

January 30, 2024

TRANSMITTAL VIA EMAIL 01/30/2024

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: 2023 Annual Groundwater Monitoring and Corrective Action Report

DE Karn Lined Impoundment Coal Combustion Residuals (CCR) Unit

Dear Ms. Babcock:

On April 17, 2015, the United States Environmental Protection Agency (USEPA) published the final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) (the CCR Rule) (USEPA, April 2015, as amended). Standards for groundwater monitoring and corrective action codified in the CCR Rule (40 CFR 257.90-98), apply to the Consumers Energy Company (Consumers Energy) Lined Impoundment at the DE Karn Power Plant Site. Pursuant to the CCR Rule, the owner or operator of a CCR unit must prepare an annual groundwater monitoring and corrective action report for the CCR unit documenting the status of groundwater monitoring and corrective action for the preceding year in accordance with §257.90(e). On behalf of Consumers Energy, TRC has prepared this Annual Groundwater Monitoring Report for the Karn Lined Impoundment to cover the period of January 1, 2023 to December 31, 2023.

This 2023 Karn Lined Impoundment Annual Report was prepared in accordance with the requirements of §257.90(e) and presents the monitoring results and the statistical evaluation of the detection monitoring constituents (Appendix III to Part 257 of the CCR Rule) for the four quarterly groundwater monitoring events completed in 2023 for the Lined Impoundment. As part of the statistical evaluation, the data collected during detection monitoring events are evaluated to identify statistically significant increases (SSIs) in detection monitoring constituents to determine if concentrations in detection monitoring well samples exceed background levels.

After establishing the groundwater monitoring system and detection monitoring project pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) December 28, 2018 to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The December 2018 amendments to Part 115 were developed to provide the State of Michigan oversight of CCR impoundments and landfills and to better align existing state solid waste management rules and statutes with the CCR Rule. This alignment would ensure compliance with the CCR standards through a state-approved

DE Karn Lined Impoundment Annual Groundwater Monitoring and Corrective Action Report Ms. Lori Babcock January 30, 2024



permitting program that would be deemed to be "equivalent to" or "as protective as" through an administrative application that would be reviewed and authorized by U.S. EPA.

On November 6, 2020 Consumers Energy submitted the Karn Lined Impoundment Hydrogeological Monitoring Plan (November 2020 HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and the four quarterly events completed in 2023 were performed in accordance with the EGLE-approved HMP. This letter and four quarterly reports (Enclosures 2 through 5) collectively comprise the 2023 Annual Groundwater Monitoring and Corrective Action Report and meet the requirements of §257.90(e) as documented in the enclosed checklist (Enclosure 1).

In 2023, Consumers Energy continued to assert an Alternate Source Demonstration (ASD), for the following SSIs over background limits:

- ➤ Chloride and total dissolved solids in DEK-MW-15003; and
- > pH in monitoring well OW-11.

As detailed in the First, Second, and Third Quarter 2023 Hydrogeological Monitoring Reports (Enclosures 2-4), a source other than the Karn Lined Impoundment CCR Unit caused the SSIs. There were no SSIs observed in the Fourth Quarter 2023 Hydrogeological Monitoring Reports (Enclosure 5). As such, Consumers Energy will continue with the detection monitoring program at the Karn Lined Impoundment in conformance with §257.90 - §257.94.

No corrective actions were performed in 2023. Per the November 2020 HMP, quarterly monitoring will be performed at the Karn Lined Impoundment in 2024. The next annual monitoring report will cover monitoring conducted in the 2024 calendar year and will be submitted no later than January 31, 2025.

Sincerely

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

Sr. Principal Environmental Engineer

Risk Management Phone: (517) 788-2982

Email: <u>harold.registerjr@cmsenergy.com</u>

DE Karn Lined Impoundment Annual Groundwater Monitoring and Corrective Action Report Ms. Lori Babcock January 30, 2024



cc: Mr. Jim Ferritto, EGLE Bay City District Office

Mr. Mike Quigg, EGLE Bay City District Office

Mr. John Ozoga, EGLE Bay City District Office

Ms. Margie Ring, EGLE Lansing Office

Mr. Jim Arduin, EGLE Lansing Office

Mr. Joe Firlit, Consumers Energy

Ms. Darby Litz, TRC

Ms. Kristin Lowery, TRC

Mr. Andrew Whaley, TRC

- Enclosures: 1) CCR Annual Groundwater Report Requirements: § 257.90(e). Checklist for the Karn Lined Impoundment CCR Unit.
 - 2) First Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC; April 27, 2023)
 - 3) Second Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC; July 21, 2023)
 - 4) Third Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC; October 30, 2023)
 - 5) Fourth Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. (TRC; January 30, 2024)

CCR Annual Groundwater Report Requirements: § 257.90(e) Checklist for the Karn Lined Impoundment CCR Unit 2023 Annual Report

Requirement	Reference
At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent	
available:	
(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to	- (2) (3) (4) (5)
include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;	Figure 2 (2),(3),(4),(5)
(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative	
description of why those actions were taken;	Not Applicable - no installation or decommissioning
(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater	
samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and	Section 3.2 (2),(3),(4),(5)
whether the sample was required by the detection monitoring or assessment monitoring programs;	Section 3.2 (Section 3.2)
(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from	
detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant	A
increase over background levels); and	Annual Report ⁽¹⁾ ; Section 1.2 Program Summary ^{(2),(3),(4),(5)}
(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.	Certified ASD ^{(2),(5)}
(6) A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and	
corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:	
(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program	(2) (3) (4) (5)
in § 257.94 or the assessment monitoring program in § 257.95;	Section 1.2 Program Summary (2),(3),(4),(5)
(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program	(2),(3),(4),(5)
in § 257.94 or the assessment monitoring program in § 257.95;	Section 1.2 Program Summary (2),(3),(4),(5)
(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in	Section 4.3 Alternate Source Demonstration ^{(2),(3),(4)} ; Certified ASD ⁽³⁾
appendix III to this part pursuant to § 257.94(e):	Section 4.3 Alternate Source Demonstration (************************************
(A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an	Certified ASD ⁽³⁾ ; remaining in Detection Monitoring
increase; and	, 0
(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Not Applicable; Detection Monitoring
(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more	
constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:	Not Applicable; Detection Monitoring
(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an	
increase;	Not Applicable; Detection Monitoring
(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	Not Applicable; Detection Monitoring
(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	Not Applicable; Detection Monitoring
(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	Not Applicable; Detection Monitoring
(v) Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy	
selection; and	Not Applicable; Detection Monitoring
(vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.	Not Applicable; Detection Monitoring

Notes:

- (1) 2023 Annual Groundwater Monitoring and Corrective Action Report Karn Lined Impoundment Coal Combustion Residuals CCR Unit. Consumers Energy. January 30, 2024.
- (2) First Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. April 27, 2023.
- (3) Second Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. July 21, 2023.
- (4) Third Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. October 30, 2023.
- (5) Fourth Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. TRC. January 30, 2024.



First Quarter 2023 Hydrogeological Monitoring Report

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

April 2023

Darby Litz

Project Manager/Hydrogeologist

Prepared For:

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

Prepared By:

TRC 1540 Eisenhower Place Ann Arbor, Michigan 48108

Kristin Lowery, E.I.T. Project Engineer



TABLE OF CONTENTS

1.0	.0 Introduction						
	1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1				
	1.2	Program Summary	1				
	1.3	Site Overview	2				
	1.4	Geology/Hydrogeology	2				
2.0	Seco	ond Collection System Monitoring	3				
3.0	Grou	ındwater Monitoring	5				
	3.1	Monitoring Well Network	5				
	3.2	March 2023 Detection Monitoring Event	5				
		3.2.1 Data Quality Review	6				
		3.2.2 Groundwater Flow Rate and Direction	6				
4.0	Data	Evaluation	8				
	4.1	Statistical Evaluation of Trends					
	4.2	Detection Monitoring Data Discussion					
	4.3	Alternate Source Demonstration					
5.0	Conc	clusions and Recommendations	.11				
6.0	Refe	rences	.12				
TAB	LES						
Table	-	Summary of Groundwater Elevation Data					
Table		Summary of Field Parameters					
Table Table		Summary of Groundwater Sampling Results (Analytical) Summary of Statistical Exceedances: March 2022					
FIGU	JRES						
Figure		Site Location Map					
Figure Figure		Site Layout Map Shallow Groundwater Contour Map – March 2022					
i igui		Chanow Croundwater Contour Map March 2022					



APPENDICES

Appendix A Laboratory Analytical Reports

Appendix B Field Notes

Appendix C Data Quality Reviews Appendix D Statistical Analysis

Appendix E Secondary Leachate Collection System Monitoring

Appendix F Alternate Source Demonstration



1.0 Introduction

Pursuant to the Federal CCR Rule¹, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018 to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This First Quarter 2023 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. 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, Format for Solid Waste Disposal Facility Monitoring Submittals, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (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 2023 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended.



- Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
- 2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the first quarter 2023, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

1.3 Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Karn site are the former Karn Bottom Ash Pond that was closed by removal and the Karn Landfill that was certified closed and now in post-closure care.

1.4 Geology/Hydrogeology

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. USGS topographic maps and aerial photographs dating back to 1938, 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 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, was generally encountered at 80 to 90 ft bgs.

The Site is bound by several surface water features (Figures 1 and 2): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay. In the vicinity of the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near the unlined ditch north of the Karn Lined Impoundment and near DEK-MW-15003, flowing outward toward the surrounding surface water bodies.



2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow rate of 25 gallons per acre per day (GPAD). The average daily flow rate for January through March 2023 (three-month average) was calculated as 4.9 GPAD and continues to demonstrate that the daily average flow rate is below the threshold value of the response action flow rate of 25 GPAD. Trend evaluations for weekly and monthly average flow rates continue to support that no additional engineering or operational modifications are necessary, and Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS Response Action Flow Rate, samples were collected from the surface water of the primary collection system (KLI-PCS) and from the secondary leachate collection system sump (KLI-SCS) to compare leachate chemistry to groundwater chemistry. The samples were analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids and chloride. A few notable observations:

■ Arsenic concentrations are higher in groundwater than the primary and secondary collection system: Arsenic was detected in the primary collection system at a concentration of 2 ug/L and in the secondary collection system at a concentration of 1 ug/L in March 2023. As shown in Appendix E, the arsenic concentrations observed in the primary and secondary collections system have been consistently low. In contrast, the arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 79 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.



- Vanadium is detected in the primary and secondary collection system and not in groundwater: Vanadium is generally present in the primary collection system samples at higher concentrations (17ug/L in March 2023) than the vanadium concentration observed in the secondary collection system (3 ug/L in March 2023) (Appendix E). Vanadium was not detected in the wells nearest the observed liner damage: OW-12 (<2 ug/L) or DEK-MW-18001 (<2 ug/L) providing additional evidence that a release has not adversely affected groundwater conditions.
- Secondary Collection System chemistry has not appreciably changed: The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the primary and secondary collection systems, except for total dissolved solids (TDS) and sulfate in the secondary collection system and chloride in both the primary and secondary collection systems. TDS and sulfate concentrations in the primary collection system leachate is significantly lower in concentration than the concentration in the secondary collection system leachate, suggesting that the elevated TDS and sulfate is not likely from the primary collection system leachate. The TDS and sulfate concentrations in the secondary collection system are beginning to stabilize and are also more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.



3.0 Groundwater Monitoring

3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance" (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

3.2 March 2023 Detection Monitoring Event

In accordance with the HMP, TRC conducted the first quarter 2023 monitoring event for the Karn Lined Impoundment on March 8th and 9th, 2023. In addition to the routine groundwater samples collected from the monitoring well network, a water sample was collected from a sump in the secondary collection system (KLI-SCS) and a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry. A sample of surface water was also collected from a ditch located north of the lined impoundment (SW-Ditch) to further evaluate site geochemistry (Figure 2). The SW-Ditch surface water grab sample represents water quality from the potentiometric high point adjacent to the Karn Lined Impoundment.

Groundwater samples collected during the first quarter 2023 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

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



Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

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 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 B).

Monitoring wells were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater 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 one field blank, one equipment blank, one field duplicate (OW-12), and field matrix spike/matrix spike duplicate samples collected at DEK-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 data were found to be complete and usable for the purposes of the HMP program. The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

3.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in March 2023 are generally within the range of 579 to 586 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at equal elevation relative to the surrounding surface water features measured by the NOAA gauging station data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the



process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected in the vicinity of the former Karn Bottom Ash Pond in March 2023 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the Karn Lined Impoundment. Monitoring wells OW-11, OW-12, and DEK-MW-15003 delineate the newly established groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3.

The average hydraulic gradient observed on March 6, 2023 in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0047 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was calculated to be 0.24 ft/day or 88 ft/year in March 2023 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.



4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the first quarter 2023 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017 and in accordance with the December 23, 2015 mixing zone determination.

4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using Sanitas[™] Statistical Software (Sanitas[™]). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from May 2021 through March 2023 were analyzed using Mann-Kendall and Sen's Slope 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 slope was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.



Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:

- The increasing trend in chloride and total dissolved solids concentrations continue to be observed in DEK-MW-15003.
- The increasing trend for pH continued to be observed in OW-11.

4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, the groundwater conditions do not conclusively indicate a release from the unit, as discussed further in Section 4.3. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Both leaks have been repaired. Detection monitoring constituent concentrations at OW-12, located closest to the identified liner damage, exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends at noted in section 4.1 will continue to be evaluated within context of changes in the site operational status.

4.3 Alternate Source Demonstration

At this time, Consumers Energy is continuing to assert an Alternate Source Demonstration (ASD), for the following, as detailed in the Fourth Quarter 2022 Hydrogeological Monitoring Report (TRC, January 2023):

- pH in monitoring well OW-11; and
- Chloride and total dissolved solids in monitoring well DEK-MW-15003.

Although increasing trends of detection monitoring (Appendix III) constituents exist, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below.

Timing of Changes in Concentrations

Time-series plots included in Appendix F illustrate that the change in chloride and TDS at DEK-MW-15003 is likely a result of changes in the groundwater flow regime or redox conditions as a result of the Bottom Ash Pond closure activities, rather than a result of a release from the unit.

Chloride and TDS at DEK-MW-15003 initially decreased after the Bottom Ash Pond closure activities. In early 2020, chloride concentrations began to increase, followed by increases in TDS beginning in 2021. Both constituents appear to be approaching the concentrations observed pre-construction. Chloride is one of the components of TDS. Other components of TDS, such as calcium, iron, magnesium, potassium, sodium, and sulfate have remained relatively consistent from 2020 to present and the increases in TDS are correlated with the increases in chloride. The slight increase in chloride began before the noted leak in the Karn Lined Impoundment liner system was observed; therefore, the recent increase in concentrations is not due to a release from the unit.



Groundwater Flow Direction

OW-11 and DEK-MW-15003 are not located downgradient of either area of the noted liner damage, due to the position of the wells relative to the groundwater elevation high point, as shown in Figure 3. Furthermore, OW-11 has distinct chemistry as compared to the KLI-SCS data as shown in Table 3. Boron, which can be used as a conservative tracer, is six times higher in OW-11 than what has been observed in the KLI-SCS samples. The pH observed at OW-11 is 2 standard units higher than what is observed in the KLI-SCS sample and higher than other nearby wells, which indicate a source other than the Karn Lined Impoundment is influencing chemistry at OW-11.

Leachate Chemistry

Analysis of the KLI-PCS and KLI-SCS data provide additional lines of evidence to support a source other than the unit is contributing to groundwater conditions.

- Arsenic concentrations are higher in groundwater than in the secondary collection system; therefore, arsenic present in groundwater does not appear to be a result of a release from the unit (Section 2.0).
- Vanadium is detected in the primary and secondary collection system and not in groundwater in the wells nearest the observed liner damage OW-12 or DEK-MW-18001 (<2 ug/L), providing additional evidence that a release has not adversely affected groundwater conditions.



5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although increasing trends for detection monitoring constituents were observed in two wells in first quarter 2023, these trends were found to not be a result of operation of the Karn Lined Impoundment. No SSIs over background limits were identified at the Karn Lined Impoundment during the March 2023 monitoring event. The use of secondary collection system flow rates as a leak detection system was successful. Increased flow rates observed in fourth quarter 2020 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. The results of the mitigation efforts continue to be monitored and recent data demonstrate that the daily average flow rate has been reduced to less than the threshold value of the Response Flow Rate of 25 gallons per acre per day after the documented repairs and response activities were completed in 2021. The second quarter monitoring event is scheduled for May 2023.



6.0 References

- AECOM. October 30, 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company.
- Consumers Energy. December 19, 2017. Hydrogeological Monitoring Plan, Rev. 3. DE Karn Solid Waste Disposal Area.
- Natural Resource Technology. September 2005. Phase II Groundwater Discharge Evaluation at the Consumers Energy DE Kam and JC Weadock Solid Waste Disposal Areas.
- TRC. January 2019. 2018 Annual Groundwater Report for the DE Karn Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. November 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. January 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. April 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).
- USEPA. July 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).



Tables

Table 1

Summary of Groundwater Elevation Data DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

NA 7 - 11	тос	Coolonia Hatt of	Screen Interval	March 6, 2023		
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water	Groundwater Elevation	
				(ft BTOC)	(ft)	
DEK Bottom Ash Pon	id	!	'			
DEK-MW-15002	590.87	Sand	578.3 to 575.3	5.98	584.89	
DEK-MW-15005	589.72	Sand	572.3 to 567.3	10.19	579.53	
DEK-MW-15006	589.24	Sand	573.0 to 568.0	9.70	579.54	
DEK Bottom Ash Pon	d & Karn Lined In	npoundment				
DEK-MW-18001	593.47	Sand	579.2 to 574.2	8.72	584.75	
Karn Lined Impoundr	ment					
DEK-MW-15003	602.74	Sand	578.8 to 574.8	17.74	585.00	
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	6.40	585.18	
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	22.57	585.33	
OW-12	603.10	Silty Sand	584.2 to 579.2	17.03	586.07	
DEK Nature and Exte	nt	•	•			
DEK-MW-15004	611.04	Sand	576.6 to 571.6	28.62	582.42	
MW-01	597.02	Sand	573.0 to 570.0	17.65	579.37	
MW-03	597.30	Sand	569.8 to 566.8	17.79	579.51	
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.31	580.13	
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	17.60	581.18	
MW-10	596.97	Sand	582.5 to 572.5	16.96	580.01	
MW-12	598.60	Sand	583.9 to 573.9	19.08	579.52	
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.71	579.66	
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.00	579.80	
MW-22	598.99	Ash/Sand	571.4 to 568.4	16.96	582.03	
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.60	580.97	
DEK Static Water Lev	rel					
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	18.00	579.34	
MW-04	598.01	NR	569.5 to 564.5	18.68	579.33	
MW-17	597.91	Sand	577.0 to 574.0	13.10	584.81	
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.20	583.02	
MW-19	597.28	NR	572.1 to 567.1	17.19	580.09	
MW-20	632.75	Sand	582.3 to 579.3	53.05	579.70	
MW-21	632.91	Sand	587.1 to 584.1	51.55	581.36	
OW-01	631.33	NR	572.5 to 567.5	51.58	579.75	
OW-02	598.01	Fly Ash	579.4 to 576.4	15.85	582.16	
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.55	580.39	
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.60	579.61	
OW-05	593.53	Sand	576.9 to 571.9	13.78	579.75	
OW-06	603.95	NR	580.9 to 575.9	22.52	581.43	
OW-07	596.41	Ash	583.3 to 580.3	15.52	580.89	
OW-08	593.93	NR	581.0 to 576.0	10.86	583.07	
OW-09	593.45	NR	585.5 to 580.5	10.23	583.22	
OW-13	588.52	NR	579.5 to 574.5	3.36	585.16	
OW-15	587.75	NR	572.8 to 567.8	2.36	585.39	

Notes:

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

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

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2

Summary of Field Parameters DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	pH (SU)	Specific Conductivity (umhos/cm)	Temperature	Turbidity (NTU)				
Karn Lined Impoundm	Karn Lined Impoundment										
DEK-MW-15003	3/8/2023	0.90	-146.5	7.97	442	16.3	2.3				
DEK-MW-18001	3/7/2023	1.00	-133.5	7.67	697	10.3	2.9				
KLI-PCS	3/8/2023	12.70	-36.8	8.30	504	5.9	20.6				
KLI-SCS	3/9/2023	4.20	9.4	7.41	1,342	3.7	9.6				
OW-10	3/8/2023	1.10	-134.8	7.26	865	10.2	7.9				
OW-11	3/8/2023	1.90	-91.1	9.80	326	10.1	5.0				
OW-12	3/8/2023	1.00	-116.3	7.17	711	11.8	4.3				
SW-DITCH	3/8/2023	11.70	7.2	8.48	541	10.1	14.7				

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

Table 3

Summary of Groundwater Sampling Results (Analytical) DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS	KLI-SCS	SW-DITCH
					Sample Date:	3/8/2023	3/7/2023	3/8/2023	3/8/2023	3/8/2023	3/8/2023	3/9/2023	3/8/2023
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Upgradient	Downgi		Upgradient	Downgradient		Supplemental	
Appendix III ⁽¹⁾													
Boron	ug/L	NC	500	500	4,000	816	945	1,430	3,690	1,060	349	595	65
Calcium	mg/L	NC	NC	NC	500EE	29.2	56.1	123	5.77	64.8	69	94.6	59.1
Chloride	mg/L	250**	250E	250E	50	58.7	63.7	74.4	59.5	59.7	79.4	52.6	74.8
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,900	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250E	250E	500EE	41.8	161	11.3	17.4	142	60.2	457	37.6
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	282	534	673	233	522	422	1,360	389
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	7.97	7.67	7.26	9.80	7.17	8.30	7.41	8.48
Appendix IV ⁽¹⁾													
Antimony	ug/L	6	6.0	6.0	2.0	1	< 1	< 1	3	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	401	228	2	769	79	2	1	< 1
Barium	ug/L	2,000	2,000	2,000	1,200	44	149	166	21	100	352	50	111
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	<1	<1	< 1	< 1	<1	4	1	1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,900	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	21	20	31	< 10	33	< 10	< 10	< 10
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	23	8	< 5	158	13	13	8	< 5
Selenium	ug/L	50	50	50	5.0	1	< 1	1	3	< 1	1	3	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 1	15 ⁽²⁾												
Iron	ug/L	300**	300E	300 ^E	500,000EE	178	1,060	3,590	86	4,950	1,090	2,320	790
Copper	ug/L	1,000**	1,000E	1,000 ^E	20	< 1	< 1	2	< 1	<1	4	2	4
Nickel	ug/L	NC	100	100	120	3	< 2	< 2	2	2	4	4	3
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	3	1,020	< 2	17	3	5
Zinc	ug/L	5,000**	2,400	5,000E	260	< 10	< 10	< 10	13	< 10	< 10	12	< 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 21, 2020.
- ** 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 1 of 1 April 2023 X:\WPAAM\PJT2\514404\0001\KLI 2023Q1\Tables\T514404.1-003_23Q1

Table 4

Summary of Statistical Exceedances – March 2023 DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

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

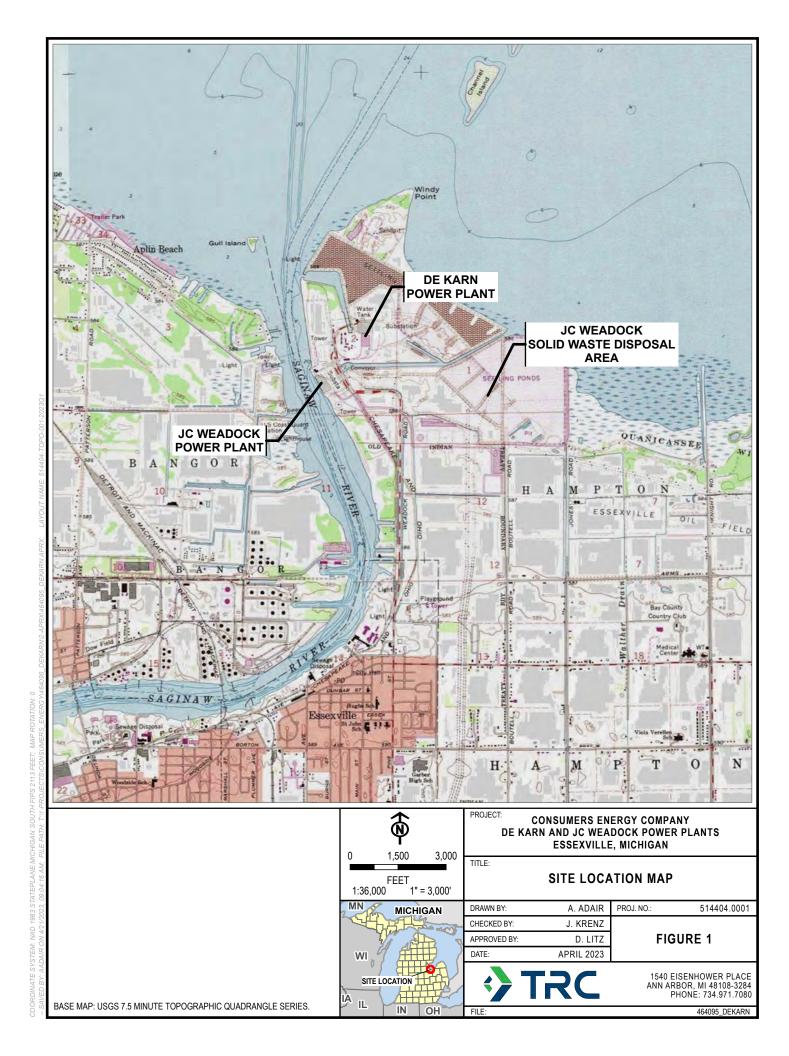
Data is in (X) ug/L or () mg/L unless otherwise stated

