24	dim	C C	Water	W	ν 0	イト						3 610		31 34	2		S. A. Visue vos			
JCW-MW-18004	5/8/24	deve	<del> </del>	Water	<b>/</b>		7	<u> </u>	$\Box$							5					
JCW-MW-18005	5/8/24	6090		Water	+-+	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	۲.		$\Box$				<del>-  </del>			5					
JCW-MW-18006	5/8/24	1055	6	Water	Ħ		<del>`</del>	1	T		1-										
MW-50	9/2/24	0807	6	Water	74	<b>₩</b>	4	Į,			1					2			·		
MW-51	5/7/24	092	6	Water	U	W	71-7	7					1			9			***		
MW-52	5/7/24	1021	6	Water	W	7	41	[								2					
MW-53	5/7/24	1130	6	Water	U	<b>/</b>	11									D					
MW-53R	3/2/24	1227	6	Water	M	4	7+									7					
MW-54R	5/7/24	1325	Co	Water	M	4	44								ļ	2					
MW-55	5/8/24	0717	6	Water	U	<b>~</b>	11									0					
Possible Hazard Identification				. ,		Sam				fee ma	y be a	ssesse	d if s	mples	s are re	taine	d longer than 1	month)			
Non-Hazard Flammable Skin Irritant Pois Deliverable Requested: I, II, III, IV, Other (specify)	son B Unk	nown 🖳	Radiologica	al		Spec	1-11		Client	t C Requ		Disposa nts:	l By La	ab	<u> </u>	Archi	ve For	Months	3		
Empty Kit Relinquish <u>ed b</u> y:		Date:				ne:							thod of	Shipmer	nt:						
Relinquished by:	Date/Time:	<u> </u>	JØ\$	Company			leceive	d by:	7	////	11			Date/Ti	lme:			CEEN	<u> </u>		
Relinquished by	Date/Time:	~ ~	y y s	Company	•	Received by:						<i>, , ,</i>	·	Date/Ti	ime:		<del>,,_,</del> ,_,,	Company	X		
Relinquished by:	Date/Time:			Company		R	teceive	d by:						Date/Ti	ime:	<del></del>		Company			
Custody Seals Intact: Custody Seal No.:	L	c	ooler T	empera	ature(s)	°C and C	Other Re	marks:		<u> </u>											

### **Eurofins Cleveland**

180 S. Van Buren Avenue Barberton, OH 44203

Sarberton, UH 44203

### **Chain of Custody Record**

MICHIGAN 190

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Client Information	Sampler Aut &	и: ks, Kı	rie M				<del></del>		Carri	er Track	ing No	s):			COC No: 240-120141-2904					
Client Information Client Contact: Jacob Krenz	Phone:			E-Mail	:	ks@et.eurofinsus.com							of Orig	n:			7	Page:		
Company:	734 9	<i>ou</i> 2	PWSID:	IKIIS.I	STOOK	(S@e	et.eurc	nsu			_							Page 2 of 2 Job #:		
TRC Environmental Corporation. Address:	Due Date Request	ed:			as V	9	Analysis R						ted		T .	l k	19%	Preservation Code	s:	
1540 Eisenhower Place	TAT Requested (da																D - HNO3			
City: Ann Arbor	IAI Requested (d	a (uaya):																		
State, Zip: MI, 48108-7080	Compliance Projec										1		100							
Phone: 734-971-7080(Tel) 734-971-9022(Fax)	PO#: TBD	· · · · · · · · · · · · · · · · · · ·													1		,			
Email: JKrenz@trccompanies.com	WO#: 5533828.0000				N S															
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# CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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### **Eurofins Cleveland**

180 S. Van Buren Avenue Barberton. OH 44203 **Chain of Custody Record** 

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eurofins | Environment Testing