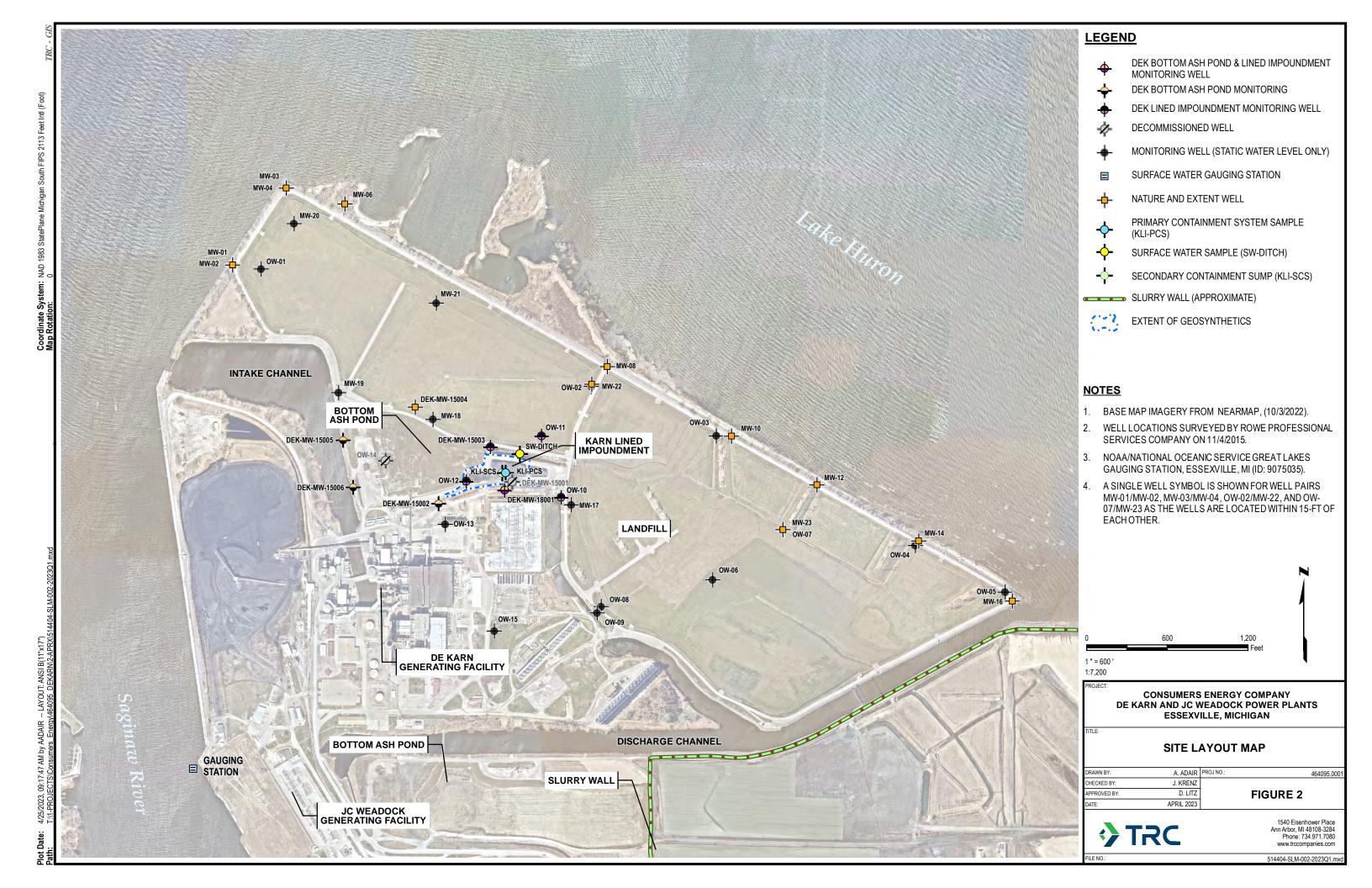
Facility: Karn Lined Impoundment – WDS# 392503

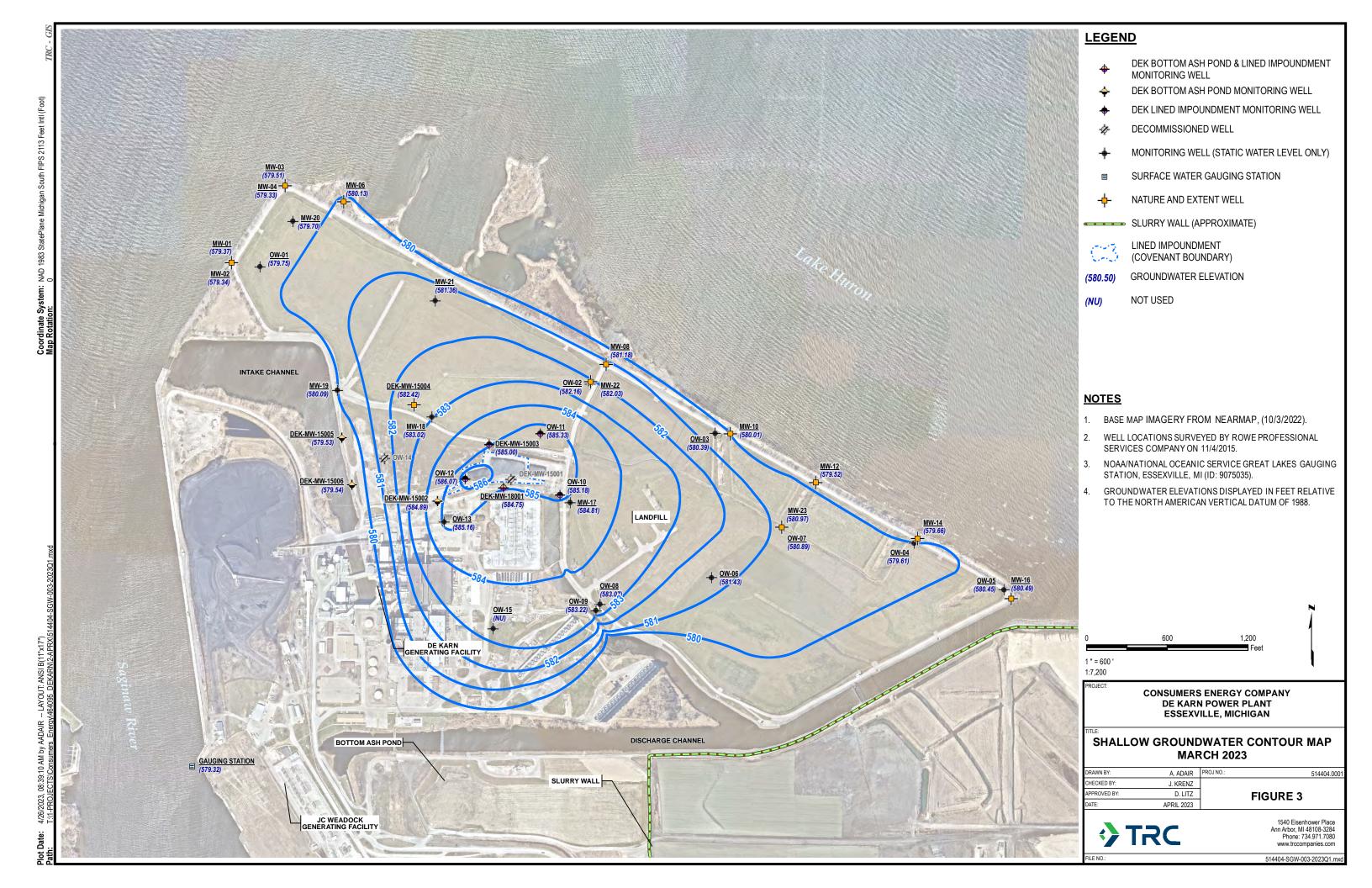
Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	1 Qtr. 2023 (bold >201)	4 Qtr. 2022 (bold >201)	3 Qtr. 2022 (bold >201)	2 Qtr. 2022 (bold >201)		
No Exceedances										



Figures









Appendix A Laboratory Analytical Reports



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

To: CDBatts, Karn/Weadock

From: EBlaj, T-258

Date: March 24, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2023 Q1

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0168

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 03/06/2023, for the 1st Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 03/08/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

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

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: Q1-2023 DEK Bottom Ash Pond & Lined Impoundment

Date Received: 3/8/2023 **Chemistry Project:** 23-0168

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0168-01	DEK-MW-18001	Groundwater	03/07/2023 13:59	DEK Bottom Ash Pond & Lined Impoundment
23-0168-02	DEK-MW-18001 MS	Groundwater	03/07/2023 13:59	DEK Bottom Ash Pond & Lined Impoundment
23-0168-03	DEK-MW-18001 MSD	Groundwater	03/07/2023 13:59	DEK Bottom Ash Pond & Lined Impoundment



Report Date:

03/24/23



A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 23-0168

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 03/07/2023

 Lab Sample ID:
 23-0168-01
 Collect Time:
 01:59 PM

Matrix: Groundwater

Result ND	Flag	Units	RL	Analysis Date	Tracking
ND				,	Hacking
		ug/L	1.0	03/13/2023	AB23-0313-11
228		ug/L	1.0	03/13/2023	AB23-0313-11
149		ug/L	5.0	03/13/2023	AB23-0313-11
ND		ug/L	1.0	03/13/2023	AB23-0313-11
945		ug/L	20.0	03/13/2023	AB23-0313-11
ND		ug/L	0.2	03/13/2023	AB23-0313-11
56100		ug/L	1000.0	03/13/2023	AB23-0313-11
ND		ug/L	1.0	03/13/2023	AB23-0313-11
ND		ug/L	6.0	03/13/2023	AB23-0313-11
ND		ug/L	1.0	03/13/2023	AB23-0313-11
1060		ug/L	20.0	03/13/2023	AB23-0313-11
ND		ug/L	1.0	03/13/2023	AB23-0313-11
20		ug/L	10.0	03/13/2023	AB23-0313-11
10700		ug/L	1000.0	03/13/2023	AB23-0313-11
155		ug/L	5.0	03/13/2023	AB23-0313-11
8		ug/L	5.0	03/13/2023	AB23-0313-11
ND		ug/L	2.0	03/13/2023	AB23-0313-11
5490		ug/L	100.0	03/13/2023	AB23-0313-11
ND		ug/L	1.0	03/13/2023	AB23-0313-11
ND		ug/L	0.2	03/13/2023	AB23-0313-11
107000		ug/L	1000.0	03/13/2023	AB23-0313-11
ND		ug/L	2.0	03/13/2023	AB23-0313-11
ND		ug/L	2.0	03/13/2023	AB23-0313-11
ND		ug/L	10.0	03/13/2023	AB23-0313-11
			Aliquot #: 23-0	168-01-C01-A02	Analyst: CLE
Result	Flag	Units	RL	Analysis Date	Tracking
ND		ug/L	0.2	03/15/2023	AB23-0315-02
)3			Aliquot #: 23-0	168-01-C02-A01	Analyst: KDR
Result	Flag	Units	RL	Analysis Date	Tracking
ND		ug/L	100.0	03/08/2023	AB23-0309-01
ND		ug/L	100.0	03/08/2023	AB23-0309-01
List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	168-01-C02-A02	Analyst: KDR
Result	Flag	Units	RL	Analysis Date	Tracking
63700		ug/L	1000.0	03/13/2023	AB23-0313-02
	945 ND 56100 ND ND ND 1060 ND 20 10700 155 8 ND 5490 ND	945 ND 56100 ND ND ND ND 1060 ND 20 10700 155 8 ND 5490 ND	945	945	945 ug/L 20.0 03/13/2023 ND ug/L 0.2 03/13/2023 56100 ug/L 1000.0 03/13/2023 ND ug/L 1.0 03/13/2023 ND ug/L 6.0 03/13/2023 ND ug/L 1.0 03/13/2023 1060 ug/L 20.0 03/13/2023 ND ug/L 1.0 03/13/2023 ND ug/L 1.0 03/13/2023 ND ug/L 10.0 03/13/2023 10700 ug/L 1000.0 03/13/2023 10700 ug/L 5.0 03/13/2023 ND ug/L 100.0 03/13/2023 ND ug/L 100.0 03/13/2023 ND ug/L 100.0 03/13/2023 ND ug/L 100.0 03/13/2023 ND ug/L 2.0 03/13/2023 ND ug/L 10.0 03/13/2023 ND ug/L 10.0 03/13/2023 ND ug/L 10.0





A CENTURY OF EXCELLENCE

Report Date: 03/24/23

DEK Bottom Ash Pond & Lined Impoundment Sample Site:

Laboratory Project: 23-0168 Collect Date: Field Sample ID: DEK-MW-18001 03/07/2023 Lab Sample ID: 23-0168-01 Collect Time: 01:59 PM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous				Aliquot #: 23-0	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	161000		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h	n), Groundwate	r HL		Aliquot #: 23-0	168-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2000		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C	;			Aliquot #: 23-0	168-01-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	534		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	168-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	183000		ug/L	10000.0	03/13/2023	AB23-0313-09
Alkalinity Bicarbonate	183000		ug/L	10000.0	03/13/2023	AB23-0313-09
Alkalinity Carbonate	ND		ug/L	10000.0	03/13/2023	AB23-0313-09
Sulfide, Total by SM 4500 S2D	Aliquot #: 23-0	168-01-C07-A01	Analyst: Merit			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/11/2023	AB23-0310-10



Report Date:

03/24/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0168**

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 03/07/2023

 Lab Sample ID:
 23-0168-02
 Collect Time:
 01:59 PM

Matrix: Groundwater

Metals by EPA 6020B: CCR Rule	Appendix III-IV To	tai Metais	Exp	Aliquot #: 23-0	168-02-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	104		%	1.0	03/13/2023	AB23-0313-11
Arsenic	96		%	1.0	03/13/2023	AB23-0313-11
Barium	102		%	5.0	03/13/2023	AB23-0313-11
Beryllium	100		%	1.0	03/13/2023	AB23-0313-11
Boron	117		%	20.0	03/13/2023	AB23-0313-11
Cadmium	104		%	0.2	03/13/2023	AB23-0313-11
Calcium	97.8		%	1000.0	03/13/2023	AB23-0313-11
Chromium	98		%	1.0	03/13/2023	AB23-0313-11
Cobalt	99		%	6.0	03/13/2023	AB23-0313-11
Copper	95		%	1.0	03/13/2023	AB23-0313-11
Iron	114		%	20.0	03/13/2023	AB23-0313-11
Lead	96		%	1.0	03/13/2023	AB23-0313-11
Lithium	100		%	10.0	03/13/2023	AB23-0313-11
Magnesium	105		%	1000.0	03/13/2023	AB23-0313-11
Manganese	107		%	5.0	03/13/2023	AB23-0313-11
Molybdenum	110		%	5.0	03/13/2023	AB23-0313-11
Nickel	97		%	2.0	03/13/2023	AB23-0313-11
Potassium	103		%	100.0	03/13/2023	AB23-0313-11
Selenium	101		%	1.0	03/13/2023	AB23-0313-11
Silver	93.4		%	0.2	03/13/2023	AB23-0313-11
Sodium	104	%	%	1000.0	03/13/2023	AB23-0313-11
Thallium	94		%	2.0	03/13/2023	AB23-0313-11
Vanadium	102		%	2.0	03/13/2023	AB23-0313-11
Zinc	98		%	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueous				Aliquot #: 23-0168-02-C01-A02 Analyst: C		Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	110		%	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueous, NO2, NO3				Aliquot #: 23-0168-02-C02-A01 Analyst: KI		Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	95		%	100.0	03/08/2023	AB23-0309-01
Nitrite	89		%	100.0	03/08/2023	AB23-0309-01
Anions by EPA 300.0 CCR Rule A	nalyte List, Cl, F,	SO4, Aqu	eous	Aliquot #: 23-0	168-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
、						



Analytical Report

Report Date: 03/24/23

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Laboratory Project: 23-0168

Field Sample ID: **DEK-MW-18001 MS**

Collect Date: 03/07/2023 Collect Time: 01:59 PM

Lab Sample ID: 23-0168-02 Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Ana	llyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	168-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	96		%	1000.0	03/13/2023	AB23-0313-02
Sulfate	106		%	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	r HL		Aliquot #: 23-0	168-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	93		%	25.0	03/14/2023	AB23-0314-06
Alkalinity by SM 2320B				Aliquot #: 23-0	168-02-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	97.5		%	10000.0	03/13/2023	AB23-0313-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	168-02-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	03/11/2023	AB23-0310-10



03/24/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 23-0168

 Field Sample ID:
 DEK-MW-18001 MSD
 Collect Date:
 03/07/2023

 Lab Sample ID:
 23-0168-03
 Collect Time:
 01:59 PM

Metals by EPA 6020B: CCR R	ule Appendix III-IV To	tal Metals Exp	Aliquot #: 23-0	168-03-C01-A01	Analyst: EE
Parameter(s)	Result	Flag Unit	s RL	Analysis Date	Tracking
Antimony	106	%	1.0	03/13/2023	AB23-0313-11
Arsenic	94	%	1.0	03/13/2023	AB23-0313-11
Barium	104	%	5.0	03/13/2023	AB23-0313-11
Beryllium	98	%	1.0	03/13/2023	AB23-0313-11
Boron	116	%	20.0	03/13/2023	AB23-0313-11
Cadmium	106	%	0.2	03/13/2023	AB23-0313-11
Calcium	99.0	%	1000.0	03/13/2023	AB23-0313-11
Chromium	98	%	1.0	03/13/2023	AB23-0313-11
Cobalt	98	%	6.0	03/13/2023	AB23-0313-11
Copper	92	%	1.0	03/13/2023	AB23-0313-11
Iron	103	%	20.0	03/13/2023	AB23-0313-11
Lead	97	%	1.0	03/13/2023	AB23-0313-11
Lithium	98	%	10.0	03/13/2023	AB23-0313-11
Magnesium	108	%	1000.0	03/13/2023	AB23-0313-11
Manganese	100	%	5.0	03/13/2023	AB23-0313-11
Molybdenum	110	%	5.0	03/13/2023	AB23-0313-11
Nickel	94	%	2.0	03/13/2023	AB23-0313-11
Potassium	107	%	100.0	03/13/2023	AB23-0313-11
Selenium	100	%	1.0	03/13/2023	AB23-0313-11
Silver	95.4	%	0.2	03/13/2023	AB23-0313-11
Sodium	112	%	1000.0	03/13/2023	AB23-0313-11
Thallium	93	%	2.0	03/13/2023	AB23-0313-11
Vanadium	100	%	2.0	03/13/2023	AB23-0313-11
Zinc	94	%	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total	, Aqueous		Aliquot #: 23-0)168-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag Unit	s RL	Analysis Date	Tracking
Mercury	108	%	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueou	s, NO2, NO3		Aliquot #: 23-0)168-03-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag Unit	s RL	Analysis Date	Tracking
Nitrate	95	%	100.0	03/08/2023	AB23-0309-01
Nitrite	89	%	100.0	03/08/2023	AB23-0309-01
Anions by EPA 300.0 CCR Ru	le Analyte List, Cl, F,	SO4, Aqueous	Aliquot #: 23-0)168-03-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag Unit	s RL	Analysis Date	Tracking
Chloride	103	%	1000.0	03/13/2023	AB23-0313-02



Analytical Report

Report Date: 03/24/23

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0168**

 Field Sample ID:
 DEK-MW-18001 MSD
 Collect Date:
 03/07/2023

 Lab Sample ID:
 23-0168-03
 Collect Time:
 01:59 PM

Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	168-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	95		%	1000.0	03/13/2023	AB23-0313-02
Sulfate	108		%	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	r HL		Aliquot #: 23-0	168-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	94		%	25.0	03/14/2023	AB23-0314-06
Alkalinity by SM 2320B				Aliquot #: 23-0	168-03-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	97.1		%	10000.0	03/13/2023	AB23-0313-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	168-03-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	03/11/2023	AB23-0310-10





Report Date: 03/24/23

Data Qualifiers	Exception Summary
	No exceptions occurred.

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

General Standard Operating Procedure

TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Number:	3.0168			
Inspection Date: 3.8.23	3	Inspection By:	CLE	
Sample Origin/Project Name: @	21-2023 DEK	BAPYLI	(Shipped	ul 23-0167
Shipment Delivered By: Enter the	ne type of shipment o	carrier.		
Pony Fed	Ex U	PSU	JSPS	Airbome
Other/Hand Carry (whon				
Tracking Number: 395	460652638	Shipping Fo	orm Attached: Yes	No
Shipping Containers: Enter the	ype and number of s	hipping containers rec	eived.	
Cooler Car				velope/Mailer
Loose/Unpackaged Conta				Christian Christ
Condition of Shipment: Enter th				
Damaged Shipment Obse		and the second second		Leaking
Other				Leaking
Shipment Security: Enter if any				
Shipping Containers Rece	eived: Opened	Sealed _		
Enclosed Documents: Enter the t	ype of documents en	closed with the shipm	ent.	
CoC Work F	Request	Air Data Sheet_	Other	
Temperature of Containers: Mea	sure the temperature	of several sample con	tainers.	
As-Received Temperature	Allert St. P. Sandan St. Phys. Berlin.	The state of the second		
M&TE # and Expiration L	5027723			
Number and Type of Containers	5.25.23	ober of sample contain	ers received	
				. Taskina
Container Type W VOA (40mL or 60mL)		Other	Broke	n Leaking
Quart/Liter (g/p)				
9-oz (amber glass jar)			= -	
2-oz (amber glass)				
	2			
24 mL vial (glass)				
2 S 05 80 mL (plastic)				
Other				

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page _ f of _ f

	PLING SITE / CU 023 DEK Botto		Lined Impo	ound.	PROJECT NUMBER: 23-0168	SAP CC or WC	_	ld R	legis	ter				Attac	NAL h Lis	YSI:	S RE	QUE:	STED s Needed)	QA REQUIREMENT:
SAM	PLING TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ S			30.3		100						H				□ NPDES ⊠ TNI
SEN	D REPORT TO:	Caleb Batts			email:	phone:														☐ ISO 17025
	COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Othe			CC	NTA	INI	RS									□ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Slud W = Water / Aqueous Liquid A = Air			P	RES	ERV	ATI	VE	als							☐ INTERNAL INFO
	TAR	SAMPLE COLL	ECTION	×	S = Soil / General Solid WP = Wi	pe neral Waste	IT#			H			Metals	su	onia		inity	o o		□ OTHER
S	LAB AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO		TOTAL	None	HNO3	NaOH	HCI	MeOH	Total	Anions	Ammonia	TDS	Alkalinity	Sulfide		REMARKS
	23-0168-01	3-7-23	1359	GW	DEK-MW-18001		7	4	1 1	1			x	x	x	x	x	x		
	-02	3-7-23	1359	GW	DEK-MW-18001 MS		6	3	1 1	I			x	x	x		x	x		
	-03	3-7-23	1359	GW	DEK-MW-18001 MSD		6	3	1 1	I			x	x	x		x	x		
REII	NQUISHED BY:			DATE	TIME:	RECEIVED BY:							CO	ММ	ENTS					
KELI	NQUISHED BY:	14	1		3-7-23 /1530								- 00	WINI	EN IS					
DELL	NQUISHED BY:	10	7			Fed EX	_	-				_	Par	aive	l on 1	007	30v-	s 🗆 N	In MAT	E#:15071113
KELI	Fed Ex				8-23 1000	CAS WAY W 23-0168 Page 13 of	13											_°C		Due Date: 5 - 15 - 13



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

To: CDBatts, Karn/Weadock

From: EBlaj, T-258

Date: March 24, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2023 Q1

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0169

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 03/06/2023 for the 1st Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 03/09/2023 and 03/10/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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. <u>Sample Receipt</u>

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

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; 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: Q1-2023 DEK Lined Impoundment

Date Received: 3/09/2023 and 3/10/2023

Chemistry Project: 23-0169

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0169-01	DEK-MW-15003	Groundwater	03/08/2023 12:25	DEK Lined Impoundment
23-0169-02	OW-10	Groundwater	03/08/2023 11:15	DEK Lined Impoundment
23-0169-03	OW-11	Groundwater	03/08/2023 13:20	DEK Lined Impoundment
23-0169-04	OW-12	Groundwater	03/08/2023 09:40	DEK Lined Impoundment
23-0169-05	KLI-SCS	Groundwater	03/09/2023 08:40	DEK Lined Impoundment
23-0169-06	KLI-PCS	Groundwater	03/08/2023 10:05	DEK Lined Impoundment
23-0169-07	SW-DITCH	Groundwater	03/08/2023 13:50	DEK Lined Impoundment
23-0169-08	DUP-KLI	Groundwater	03/08/2023 00:00	DEK Lined Impoundment
23-0169-09	EB-KLI	Water	03/08/2023 14:10	DEK Lined Impoundment
23-0169-10	FB-KLI	Water	03/08/2023 12:25	DEK Lined Impoundment

03/24/23



Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project:

23-0169 Field Sample ID: **DEK-MW-15003** Collect Date: 03/08/2023 Lab Sample ID: 23-0169-01 Collect Time: 12:25 PM

Metals by EPA 6020B: CCR F				Aliquot #: 23-0	169-01-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	1		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	401		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	44		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	816		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	29200		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	178		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	21		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	4840		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	79		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	23		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	3		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	4030		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	1		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	55300		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Tota	I, Aqueous			Aliquot #: 23-0	169-01-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueou	ıs, NO2, NO3			Aliquot #: 23-0	169-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR Ru	ule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-01-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking





Report Date: 03/24/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 DEK-MW-15003
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-01
 Collect Time:
 12:25 PM

Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	, SO4, Aqι	ieous	Aliquot #: 23-0	169-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	41800		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h	ı), Groundwat	er HL		Aliquot #: 23-0	169-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2150		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-01-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	282		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	169-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	96500		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Bicarbonate	96500		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0313-10
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	240		ug/L	20.0	03/13/2023	AB23-0310-11

03/24/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 OW-10
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-02
 Collect Time:
 11:15 AM

				Allquot #. 23-0	169-02-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	2		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	166		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	1430		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	123000		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	2		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	3590		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	31		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	23900		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	512		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	ND		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	5620		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	1		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	71100		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	3		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueo	us			Aliquot #: 23-0	169-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 23-0	169-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking





Report Date: 03/24/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 OW-10
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-02
 Collect Time:
 11:15 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous A			Aliquot #: 23-0	169-02-C02-A02 Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	11300		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	169-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3950		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-02-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	673		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	169-02-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	499000		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Bicarbonate	499000		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0313-10
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-02-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	140		ug/L	20.0	03/13/2023	AB23-0310-11

03/24/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 OW-11
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-03
 Collect Time:
 01:20 PM

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tai Metal	s Exp	Aliquot #: 23-0	169-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	3		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	769		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	21		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	3690		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	5770		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	86		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	ND		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	ND		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	158		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	2		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	3470		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	3		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	65400		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	1020		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	13		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 23-0	169-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	169-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	221		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 23-0	169-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59500		ug/L	1000.0	03/13/2023	AB23-0313-02



03/24/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 OW-11
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-03
 Collect Time:
 01:20 PM

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous A			Aliquot #: 23-0	Aliquot #: 23-0169-03-C02-A02		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	2900		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	17400		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	169-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	14000		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-03-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	233		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	169-03-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	92000		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Bicarbonate	16600		ug/L	10000.0	03/14/2023	AB23-0313-10
Alkalinity Carbonate	75400		ug/L	10000.0	03/14/2023	AB23-0313-10
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-03-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11

03/24/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 OW-12
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-04
 Collect Time:
 09:40 AM

Metals by EPA 6020B: CCR I	Ruie Appendix III-IV 10	tai wetais	= Exp	Aliquot #: 23-0	169-04-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	79		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	100		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	1060		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	64800		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	4950		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	33		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	26600		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	121		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	13		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	2		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	5740		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	61300		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Tota	ıl, Aqueous			Aliquot #: 23-0	169-04-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueo	us, NO2, NO3			Aliquot #: 23-0	169-04-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR R	ule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-04-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59700		ug/L	1000.0	03/13/2023	AB23-0313-02



03/24/23



Sample Site:DEK Lined ImpoundmentLaboratory Project:23-0169Field Sample ID:OW-12Collect Date:03/08/2023Lab Sample ID:23-0169-04Collect Time:09:40 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot #: 23-0169-04-C02-A02		Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	142000		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	169-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	918		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-04-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	522		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	169-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	208000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Bicarbonate	208000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0314-04
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11



03/24/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: KLI-SCS Collect Date: 03/09/2023 Lab Sample ID: 23-0169-05 Collect Time: 08:40 AM

Parameter(s) Result Antimony ND Arsenic 1 Barium 50 Beryllium ND Boron 595 Cadmium ND Calcium 94600 Chromium 1 Cobalt ND	Flag	Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0	03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11
Arsenic 1 Barium 50 Beryllium ND Boron 595 Cadmium ND Calcium 94600 Chromium 1		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.0 5.0 1.0 20.0 0.2 1000.0 1.0	03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11
Barium 50 Beryllium ND Boron 595 Cadmium ND Calcium 94600 Chromium 1		ug/L ug/L ug/L ug/L ug/L ug/L	5.0 1.0 20.0 0.2 1000.0 1.0	03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11
Beryllium ND Boron 595 Cadmium ND Calcium 94600 Chromium 1		ug/L ug/L ug/L ug/L ug/L	1.0 20.0 0.2 1000.0 1.0	03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	AB23-0313-11 AB23-0313-11 AB23-0313-11 AB23-0313-11
Boron 595 Cadmium ND Calcium 94600 Chromium 1		ug/L ug/L ug/L ug/L ug/L	20.0 0.2 1000.0 1.0	03/13/2023 03/13/2023 03/13/2023 03/13/2023	AB23-0313-11 AB23-0313-11 AB23-0313-11
Cadmium ND Calcium 94600 Chromium 1		ug/L ug/L ug/L ug/L	0.2 1000.0 1.0	03/13/2023 03/13/2023 03/13/2023	AB23-0313-11 AB23-0313-11
Calcium 94600 Chromium 1		ug/L ug/L ug/L	1000.0 1.0	03/13/2023 03/13/2023	AB23-0313-11
Chromium 1		ug/L ug/L	1.0	03/13/2023	
		ug/L			AB23-0313-11
Cohalt ND			6.0		
Cobait		/1		03/13/2023	AB23-0313-11
Copper 2		ug/L	1.0	03/13/2023	AB23-0313-11
Iron 2320		ug/L	20.0	03/13/2023	AB23-0313-11
Lead ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium ND		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium 38000		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese 84		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum 8		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel 4		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium 3230		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium 3		ug/L	1.0	03/13/2023	AB23-0313-11
Silver ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium 351000		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium 3		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc 12		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueous			Aliquot #: 23-0	169-05-C01-A02	Analyst: CLE
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Mercury ND		ug/L	0.2	03/15/2023	AB23-0315-02
Anions by EPA 300.0 Aqueous, NO2, NO3			Aliquot #: 23-0	169-05-C02-A01	Analyst: KDR
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate 1320		ug/L	100.0	03/10/2023	AB23-0310-13
Nitrite ND		ug/L	100.0	03/10/2023	AB23-0310-13
Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SC) 4, Aqu	ieous	Aliquot #: 23-0	169-05-C02-A02	Analyst: KDR
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Chloride 52600		ug/L	1000.0	03/13/2023	AB23-0313-02



03/24/23



A CENTURY OF EXCELLENCE

Sample Site:DEK Lined ImpoundmentLaboratory Project:23-0169Field Sample ID:KLI-SCSCollect Date:03/09/2023Lab Sample ID:23-0169-05Collect Time:08:40 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot #: 23-0	t #: 23-0169-05-C02-A02 Analyst		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	457000		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	169-05-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-05-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1360		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliquot #: 23-0	169-05-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	592000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Bicarbonate	592000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0314-04
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0169-05-C07-A01		Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11



03/24/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: KLI-PCS Collect Date: 03/08/2023
Lab Sample ID: 23-0169-06 Collect Time: 10:05 AM

				-	169-06-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	2		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	352		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	349		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	69000		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	4		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	4		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	1090		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	18600		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	11		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	13		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	4		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	2790		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	1		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	46200		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	17		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	169-06-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-05
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 23-0	169-06-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	3830		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-06-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
rarameter(s)		- 3				



03/24/23



A CENTURY OF EXCELLENCE

Laboratory Project: Sample Site: **DEK Lined Impoundment** 23-0169

Collect Date: Field Sample ID: KLI-PCS 03/08/2023 Lab Sample ID: 23-0169-06 Collect Time: 10:05 AM

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aque			ieous	Aliquot #: 23-0	169-06-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	60200		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater	- ні		Aliquot #: 23-0	169-06-C03-A01	Analyst: CLE
	Result		Linita	-	Analysis Date	Tracking
Parameter(s)		Flag	Units	RL	•	•
Ammonia	139		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	169-06-C04-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	422		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				-	169-06-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	185000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Bicarbonate	182000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0314-04
Sulfide, Total by SM 4500 S2D	Aliquot #: 23-0	169-06-C07-A01	Analyst: Merit			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
•	Result ND	Flag	Units ug/L			
Parameter(s) Sulfide	ND		ug/L	RL 20.0	Analysis Date 03/13/2023	Tracking
Parameter(s)	ND		ug/L	RL 20.0	Analysis Date	Tracking
Parameter(s) Sulfide	ND		ug/L	RL 20.0	Analysis Date 03/13/2023	Tracking AB23-0310-11
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe	ND ndix III-IV Dis	s Metals	ug/L Expa	RL 20.0 Aliquot #: 23-0	Analysis Date 03/13/2023 169-06-C08-A01	Tracking AB23-0310-11 Analyst: EB
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s)	ND ndix III-IV Dis Result	s Metals	ug/L Expa Units	RL 20.0 Aliquot #: 23-0 RL	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date	Tracking AB23-0310-11 Analyst: EB Tracking
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony	ND ndix III-IV Dis Result ND	s Metals	ug/L Expa Units ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic	ND ndix III-IV Dis Result ND 1	s Metals	ug/L Expa Units ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium	ND ndix III-IV Dis Result ND 1 213	s Metals	ug/L Expa Units ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium	ND ndix III-IV Dis Result ND 1 213 ND	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron	ND ndix III-IV Dis Result ND 1 213 ND 378	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium	ND ndix III-IV Dis Result ND 1 213 ND 378 ND	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000 4	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12 AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000 4 ND	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/21/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Copper	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000 4 ND 2	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Copper Iron	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000 4 ND 2 ND	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12
Parameter(s) Sulfide Metals by EPA 6020B: CCR Rule Appe Parameter(s) Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Chromium Cobalt Copper Iron Lead	ND ndix III-IV Dis Result ND 1 213 ND 378 ND 65000 4 ND 2 ND ND	s Metals	ug/L Expa Units ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	RL 20.0 Aliquot #: 23-0 RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 20.0	Analysis Date 03/13/2023 169-06-C08-A01 Analysis Date 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023 03/13/2023	Tracking AB23-0310-11 Analyst: EB Tracking AB23-0313-12



03/24/23



Count on Us®

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: KLI-PCS Collect Date: 03/08/2023 Lab Sample ID: 23-0169-06 Collect Time: 10:05 AM

Metals by EPA 6020B: CCF	R Rule Appendix III-IV Dis	ss Metals Expa	Aliquot #: 23-0	Analyst: EB	
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Manganese	ND	ug/L	5.0	03/13/2023	AB23-0313-12
Molybdenum	12	ug/L	5.0	03/13/2023	AB23-0313-12
Nickel	3	ug/L	2.0	03/13/2023	AB23-0313-12
Potassium	3110	ug/L	100.0	03/21/2023	AB23-0313-12
Selenium	2	ug/L	1.0	03/13/2023	AB23-0313-12
Silver	ND	ug/L	0.2	03/13/2023	AB23-0313-12
Sodium	47800	ug/L	1000.0	03/21/2023	AB23-0313-12
Thallium	ND	ug/L	2.0	03/13/2023	AB23-0313-12
Vanadium	12	ug/L	2.0	03/13/2023	AB23-0313-12
Zinc	ND	ug/L	10.0	03/13/2023	AB23-0313-12



03/24/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0169-07

Collect Date: 03/08/2023
Collect Time: 01:50 PM

					Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	111		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	65		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	59100		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	1		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	4		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	790		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	18600		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	20		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	ND		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	3		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	2550		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	45200		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	5		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	169-07-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-05
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 23-0	169-07-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	4100		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-07-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
r drumotor(o)						



03/24/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: SW-DITCH Collect Date: 03/08/2023
Lab Sample ID: 23-0169-07 Collect Time: 01:50 PM

Anions by EPA 300.0 CCR Rule Analyte	List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	169-07-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02
Sulfate	37600		ug/L	1000.0	03/13/2023	AB23-0313-02
Nitrogen-Ammonia by SM4500NH3(h),	<u>Groundwate</u>			•	169-07-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	113		ug/L	25.0	03/14/2023	AB23-0314-06
Total Dissolved Solids by SM 2540C	Aliquot #: 23-0	169-07-C04-A01	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	389		mg/L	10.0	03/10/2023	AB23-0310-05
Alkalinity by SM 2320B				Aliguot #: 23-0	169-07-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	182000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Bicarbonate	182000		ug/L	10000.0	03/14/2023	AB23-0314-04
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0314-04
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-07-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11
Metals by EPA 6020B: CCR Rule Appe	ndix III-IV Dis	s Metals	Ехра	Alignot #: 23-0	169-07-C08-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND	J	ug/L	1.0	03/13/2023	AB23-0313-12
Arsenic	ND		ug/L	1.0	03/13/2023	AB23-0313-12
Barium	85		ug/L	5.0	03/13/2023	AB23-0313-12
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-12
Boron	64		ug/L	20.0	03/13/2023	AB23-0313-12
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-12
Calcium	58400		ug/L	1000.0	03/21/2023	AB23-0313-12
Chromium	1		ug/L	1.0	03/13/2023	AB23-0313-12
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-12
Copper	3		ug/L	1.0	03/13/2023	AB23-0313-12
Iron	54		ug/L	20.0	03/13/2023	AB23-0313-12
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-12
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-12
Magnesium	19400		ug/L	1000.0	03/21/2023	AB23-0313-12



03/24/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0169-07

Collect Date: 03/08/2023
Collect Time: 01:50 PM

Metals by EPA 6020B: CCF	Metals by EPA 6020B: CCR Rule Appendix III-IV Diss Metals Expa				Analyst: EB		
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking		
Manganese	8	ug/L	5.0	03/13/2023	AB23-0313-12		
Molybdenum	ND	ug/L	5.0	03/13/2023	AB23-0313-12		
Nickel	3	ug/L	2.0	03/13/2023	AB23-0313-12		
Potassium	2720	ug/L	100.0	03/21/2023	AB23-0313-12		
Selenium	ND	ug/L	1.0	03/13/2023	AB23-0313-12		
Silver	ND	ug/L	0.2	03/13/2023	AB23-0313-12		
Sodium	44400	ug/L	1000.0	03/21/2023	AB23-0313-12		
Thallium	ND	ug/L	2.0	03/13/2023	AB23-0313-12		
Vanadium	3	ug/L	2.0	03/13/2023	AB23-0313-12		
Zinc	ND	ug/L	10.0	03/13/2023	AB23-0313-12		

03/24/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Field Sample ID: DUP-KLI Collect Date: 03/08/2023
Lab Sample ID: 23-0169-08 Collect Time: 12:00 AM

Metals by EPA 6020B: CCR Rule Appe	muix III-IV 10	rai wetal		Aliquot #: 23-0	169-08-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Arsenic	78		ug/L	1.0	03/13/2023	AB23-0313-11
Barium	102		ug/L	5.0	03/13/2023	AB23-0313-11
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Boron	1060		ug/L	20.0	03/13/2023	AB23-0313-11
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Calcium	66000		ug/L	1000.0	03/13/2023	AB23-0313-11
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-11
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Iron	4950		ug/L	20.0	03/13/2023	AB23-0313-11
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Lithium	32		ug/L	10.0	03/13/2023	AB23-0313-11
Magnesium	26900		ug/L	1000.0	03/13/2023	AB23-0313-11
Manganese	124		ug/L	5.0	03/13/2023	AB23-0313-11
Molybdenum	13		ug/L	5.0	03/13/2023	AB23-0313-11
Nickel	2		ug/L	2.0	03/13/2023	AB23-0313-11
Potassium	5990		ug/L	100.0	03/13/2023	AB23-0313-11
Selenium	ND		ug/L	1.0	03/13/2023	AB23-0313-11
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-11
Sodium	62600		ug/L	1000.0	03/13/2023	AB23-0313-11
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Vanadium	ND		ug/L	2.0	03/13/2023	AB23-0313-11
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-11
Mercury by EPA 7470A, Total, Aqueou	IS			Aliquot #: 23-0	169-08-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-05
Anions by EPA 300.0 Aqueous, NO2, N	NO3			Aliquot #: 23-0	169-08-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-01
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-01
THING						
Anions by EPA 300.0 CCR Rule Analyt	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	169-08-C02-A02	Analyst: KDR
	te List, CI, F,	SO4, Aqı Flag	ueous Units	Aliquot #: 23-0 RL	169-08-C02-A02 Analysis Date	Analyst: KDR Tracking



03/24/23



Laboratory Project: Sample Site: **DEK Lined Impoundment** 23-0169

Collect Date: Field Sample ID: DUP-KLI 03/08/2023 Lab Sample ID: 23-0169-08 Collect Time: 12:00 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule An	Aliquot #: 23-0	Analyst: KDR					
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	ND		ug/L	1000.0	03/13/2023	AB23-0313-02	
Sulfate	140000		ug/L	1000.0	03/13/2023	AB23-0313-02	
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	r HL		Aliquot #: 23-0	169-08-C03-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	931		ug/L	25.0	03/14/2023	AB23-0314-06	
Total Dissolved Solids by SM 2540	С			Aliquot #: 23-0	169-08-C04-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Total Dissolved Solids	518		mg/L	10.0	03/10/2023	AB23-0310-05	
Alkalinity by SM 2320B				Aliquot #: 23-0	169-08-C05-A01	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	209000		ug/L	10000.0	03/14/2023	AB23-0314-04	
Alkalinity Bicarbonate	209000		ug/L	10000.0	03/14/2023	AB23-0314-04	
Alkalinity Carbonate	ND		ug/L	10000.0	03/14/2023	AB23-0314-04	
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	169-08-C07-A01	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11	



03/24/23



Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: Laboratory Project: **DEK Lined Impoundment**

23-0169 Collect Date: Field Sample ID: EB-KLI 03/08/2023 Lab Sample ID: 23-0169-09 Collect Time: 02:10 PM

Matrix: Water

				Allquot #. 20 0	169-09-C01-A01	Analyst: El	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Arsenic	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Barium	ND		ug/L	5.0	03/13/2023	AB23-0313-1	
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Boron	ND		ug/L	20.0	03/13/2023	AB23-0313-1	
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-1	
Calcium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-1	
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Iron	ND		ug/L	20.0	03/13/2023	AB23-0313-1	
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-1	
Magnesium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Manganese	ND		ug/L	5.0	03/13/2023	AB23-0313-1	
Molybdenum	ND		ug/L	5.0	03/13/2023	AB23-0313-1	
Nickel	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Potassium	ND		ug/L	100.0	03/13/2023	AB23-0313-1	
Selenium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-1	
Sodium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Vanadium	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-1	
Mercury by EPA 7470A, Total, Aqu	eous			Aliquot #: 23-0	169-09-C01-A02	Analyst: CL	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin	
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-0	
Anions by EPA 300.0 Aqueous, NC	2, NO3			Aliquot #: 23-0	169-09-C02-A01	Analyst: KD	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin	
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-0	
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-0	
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	r HL		Aliquot #: 23-0	169-09-C03-A01	Analyst: CL	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin	



Analytical Report

Report Date: 03/24/23

Laboratory Services A CENTURY OF EXCELLENCE

23-0169-09

Sample Site: **DEK Lined Impoundment** Laboratory Project: 23-0169

Collect Date: 03/08/2023 Collect Time: 02:10 PM

Lab Sample ID: Matrix: Water

Field Sample ID: EB-KLI

Sulfide, Total by SM 4500 S2D	Aliquot #: 23-0	Analyst: Merit				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	03/13/2023	AB23-0310-11



03/24/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

 Field Sample ID:
 FB-KLI
 Collect Date:
 03/08/2023

 Lab Sample ID:
 23-0169-10
 Collect Time:
 12:25 PM

Matrix: Water

				Allquot #. 25-0	169-10-C01-A01	Analyst: EE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Arsenic	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Barium	ND		ug/L	5.0	03/13/2023	AB23-0313-1	
Beryllium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Boron	ND		ug/L	20.0	03/13/2023	AB23-0313-1	
Cadmium	ND		ug/L	0.2	03/13/2023	AB23-0313-1	
Calcium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Chromium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Cobalt	ND		ug/L	6.0	03/13/2023	AB23-0313-1	
Copper	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Iron	ND		ug/L	20.0	03/13/2023	AB23-0313-1	
Lead	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Lithium	ND		ug/L	10.0	03/13/2023	AB23-0313-1	
Magnesium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Manganese	ND		ug/L	5.0	03/13/2023	AB23-0313-	
Molybdenum	ND		ug/L	5.0	03/13/2023	AB23-0313-1	
Nickel	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Potassium	ND		ug/L	100.0	03/13/2023	AB23-0313-1	
Selenium	ND		ug/L	1.0	03/13/2023	AB23-0313-1	
Silver	ND		ug/L	0.2	03/13/2023	AB23-0313-1	
Sodium	ND		ug/L	1000.0	03/13/2023	AB23-0313-1	
Thallium	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Vanadium	ND		ug/L	2.0	03/13/2023	AB23-0313-1	
Zinc	ND		ug/L	10.0	03/13/2023	AB23-0313-1	
Mercury by EPA 7470A, Total, Aqu	eous			Aliquot #: 23-0	169-10-C01-A02	Analyst: CLI	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	ND		ug/L	0.2	03/15/2023	AB23-0315-0	
Anions by EPA 300.0 Aqueous, NC	02, NO3			Aliquot #: 23-0	169-10-C02-A01	Analyst: KDI	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	ND		ug/L	100.0	03/09/2023	AB23-0310-0	
Nitrite	ND		ug/L	100.0	03/09/2023	AB23-0310-0	
Nitrogen-Ammonia by SM4500NH3	ß(h), Groundwate	r HL		Aliquot #: 23-0	169-10-C03-A01	Analyst: CL	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	



Analytical Report

Report Date: 03/24/23

Laboratory Services

A CENTURY OF EXCELLENCE

23-0169-10

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0169**

Collect Date: 03/08/2023 Collect Time: 12:25 PM

Matrix: Water

Lab Sample ID:

Field Sample ID: FB-KLI

Sulfide, Total by SM 4500 S2D	iquot #: 23-	Analyst: Merit			
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Sulfide	ND	ug/L	20.0	03/13/2023	AB23-0310-11





Report Date: 03/24/23

Data Qualifiers	Exception Summary
	No exceptions occurred.

General Standard Operating Procedure

TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

-	Project Log-In Number: 23-0169												
	Inspection Date: 3-9.23 Inspection By: TWR												
	Sample Origin/Project Name: Q1-2023 DEK Lined Impoundment												
	Shipment Delivered By: Enter the type of shipment carrier.												
	Pony FedEx_X UPS USPS Airborne Other/Hand Carry (whom)												
	Tracking Number: 3955 1052 3340 Shipping Form Attached: Yes No												
	Shipping Containers: Enter the type and number of shipping containers received.												
	Cooler K Cardboard Box Custom Case Envelope/Mailer Loose/Unpackaged Containers Other												
	Condition of Shipment: Enter the as-received condition of the shipment container.												
	Damaged Shipment Observed: None _ Market Dented _ Leaking Other												
	Shipment Security: Enter if any of the shipping containers were opened before receipt. Shipping Containers Received: Opened Sealed												
	Enclosed Documents: Enter the type of documents enclosed with the shipment.												
	CoC Work Request Air Data Sheet Other												
	Temperature of Containers: Measure the temperature of several sample containers.												
	As-Received Temperature Range 1.1-3.2 Samples Received on Ice: Yes No												
	M&TE # and Expiration _ L3027723 / 05-25-23												
	Number and Type of Containers: Enter the total number of sample containers received.												
PH paper Lot # 2135150 5.15.23	Container Type Water Soil Other Broken Leaking VOA (40mL or 60mL)												
Lat# 2703 20	9-oz (amber glass jar)												
10-34-23	2-oz (amber glass)												
	125 mL (plastic) 38												
	24 mL vial (glass)												
	500 mL (plastic)												
	Other 250 ml 7 Playtic												

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

	x	
Page	of 1	
1 ago	I OI	

SAMPLIN	IG SITE / CU	STOMER:				PROJECT NUMBER:	SAP CC or WO#:				ANALYSIS REQUESTED								QA REQUIREMENT:									
Q1-2023	DEK Lined	Impound	ment			23-0169 REQUESTER: Harold Register						(Attach List if More Space is Need								QA REQUIREMENT.								
SAMPLIN	SAMPLING TEAM: THE TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER															□ NPDES ☑ TNI												
SEND RI	EPORT TO:	Caleb B	atts			email:	phone:														Fe L		☐ ISO 17025					
COF	PY TO:	Harold	Regist	ter		MATRIX CODES: GW = Groundwater OX = Other	or .		CC	ONT	AIN	ER	S	1												metal		☐ 10 CFR 50 APP. B
		TRC				WW = Wastewater SL = Slud W = Water / Aqueous Liquid A = Air	lge		F	RES	SER	VAT	IVE	100	alls								☐ INTERNAL INFO					
Ť	AB	SAMPLE	COLL	ECTION	X	S = Soil / General Solid WP = Wi	pe neral Waste	# T				MeOH A Other Total Metals		Ammonia	onia		inity	2	3		□ OTHER							
	PLE ID	DAT	Е	TIME	MATRIX	FIELD SAMPLE ID / LO	OCATION	TOTAL#	None	HNO3	HCI MeOH Other		Total	Lora	Amons	Amm	TDS	Alkalinity	Sulfide	Dissolved		REMARKS						
23-0	169-01	3-8-	23	1225	GW	DEK-MW-15003		7	4	1	1 1	1		,		x :	x	x	x	x								
	-02	1		1115	GW	OW-10		7	4	i	1 1	1		,		x :	x	x	x	x								
	-03			1320	GW	OW-11		7	4	1	1	t		>		x :	x	x	x	x								
	-04			0940	GW	OW-12		7	4	1	1	1		2		x	x	x	x	x								
-	05				W	KLI-SCS		7	4	1	1	1		9	+	×	K-	X	X	X								
	-06			1005	sw	KLI-PCS		7	4	1	1	1		,		x	x	x	x	x	X							
	-07			1350	sw	SW-DITCH		7	4	1	1	1		,		x	x	x	x	x	X							
	-08			-	GW	DUP-KLI		7	4	1	1	1		1		x	x	x	x	x								
	-09			1410	w	EB-KLI		4	1	1	1	1		,	c	x	x			x								
+	-10	J		1225	W	FB-KLI		4	1	1	1	1		,	c	x	x			x								
PEI INOI	JISHED BY:				DATE/	TIME:	RECEIVED BY:				4			1	OM	MEN	TS	_										
A		K	2	,		8-23/1545	Fed	ex									20.											
	ISHED BY:			- 1		TIME: 3-09-23 12:05 PM	RECEIVED BY:													s □:			E#: <u>LS 927723</u> Due Date: <u>05-25-23</u>					
1	E 4 0/						23-0169 Page 29 c	f 31	-	_		-			-		_			-								