Page 380938 Phone: 330-497-9396 Fax: 330-497-0772 Carrier Tracking No(s): 240-120140-33282.1 Brooks, Kris M Client Information State of Origin: E-Mail: Client Contact: Page 1 of 1 Kris.Brooks@et.eurofinsus.com Jacob Krenz Company: **Analysis Requested** TRC Environmental Corporation. Preservation Codes: Address: Due Date Requested: 1540 Eisenhower Place TAT Requested (days): City: Ann Arbor State, Zip: Compliance Project: A Yes A No MI. 48108-7080 PO#: Phone: 734-971-7080(Tel) 734-971-9022(Fax) TBD WO#: JKrenz@trccompanies.com Project Name: Project #: 24024154 Karn/Weadock CCR Background Well Other: SSOW#: Matrix Sample (W=water, Type S=solid, O=waste/oil, Sample (C=comp, Special Instructions/Note: Time Sample Date G=grab) | BT=Theue, A=Ak) Sample Identification Preservation (000e) A PROPERTY OF STREET Water MW-15002 1315 Water MW-15008 1457 Water MW-15016 MW-15019 Water DUP-Background Water Water (40 T EQ-Backgroud Water Sample Disposal ( A fee may be assessed If samples are retained longer than 1 month) Possible Hazard Identification Possible Hazard Identification

Non-Hazard Flammable Skin irritant Poison B Unknown Radiological Archive For Return To Client Disposal By Lab Months Special Instructions/QC Requirements: Deliverable Requested: I, II, III, IV, Other (specify) Time: Empty Kit Relinquished by: Received by: Relinquished by Received by: Company Relinquished by: Date/Time: Company Company Received by: Relinguished by: Date/Time: Cooler Temperature(s) °C and Other Remarks: Custody Seals Intact: Custody Seal No.: Δ Yes Δ No



# 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

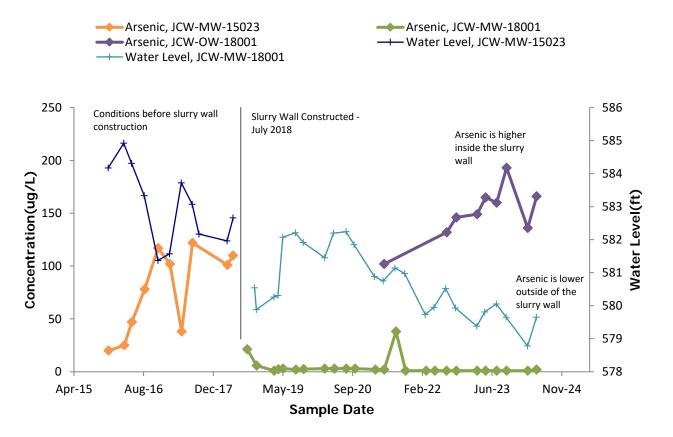
**Professional Engineer Certification Number** 



### References

TRC (July 2024). <u>2024 Semiannual Groundwater Monitoring Report/Second Quarter</u> <u>2024 Hydrogeological Monitoring Report, JC Weadock Landfill Solid Waste Disposal Area, Essexville, Michigan</u>

Figure G1: Time Series Plots for JCW-MW-18001 ASD



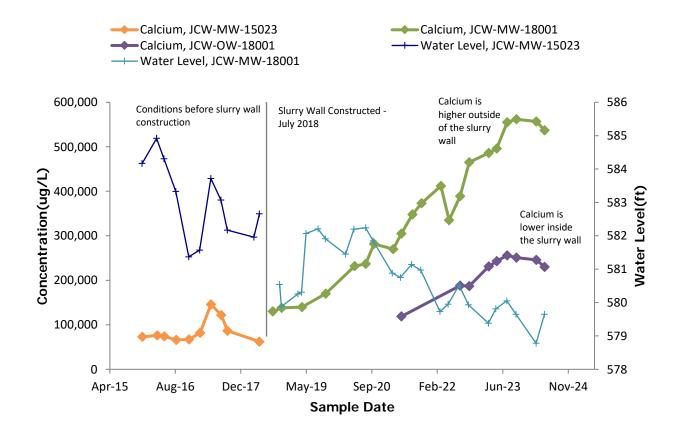
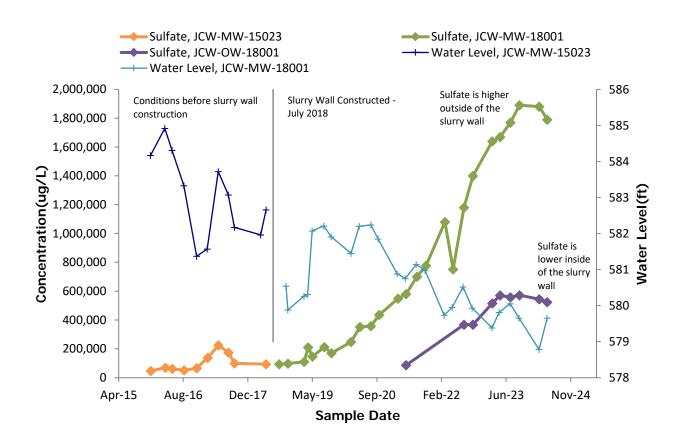


Figure G1: Time Series Plots for JCW-MW-18001 ASD



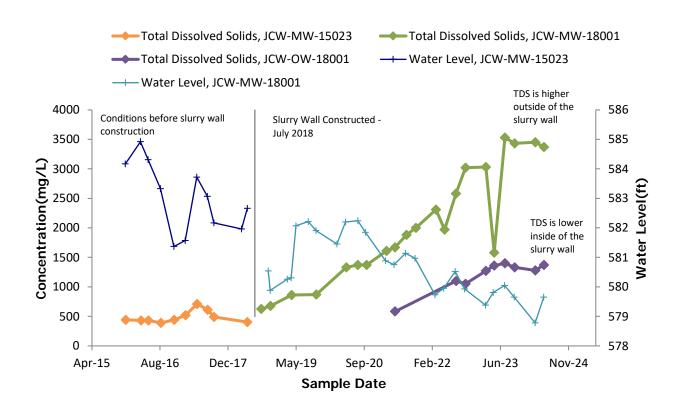


Figure G1: Time Series Plots for JCW-MW-18001 ASD

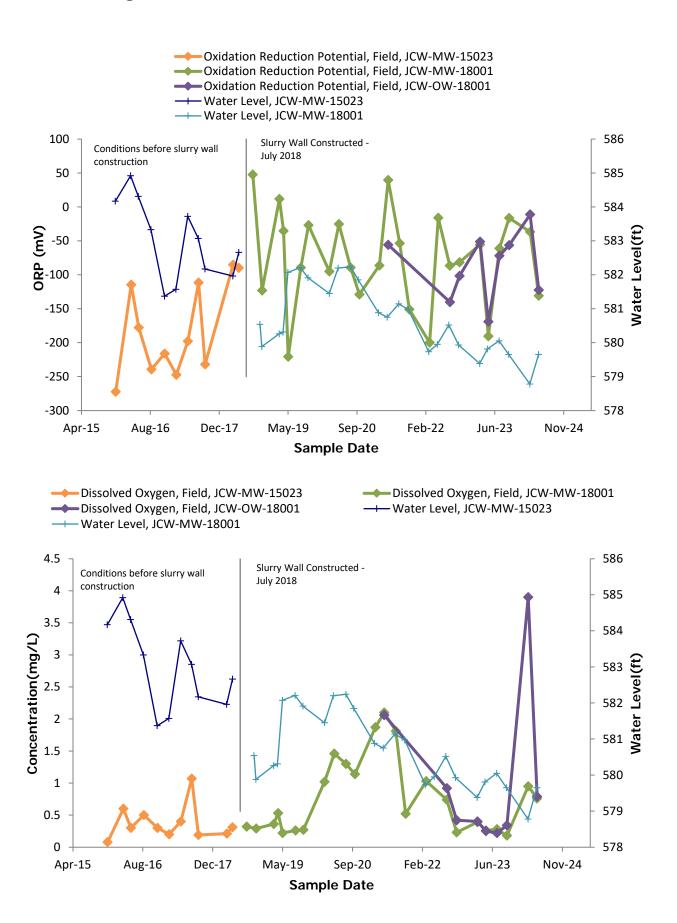
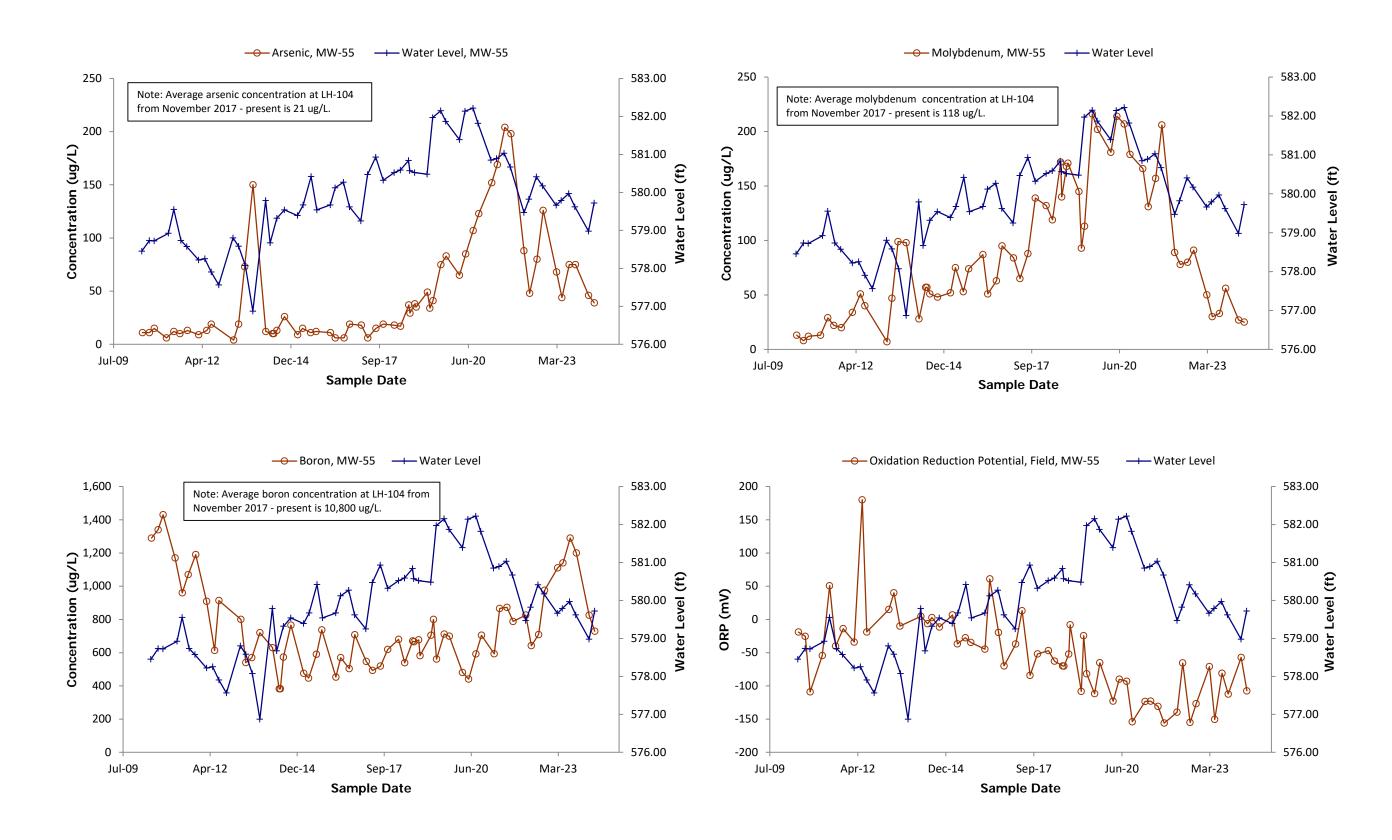