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: 23-016	29-05			
Inspection Date: 03.10.23		Inspection By: UC		
Sample Origin/Project Name:	LI			
Shipment Delivered By: Enter the type of	shipment c	arrier.		
		PS USPS_	Air	borne
Other/Hand Carry (whom) TR	\bar{c}			001110
Tracking Number:			tached: Yes	No
Shipping Containers: Enter the type and a	number of si	hipping containers received.		
18		Custom Case		e/Mailer
Loose/Unpackaged Containers				
Condition of Shipment: Enter the as-recei				
the state of the s	1	The state of the s		
Damaged Shipment Observed: No			Lea	king
Other				-
Shipment Security: Enter if any of the ship	pping conta	iners were opened before rec	ceipt.	
Shipping Containers Received: Op	ened	Sealed_	_	
Enclosed Documents: Enter the type of do	cuments en	closed with the shipment.		
CoC Work Request		The state of the s	Othor	
Coc work Request_		Air Data Sheet	Omer	÷
Temperature of Containers: Measure the t	emperature	of several sample containers	S.	
As-Received Temperature Range I.	1-2.30	Samples Received or	Ice; Yes N	lo
M&TE# and Expiration L50 2	1723			
Number and Type of Containers: Enter the		- han af namula agutain an na	havia	
Container Type Water	Soil	Other	Broken	Leaking
VOA (40mL or 60mL)	_			
Quart/Liter (g/p)	-	-	-	-
9-oz (amber glass jar)	-			
2-oz (amber glass)	_		_	-
125 mL (plastic) <u>4</u>	÷	-	+	
24 mL vial (glass)	-			_
150 500 mL (plastic)	-			
Other	-			



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Daga	of	
Page	of	

SAMPLING SITE / CUSTOMER:				PROJECT NUMBER:	SAP CC or V	VO#:						ANALYSIS REQUESTED						QA REQUIREMENT:		
Q1-2023 DEK Lined Impoundment		23-0169 REQUESTER: Harold Register						(Attach List if More Space is Needed)							QA REQUIREMENT.					
SAME	LING TEAM:				TURNAROUND TIME REQUIRED:	STANDARD ⊠ O	THER_													□ NPDES ☑ TNI
SENI	O REPORT TO:	Caleb Batts			email:	email: phone:														☐ ISO 17025
1-0	COPY TO:	Harold Regi	ster		MATRIX CODES: GW = Groundwater OX = Ott	her		C	ONT	AIN	ERS	3								☐ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Slu W = Water / Aqueous Liquid A = Air	dge			PRES	ER	VAT	IVE	als							☐ INTERNAL INFO
	LAB	SAMPLE COL	LECTION	XIX	S = Soil / General Solid WP = W		TOTAL#					_	Metals	sus	Ammonia		Alkalinity	qe		□ OTHER
SA	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOCATION		TOT	None	None HNO ₃ H ₂ SO ₄ NaOH HCI MeOH Other		Total	Anions	Amn	TDS	Alka	Sulfide		REMARKS		
1	23-0169-01			GW	DEK-MW-15003		7	4	1	1 1			x	x	x	x.	x	Y	-0	
	-02			GW	OW-10		7	4	1	1 1			×	×	X	x	×	x		
	-03			GW	OW-11		7	4.	1	Ц			x	x	x	x.	-N	-x-		
	-04			GW	OW-12		7	4	1	1 1			×	x	X	X	X	x		
	-05	3-9-23	0840	w	KLI-SCS		7	4	1	1 1			x	x	x	x	x	x		
	-06			SW	KLI-PCS		7	4	-1-	1-1			-ж-	×	×	-X-	×	*		
	-07			SW	SW DITCH		7	4	1	1	+		A	X	А	X	X	X		
	-08	-		GW	DUP-KLI		7	4	1	ı i			x	x	x	x	x	x		
	-09			W	EB KLI		4	1	1	1	+		×	×	×			x		
	-10			W	FB-KLI		4	1	1	1 1			x	x	x			x		
									Ш											
RELIN	QUISHED BY:	3/16	6;	DATE/	TIME:	RECEIVED BY:	hee	1	3.10	084	3	i		OMM						
RELIT	VOISHED BY:			DATE	TIME:	RECEIVED BY:												s □ : _°C		Due Date: 5 · 25 · 23



Appendix B Field Notes



#56.##551Acre	
PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Compliance
PROJECT NUMBER:	514404.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy
	Essexville, MI 48732
DATES OF FIELDWORK:	7/6/23 3/9/23 2/27/2023 TO -3/3/2023
	First Quarter Supplemental Sampling Event
PURPOSE OF FIELDWORK:	
·	Jake Krenz, Javier Jasso, Andrew Whaley
WORK PERFORMED BY:	
_	
_	

3-10-23 SIGNED DATE CHECKED BY Whiley 3-15-23



GENERAL NOTES

PROJECT NAME:	CEC Kam LF: 2023 GV	V Complian	DATE: 3-6-23	TIME ARRIVED: 0800
PROJECT NUMBER	514404.0000	.0000	AUTHOR: J. Krenz	TIME LEFT: 1600
			WEATHER	
TEMPERATURE: 30	O °F WIND:	5-10	MPH VISIE	BILITY: cloudy / Snawy
	w	ORK / SA	MPLING PERFORMED	
met with	Caleb Gr	Site	Soufely training	i
Assessed '	Transect loca	at.61	conditions	
Sampled are	lls Mw-ol,	MW	03, MW-06, MW-0	F
PROB	BLEMS ENCOUNTER	ED	CORREC	TIVE ACTION TAKEN
		_		
		_		
NAME	DEDDESENTING	- 60	MMUNICATION SUBJECT / CO	MMENTS
NAME Darby Litz	REPRESENTING TRC	PM/U		NIMIEN 13
Caleb Batts	Consumers	Site Co		
	INVEST	IGATION	DERIVED WASTE SUMMARY	
WASTE MATRIX	QUANTITY		COMME	NTS
Groundwater	NM	To Gro	ound	
1				0 0
SIGNED	3-13	-23 DATE	Cluber W	hule 3-15-2°

DATE



GENERAL NOTES

PROJECT NAME:	CEC Kam LF: 2023 GW	Complian	DATE: 3-7-23	TIME ARRIVED: 0770
PROJECT NUMBER			AUTHOR: J. Krenz	TIME LEFT: 1500
			WEATHER	
TEMPERATURE: 40	O °F WIND:	5-10	MPH VIS	BILITY: elec
	wo	RK / SA	MPLING PERFORMED	
Sampled a	vells mw-10	, mh	,-12, MW-14, and	mw-16
Shippeel of	P/LI wells, one Samples colle	DEK- cted	mu-15005, NEK-1 on 3/6/23	and 3/7/23
PRO	BLEMS ENCOUNTERED	D	CORRE	CTIVE ACTION TAKEN
		_		
	-			
	The series of the series	COI	MMUNICATION	0.1115150
NAME Darby Litz	REPRESENTING TRC	PM/Up	SUBJECT / C	COMMENTS
Caleb Batts	Consumers	Site Co		
Caleb Ballo				
	INVESTIG	ATION I	DERIVED WASTE SUMMARY	·
	QUANTITY		COMM	ENTS
WASTE MATRIX				
WASTE MATRIX Groundwater	NM	To Gro	und	
18.133.237.1113.1		To Gro	und	

DATE

CHECKED BY

SIGNED



GENERAL NOTES

PROJECT NAME:	CEC Kam LF: 2023 GW	/ Complian	DATE: 3-8-23	TIME ARRIVED: 0730
PROJECT NUMBE	In the second second		AUTHOR: J. Krenz	TIME LEFT: 1530
		W	/EATHER	
TEMPERATURE: 4	2 °F WIND:		MPH VISI	BILITY: chear
	W	ORK / SAM	PLING PERFORMED	
Sampled	wells DEK-M	1w- 150	02, OW-12, ON	1-10, OW-11,
	5003, MW-18,			
collected	Surface and	er sa	mples KLIPCS	, SW- Ditch
Shipped	Samples			
PR	OBLEMS ENCOUNTERE	D	CORREC	CTIVE ACTION TAKEN
	*	COM	MUNICATION	
NAME	REPRESENTING		SUBJECT / C	OMMENTS
Darby Litz	TRC	PM/Upd	ates	
Caleb Batts	Consumers	Site Con	fact	
		GATION DE	ERIVED WASTE SUMMARY	
WASTE MATRIX			COMME	ENTS
Groundwater	NM	To Grou	nd	

CHECKED BY

DATE

DATE



GENERAL NOTES

PROJECT NAME:	CEC Kam BAP/LI: 2023	GW Com	DATE: 3-9-23 TIME ARRIVED: 0730
PROJECT NUMBER	514404.0001.	0000	AUTHOR: (ake Krenz) Javier Jasso, TIME LEFT: 1000
			WEATHER
TEMPERATURE: 3	8 °F WIND:	5-10	O MPH VISIBILITY: Clear
	W	ORK / SA	AMPLING PERFORMED
Sampled	MW-19, Sam	ried	KLI-SCS
checked	out areas	for	- stilling wells for transducer
Study.			- Stilling wells for transducer
	11		
PRO	BLEMS ENCOUNTERE	D	CORRECTIVE ACTION TAKEN
		co	OMMUNICATION
NAME	REPRESENTING		SUBJECT / COMMENTS
Darby Litz	TRC		Updates
Caleb Batts	Consumers	Site Co	ontact
WASTE MATRIX	QUANTITY	GATION	DERIVED WASTE SUMMARY COMMENTS
Groundwater	NM	Purge	to Ground
Significanties	1700	Luige	
	-		

DATE

CHECKED BY

SIGNED



EQUIPMENT SUMMARY

PROJECT NAME: CEC Karn BAP/LI: 2023 GW	V SAMPLER NAME: Jake Krenz, Javier Jasso, Andrew Whale						
PROJECT NO.: 514404.0001.0000	SAMPLEN MANUE. Sake Nieliz, daviel 34350, Andrew What						
WATER LEVEL MEASUREMENTS COLLECTED WITH:							
HERON DIPPER-T	TRC A2						
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
PRODUCT LEVEL MEASUREMENTS COLLECTED WIT	H:						
NA .	NA						
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
DEPTH TO BOTTOM OF WELL MEASUREMENTS COLI	LECTED WITH:						
HERON DIPPER-T	TRC A2						
NAME AND MODEL OF INSTRUMENT	SERIAL NUMBER (IF APPLICABLE)						
PURGING METHOD							
PERISTALTIC PUMP	TRC A2						
NAME AND MODEL OF PUMP OR TYPE OF BAILER.	SERIAL NUMBER (IF APPLICABLE)						
SAMPLING METHOD							
PERISTALTIC PUMP	TRC A2						
NAME AND MODEL OF PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)						
GEOTECH DISPOSABLE FILTER	0.45 MICRON						
NAME AND MODEL OF FILTERATION DEVICE	FILTER TYPE AND SIZE						
DEDICATED POLY TUBING	☑ LOW-FLOW SAMPLING EVENT						
TUBING TYPE							
PURGE WATER DISPOSAL METHOD							
☑ GROUND ☐ DRUM ☐ POTW	□ POLYTANK □ OTHER						
DECONTAMINATION AND FIELD BLANK WATER SOUR	RCE						
STORE BOUGHT	LABORATORY PROVIDED						
POTABLE WATER SOURCE 3-13-23	audin whit 3-15-29						
SIGNED DATE	CHECKED BY DATE						



PROJECT NAME:	CEC Karn LF: 2023 GW Co	mpliance	- 9.1	MODEL YSI Pro DSS	SAMPLER:	AW, JJC	18)
PROJECT NO.:	514404.0000.0000			SERIAL # Ann Arbor	DATE: 3-6	-23	
PH	CALIBRATION CHECK			SPECIFIC CONI	DUCTIVITY CALIB	RATION C	HECK
pH 7 (LOT #): 2 GI 834 (EXP. DATE): Sep/24 POST-CAL READING/STANDARD	pH 4/10 (LOT #): 2GI 306 (EXP. DATE): Sep/24 POST-CAL READING/STANDARD	CAL RANGE	TIME	CAL. READING (LOT #): 2 GK 498 (EXP. DATE): NOV /23 POST-CAL, READING / STANDAR	TEMPERATURE (*CELS(US)	CAL. RANGE	TIME
7.02 /7.02	4.00 14.00	WITHIN RANGE	0973	1413 / 1413	22.1	WITHIN RANGE	0930
1	1	☐ WITHIN		1		WITHIN RANGE	
1	1	☐ WITHIN RANGE		/		WITHIN PANGE	
1		WITHIN RANGE				RANGE	
	CALIBRATION CHECK		<u> </u>	1	ALIBRATION CHE		_
CAL. READING (LOT #): 22 G100076 (EXP. DATE): Sept/23 POST-CAL. READING/STANDARD	TEMPERATURE (*CELSIUS)	CAL RANGE	TIME	CAL. READING POST-CAL READING (SATURATED	TEMPERATURE ("CELSIUS)	CAL. RANGE	TIME
228.1 /228.7	21.2	WITHIN RANGE	0936	8,65 18.65	20.1	WITHIN RANGE	0941
1		☐ WITHIN RANGE		1	100	WITHIN RANGE	1100
1		☐ WITHIN		1		☐ WITHIN	
1		□ WITHIN RANGE		1		WITHIN RANGE	
TURBID	ITY CALIBRATION CHEC	1000			COMMENTS		
CALIBRATION	READING (NTU)			AUTOCAL SOLUTION	☑ STANDARD	SOLUTION	(S)
(LOT #): A1172 (EXP. DATE): 6/24	(LOT #): ATTE	CAL. RANGE	TIME	(LOT#): (EXP_DATE):	LIST LOT NUMBERS A UNDER CALIF		
POST-CAL, READING / STANDARD	POST-CAL, READING / STANDARD			CALIBRATED PARAMETERS	CALIBRATI	ON RANGES	ı)
10.1 / 10.0	1	WITHIN RANGE	0946	□ pH	pH; +/- 0.2 S.	U.	
1	I	WITHIN RANGE		☐ COND	COND: +/- 1% O	F CAL STAN	IDARD
1	1	☐ WITHIN RANGE		☐ ORP	ORP: +/- 25 m\	,	
I	1	WITHIN RANGE		□ 0.0.	D.O.; VARIES		
	NOTES			☐ TURB	TURB: +/- 5% O	F CAL. STAN	IDARD
		_		п	(1) CALIBRATION RAI THE MODEL OF THE		
				20005	CTIVE ACTIONS		
	PROBLEMS ENCOUNTERED		-	CONC	- The notice	_	_
1eg	3-13	-23 DATE		Quelen CHECKED BY	while	3-	-15-



PROJECT NAME:	CEC Karn LF: 2023 GW Co	mpliance		MODEL: YST Pro	188	SAMPLER:	AW, JJ,	R)
PROJECT NO.:	514404.0000.0000			SERIAL #: Ann A	rpor	DATE: 3-7	-23	
PH	CALIBRATION CHECK			SPE	CIFIC COND	UCTIVITY CALIBR	RATION C	HECK
PH 7 (LOT #): 1 GI 834 (EXP. DATE): Se /24 FOST-CAL READING/STANDARD	pH 4/10 (LOT #): 2GI 706 (EXP. DATE): Sep /24 POST-CAL READING/STANDARD	CAL RANGE	TIME	(LOT #): 2 GK (EXP. DATE):		TEMPERATURE (*CELSIUS)	CAL RANGE	TIME
7.00 / 7.00	4.00 / 4.00	WITHIN RANGE	0631	1413	11413	27.0	WITHIN RANGE	0625
1	1	WITHIN RANGE		1 1 1 2 2 3 -	1		☐ WITHIN RANGE	
1	1	☐ WITHIN RANGE	-		1		☐ WITHIN RANGE	
1	1	WITHIN RANGE			1		☐ WITHIN RANGE	
ORP	CALIBRATION CHECK				D.O. CAI	LIBRATION CHEC	K	
CAL READING (LOT #):22 G100076 (EXP. DATE): Sep 23 POST-CAL READING/STANDARD	TEMPERATURE ("CELSIUS)	CAL RANGE	TIME		READING	TEMPERATURE ("CELSIUS)	CAL. RANGE	TIME
232,3 / 232,7	22.8	WITHIN RANGE	0635	8.57	18.57	21.5		0640
1		WITHIN RANGE		1 1 1 2	1		WITHIN RANGE	
1		☐ WITHIN RANGE			1		☐ WITHIN RANGE	
1		WITHIN RANGE			1		☐ WITHIN RANGE	
TURBID	ITY CALIBRATION CHEC	K				COMMENTS		
CALIBRATION	READING (NTU)	100		☐ AUTOCAI	L SOLUTION	☑ STANDARD	SOLUTION	(S)
(LOT #): A2172 (EXP. DATE): 6/24	(LOT #): (EXP. DATE):	CAL. RANGE	TIME	(LOT #): (EXP. DATE):		LIST LOT NUMBERS A UNDER CALIB		
POST-CAL READING / STANDARD	POST-CAL READING / STANDARD	i e bug		CALIBRATE	PARAMETERS	CALIBRATIO	ON RANGES (1)
10.0 / 10.0	1	WITHIN RANGE	0640	□ pH		pH; +/- 0.2 S.U	Ji.	
1	1	WITHIN RANGE	1 1	□ cc	DND	COND: +/- 1% OF	CAL, STAN	DARD
1	1	☐ WITHIN RANGE		☐ DR	₹P	ORP: +/- 25 mV		
7	1	WITHIN RANGE		□ D.0	O	D.O.: VARIES		
	NOTES				IRB	TURB: +/- 5% OF	CAL STAN	DARD
						THE MODEL OF THE V		
ı i P	PROBLEMS ENCOUNTERED				CORRECT	TIVE ACTIONS		
SIGNED /	3-1	3-23		CHECKE	lun	while	3	-15

> TRC

PROJECT NAME:	CEC Karn BAP/LI: 2023 GV	v Gompilan	U.C	MODEL YST Pro DSS	SAMPLER:	AW, (JK, ZIJ
PROJECT NO.:	514404.0001.0000		SERIAL# Ann Arbor	DATE: 3-	8-23	
PH	CALIBRATION CHECK			SPECIFIC COND	UCTIVITY CALIBI	RATION CHECK
pH 7 (LOT #): 2 GI 874 (EXP. DATE): Sep/24 POST-CAL READING/STANDARD	pH 4/10 (LOT #):1GI 306 (EXP. DATE): Se# /24 POST-CAL READING/STANDARD	CAL RANGE	TIME	CAL READING (LOT#): 2 GK 498 (EXP. DATE): NOV/27 POST-CAL READING/STANDARD	TEMPERATURE ("CELSIUS)	CAL RANGE TIME
7.00 / 7.00	4.00 14.00	WITHIN	0625	1413 / 1413	22.8	TX WITHIN 062
1	1	☐ WITHIN RANGE	1	1		☐ WITHIN RANGE
L	I	☐ WITHIN RANGE		1		WITHIN RANGE
1	1	☐ WITHIN RANGE		1		WITHIN RANGE
ORP	CALIBRATION CHECK	TOMOL		D.O. CA	LIBRATION CHE	
CAL, READING (LOT #):22 G100076 (EXP. DATE): \$2/23 POST-CAL READING/STANDARD	TEMPERATURE (*CELSIUS)	CAL RANGE	TIME	CAL READING POST-CAL READING /SATURATED /	TEMPERATURE (*CELSIUS)	CAL. RANGE TIME
222.1/232,1	22.1	WITHIN RANGE	0628	8.62 18.62	22.0	WITHIN PANGE 0673
/		☐ WITHIN RANGE	0000	1	1	☐ WITHIN RANGE
1		WITHIN	1	1		WITHIN RANGE
1		☐ WITHIN RANGE		7		WITHIN RANGE
TURBID	ITY CALIBRATION CHEC				COMMENTS	Tense
	READING (NTU)			AUTOCAL SOLUTION	☑ STANDARD	SOLUTION (S)
(LOT #): A2172 (EXP. DATE): Sep/23	(LOT #): (EXP_ DATE):	CAL RANGE	TIME	(LOT #): (EXP. DATE):		AND EXPIRATION DATE BRATION CHECK
POST-CAL. READING / STANDARD	POST-CAL READING / STANDARD			CALIBRATED PARAMETERS	CALIBRATI	ON RANGES (1)
10.1 / 10.0		WITHIN RANGE		☐ pH	pH: +/- 0.2 S.	U.
1	Í	☐ WITHIN RANGE		□ COND	COND: +/- 1% O	CAL STANDARD
I	1	☐ WITHIN RANGE		☐ ORP	ORP: +/- 25 mV	
I	1	☐ WITHIN RANGE		□ D.O.	D.O.: VARIES	
	NOTES			☐ TURB	TURB: +/- 5% OI	F CAL STANDARD
						IGES ARE SPECIFIC TO WATER QUALITY METE
1	PROBLEMS ENCOUNTERED			CORREC	TIVE ACTIONS	-
100	Va-1 3-	17-23		1 suntin	Mal	· \-15

> TRC

PROJECT NAME:	CEC Kam LF; 2023 GW Co	mpliance	177	MODEL YSI POD DSS	SAMPLER:	AW, JJ, (IK)		
PROJECT NO.:	514404.0000.0000			SERIAL#: Ann Arbor	DATE: 7-9-23			
PH	CALIBRATION CHECK			SPECIFIC CONDI	JCTIVITY CALIBR	RATION CHECK		
pH 7 (LOT #): 2 GE 874 (EXP. DATE): Sep 124 FOST-CAL READING/STANDARD	pH 4/10 (LOT #): 261 306 (EXP. DATE): Sep/24 POST-CAL READING/STANDARD	GAL RANGE	TIME	CAL READING (LOT #): 26K 498 (EXP. DATE): Mgv /23 POST-CAL READING/STANDARD	TEMPERATURE (*CELSIUS)	CAL. RANGE TIME		
7.00 / 7.00	4.00 / 4.00	WITHIN RANGE	0645	1413 /1413	22.1	RANGE C64		
/	1	☐ WITHIN RANGE			1123	WITHIN		
1	- L	WITHIN RANGE		/		☐ WITHIN RANGE		
1	1	WITHIN RANGE		1		RANGE		
ORP	CALIBRATION CHECK			D.O. CAI	IBRATION CHEC	CK		
CAL READING (LOT #): 22 G 100 OT G (EXP. DATE): Set /23 POST-CAL READING / STANDARD	TEMPERATURE {"CELSIUS}	ČAL RANGE	TIME	CAL. READING POST-CAL. READING/SATURATED AI	TEMPERATURE ("CELSIUS)	CAL TIME		
226.7 / 226.7	22.4	WITHIN	0647	8.57 18.57	22.7	WITHIN DESC		
/	1231	WITHIN RANGE	3.5.1	1		WITHIN RANGE		
1		☐ WITHIN RANGE	7	1		WITHIN RANGE		
1	·	☐ WITHIN RANGE	7.7.2	1		WITHIN RANGE		
TURBID	ITY CALIBRATION CHEC				COMMENTS			
CALIBRATION	READING (NTU)			AUTOCAL SOLUTION	☑ STANDARD	SOLUTION (S)		
(LOT#): A2172	(LOT #):	CAL.	TIME	(LOT#):		AND EXPIRATION DATE		
(EXP. DATE): Sep /27	(EXP. DATE):	RANGE	*//	(EXP. DATE):	3,25,10,00	BRATION CHECK		
POST-CAL, READING / STANDARD	POST-CAL, READING / STANDARD	NG WITHIN	6:->	CALIBRATED PARAMETERS		ON RANGES (1)		
10.2 / 10.0	1	the state of the same of the same of	0650	□ pH	pH: +/- 0.2 S.			
1	1	☐ WITHIN RANGE	11	COND	COND: +/- 1% Of	F CAL. STANDARD		
1	1	☐ WITHIN RANGE	1	□ ORP	ORP: +/- 25 mV			
I	- 1	WITHIN RANGE		□ D,O.	D.O.: VARIES			
	NOTES			☐ TURB	TURB: +/- 5% OF	CAL. STANDARD		
] 0	111			
				1 16		IGES ARE SPECIFIC TO WATER QUALITY METE		
						_		
/1	PROBLEMS ENCOUNTERED			CORRECT	TVE ACTIONS			
1	0				01	- 1		
// //	111 2	100	~	^ /	. /2 /	1		

	-	-	
< ≥	1 -	2(
		<i>-</i>	

PROJECT	NAME:	CEC K	arn BAP/LI; 20	23 GW C		PR	EPARED		CHEC	KED
PROJECT	NUMBER	R; 514404	4.0001.0000		BY:	AW, Ø	J DATE: 3-1	1-23 BY:	Acs	DATE: 3-15-2
SAMPLE	D: NEK	- MW-	15005	WELL D	DIAME	TER: 🗸	2" 4"	6" OTH	ER	
WELL MAT		✓ PVC		IRON 🗌	GALV	ANIZED S	STEEL	□ отн	ER	
SAMPLE T	YPE:	☑ GW	□ww □	sw 🗌	DI	-	LEACHATE	□ отн	ER	
PURC	SING	TIME:	26 DA	TE: 3-7-	23	S	AMPLE	TIME: 12	08	ATE: 3-7-23
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP		-	10 - 2	U CONDUC		g/L umhos/ci
DEPTH TO	WATER:	10.02	T/ PVC			TURBI	DITY: 1.74	L NTU		
		12.27				X NO	NE SLI	GHT	MODERATE	☐ VERY
WELL VOL		NA	LITERS	GALLO	NS	TEMPE	RATURE: _1	0,2 °C	OTHER:	
VOLUME F	REMOVED:	8	X LITERS	GALLO	NS	COLO	R: Cheev		ODOR: _	none
COLOR:		clear	OD	OR: no:	re	FILTRA	TE (0.45 um)	YES	▼ NO	
La Tri		TUR	BIDITY			FILTRA	TE COLOR:		FILTRATE OD	OR:
NONE	☐ SLI	GHT 🗌	MODERATE	☐ VEF	YY.	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	GROUP	ND DRUM	OTHER	1	COMM	IENTS:			
TIME	PURGE RATE	РН	CONDUCTIVITY	ORP		D.O.	TURBIDITY (NTU)	TEMPERATU	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUM (GAL OR L)
>	(ML/MIN)	(SU)	(umhos/cm) 956	(mV) -10,4		(mg/L)	2.09	9.1	10.29	INITIAL
1128	200	7.72	939		-1	1.6	1.96	9.8	10.25	
1133	200			-31.7			1.85	10.0	10,29	2
1138	200	7.66	972	-64.3		1.3	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		10.29	3
1143	200	7,63	979	- 91.0		1.2	1.87	10.0	-	
1148	200	7,61	970	- 105.		1.1	1.83	10.1	10.29	
i153	300	7.60	966	-113.7		1.0	1.85	10.2		
1158	200	7.59	959	-120,6	-	1.0	1.74	10.1	10,29	6
1203	200	7.59	957	- 125.5	-	1.0	1.82	10.1	10.29	-
1208	200	7.47.5	961	-127.7		1.0	1.79	10.2	10.29	8
pH: +/-	0.1	COND.: +/-		+/- 10	D.C	D.: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP: +/-</td>	TEMP: +/-
			ATIVE CODES		_	B - HNO3			PRESERVAT	100
NUMBER	SIZE	TYPE	PRESERVATI		ERED			TYPE	January Com	1 (1
1.4	135mL	Plastic	A		x !	-	60mL	VOA	A	
	ASML		В	ΠY	X					
	125mL		(X I	-				
	125mL	1.27	D		X					
i.	250mL	V	A		X	N.				
SHIPPING	METHOD:	Feile	X DA	ATE SHIPPE	ED:	3-7	-23	AIRBILL	NUMBER:	بسي
						-1				3-10-23