Figure G2: Time Series Plots for MW-55 ASD





# Enclosure 3 First Semiannual 2024 Nature and Extent Data Summary, JC Weadock, Consumers Energy, Essexville, Michigan. (TRC, July 30, 2024).



**Date:** July 30, 2024

**To:** J.R. Register, Consumers Energy

From: Darby Litz, TRC

Kristin Lowery, TRC

**Project No.:** 553828.0000 Phase 2 Task 2

**Subject:** First Semiannual 2024 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)<sup>3</sup> 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

<sup>&</sup>lt;sup>1</sup> TRC. 2019. Statistical Evaluation of Initial Assessment Monitoring Sampling Event, JC Weadock Landfill, Consumers Energy Company, Essexville, Michigan. January 14.

<sup>&</sup>lt;sup>2</sup> TRC. 2019. Statistical Evaluation of Initial Assessment Monitoring Sampling Event, JC Weadock Bottom Ash Pond, Consumers Energy Company, Essexville, Michigan. January 14.

<sup>&</sup>lt;sup>3</sup> TRC. 2019. Assessment of Corrective Measures – JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units. Prepared for Consumers Energy Company. September 11.

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 Report<sup>4</sup> and the Weadock Bottom Ash Pond CCR unit was certified closed<sup>5</sup>. Beryllium and lithium have never been detected at concentrations above the

<sup>&</sup>lt;sup>4</sup> 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.

<sup>&</sup>lt;sup>5</sup> Consumers Energy. 2023. *JC Weadock Bottom Ash Pond 40 CFR 257.102(c) Closure by Removal Certification.* November 10.

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 August 2022 to May 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 GWPS<sup>6</sup>
- Orange Statistically Significant GWPS Exceedances<sup>7</sup>

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 two groundwater monitoring wells located along the Weadock Landfill perimeter (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).<sup>8</sup> 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 Second Quarter 2024 Hydrogeological Monitoring Report (24Q2 HMP Report).<sup>9</sup>

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 and molybdenum 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: 24Q2 HMP Report).

<sup>&</sup>lt;sup>6</sup> 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)

<sup>&</sup>lt;sup>7</sup> Lower confidence limit is above the GWPS based upon most recent assessment monitoring statistical evaluation using the past eight compliance sampling events.

<sup>&</sup>lt;sup>8</sup> TRC. 2020. 2019 Annual Groundwater Monitoring Report – JC Weadock Power Plant Landfill CCR Unit. Prepared for Consumers Energy Company. January 30.

<sup>&</sup>lt;sup>9</sup> TRC. 2024. 2024 Semiannual Groundwater Monitoring Report and Second Quarter 2024 Hydrogeological Monitoring Report – JC Weadock Solid Waste Disposal Area. July 30.

- 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 of the 24Q2 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. 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.

### **Summary**

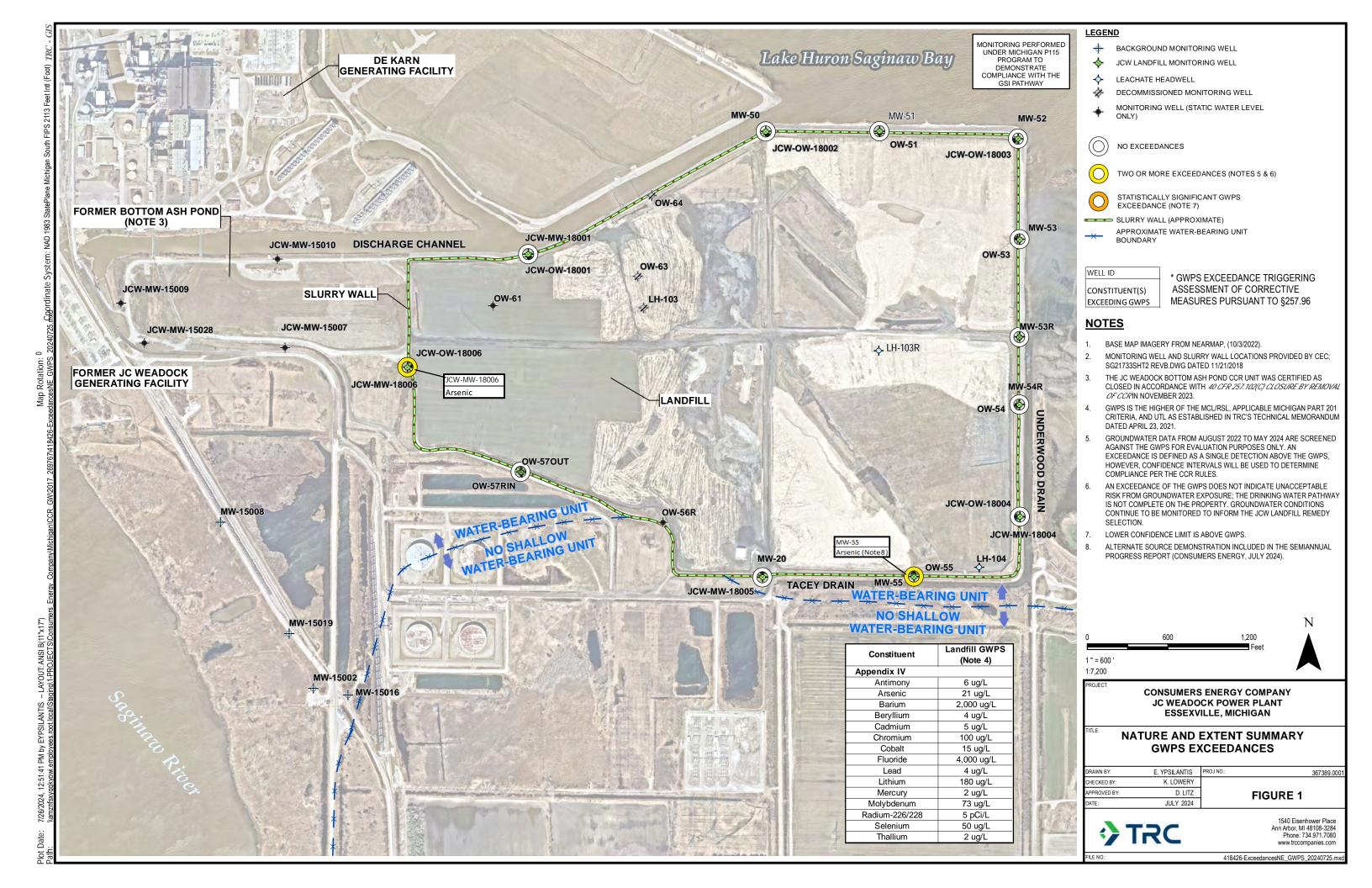
The nature and extent of arsenic in the shallow water-bearing unit is defined in accordance with the Federal CCR rule based on the site-specific hydrogeology. Beryllium and lithium concentrations in groundwater have been addressed as a part of the Weadock Bottom Ash Pond closure. Although arsenic concentrations 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**