-		_
	1	"
1		

	RIAL: PE: NG					JJ DATE: 3-	7-23 BY: Au	7	DATE 3-15-23
WELL MATER SAMPLE TYP PURGI PURGE METHOD:	RIAL: PE: NG	✓ PVC ✓ GW	□ss □	WELL DIAM	METER: 🔽				
PURGI PURGE METHOD:	PE: NG	☑ GW				2" 4"	6" OTHER		
PURGI PURGE METHOD:	NG 🗾			IRON GAL	VANIZED S	STEEL	☐ OTHER		
PURGE METHOD:	V	TIME: 14	_ ,,,,,	SW 🗌 DI		LEACHATE	OTHER		
METHOD:		1	-27 DA	TE:3-7-23	S	AMPLE	TIME: 13/0		TE:3-7-27
DEPTH TO		PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP;		CONDUCTIV	/ITY: 95	umhos/cm/L
ULT III IU V	NATER:	9.43	T/ PVC		TURBI	DITY: 1.8	1 NTU		
DEPTH TO E		21.50	T/ PVC		DN X	NE SL	GНТ ☐ МС	DERATE	☐ VERY
WELL VOLUM		NA	LITERS	GALLONS	TEMPE	RATURE: 1	0.8 °C OT	HER:	~~
VOLUME RE		8	X LITERS	GALLONS	COLO	4	r 00	OR:	none
COLOR:	V / U = 41.7	leir	OD	OR: none	FILTRA	TE (0.45 um)	☐ YES 🔀	NO	
NONE		TUR	BIDITY	☐ VERY	FILTRA	TE COLOR:		TRATE ODC	OR:
	METHOD:	✓ GROU	ND DRUM		COMM	ENTS: FB	DEK-BAP	collecte	J
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
	ML/MIN)	(SU)	(umhos/cm)			3,29		9.66	INITIAL
1	200	7.92	864	-47.4	2.1		10.3	9.66	
	200	7,67	919	-71.0	1.2	2.07	10.6		2
	200	7,64	940	-98,6	1.1	1.79	10.8	9.66	2
	200	7.64	944	- 117.6	1.0	1.67	10.8	9.66	3
1320	200	7,66	952	-124.8	0,9	1.71	10.9	9,66	4
1355	200	7.67	953	- 133,0	0.9	1.65	10.8	9.66	5
1300	200	7,68	954	-138.8	0.9	1.62	10.8	9.66	6
1305 1	200	7.68	958	-143,1	0.9	1.73	10.9	9.66	7
1310 6	200	7.68	957	- 145.6	0,9	1.81	10,8	9.66	8
								0.000	11 1 1 1 1 1
pH: +/- 0.	.1 (COND.: +/-	3 % ORP:	+/- 10 D	.O.: +/- 0.3	TURB: +/-	ARE WITHIN THE	: 10	TEMP.: +/-
BOTTLES	-		ATIVE CODES		B - HNO3			E - HC	
NUMBER	SIZE	TYPE	PRESERVATIV					RESERVATI	
1 1	25mL	Plushe	A	X Y	-	60mL	VOA	A	□ Y X N
1			В	□ Y X	1	asml	plastic	A	
			C		1			В	
1	4		9		N/)!			C	
1 2	25094	V	I A		1) (1	1 1	V	P	
SHIPPING M	ETHOD:	Fede	XDA	TE SHIPPED	3-7-	-23	AIRBILL NUM	MBER: -	<
COC NUMBE	ER:		SIC	SNATURE:	le	Per	DATE SIGNE	D:	3-10-23

PROJECT	NAME:	CEC	Kam BAP/LI: 20	23 GW C		PR	EPARED		0	CHEC	KED	
PROJECT	NUMBER	R: 51440	4.0001.0000		BY:	AW, 🔞	JJ DATE: 3-7	1-23 BY:	Aw		DATE }	15-2
SAMPLE	ID: DE	K-MW-	18001	WELL	DIAME	TER: 🗸	2" 4" [6" □ OT	HER _			
WELL MAT	ERIAL:	☑ PVC	ss [IRON [GALVA	ANIZED S	STEEL	□ от	HER			
SAMPLE T	YPE:	☑ GW	□ww □	SW [DI		LEACHATE	ОТ	HER			
PUR	SING	TIME:	326 DA	TE: 3-7	-23	S	AMPLE	TIME: 13	59	DA	TE:3-7	-23
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP		-		CONDU	1.0			imhos/c
DEPTH TO	WATER:	8.75	T/ PVC			TURB	DITY: 2.8	6 NTU				
DEPTH TO	воттом	19.66	T/ PVC			X NO	NE SLI	GHT 🗌	MODE	RATE		/ERY
WELL VOL	UME:	NA	LITERS	GALLO	ONS	TEMP	ERATURE:	0.3_°C	OTHER	2		
VOLUME F	REMOVED	_ 6	X LITERS	GALLO	ONS	COLO	R: <u>Clear</u>		ODOR:		none	5
COLOR:	clew	w/ ora	nge floatedD	OR:		FILTRA	ATE (0.45 um)	YES	≥ NC)		
		TUF	RBIDITY				TE COLOR:			TE ODO	R:	
NONE	☐ SL		MODERATE	☐ VE	RY	QC SA	AMPLE: X MS	MSD	□ DL	JP		
DISPOSAL	METHOD	: GROU	ND DRUM	OTHE	R	COMN	MENTS:			_		
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. (mg/L)	TURBIDITY (NTU)	TEMPERAT	URE	VATER LEVEL FEET)	PURGE	LATIVE VOLUM OR L)
1329	300	7.84	696	-70,		1.9	44.5	10.1	240.0	8.43		TIAL
1334	200	7,71	692	-97.		1.4	22.5	9,9	_	3.93		1
1339	200	7.68	694	- 108.		1,2	11.1	10.1		3.97	ó	2
1344	200	7.67	694	- 119.		1.1	6,34	10,1		8.91	3	
1349	200	7.67	694	-124.		1.1	5.30	10.1		.93	4	
1354	200	7,66	697	- 129.		1.0	4.46	10.3		193	5	
1359	200	7.67	697	- 133.	Sale of	1.0	2.86	10.3		.93	6	
pH: +/-	0.1	COND.: +/-	TEST IS COMPL 3 % ORP:	+/- 10	D.O.			10 % or	= 10</td <td></td> <td>TEMP,: 4</td> <td>-/-</td>		TEMP,: 4	-/-
NUMBER	SIZE	TYPE	PRESERVATION	VE FILT	ERED	NUME	BER SIZE	TYPE	PRES	ERVATI	VE FIL	TERED
3	125mL	Plastic	A	□ Y	X	6	60mL	VOA	1	4		N X
3		1	В	DY	X N	-						
3	111		L	ΠY	N	_						
3			N	ΠY	X N	_						
i	250mL	1	A	□ Y	XN	+						
SHIPPING	33. 533.8%	r.1		TE SHIPP	ED-	1-	7-23	AIRRII I	NUMBE	R.		
COC NUM		_Fect		GNATURE		1 1	7.	MINDICE	TACINIDE	_		

◆ TRC

SAMPLE D: DEK - MJ - 15 00 WELL DIAMETER 2" 4" 6" OTHER WELL MATERIAL: PVC SS	PROJECT	NAME:	CEC H	Carn BAP/LI: 20	23 GW C	PR	EPARED		CHEC	KED
WELL MATERIAL PVC SS	PROJECT	NUMBE	R: 51440	4.0001.0000	BY:	AW, OR	JJ DATE:3-8	-23 BY: AL	ل	DATE 3-15-25
SAMPLE TYPE	SAMPLE	ID: DE	K-MW-	-15002	WELL DIAN	ETER: 🗸	2" 🗌 4" 🗀	6" OTHE	R	
PURGING TIME 0777 DATE 3-2-23 SAMPLE TIME 0830 DATE 3-2-2. PURGE	WELL MAT	ERIAL:	✓ PVC	□ss □	IRON GAL	VANIZED S	STEEL	☐ OTHE	R	
PURGE	SAMPLE T	YPE:	☑ GW	□ww □	SW DI	7 4E	LEACHATE	OTHE	R	
METHOD: BAILER	PUR	GING	TIME: O	733 DA	TE: 3-8-23	S	AMPLE	TIME: OF	30 0	ATE: 3-8-23
DEPTH TO BOTTOM: S. 72				PERISTALTIC F	PUMP					
WELL VOLUME	DEPTH TO	WATER:	5.99	T/ PVC		TURBI	DITY: 1.9	O NTU		
WELL VOLUME NA	DEPTH TO	воттом	15.72	T/ PVC		₩ NO	NE SL	GHT N	MODERATE	☐ VERY
COLOR: CLEST	A				GALLONS	TEMPE	RATURE: C	,2 ℃	THER:	
TURBIDITY NONE	VOLUME	REMOVED:	_ 11 _	LITERS	GALLONS	COLO	R: Clear		DDOR:	none
NONE	COLOR:		les	OD.	OR: 110re	FILTRA	TE (0.45 um)	YES [NO	
DISPOSAL METHOD. ☐ GROUND ☐ DRUM ☐ OTHER COMMENTS: TIME PURGE PH (SU) (Umbos/cm) (mV) (mg/L) (NTU) (*C) (*EET) (GAL ORL) (GAL ORL) (ML) (ML) (*C) (*EET) (GAL ORL) (and the second second		C veny					
TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE (MILATIVE (MILATIVE) (MILATIVE						- 1 A 44 P 19		INIOD [X 001 - 02	ir on
TIME (MLMIN) (SU) (CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL (MLMIN) (SU) (LIMINOS/CM) (MV) (Mg/L) (NTU) (CC) (FEET) PURGE VOLUM (GALOR L)								language (m.)	WATER	CUMULATIVE
### PROPRISE 131.9 2.0 6.29 7.5 6.35 INITIAL ### OTHO 2.00 6.77 947 66.6 1.7 5.22 8.1 6.75 1 ### O745 200 7.11 959 15.3 i.1 3.54 8.3 6.75 2 ### O750 200 7.22 950 -74.6 1.1 2.70 8.7 6.35 3 ### O757 200 7.22 942 -57.0 i.1 2.64 8.7 6.35 4 ### O860 200 7.28 937 -76.5 1.0 2.59 8.7 6.75 5 ### O865 200 7.30 935 -90.0 i.0 2.27 8.9 6.35 6 ### O870 200 7.32 975 -99.0 i.0 2.27 8.9 6.35 6 ### O870 200 7.33 933 -105.8 i.0 2.14 8.9 6.75 7 ### O820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 ### NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: #### PH: ## O.1 COND.: ## 3% ORP: ## 10 D.0. ## 0.3 TURB: ## 10 % OF <## 10 TEMP.: ## ### BOTTLES FILLED PRESERVATIVE CODES A- NONE B- HN03 C- H2SO4 D- NaOH E- HCL F- ### NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTER	TIME	RATE			300 1	3.4	100000000000000000000000000000000000000	W. W. W. W. W. W.	LEVEL	PURGE VOLUME (GAL OR L)
0740 2c0 6.88 947 66.6 1.7 5.22 8.1 6.35 1 0745 200 7.11 959 15.3 i.1 3.54 8.3 6.35 2 0750 200 7.22 950 -34.6 1.1 2.70 8.7 6.35 3 0755 200 7.25 942 -57.0 i.1 2.64 8.7 6.35 4 0800 200 7.26 937 -76.5 1.0 2.59 8.7 6.35 5 0805 200 7.30 935 -90.0 1.0 2.27 8.9 6.35 6 0810 200 7.32 975 -99.3 1.0 2.22 8.9 6.35 6 0810 200 7.33 933 -105.8 1.0 2.14 8.9 6.75 8 0820 200 7.35 974 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: PH: +0.1 COND.: +6.3% ORP: +6.10 D.O. +6.03 TURB: +6.10% or <6=10 TEMP.: +6. BOTTLES FILLED PRESERVATIVE CODES A-NONE B-HNO3 C-H2SO4 D-NBOH E-HCL F- NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED 1.25 ML A PINST.	07501%		1 /							
0750 200 7.22 950 -34.6 1.1 2.70 8.7 6.35 3 0755 200 7.25 942 -57.0 1.1 2.64 8.7 6.35 4 0800 200 7.26 937 -76.5 1.0 2.59 8.7 6.35 5 0805 200 7.30 935 -90.0 1.0 2.27 8.9 6.35 6 0810 200 7.32 975 -99.3 1.0 2.22 8.9 6.75 7 0815 200 7.33 933 -105.8 1.0 2.14 8.9 6.75 7 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.75 8 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.75 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: ph: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O. +/- 0.3 TURB: +/- 10% or BOTTLES FILLED PRESERVATIVE CODES A- NONE B- HNO3 C- H2S04 D- Na0H E- HCL F- NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERE DISTANCE A PASSEX DY XI N DISTANCE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED A NUMBER SIZE TYPE PRESERVATIVE SIZE TYPE PRE		Maria de la compansa del la compansa de la compansa	6.28	7	66.6	1.7	5.22	8.1	6,35	1
0755	0745	200	7.11	959	15.3	id	3.54	8.3	6.35	2
080 200 7.28 917 -76.5 1.0 2.59 8.7 6.35 5 0805 200 7.30 935 -90.0 1.0 2.27 8.9 6.35 6 0810 200 7.32 915 -91.3 1.0 2.22 8.9 6.35 7 0815 200 7.33 933 -105.8 1.0 2.14 8.9 6.35 8 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O. +/- 0.3 TURB: +/- 10% or 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 135mL A Plustic DY N 4 60mL VOA A DY S 2	0750	200	7.22	950	-34.6	1.1	2.70	8.7	6.35	
0805 200 7.30 935 -90.0 1.0 2.27 8.9 6.35 6 0810 200 7.32 915 -99.3 1.0 2.22 8.9 6.75 7 0815 200 7.33 933 -105.8 1.0 2.14 8.9 6.35 8 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O. +/- 0.3 TURB: +/- 10% or BOTTLES FILLED PRESERVATIVE CODES A-NONE B-HNO3 C-H2SO4 D-NaOH E-HCL F- NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED ALL SIZE TYPE PRESERVATIVE	0755	200	7.25	942	-57.0	i.t	2.64	8.7	6.35	
6810 200 7.32 975 -99.3 1.0 2.22 8.9 6.75 7 07:5 200 7.33 933 -105.8 1.0 2.14 8.9 6.75 8 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: ph: +/- 0.1	0800	200	7.28	937	-76.5	1.0	2.59	8.7	6.75	
07:5 200 7.33 933 -105.8 1.0 2.14 8.9 6.75 8 0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.0. +/- 0.3 TURB: +/- 10% OF <= 10	0805	200	7.30	935	-90.0	1.0	2.27	8,9	6.35	6
0820 200 7.35 934 -112.1 1.0 2.08 8.9 6.35 9 NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1	6810	200	7.32	915	-99.3	1.0	2.22	8.9	6.75	
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: ph: +/- 0.1	0815	200		933	- 105.8	1.0			6.75	
PH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O. +/- 0.3 TURB: +/- 10% OF 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 A PLANT A PLANT DY X N 4 60mL VOA A DY X N DY X N DY X N DY X N DY X DY X N DY X DY X	0820	200	7.35	934	-112.1	1.0	2.08	8.9	6.75	9
NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE FILTERED ALL SIZE TYPE PRESERVATI		120								
2 125mL A Plustic	BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E-HC	L F
2 B	NUMBER	SIZE	TYPE		1-1-1	111111111111	ER SIZE			Land I Small
2 C C C C C C C C C C C C C C C C C C C		125mL		Plastic			60mL	VOA	A	
2 J D D Y X N DY D SHIPPING METHOD: Fedex DATE SHIPPED: 3-8-23 AIRBILL NUMBER:			1		-	N				
SHIPPING METHOD: Fedex DATE SHIPPED: 3-8-23 AIRBILL NUMBER:	2		66	->			-			
SHIPPING METHOD: Fedex DATE SHIPPED: 3-8-23 AIRBILL NUMBER:	-	4				_				
	a a	250mL	1,4	U	□ Y X	N				
COC NUMBER: SIGNATURE: 1 2 2 DATE SIGNED: 3-10-23	SHIPPING	METHOD:	Fedex	DA	TE SHIPPED:	3-8-	-23	AIRBILL N	JMBER:	
	COC NUM	BER:		SI	GNATURE:	De	They	DATE SIGN	NED: 3	1-10-27

> TRC

WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Co		PREPARED	CHECKED			
PROJECT NUMBER:	514404.0001.0000	BY:	AW. (1) DATE: 7-8-23	BY: AW	DATE 3-15-23		

SAMPLEID: DEK-MW-15002

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUM (GAL OR L)
0825	200	7.35	935	-117.1	1.0	1.72	9.2	6.35	10
0830	200	7.36	935	-120.5	1.0	1.90	9,2	6.35	- /1
	A			1	1				
				X == 1					
							In Case of		
							In Charles		
	T		44				1 === 1		
								T-4	
					10				
				1					li ar m
			150						
- 1									1
								1 - 0 4	
	1				1, 400				
		-							14
									-
								T	

SIGNATURE:

Je My

DATE SIGNED:

3-10-23

TOC

PROJECT	NAME:	CEC K	(arn BAP/LI: 20	23 GI	NC		PR	EPARED	-30		CHEC	KED
PROJECT	NUMBER	R: 51440	4.0001.0000		B	: A	w@	JJ DATE:7-	?23	BY: AW		DATE 3-15-2
SAMPLE	D:	OW-1	0	W	ELL DIA	MET	ER: 🗸	2"		OTHER		
WELL MAT	ERIAL:	☑ PVC	ss [IRON	☐ G	ALVA	NIZED S	STEEL		OTHER		
SAMPLE T	/PE:	☑ GW	□ ww □	sw	☐ D		J	LEACHATE		OTHER		
PURC	SING	TIME: 10	141 DA	TE: 7	2-2	3	S	SAMPLE	TIME:	1115	D	ATE: 3-8-23
PURGE	4	PUMP	PERISTALTIC F	PUMP			PH:		su coi	NDUCTIV	ITY: _ 8	umhos/cr
METHOD		BAILER			_		ORP:		nV DO:		mg mg	/L
DEPTH TO	WATER:	6.46	T/ PVC				TURB		3 NTU			02/01
DEPTH TO	воттом	17.93	T/ PVC				⋈ NO		IGHT		DERATE	☐ VERY
VELL VOL	JME:	NA	LITERS	☐ GA	ALLONS	5	TEMPE	ERATURE: 1	0.2	C OT	HER:	
VOLUME F	REMOVED	_3	LITERS	☐ G/	ALLONS	3	COLO	R: Chear		OD	OR:	none
COLOR:		lear	OD	OR:	non	_	FILTRA	ATE (0.45 um)	YES	*	NO	
		TUR	BIDITY				FILTRA	TE COLOR:		FIL	TRATE OD	OR:
NONE	X SL	IGHT 🗌	MODERATE		VERY		QC SA	AMPLE: MS	S/MSD	1	DUP-	
DISPOSAL	METHOD	: GROUI	ND DRUM	0	THER		COMM	MENTS:				
TIME	PURGE	PH	CONDUCTIVITY		ORP		D.O.	TURBIDITY	TEMPE	RATURE	WATER LEVEL	CUMULATIVE PURGE VOLUM
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	1	mg/L)	(NTU)		°C)	(FEET)	(GAL OR L)
1045	100	7.57	767	-2	9.9	4	1,2	9.70	8	, 2	6.92	INITIAL
1050	100	7.38	820	- 5	1.8	i	.7	13.8	9.	7	7.40	.5
1055	100	7.31	837	-90	0.8		.4	15.0	9	8	7.57	1.0
1100	100	7,27	848	-11	1.4	1	.3	12.8	10	0.0	7,68	1.5
1105	100	7,27	854		2.0	11	,2	10.14	10	0.1	7.74	2.0
1110	100	7.26	860	-1	31.7		1.1	9.28	10	1.1	7.80	2.5
1115	100	7.26	865		34. 8	- 1	1.1	7,93	10	,2	7.81	3.0
1,10												
			1									
NC	TE: STAB	ILIZATION '	TEST IS COMPL	ETE V	VHEN 3	suc	CESSIV	E READINGS	ARE WIT	HIN THE	FOLLOWIN	G 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 - N	ONE	В	HNO3	C - H2SO4	1 D-	NaOH	E-HO	L F
NUMBER	SIZE	TYPE	PRESERVATI	VE	FILTER	ED	NUME	BER SIZE	TYP	E PF	RESERVAT	100000000000000000000000000000000000000
t l	i25mL	Plastic	A		Y	N	2	60mL	Vo	A	A	□Y X
1	51		ß	Ē	YX	N						
i		-1	С	Ē	-	N		41				
1	1		- N	. C	Y	N is						
1	250mL	1	A		Y	N						
SHIDDING	METHOD:	Fede		TE SH	IIPPED		3-1	8- 23	AIR	BILL NUM	MBER:	
		COT	-	F : - 15- 3					Jan 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			

◆ TRC

PROJECT	NAME:	CEC	Karn BAP/LI: 20	023 GW C	PR	EPARED		CHEC	KED
PROJECT	NUMBE	R: 51440	4.0001.0000	BY:	AW, JR	JJ DATE: 3-	8-23 BY: Ac	1	DATE:3-15-23
SAMPLE	ID: 6	11-w	-				6" OTHER		
WELL MAT		₽VC	□ss □	IRON GAL	VANIZED S	STEEL	OTHER		
SAMPLE T	YPE:	☑ GW	□ww □	SW DI		LEACHATE	OTHER		
PUR	GING	TIME: []	52 DA	TE: 3-8-23	S	AMPLE	TIME: 13 2	6 D/	ATE:3-8-23
PURGE METHOL		PUMP BAILER	PERISTALTIC I	PUMP			SU CONDUCTIV		umhos/cr
DEPTH TO	WATER:	22.50	T/ PVC		TURBI	DITY: 4.9	8 NTU		
DEPTH TO	воттом	25.42	T/ PVC		X NO	NE SL	IGHT MC	DDERATE	☐ VERY
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE:	0.1 °C OT	HER:	
VOLUME I	REMOVED	2.5	I LITERS	GALLONS		R: rlew	00	OOR:	nonc
COLOR:		lear	OD	OR: none	FILTRA	TE (0.45 um)	YES X	NO	
		TUF	BIDITY			TE COLOR: -	The second second	LTRATE ODG	OR:
NONE	X SL		MODERATE	☐ VERY	-	MPLE: MS		DUP-	
DISPOSAL	METHOD	GROU	ND DRUM	OTHER	COMM	IENTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUMI (GAL OR L)
1255	100	9.27	340.7	-54.6	5.5	23.3	9.8	23.27	INITIAL
		9,43	379.0	-65.2	2.9	100000	10.2		
1300	100				2.3	7.1		23.39	0.5
1305	100	9.62	333.1	-78.3		7.31	10.2	23,57	1.0
BIO	100	9.79	328.2	- 86.5	2.0	5.37	10.2	23.78	1.5
1315	100	9.82	325,4	- 39.4	2.0	5,13	10.1	23,40	2.0
1320	100	9.80	326.1	- 91.1	1.9	4,48	101	23.95	2.5
pH: +/-	0.1	COND.: +/-	3 % ORP:	+/- 10 D.	O.: +/- 0.3	TURB: +/-	ARE WITHIN THE	: 10	TEMP.: +/-
			ATIVE CODES		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_			L F
NUMBER		TYPE	PRESERVATION	-1 (-1				RESERVATI	1 15-1
11	125mL	Plastic	A	□ Y X		60in L	UOA	A	□ Y ØN
	5 -		В	□ Y X	-				
3 12			С						П У П и
3-10	J		9		N				□ Y □ N
1	250mL	V	A		N				
SHIPPING	METHOD:	Fede	X DA	TE SHIPPED:	3-8-	-23	AIRBILL NUM	MBER: -	
COC NUME		1.5		SNATURE:	10	11-	DATE SIGNE		3-10-23
OC NOME	-10			ZACTIONE.	f	17	DATEGIGNE		3 10 25

> TRC

PROJECT	NAME	CEC k	(am BAP/LI: 20	23 GV	V C		F	PREP	ARED			CHEC	KED
PROJECT	NUMBER	R: 51440	4.0001.0000			BY:	AW,	B)11	DATE:3-	P-23 BY:	Au)	DATE: 3-15-2
SAMPLE	ID:	DW-19	k.	WE	LL	DIAM	ETER:	√ 2"	□ 4" □	6" OT	HER		
WELL MAT		☑ PVC		IRON		GAL	VANIZE	D STE	EL	От	HER		
SAMPLE T	YPE:	☑ GW	□ww □	SW		DI		LE	ACHATE	□ от	HER		
PUR	SING	TIME: O	859 DA	TE: 7	- 6	-2	3	SAN	IPLE	TIME: O	140	DA	TE:3-8-23
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP			PH:		17_ S 1.0-116			TY: // (.	3-711 umhos/d
DEPTH TO	WATER:	17.00	T/ PVC				TUE	RBIDIT	Y: 4.2	6 NTU			
DEPTH TO	воттом	23,42	T/ PVC				X	NONE	SLI	GHT [МО	DERATE	☐ VERY
WELL VOL	UME:	NA	LITERS	☐ GA	LLC	ONS	TEN	IPERA	TURE:	1.8 °C	ОТН	HER:	
VOLUME I	REMOVED	_8_	X LITERS	☐ GA	LLC	ONS	co	LOR:	Clear	_	OD	OR: _	none
COLOR:	_00	ange	OD	OR: _/	O	e	FILT	RATE	(0.45 um)	YES	×	NO	
NONE	☐ su		BIDITY MODERATE	×	VE	RY	0.000	44 30 10	COLOR:	/MSD	-	DUP-	
DISPOSAL	METHOD	GROU	ND DRUM	□ от	HE	R	CO	MMEN	TS:				
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)		RP nV)		D.O.		URBIDITY (NTU)	TEMPERAT	URE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUM (GAL OR L)
0900	200	7.68	644	-87	-	1	4.8		135	10.3		17.06	INITIAL
0905	200	7.30	673	-100			1.7	_	81.6	11.4		17.06	- 1
0910	200	7,18	688	-11:		- 1	1.3		28.4	11.6		17.06	2
0915	200	7.16	694	- 11:	-		1. 2		22.7	11.6		17.06	3
0920	200	7.15	696	- 11		-	1.1		16.2	11.6		17.06	4
0925	200	7.15	703	- 11	_	- 1	1.1	_	11.3	11.8		17.06	5
0930	200	7.15	708	- 114			1.1		6.27	11.8		17,06	6
0935	200	7.16	7/1	-119			1.1		4.95	11.9		17.06	7
0940	200	7.17	711	- 116			1.0	(F) to	4.26	[1.8		17,06	8
pH: +/-	10000	COND.: +/-	TEST IS COMPL 3 % ORP:	+/- 10		D.		0.3		10 % or	=</td <td>10</td> <td></td>	10	
NUMBER	SIZE	TYPE	PRESERVATI	VE I	FILT	ERE	טא	MBER	SIZE	TYPE	PF	RESERVATI	
1	125mL	Plastic	A		Y		N	4	60mL	VOA		A	
2			В		Y	X	N						
2			Č.		Y	X	N						
2	1		9		Y	X	N						
2	250mL	1	A		Y	X	N						
SHIPPING		Fede	X DA	ATE SH	IPP	ED:	3.	-8-3	23	AIRBILL	NUN	IBER:	
7	Carminia.						-/-	_	_				7-10-23

		_
	$T \supset$	
7	IK	

PROJECT	NAME:	CEC K	arn BAP/LI: 20	23 GW C	PRI	EPARED		CHEC	KED	
PROJECT	NUMBER	R: 514404	4.0001.0000	BY:	AW, (R)	DATE:3-8	2-27 BY:	les	DATE: S-15	·Z
SAMPLE	ID: DEN	L- MW	- 15003	WELL DIAM	METER: 🗸	2" 🗌 4" 🔲	6"	ER.		
WELL MAT		☑ PVC			VANIZED S	STEEL	ОТН	ER		
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI		LEACHATE	□ отн	ER		
PURC	SING	TIME:)	32 DA	TE: 3-8-2	3 S	AMPLE	TIME: 122	5 DA	TE: 3-8-2	13
PURGE METHOD	. =	PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP:		U CONDUC	TIVITY: 442		os/cm
DEPTH TO	WATER:	17.15	T/ PVC		TURBI	DITY: 2.2	עדא ר			
DEPTH TO	воттом	27.98	T/ PVC		IX NO	NE SLI	GHT 🔲	MODERATE	☐ VERY	Y
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE:	6.3 °c	OTHER: _		
VOLUME F	REMOVED:	_10	X LITERS	GALLONS	COLO	R: Clear		ODOR:	none	
COLOR:	Cl	eur	OD	OR: none	FILTRA	TE (0.45 um)	YES	NO K		
100		TUR	BIDITY		FILTRA	TE COLOR:		FILTRATE ODG	R:	_
NONE	SLI	GHT 🗌	MODERATE	☐ VERY	QC SA	MPLE: MS	/MSD	DUP-		
DISPOSAL	METHOD:	☑ GROUN	ND DRUM	OTHER	COMM	IENTS:	-B-KLI	colle ded		
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATUR	RE WATER LEVEL (FEET)	CUMULAT PURGE VOL (GAL OR	UME
1135		8.03	406.1	-99.2	3.3	3,33	14.4	18.21	INITIAL	
	200		TOTAL A	7	1.4	2.67	15.0	19,43	1	
1140	200	7,41	400.1	-96.3				The Table of the Control of the Cont	2	-
1145	200	7.76	406.3	-96.2	1.2	2.68	15.5		3	-
1150	200	7.78	407.2	- 99.2	- be U	2.65	15.3		4	-
1155	200	7.82	413.3	-108.6	tel	2.58	15.5	20,13		-
1200	200	7.91	418.9	-121,1	1.0	2.69	15.8	20.28	5	-
1205	200	7.92	420.8	-122,9	1.0	2.47	15.9	20.32	6	
1210	200	7.56	427.3	-133,1	1.0	2.53	16.3	20.50	7	
1215	200	7.96	431.8	-140.7	0.9	2.61	16.4	20.62		
1290	200	7.96	437.8	- 144.5	0.9	2.42	16.6	20.70	9	
	OTE: STABI	COND.: +/-	TEST IS COMPL 3 % ORP:	ETE WHEN 3 S +/- 10 D		TURB: +/-	10 % or	= 10</td <td>TEMP.: +/-</td> <td></td>	TEMP.: +/-	
BOTTLE			ATIVE CODES		B - HNO3			-	L F	_
NUMBER	1 1	TYPE	PRESERVATI				TYPE	PRESERVATI		1
11 .	135mL	Plastic	A			60 mL	VOA	A		_
1			ß		N (i	125mL	Plastic	A		K N
		- t/L	(N)1			В		X N
	J	4 . 5	b		N /)		Sel E	Ĉ		X
1	250.4L	J	A	N Y	N/ (1	Ψ	1	Ŋ		N
SHIPPING	METHOD:	Fede	X DA	ATE SHIPPED:	3-	8-23	AIRBILL	NUMBER:	-	
	BER:		SI	GNATURE:	10	16	DATE SIG	ENED:	3-10-23	3



WATER SAMPLE LOG (CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Co		PREPARED		CH	IECKED
PROJECT NUMBER:	514404.0001.0000	BY:	AW. OR JU DATE: 3-8-23	BY:	AW	DATE: 3-15-2)

SAMPLEID: DEK-MW-15003

TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1225	200	7,47	442.0	-146.5	0.9	2.27	16.3	20,70	10
				-					-
								1	
			-		-				
		1-							
							1		
							/ - I		

SIGNATURE:

DATE SIGNED:

3-10-23

-	
	$T \rightarrow C$
1	150

ROJECT	NAME:	CEC	Karn BAP/LI: 2	023 G	wc		PRE	PARED		(CHEC	KED
ROJECT	NUMBER	R: 51440	04.0001.0000		1	BY:	AW, 🚱 J	DATE: 3-	8-23 BY:	4W		DATE: 3-15-2
SAMPLE	D: S	w-b	itch	W	ELL	DIAME	TER:	# □ 4" □	6" 🔀 OTI	HER	Ni	4
VELL MAT	ERIAL	√ PV €	□ss □	IRON		GALV	ANIZED S	TEEL	В отп	HER	N	7
SAMPLE TO	YPE:	⊿ cw	□ww 🗷	SW		DI		LEACHATE	□ отп	HER		
PURC	SING	TIME:	D	ATE:			S	AMPLE	TIME: 1'3			ATE-3-8-23
PURGE		PUMP BAILER	PERISTALTIC	PUMP					SU CONDU	CTIVITY:	54 mg	
DEPTH TO	WATER:		T/ PVC				TURBIC	OITY: 14.	1 NTU			
DEPTH TO	BOTTOM		TV PVC				□ NON	E X SL	IGHT 🗌	MODER	ATE	☐ VERY
WELL VOL	HME:	NA	LITERS	☐ G	ALLC	NS	TEMPE	RATURE: 1	0.1_°C	OTHER:	- E	
VOLUME F	REMOVED:		LITERS	G	ALLS	SIA	COLOR	clear		ODOR:	- 40	nore
COLOR:			O	OR: _			FILTRA	TE (0.45 um)	X YES	☐ NO),	
NONE	Пsu		RBIDITY MODERATE		VE		FILTRAT	E COLOR:	chew	FILTRA	_	OR: 10me
			IND DRUM		THEF		COMM		311,15			
TIME	PURGE RATE	PH	CONDUCTIVITY	,	ORP		D.O.	TURBIDITY	TEMPERATI	URE LI	ATER	CUMULATIVE PURGE VOLUMI
1350	(ML/MIN)	(SU)	(umhos/cm)	1	mV)	-	(mg/L)	(NTU) 14.7	(°C)		(A	(GAL OR L)
NO pH: +/-		LIZATION COND.: +/-	TEST IS COMP				CCESSIVE	17.5		= 10</td <td></td> <td>TEMP.: +/-</td>		TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A- N	ONE	В	- HNO3	C - H2SO	4 D - NaO	н	E - HC	L F
NUMBER	SIZE	TYPE	PRESERVAT	VE		ERED	1107 - 1207		TYPE	PRESE	RVATI	
1	125mL		> plastic		-	N		250mL	Pleastic	A		OY XIN
1	HILE #	B		X	Y		1 2	60mL	VOA	A	+	
1		В]	X V						
1		A			Y	X N	1					
	1	b	1] Y	X	_	-				
		-										
SHIPPING	METHOD:	Fede	x D	ATE SI	IIPPE	ED:	3-8-	23	AIRBILL	NUMBER	0 p	

	$T \rightarrow C$
10	IRC

PROJECT	NAME:	CEC K	(arn BAP/LI: 20	23 GW C	-	PR	EPARED		CHE	CKED
PROJECT	NUMBER	R: 51440	4.0001.0000		BY:	AW, (R)	DATE:3 -	8-23 BY:	Aw	DATE: 3-15-2
SAMPLE		LI-			-		2" [] 4" []			
NELL MAT	ERIAL (PVG		RON [GALV	ANIZED S		⊠ отн	HER ///	+
SAMPLE T	YPE:	- ew	□ww 🗵	SW] DI		LEACHATE		HER	
PURC	SING	TIME:	DA	TE:	/		AMPLE	TIME: 100		DATE:3-8-23
PURGE METHOD		PUMP	PERISTALTIC P	UMP		-		U CONDU	12.7 n	
DEPTH TO	WATER:	NA	TL PLYE			TURBI	DITY: 20.	6 NTU		
DEPTH TO	воттом	NA	T/ PVC			□ NO	NE X SLI	GHT 🗌	MODERATE	☐ VERY
WELL VOL		NA	LITERS	GALL	ONS	TEMPE	RATURE: _	.9 ℃	OTHER:	-
VOLUME	EMOVED:	NA	LITERS	GALL	QNS	COLO	R. light s	ray	ODOR:	none
COLOR:	ligh	it gra	OD0	OR: Ain	13	FILTRA	TE (0.45 um)	YES	□ NO	
		TUR	BIDITY			FILTRA	TE COLOR:	cher	FILTRATE OF	DOR: MOY
NONE	X SLI	GHT 🗌	MODERATE	□ VE	ERY	QC SA	MPLE: MS	MSD	DUP-	
DISPOSAL	METHOD:	GROUI	ND DRUM	OTHE	R	COMM	IENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY (NTU)	TEMPERATI	URE LEVEL (FEET)	PURGE VOLUM
1005	(ML/MIN)	8.30	(umhos/cm)	-36.		(mg/L) 12.7	20.6	5.9	IV.A	INITIAL
pH: +/-	0.1	COND.: +/-	5 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	+/- 10	D.C).: +/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES	Se of Arthur		ATIVE CODES		-	3 - HNO3	C - H2SO4		-	
NUMBER	SIZE	TYPE	PRESERVATIV	10-1	TERED			TYPE	PRESERVA	
-21	125mL	Plastic	iß	LIY	-		125nL	Plastic	18	
1.			A	LIY	-	-	60mL	VO A	A	
1			C	□ Y	100	-	1	2		
110	1		7	D Y	-		1		-	
- V 1	250mL	1	A	Y	N	1				
SHIPPING	METHOD:	Fede	X DA	TE SHIPE	PED:	3-8-	23	AIRBILL	NUMBER:	
				NATURE		1 -	-0			3-10-23

>	TRO	2	w	Α	ΓE	R S	AMP	LE I	.og	í.		PAG	GE <u>23</u> OF _
PROJEC*	T NAME:	CEC K	(am BAP/LI: 202	23 G	wc		PRI	EPARE	ED			CHEC	KED
PROJEC	T NUMBER	R: 51440	4.0001.0000			BY:	AW, Ø	J DAT	E:3-0	1-23	BY: AW		DATE 3-15-25
SAMPLE	ID: 1	LIC	KLI-SCS	· v	/ELL	DIAME	TER:		4"	6" 🔀	OTHER	W	7
	TERIAL (T)			RON			ANIZED S			X	OTHER	NI	4
SAMPLE T		S CW	ww Ds	SW		DI		LEACH	ATE	X	OTHER	Secondo	ry collection
PUR	GING	TIME:	DAT	E:			S	AMPLE	E 1	TIME:	0840	DA	ATE: 3-9-23
PURGE METHO		PUMP BAILER	PERISTALTIC PI	JMP	_		PH: ORP:	7.4	l s	u co	NDUCTIVI	TY: 13	12 umhos/cn
DEPTH TO	O WATER:	\searrow	T/ PVC				TURBI	DITY:	9.6	1 NTL			
DEPTH TO	о воттом		TYPYC				■ NOI	NE [SLI	GHT	☐ MOD	ERATE	☐ VERY
WELL VO	OME:	NA	LITERS	JG	ALLC	ONS	TEMPE	RATUR	E 3	.7	°С ОТН	ER:	
YOLUME	REMOVED		LITERS [G	ALLE	SHE	COLOF	: <u>C</u>	lear		ODC	R: _	nome
COLOR:			ODO	R: _			FILTRA	TE (0.45	5 um)	YES		NO	
NONE		IGHT 📗	MODERATE	-] VE		2323 341	MPLE:	_	MSD		RATE ODO	DR:
DISPOSA	L METHOD	:[☑] GROUI	ND DRUM [70	THE	R	COMM	ENTS:					
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)		ORP (mV)		D.O. (mg/L)	TURB (NT			RATURE °C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
०४४०	NA	7.41	1342	9	.4		4.2	9,	63	3	.7	NA	INITIAL
N	OTE: STAB	ILIZATION	TEST IS COMPLE	TE V	WHE	N 3 SU	ICCESSIV	E READ	INGS A	RE WIT	HIN THE F	OLLOWIN	G LIMITS:
pH: +/-	0.1	COND.: +/-	3 % ORP: +	/- 10	0	D,C	0.: +/- 0.3	TUF	RB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +/-</td>	10	TEMP.: +/-
BOTTLE	SFILLED	PRESERV	ATIVE CODES A	4 - N	ONE	E	B - HNO3	C -	H2SO4	D-	NaOH	E-HC	L F
NUMBER	SIZE	TYPE	PRESERVATIV	E	FILT	ERED	NUMBI	ER S	SIZE	TYP	E PRI	ESERVATI	VE FILTERED
	125mL	Plastic	Α	C	Y	X	1 2	6	Oml	Vo	A	A	UY XN

SFILLED	PRESERV	ATIVE CODES A-	NON	ΙE	В	- HNO3	C - H2SO4	D - NaO	H E- HCL	F
SIZE	TYPE	PRESERVATIVE	FI	LTER	RED	NUMBER	SIZE	TYPE	PRESERVATIVE	FILTERED
125mL	Plastic	٨		Y	X N	2	60ml	VOA	A	□ Y X N
	2 2 1	ß		Y	N					
= (: 11	2 2 2 1	(Y [X N				1	
V	1-1	N.		Y 5	N					
250mL	U	À		Y []	N					
METHOD:	Eas	brop off DATE	SHIF	PEC):	3-10-	23	AIRBILL	NUMBER: -	
BER:	-	SIGNA	ATUR	E:		le	The	DATES	IGNED: 3-	10-23
	SIZE 125mL 250mL METHOD:	SIZE TYPE 125mL Plastic 250mL V METHOD: Lab	SIZE TYPE PRESERVATIVE 125mL Plastic A C 250mL A METHOD: Lab brop off DATE	SIZE TYPE PRESERVATIVE FI	SIZE TYPE PRESERVATIVE FILTER 125mL Plastic A Y C C Y C 250mL A Y C AMETHOD: Lab brop off DATE SHIPPED	SIZE TYPE PRESERVATIVE FILTERED 125mL Plastic A Y N C Y N C Y N 250mL A Y N METHOD: Lab brop off DATE SHIPPED:	SIZE TYPE PRESERVATIVE FILTERED NUMBER 125mL Plastic A Y N 2 125mL Plastic A Y N N C Y N N 250mL V A Y N METHOD: Lab brop off DATE SHIPPED: 3-10-	SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE 125mL Plastic A	SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE 125mL Piast.: A	SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE 125mL Piast. A

VE)	-
AM	
A 1	
By	

PROJECT	NAME:	CEC W	eadock BAP: 2	2023 GW	. PRI	EPARED		CHEC	KED
PROJECT	NUMBER	: 514403	.0001.0000	BY:	JJ	DATE	bみ BY: つ	JK	DATE: 3-13-23
SAMPLE II	o:MW	-15	002	WELL DIAM	METER: V		6" OTHE	R	
WELL MATE	ERIAL:	✓ PVC	ss 🗆	RON GAL	VANIZED S	STEEL	OTHE	R	
SAMPLE TY	PE:	☑ GW	□ww □s	SW DI		LEACHATE	OTHE	R	
PURG	ING	TIME:	DAT	E36 63	S	AMPLE	TIME: (15	53 04	TE:3 17 63
PURGE METHOD		PUMP I	PERISTALTIC PI	UMP	PH: ~			1VITY: 101	
DEPTH TO	WATER:	Cell	T/ PVC		TURBI	DITY: Les	2 NTU		
DEPTH TO	воттом:	1689	T/ PVC		ZNO	NE SL	GHT N	ODERATE	☐ VERY
WELL VOLU	JME:	NA	LITERS [GALLONS	TEMPE	RATURE:	2c) °C 0	THER:	
VOLUME R	EMOVED:	7	LITERS [GALLONS	COLO	R: Choc	(10	DOR: I	2006
COLOR:	(100	ODO	R:DOM	FILTRA	TE (0.45 um)		-NO	
			BIDITY			TE COLOR:		FILTRATE ODG	OR:
NONE	I SLI		MODERATE	☐ VERY	0.00	MPLE: MS		JOUP- #	
DISPOSAL	METHOD:	GROUN	D DRUM	OTHER	COMIN	ENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	LEVEL	CUMULATIVE PURGE VOLUME
24 11.	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
1118	240	7.63	1015	1040	11.6	is.c	64	638	INITIAL
1133		7.43	1059	100.0	50	130	Ceil	6.70	1
1128		7.36	1061	90.0	47	8.8	61	680	а
1133		7.30	1056	80.0	4.0	88	66	680	3
1138		730	1050	70.0	3.8	90	6.1	680	4
1143		733	1643	700	3.8	les	Cocl	680	5
1148		722	1636	69.5	3.8	Le.C	Ceil	680	ie
1153	1 = 1	7.30	1036	64.5	3.8	6.0	61	600	フ
11 - 7 - 1	1	1							
NO pH: +/-			TEST IS COMPLI				ARE WITHIN TH		G LIMITS: TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HO	L F+
NUMBER	SIZE	TYPE	PRESERVATIV	E FILTERE	D NUME	BER SIZE	TYPE	PRESERVAT	IVE FILTERED
D	250	PI	^		N	TI COLOR			DY DN
Э	125	PI	A	□ Y #	N				OY ON
2	105	PI	B	□Y-¥	N				□Y □N
					N				OY ON
					N				OY ON
SHIPPING	METHOD:	Feder	DA	TE SHIPPED:	3	-8-23	AIRBILL N	UMBER:	
		=							11/11
COC NUM	SEK:		Sic	SNATURE:	6)	DATE SIG	NED: 3/1	3133

? TRC

ROJECT	NAME:	CEC W	Veadock BAP:	2023 GW	PR	EPARED		CHECK	ŒD
ROJECT N	NUMBER	: 514403	3.0001.0000	Е	sy; JJ	DATE 3 13	カラ BY: コ	k	DATE:3-13-2
AMPLE ID	mu	2-15	oib	WELL D	AMETER: [7	2" 4"	6" OTHER		
VELL MATER		☑ PVC		IRON []	SALVANIZED	STEEL	OTHER		
AMPLE TYP	PE:	√ GW	□ww □	sw 🔲	DI 🗆	LEACHATE	OTHER		
PURGI	NG	TIME: [000 DA	TE:3 13 1:	3 8	SAMPLE	TIME: 133	The state of the s	1E3 17 123
PURGE	X	PUMP	PERISTALTIC F	PUMP	PH:		U CONDUCTIV	/ITY: 976	umhos/cr
METHOD:		BAILER			ORP:			53 mg/l	
DEPTH TO V						IDITY: Le C			
DEPTH TO E	BOTTOM:	810			JENO		-	DERATE	VERY
VELL VOLUM		NA	LITERS	GALLON		ERATURE: 3	. /	HER:	
VOLUME RE	EMOVED:	_		GALLON		(*			010
COLOR:		Clou	ly 00	OR: NO V	FILTR/	ATE (0.45 um)	∐ YES □	NO	
Sheen a			BIDITY	-		TE COLOR:		TRATE ODO	R: I
NONE		//	MODERATE	VER		AMPLE: MS	/MSD	DUP-	
		☑ GROU	ND DRUM	OTHER	COM	MENTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUM
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)
sce	104	763	813	136.2		36.0	4.3	318	INITIAL
301		7.33	Sil	133-6	295	20,0	3.8	3.40	17
1210		7.17	863	0106	0092	18.3	3.7	3.43	
7161		7.10	913	81.9	dou	9.5	3.7	345	1.5
1300		7.10	937	60.0		7.7	3.7	345)
1306		7.10	957	59.8	0.7	6,6	3.7	345	2,0
1230		7.10	967	590	053	Luc	3,7	347	3
1237		7.10	970	59.0	052	60	3.7	341	3.5
					(A)	-			
PH: +/- 0			3% ORP:		D.O.: +/- 0.3		ARE WITHIN THE		TEMP.: +/-
BOTTLES	FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO	D - NaOH	E-HC	L F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTE	RED NUM	BER SIZE	TYPE F	RESERVATI	VE FILTERE
1	250	71	A		1 N				
1	761	PI	A		力N				
	125	PI	B	□ Y					
					□ N				
			1		=+-	1			
	METHOD:	Fech	or D	ATE SHIPPE		3-23	AIRBILL NU	MBER: -	Y-1 - F
SHIPPING N	METHOD.	1			, ,				

The state of the s	NAME:	CEC W	eadock BAP: 2	2023 GW	PRE	PARED		CHECK	KED
ROJECT	NUMBER	: 514403	.0001.0000	BY:	JJ	DATE:3	b) BY: 3	JK	DATE 3-13-23
AMPLE ID	o: KNu	- +50	15019	WELL DIA	METER: 🗸		6" OTHER	3	
ELL MATE		J PVC			LVANIZED S	TEEL	OTHE	3	
AMPLE TY	PE:	☑ GW	□ww □	SW DI		EACHATE	OTHE	3	
PURG	ING	TIME: 12	50 DA	TE3 7 19	-3 S/	AMPLE	TIME: (3)		TE3/7/3
PURGE METHOD:	-4-	PUMP I	PERISTALTIC P	UMP		126 0		1VITY: 300	
EPTH TO	WATER:	(01)	T/ PVC		TURBIC	DITY: 4,9	NTU		
EPTH TO	воттом:	1661	T/ PVC		PHON	NE SL		ODERATE	☐ VERY
VELL VOLU	ME:	NA [LITERS	GALLONS	TEMPE	RATURE:	7	THER:	
OLUME RI	EMOVED:	0	LITERS	GALLONS	COLOR	: <u>Cu</u>			016
COLOR:		Brown	lish ode	DR: DOM	FILTRA	TE (0.45 um)	YES E	¶-NO	
			BIDITY		FILTRAT	TE COLOR:	F	ILTRATE ODG	DR:
NONE			MODERATE	☐ VERY	QC SAI	MPLE: MS	S/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROUN	D DRUM	OTHER	COMM	ENTS:			
TIME	PURGE RATE (MIJMIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATUR	E WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
250	200	705	1586	151,4	99	\$3.c	Cal	518	INITIAL
355	7	669	2054	-520	1.0	7.6	40	5.37	1
300	1	(p. 64	2673	-80.0	do	5.0	Ce.60	537	2
1305		670	2070	-88.5	040	50	60	537	3
1310		6.70	2006	-888	630	5.0	6.6	(53)	Ψ
135		le.70	2064	. 885	1	4.9	6.4	537	1
1300	1	le.70		-890	-	4.9	6.6	1500	
pH: +/- (COND.: +/-				. TURB: +/	ARE WITHIN TH		TEMP.: +/-
BOTTLES	100 - 100		ATIVE CODES		B - HNO3	C - H2SO	1	E-HO	
NUMBER	SIZE	TYPE	PRESERVATI	total to	. 1	ER SIZE	TYPE	PRESERVAT	
1	250	PI	A		N				
1	136	PI	f)] N				
1	761	PI	В		l n		the state of the s		
] N				
] N	i		-0	
SHIPPING	METHOD:	Fele	K D	ATE SHIPPED	3-8	-23	AIRBILL N	UMBER:	
COC NUME	RER.		- SI	GNATURE:		$\overline{}$	DATE SIG	NED: >/	x : /12