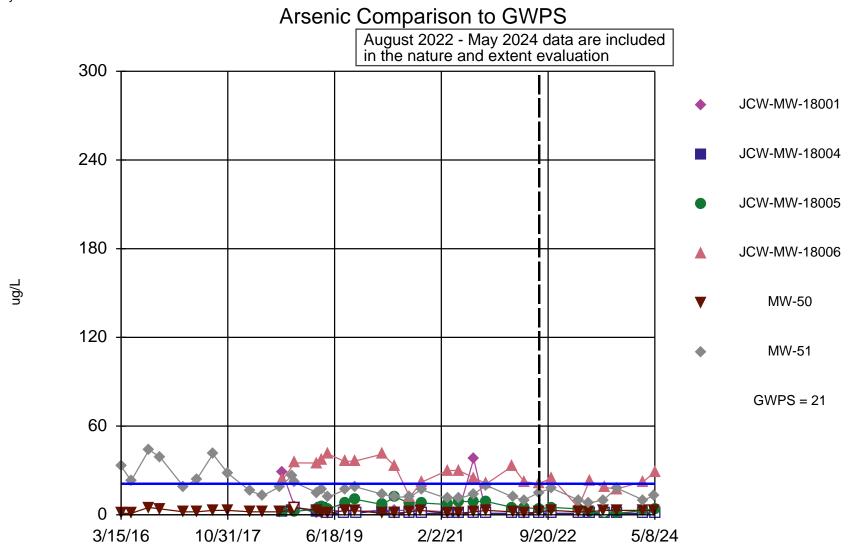
Figure 1 Nature and Extent Summary: GWPS Exceedances

Attachment A Time Series Graphs

# **Figure**

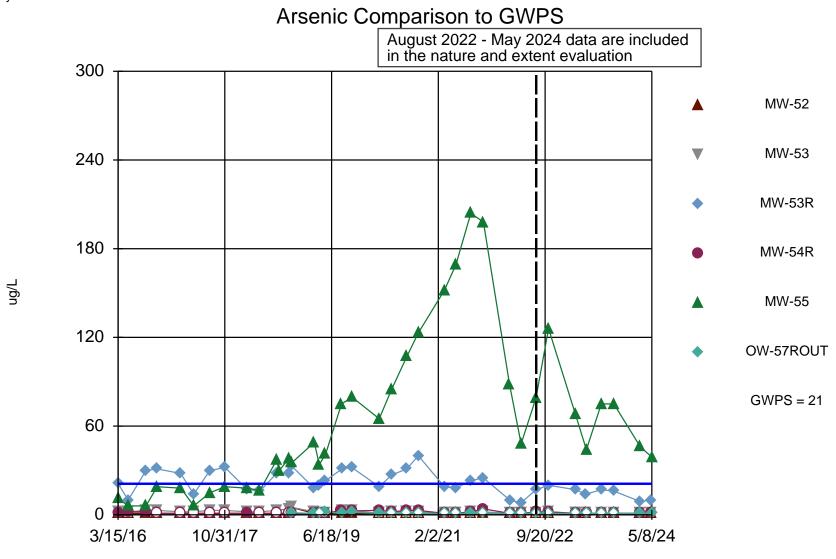


# **Attachment A Time Series Graphs**



Time Series Analysis Run 7/11/2024 10:29 AM

Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2



Time Series Analysis Run 7/11/2024 12:09 PM

Client: Consumers Energy Data: JCW\_HMPCCR\_Sanitas\_24Q2