PROJECT NAME:	CEC W	eadock BAP:	2023 GW	PRE	EPARED	1	CHEC	KED
PROJECT NUMBE	R: 514403	.0001.0000	BY	: JJ	DATE:313	Dy BA: 2	K	DATE:3-13-23
SAMPLE ID: M	W- 15	800	WELL DIA	METER: 🗸	2"	6" OTHER		
WELL MATERIAL:	☑ PVC	□ss □	IRON G	ALVANIZED S	TEEL	OTHER		
SAMPLE TYPE:	☑ GW	□ww □	SW 🗆 DI		LEACHATE	OTHER		
PURGING	TIME: (3	30 DA	TE3/7/a	3 s.	AMPLE	TIME: 1417		TE3/7/33
PURGE METHOD:	PUMP	PERISTALTIC F	PUMP	-	98.5 m	(11)	(TY: 13)	
DEPTH TO WATER:	435	T/ PVC		TURBI		NTU		
DEPTH TO BOTTOM	1:1746	T/ PVC		A NOI	NE SLI	GHT MO	DERATE	☐ VERY
WELL VOLUME:	NA	LITERS	GALLONS	S TEMPE	RATURE: 7		HER:	
VOLUME REMOVED	:_9_	LITERS	GALLONS	15.75(5.15)	e Clu	V OD	OR: 1	onp
COLOR:	3 rown	ISY OD	OR: NON	E FILTRA	TE (0.45 um)	YES Y	NO	
	TURE	BIDITY	1.5		TE COLOR:		TRATE ODG)R:
NONE S	LIGHT	MODERATE	VERY	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL METHO	D: GROUN	ID DRUM	OTHER	COMM	ENTS:			
TIME PURGE RATE (ML/MIN)	PH	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1330 200	734	873	- 45.		115	69	439	INITIAL
1337	7.23	814	_113.5	079	993	6.7	440	1
340	70c	985	-115.6	038	200	6.9	44	2
1347	6.90	1146	-108.6	- 4	327	7.0	440	3
1350	600	1316	1040	024	14.0	7.0	44	4
1351	6.80	1245	-100.0		10	7.0	44	5
1400	6 80	1269	-101.5	030	265	7.1	Huc	6
1400	6.74	1318	- 48. 5		10.0	7.1	440	7
140	6.79	1318	000		10.0	7.1	yte	8
1415	14:79	1320	-985		100	7.1	440	9
NOTE: STA pH: +/- 0.1	BILIZATION COND.: +/-	3 % ORP:	+/- 10	D.O.: +/- 0.3	E READINGS /	ARE WITHIN THE	= 10	TEMP.: +/-
BOTTLES FILLED		ATIVE CODES	110 11010-3	B - HNO3			E- Ḥ(
NUMBER SIZE	TYPE	PRESERVAT			SER SIZE	TYPE P	RESERVAT	
1 250	bi	I A		-1-1				
1 131	151	K		N	-	-		
1 100	191	В		IN				
				N				
SHIPPING METHOL): Feeling	· 10	ATE SHIPPEL		-23	AIRBILL NU	MBER:	
	. rever				\prec			
COC NUMBER:	2	S	IGNATURE:)	DATE SIGN	ED. 1/L	5 63

ROJECT	NAME:	CEC V	Veadock BAP: 20	23 GW		PR	EPARED		CHECK	KED
ROJECT	NUMBER	: 51440	3.0001.0000		BY:	JJ	DATE 13	b3 BY:	JK	DATE:3-13-23
AMPLE II	D: FP	# B.	ckground	WELL	DIAME	TER: 🗸			R	
VELL MATE	RIAL:	✓ PVC				ANIZED S		OTHE	R	
SAMPLE TY	PE:	☑ GW	□ww □sv	v 🔲	DI		LEACHATE	OTHE	R	
PURG	ING	TIME:	DATE	:		S	AMPLE	TIME:	DA	TE:3/1/03
PURGE METHOD	_ =	PUMP BAILER	PERISTALTIC PUM	/IP		PH: ORP:	411	CONDUCT	IVITY:	
DEPTH TO	WATER:	^	TXPVC \				DITY: N	NTU _		
DEPTH TO	воттом:	1	T/ PVC	-		DINC		111	ODERATE	☐ VERY
WELL VOLU	JME:/	NA	LITERS	GALLO			ERATURE: A	7	THER:	- W.
VOLUME R	EMOVED:	1	LITERS	GALLO	ONS	COLO				02
COLOR:	1-		ODOR	:	_	FILTRA	ATE (0.45 um)	YES	Ĵ NO	
	L	F 1 4 12 1	BIDITY			FILTRA	TE COLOR:	1	FILTRATE ODC	R:
NONE	SLI	GHT 🗌	MODERATE	☐ VE	RY	QC S/	AMPLE: MS	S/MSD [DUP-	
DISPOSAL	METHOD:	☑ GROU	ND DRUM	OTHE	R	COM	MENTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATUR	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
	(MDMIA)	(30)	(dimos/citi)	(niv)		(nigre)	(1110)	(0)	(,	INITIAL
				_	\dashv		 			
							1			
		İ								
	_		1	_						
		-							-	
					-			<u> </u>	-	1
1										
NC pH: +/-		ILIZATION COND.: +/-	TEST IS COMPLETED AS ORP: +/					ARE WITHIN TH		
BOTTLES	FILLED	PRESERV	ATIVE CODES A	- NONE		B - HNO3	C - H2SO	4 D - NaOH	E- HO	L F
NUMBER	SIZE	TYPE	PRESERVATIVE	FIL	TERE	MUM C	BER SIZE	TYPE	PRESERVAT	IVE FILTERED
	175	10	13	Y	1	Ñ				
		1,	,	Пү	-	N				
		-		Пү		N	1			
		-	1							
		1		LIY		N				
		1	9	ШҮ		N				
SHIPPING	METHOD:	Feel	ex DAT	E SHIPI	PED:	3-	8-23	AIRBILL N	IUMBER:	
COC NUM	BER:		SIGN	NATURE	E: .		\cap	DATE SIG	NED: 2	12152
		_					1	>	71	51)1

29 of 34



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 WO	#:							Α'	NAI.	VSIS	REC	OUE	STED		
Q1-20	23 JCW-DEK	Background We	ells		23-0166	REQUESTER:	Haro	ld R	legis	ter		_		Attac	h Lis	t if M	ore S	pace i	s Need	ded)	QA REQUIREMENT:
SAMP	LING TEAM:	*			TURNAROUND TIME REQUIRED:																□ NPDES
		ş			□ 24 HR □ 48 HR □ 3 DAYS □ STA	NDARD 🛮 OTH	ER_					_									⊠ TNI
SEND	REPORT TO:	Caleb Batts			email:	phone:															□ ISO 17025
C	COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other _			CC	NT	AINI	ERS										☐ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		#	P	RES	ERV	ATI	VE	Metals								☐ INTERNAL INFO
	LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = General	al Waste	TOTAL		3	H 74		E L	al Me	Anions	20						□ OTHER
SA	MPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	TO	None	HNO ₃	NaO NaO	HCI	MeOH	Total	Ani	TDS						REMARKS
2	3-0166-01	367123	(153)	GW	MW-15002		3	2	1				x	x	x						
	-02	3/7/21	1415	GW	MW-15008		3	2	1				x	x	x						
	-03	317123	B3.	GW	MW-15016		3	2	1				x	x	x						
	-04	3/7/57	1330	GW	MW-15019		3	2	1				x	x	x						
	-05	3/7/07	_	GW	DUP-Background		3	2	1				x	x	x						
,	-06	3 4122	142	W	FB- Background		1						x								
												T									
RELIN	QUISHED BY:			DATE/	TIME: RE	ECEIVED BY:							СО	MMI	ENTS	:					
		- 5	3/8/3			l ex															44.0012
RELIN	OUISHED BY:			OS-	71ME: RE	ECEIVED BY:							1					_°C			#: LS \$277 &3 ue Date: 05-15-23
	- Ca					0166 Page 13 of 1	13				_	_		_	_						



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

	The second	To .
Page _	of	1

30 of 34

SAMP	LING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or WO	#:							А	NAI	VSIS	SRF	OUE	ESTE	D		
Q1-20	23 DEK Botto	m Ash Pond Wo	ells		23-0167	REQUESTER: 1	Haro	ld F	Regis	ster									is Ne			QA REQUIREMENT:
SAMP	LING TEAM:				TURNAROUND TIME REQUIRED:																	NPDES
					□ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD 🗵 OTH	ER_														Σ	I TNI
SENI	REPORT TO:	Caleb Batts			email:	phone:																☐ ISO 17025
(COPY TO:	Harold Regis	ter		MATRIX CODES: GW = Groundwater OX = Other_			CC	NT	AIN	ERS											□ 10 CFR 50 APP. B
		TRC		I	WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		#	F	RES	ERV	/AT	IVE	Metals		.e		Zi.					INTERNAL INFO
	LAB	SAMPLE COLI	LECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene	ral Waste	TOTAL#	13	5	H 7		Ħ L	al Me	Anions	Ammonia	S	Alkalinity	Sulfide				OTHER
SA	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	ATION	TO	None	HNO ₃	NaO	HC	MeOF	Total	Ani	Am	TDS	Alk	Sull			П	REMARKS
- 2	3-0167-01			GW	DEK MW-15002		7	4	1	1			×	v_	x	v	v	ů.				
	-02	3-7-23	1208	GW	DEK-MW-15005		7	4	1	1 1			x	x	×	X	X.	x				
	-03	3-7-23	1310	GW	DEK-MW-15006	1	7	4	1	1			×	N	×	X	×	N				
	-04			G₩	DUP-DEK-BAP-01		7	4	1	1			×	- X-	-X-	-X-	y	y.				
	-05	3-7-23	1310	W	FB-DEK-BAP		4	1	1	1 1			x	х	x			x				"
	-06	3-7-23	1430	W	EB-DEK-BAP	11	-4	1	T	1 1			x	×	X		I.	x				
			(4)									-										1
					×																	
RELIN	QUISHED BY:			DATE/	TIME: R	ECEIVED BY:							CC	MMI	ENTS							
	De	Par			7-23 /1570	Felex									21110							
RELIN	QUISHED BY:			DATE/	TIME: R	ECEIVED BY:							Re	ceive	d on I	ce? [₽ Ye	s 🗆 1	No	M&T	Е#: L	5027723
	Fede,	0		3.	8.23 1000	USCUP Ch -0167 Page 19 of 2	(pr						Ter	mpera	ture:	.2.	3.1	_°C		Cal. I	Due Da	ate: 5 · 25 · 23

31 of 34



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page _ | _ of _ |

SAMPLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or W	O#:							A	NAL	YSI	SRE	OUE	ESTF	ED		
Q1-2023 DEK Botto	m Ash Pond We	lls		23-0167	REQUESTER	: Haro	ld R	legis	ster				(Atta	ch Lis	st if N	fore S	Space	is No	eeded)	Q.	A REQUIREMENT:
SAMPLING TEAM:	TRC			TURNAROUND TIME REQUIRED:	'ANDARD ⊠ OT	HER_															NPDES TNI
SEND REPORT TO:	Caleb Batts			email:	phone:							1									ISO 17025
COPY TO:	Harold Registe	er		MATRIX CODES: GW = Groundwater OX = Other		mail.	CC	NT	AIN	ERS	3										10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air		#	P	RES	ERV	VAT	IVE	Metals		83		>					INTERNAL INFO
LAB	SAMPLE COLL	ECTION	RIX	S = Soil / General Solid $WP = Wip$ $O = Oil$ $WT = General Solid$	e eral Waste	TOTAL #		5	- I		E .	al Me	Anions	Ammonia	100	Alkalinity	Sulfide				OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TO	None	HNO	NaO NaO	HCI	MeOH	Total	Ani	Am	TDS	Alk	Sul				REMARKS
23-0167-01	3-8-23	0830	GW	DEK-MW-15002		7	4	1	1 1			x	х	х	х	· · xe	x	-			
-02			GW	DEK-MW-15005		7	4	1	1 1			Х	х	x	x	X	×				
-03			GW	DEK-MW-15006		7	4	1	1 1	F		x	X	x	x	x	x				
-04	3-8-23	_	GW	DUP-DEK-BAP-01		7	4	1	1 1	T		x	x	x	x	x	x				
-05			W	FB-DEK-BAP		4	-1	1	1 1	-		x	X	х			-x-				
-06			W	EB-DEK-BAP		4	1	1	1 1	-		×	×	Y			x				1
RELINQUISHED BY:	Ko			TIME: P-23/1545	RECEIVED BY: Fede	ex						CC	MM	ENTS	:						
RELINQUISHED BY:		1		-09-23 12:05 pm	RECEIVED BY:	£ 24						1		d on 1							e: 05.25-23

32 of 34



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page _ l of _ l

SAMI	PLING SITE / CL	JSTOMER:		T	PROJECT NUMBER:	SAP CC or WO	D#:								A	NAI	YSI	SRE	OUE	ESTED	OA DEGVEREN EDER
Q1-2	023 DEK Botto	m Ash Pond &	Lined Impor	and.	23-0168	REQUESTER:	Haro	ld F	Regi	ste	г			,						is Needed)	QA REQUIREMENT:
SAMI	PLING TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STA	ANDARD Ø OTT	IER_														□ NPDES ☑ TNI
SEN	D REPORT TO:	Caleb Batts			email:	phone:															☐ ISO 17025
	COPY TO:	Harold Regist	ter		MATRIX CODES: GW = Groundwater OX = Other			C	ONT	AΠ	NEF	RS									☐ 10 CFR 50 APP. B
		TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			1	PRE	SEF	RVA	TIVI	E	tals							☐ INTERNAL INFO
	LAB	SAMPLE COLL	ECTION	XX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene	ral Waste	AL#			4	-	-		I Metals	suc	Ammonia		Alkalinity	de		□ OTHER
S	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	TOTAL	None	HNO	H ₂ SO	NaOr	MeOH	Other	Total	Anions	Amn	TDS	Alka	Sulfide		REMARKS
110	23-0168-01	3-7-23	1359	GW	DEK-MW-18001		7	4	1	1	1			x	x	x	x	x	x		
	-02	3-7-23	1359	GW	DEK-MW-18001 MS		6	3	1	1	1			х	x	x		x	x		
	-03	3-7-23	1359	GW	DEK-MW-18001 MSD		6	3	1	1	1			x	x	x		x	x	4 . 1	
								L					Ш								
								1				1									
									Ш		1	1									
	7					×															
RELI	NQUISHED BY:	7.15	D			ECEIVED BY:								CC	MMI	ENTS	35				
	Je	They		7	1-7-27/1530	Fed-Ex															
RELI	LINQUISHED BY:					ECEIVED BY:													s 🗆		E#:15021113
	Fed Ex				8-23 1000	CASUPANO 3-0168 Page 13 o	tr							Ter	npera	ture:	10.	3.1	_°C	Cal. I	Due Date: 5 · 85 · 13

33 of 34



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page of

SAMPLING SITE / CUST	TOMER:			PROJECT NUMBER:	SAP CC or WO	#:					×		Aì	NAL	YSIS	S RE	QUE	STE	D		DECLUDEN	CNIT.
Q1-2023 DEK Lined In	mpoundment			23-0169	REQUESTER:	Haro	ld R	egis	ter			(eded)		A REQUIREM	ENI:
SAMPLING TEAM:	RC			TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STA	NDARD ⊠ OTH	ER_															NPDES TNI	
SEND REPORT TO: 0	Caleb Batts			email:	phone:													metal			ISO 17025	
COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other_		4-1	CO	NTA	INE	ERS								3			10 CFR 50 APP.	В
	TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			PI	RES	ERV	ATI	VE-	Metals						73			INTERNAL INF	O
LAB S.	SAMPLE COLL	ECTION	ΧIX	S = Soil / General Solid $WP = Wipe$ $O = Oil$ $WT - General$	al Waste	TOTAL	П				-	Me	Suc	Animonia		Alkalinity	qe	10			OTHER	
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LOC	CATION	5	None	ON H	NaO	H	Other	Total	Anions	Ann	25	Alka	Suffide	b.ssolved			REMARKS	
23-0169-01	3-8-23	1225	GW	DEK-MW-15003		7	4	1 1	1			х	x	x	x	x	x					
-02	1	1115	GW	OW-10		7	4	1 1	1			х	x	x	х	х	x					
-03		1320	GW	OW-11		7	4	1 1	1			х	x	x	x	х	х					
-04		0940	GW	OW-12		7	4	1 1	1			x	x	x	x	x	x					
05		5	W	KLI-SCS		7	4	1 1	1				×	×	×	×	×			4/4		
-06		1005	SW	KLI-PCS		7	4	1 1	1			х	x	x	x	x	x	×				
-07		1350	sw	SW-DITCH		7	4	1 1	1			х	x	x	x	x	x	X				
-08		-	GW	DUP-KLI		7	4	1 1	1			х	х	х	x	x	х					
-09		1410	W	EB-KLI		4	1	1 1	1			x	x	x			x					
-10	1	1225	W	FB-KLI		4	1	1 1	1			х	х	х			х					
																				+		
RELINQUISHED BY:	Ky	1		TIME: RE 8-23/1545	ECEIVED BY:	K							MME									
RELINQUISHED BY:		4		5-09-23 12:05 PM	CEIVED BY:	31							eived npera								s 027723 e: 05:25:22	

34 of 34



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page ____ of ____

	PLING SITE / CU				PROJECT NUMBER:	SAP CC or W	/O#:							A	NAI	LYSI	S RE	EQUI	ESTE	ED	QA REQUIREMENT:
Q1-2	2023 DEK Lined	Impoundment			23-0169	REQUESTER	R: Haro	ld I	Regi	ster				(Atta	ch Li	st if N	lore :	Space	is No	eeded)	QA REQUIREMENT:
SAM	PLING TEAM:				TURNAROUND TIME REQUIRED: 24 HR	ANDARD ⊠ O	ΓHER _				21.17										□ NPDES ☑ TNI
SEN	ID REPORT TO:	Caleb Batts			email:	phone:															□ ISO 17025
	COPY TO:	Harold Regi	ster		MATRIX CODES: GW = Groundwater OX = Other			C	ONT	AIN	ER	5									☐ 10 CFR 50 APP, B
		TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air			I	PRE	SER	VA	ΓΙVΕ	tals								\square INTERNAL INFO
	LAB	SAMPLE COL	LECTION	XIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene	eral Waste	TOTAL #			_T H	_	Ξ.	Total Metals	Suc	Ammonia		Alkalinity	de			□ OTHER
S	AMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	101	None	HNO	H ₂ SO	MAC	MeOH	Tota	Anions	Arm	TDS	Alka	Sulfide			REMARKS
1.	23-0169-01		111111111	GW	DFK-MW-15003		7	4	1	1 1			x	x	×	Y	x	v	-		
	-02			GW	OW-10		7	4	1	1 1	+		×	×	Α.	- 1	X	×			
	-03			GW	OW-11		7	4	1	1	4		x	x	x	x_	- X -	<u>x</u>			
	-04	4	-	GW	OW-12		7	4	1	1	L_		X	X	X	-X	Х	X	-		
	-05	3-9-23	0840	w	KLI-SCS		7	4	1	1	(-		×	×	×	×	×	8			
	-06			SW	KLI-PGS		7	4	1	1	1		×	X	N	X	_X	N-			
	-07		-	SW	SW DITCH		7-	4	1	1	1		A	A	X	X	_	_	461		
	-08			GW	DUP-KLI		7	4	1	1		12-12	x	x	x	x	х	x	47.1		
	-09			W	EB-KLI		1	1	1	1	1	H	*	×	×			×			
	-10			-W	FB-KLI		4	1	1	1	1		х	x	x			x			
					,																
DEL I	Valuaties na			D.A.TO	THA AP.	ECERTED BY			Ш		_		C	OMM	CAPT			,			
RELI	NQUISHED BY:	2/16	6,	DATE/	067c	RECEIVED BY: RECEIVED BY:	hle	きなして	3.18 1	08	13	5									
RELI	NOOTSHED BY:	3110	J	DATE/	TIME:	RECEIVED BY:										lce?					LSo 17713 Date: 5 . 25 . 23



Appendix C Data Quality Reviews

Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event March 2023 DE Karn Lined Impoundment

Groundwater, water, and surface water samples were collected by TRC for the March 2023 sampling event. Samples were analyzed for total and/or dissolved metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0169 and S46162.01(01).

During the March 2023 sampling event, a groundwater sample was collected from each of the following wells:

OW-10

OW-11

OW-12

DEK-MW-15003

During the March 2023 sampling event, the following water/surface water samples were collected:

KLI-PCS

KLI-SCS

SW-DITCH

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

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total & Dissolved Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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 and Merit. 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, TDS, ammonia, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- One field blank (FB-KLI) and one equipment blank (EB-KLI) were collected with this data set. Target analytes were not detected in these blank samples.
- The field duplicate pair samples were DUP-KLI and OW-12; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits.

•	Laboratory set.	duplicate and MS/	MSD analyses	were not perforr	med on a sample	e from this data

Laboratory Data Quality Review Groundwater Monitoring Event March 2023 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the March 2023 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0168, and S46137.01(01).

During the March 2023 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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, when collected. 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 and Merit. 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, ammonia, TDS, alkalinity, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of a detection or assessment monitoring program.
- Data are usable for the purposes of the detection or assessment monitoring program.
- When the data are evaluated through a detection or assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- A field blank was not collected with this data set.
- An equipment blank was not collected with this data set.
- MS and MSD analyses were performed on sample DEK-MW-18001 for total metals, anions, ammonia, total alkalinity, and sulfide. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters and therefore were not evaluated; further, with the exception of sulfide, 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.
- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample in this data set.



Appendix D Statistical Analysis

Appendix D

Statistical Summary for DE Karn Lined Impoundment First Quarter 2023

Data from May 2021 to March 2023

Karn Lined Impoundment Wells						
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	0	0	0	0	0
Calcium	Trend	0	↓*	0	\downarrow	0
Chloride	Trend	↑ ^{ASD}	0	0	↓	0
Fluoride	Trend	O*	O*	O*	0	O*
Iron	Trend	0	0	0	0	0
рН	Trend	0	0	0	↑ ^{ASD}	0
Sulfate	Trend	0	0	0	\downarrow	0
Total Dissolved Solids	Trend	↑ ^{ASD}	0	0	0	0

Notes:

O* = Non-detect

O = No trend

= Upward trend, continuous

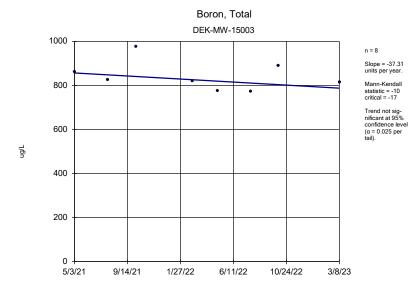
↑* = Upward trend, new

= Upward trend, confirmed

= Downward trend, continuous

↓* = Downward trend, new

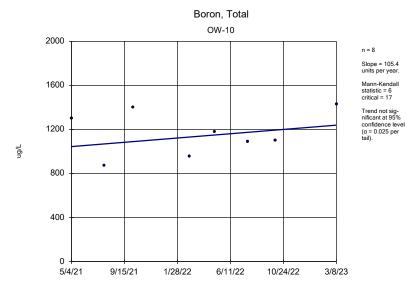
↑ ASD = Alternate Source Demonstration (Fourth Quarter 2022 Hydrogeological Monitoring Report for the Karn Lined Impoundment CCR Unit, TRC, January 2023.)



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

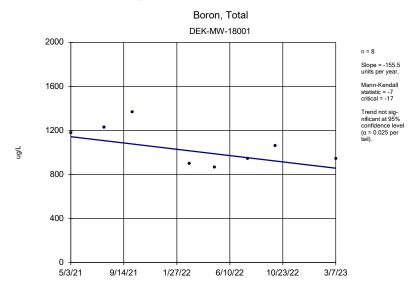
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

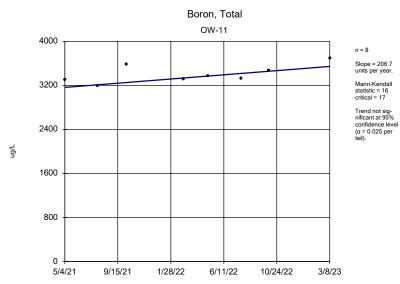
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

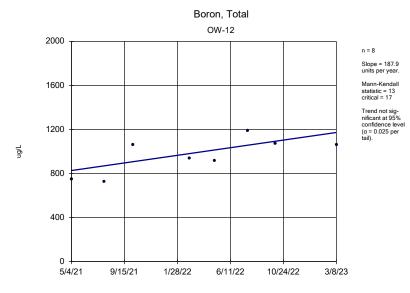
Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

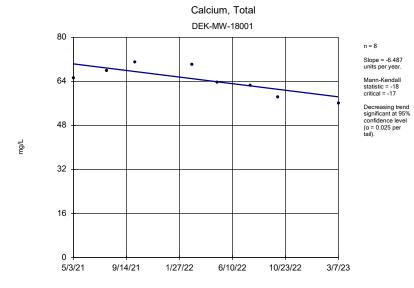
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

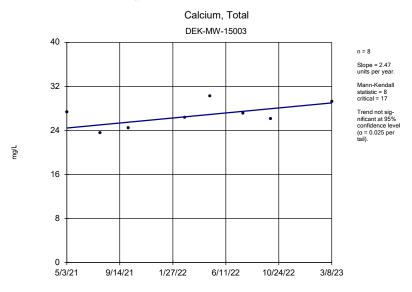
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas $^{\text{\tiny{TM}}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

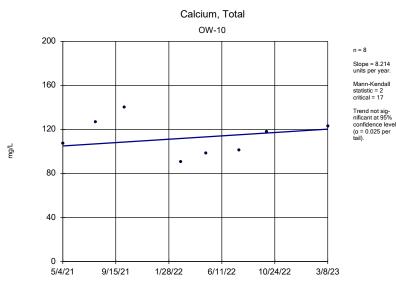
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

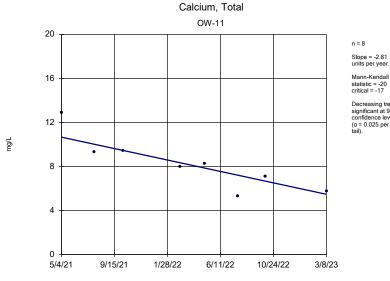
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

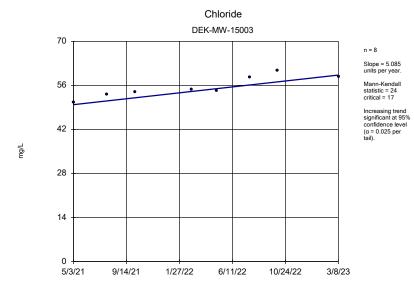
100



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

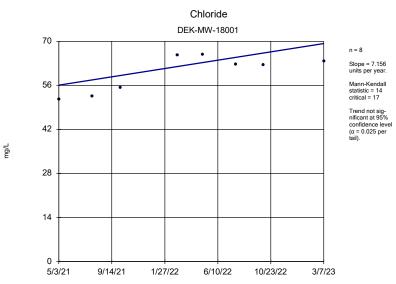
Mann-Kendall 80 statistic = -6 critical = -17 Decreasing trend significant at 95% confidence level Trend not sig-nificant at 95% confidence level 60 (α = 0.025 per tail). (α = 0.025 per tail). mg/L 40 20 5/4/21 9/15/21 1/28/22 6/11/22 10/24/22 3/8/23 Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1





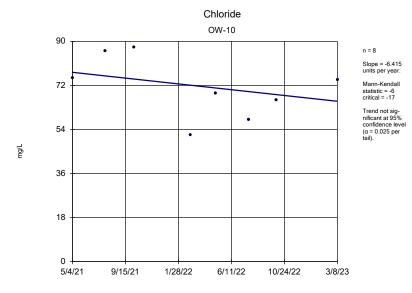
Calcium, Total

OW-12

Slope = -2.488

units per year.

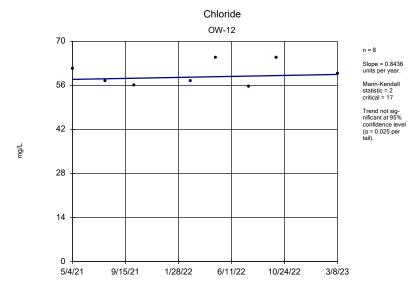
Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Sen's Slope Estimator Analysis Run 3/30/2023 2:33 PM

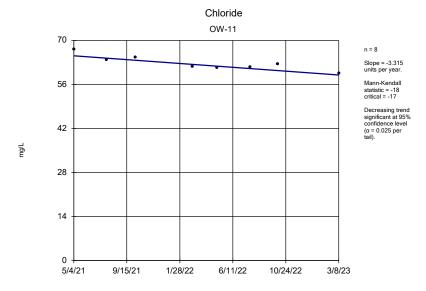
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



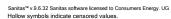
Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

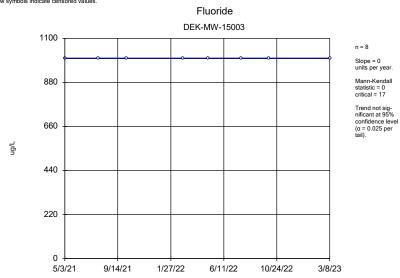
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

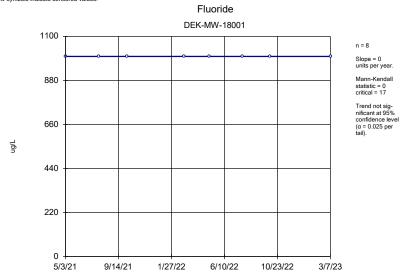




Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

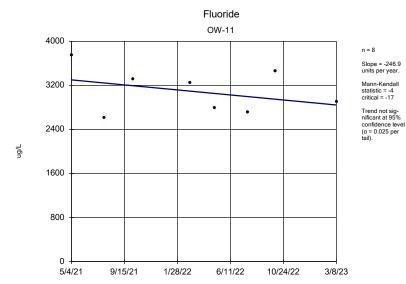
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

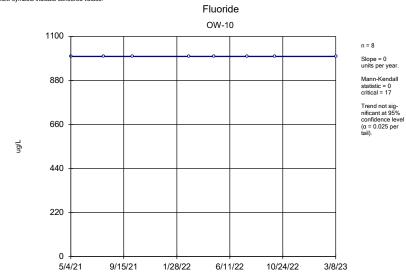
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

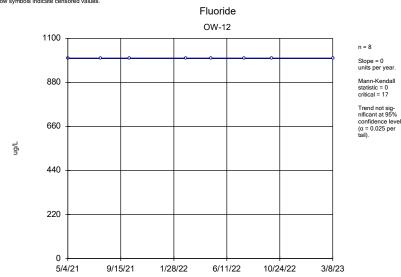
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

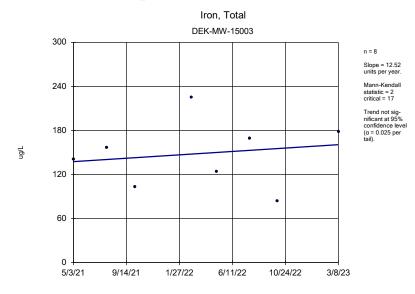
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

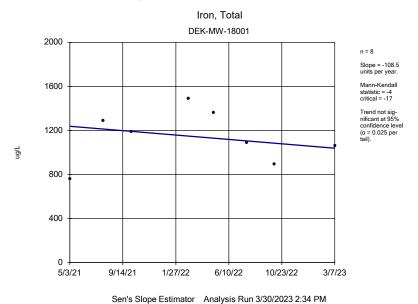
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

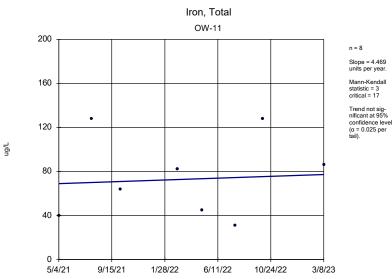
Iron, Total OW-10 5000 Slope = 606.9 units per year. Mann-Kendall 4000 statistic = 6 critical = 17 Trend not sig-nificant at 95% confidence level 3000 (α = 0.025 per tail). ng/L 2000 1000 5/4/21 9/15/21 1/28/22 6/11/22 10/24/22 3/8/23

Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

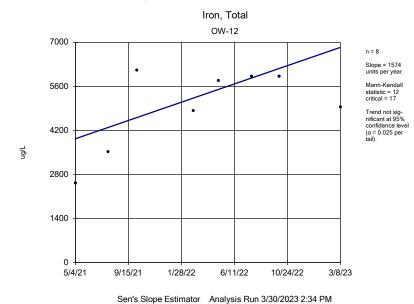


Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

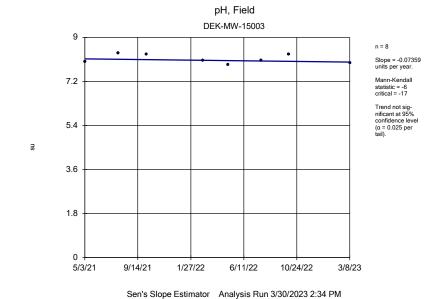




Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

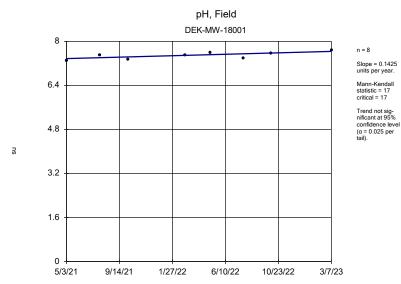


Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

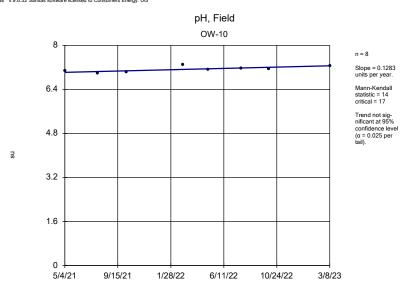




Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

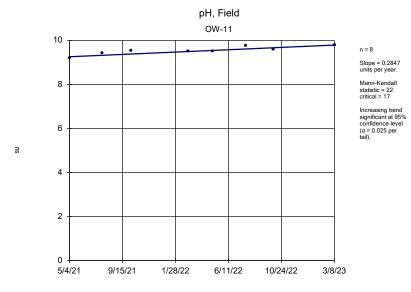
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

10

5/3/21

9/14/21

1/27/22



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sulfate DEK-MW-15003 n = 8 Slope = 2.129 units per year. Mann-Kendall statistic = 2 critical = 17 Trend not significant at 95% confidence level (a = 0.025 per tail).

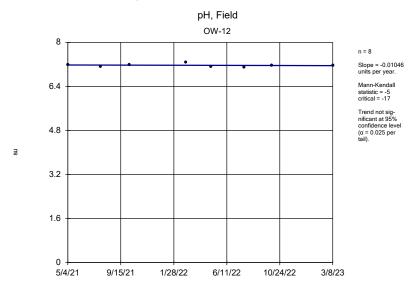
Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

6/11/22

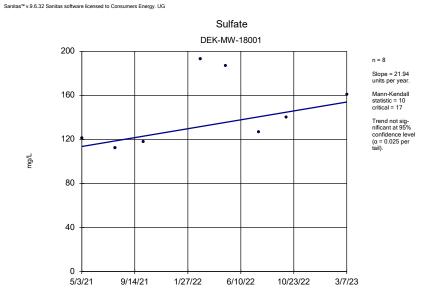
10/24/22

3/8/23



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

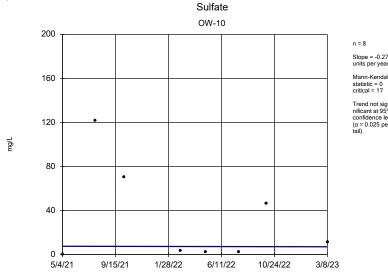
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

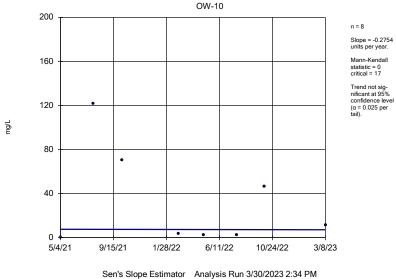


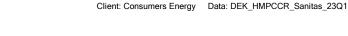
Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



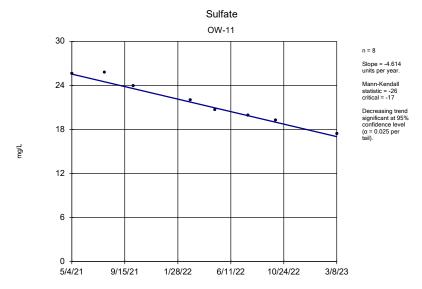




Sulfate OW-12 300 Slope = 4.36 units per year. Mann-Kendall 240 statistic = 4 critical = 17 Trend not sig-nificant at 95% confidence level 180 (α = 0.025 per tail). 120 60 5/4/21 9/15/21 1/28/22 6/11/22 10/24/22 3/8/23

Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

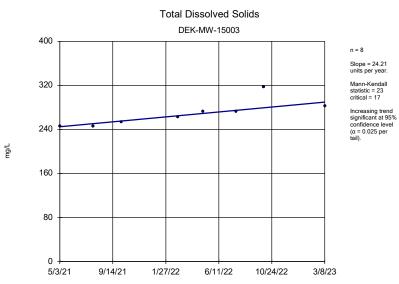
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



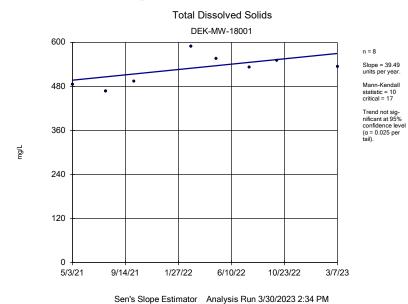
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM



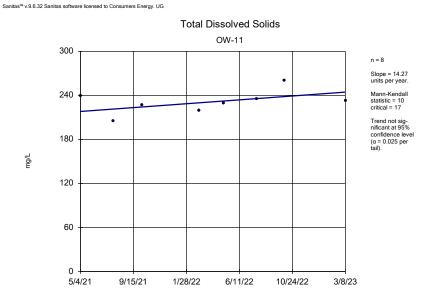


Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



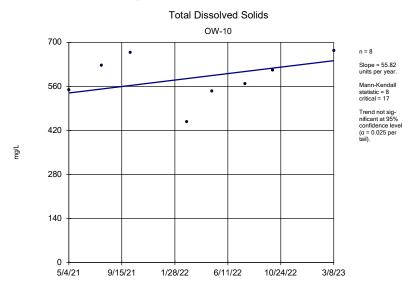
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1





Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

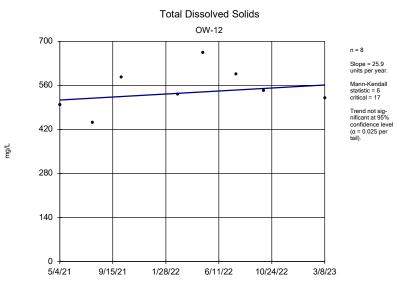
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1



Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

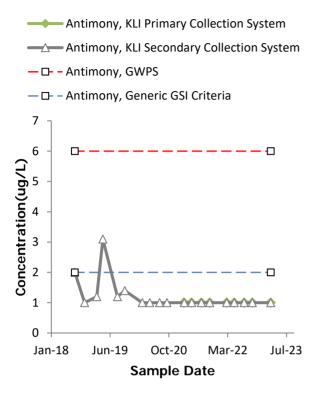


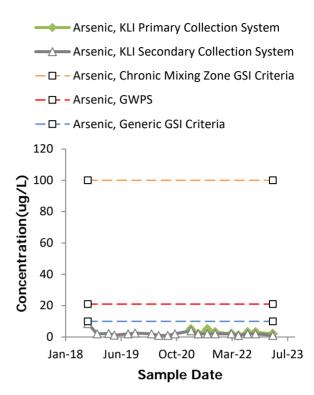
Sen's Slope Estimator Analysis Run 3/30/2023 2:34 PM

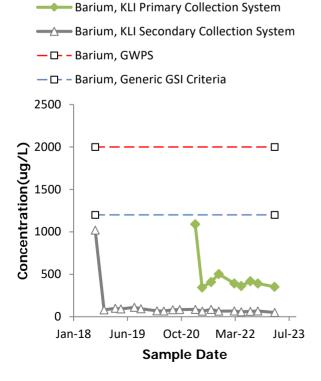
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q1

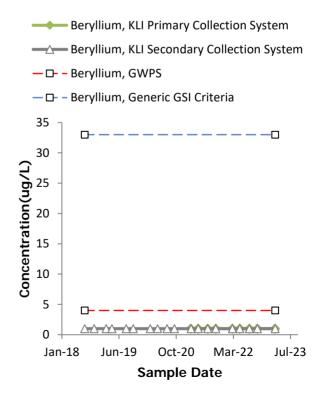


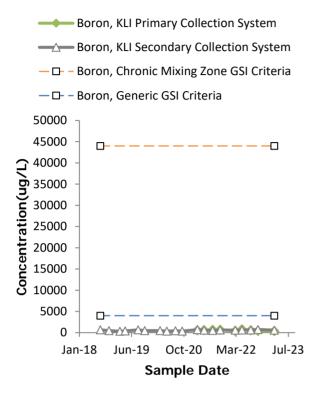
Appendix E Secondary Leachate Collection System Monitoring

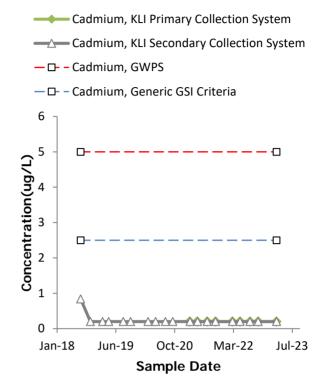


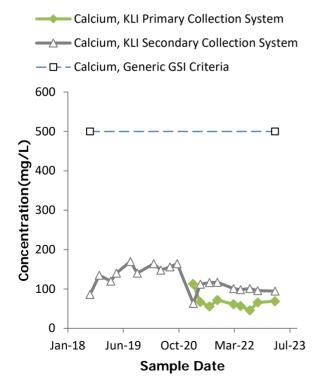


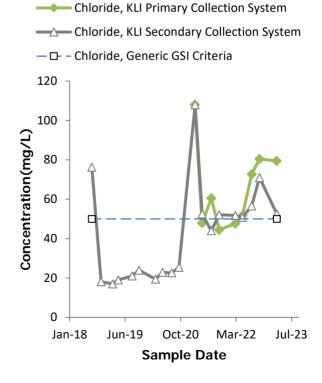


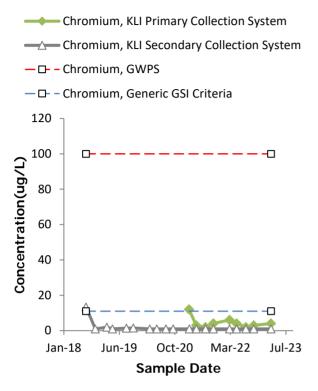


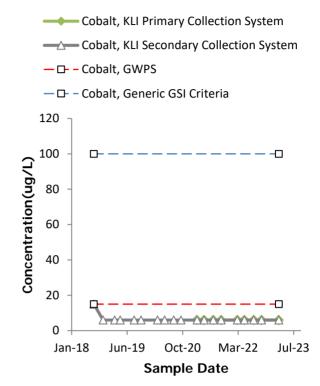


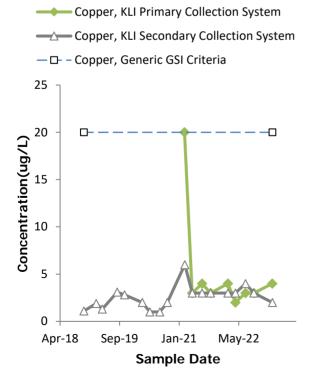


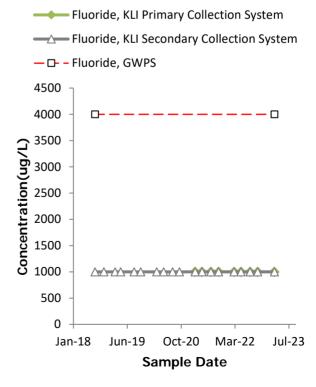


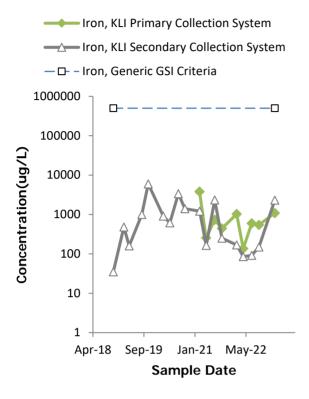


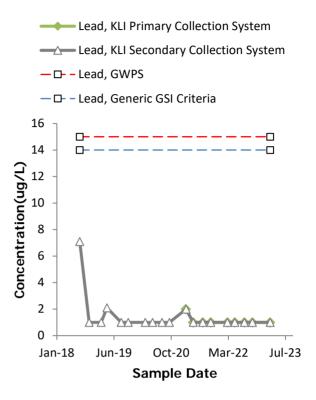


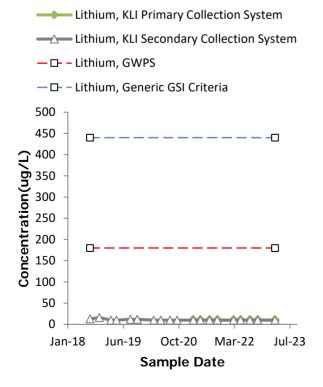


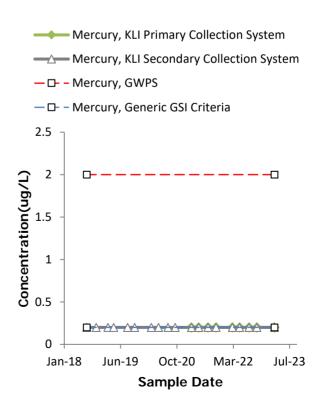


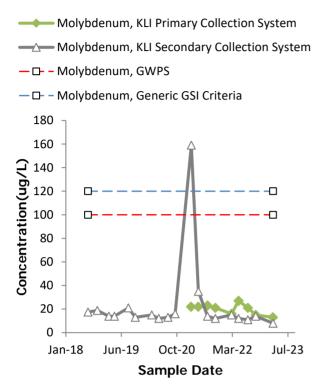


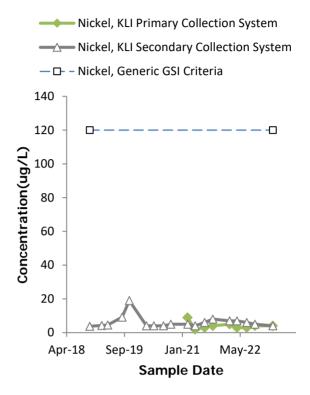


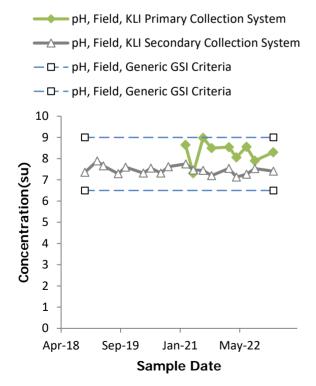


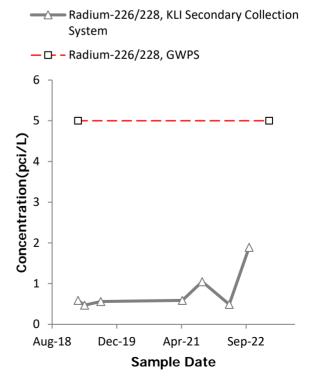


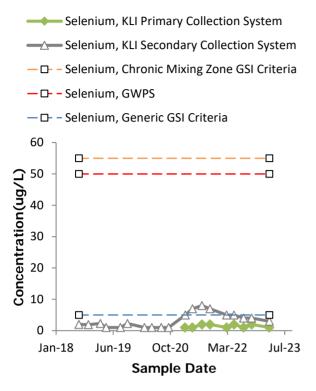


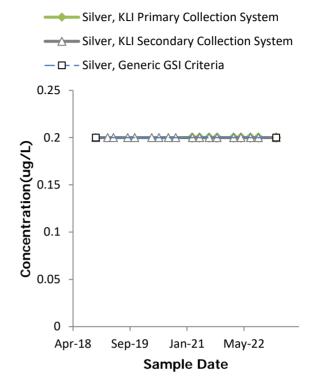


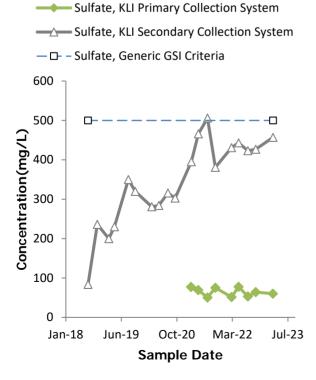


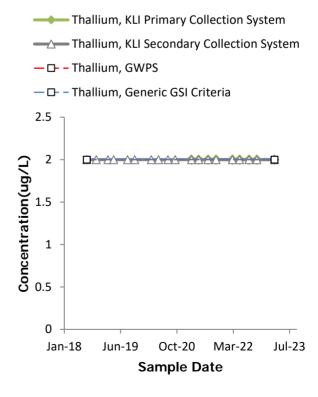




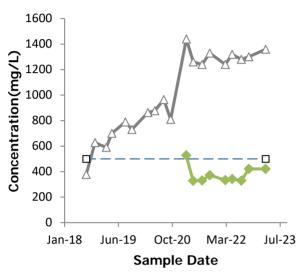


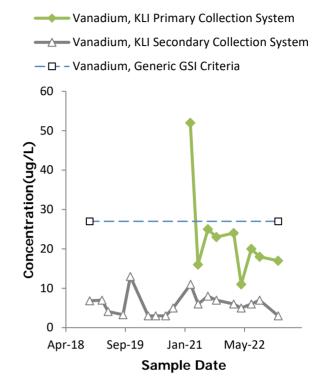


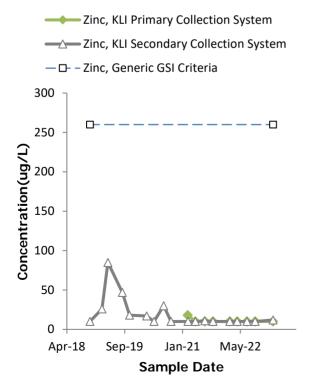




- Total Dissolved Solids, KLI Primary Collection System
- Total Dissolved Solids, KLI Secondary Collection System
- □- Total Dissolved Solids, Generic GSI Criteria





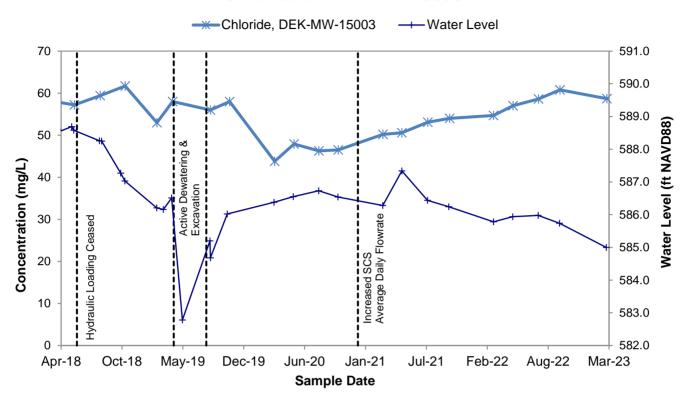




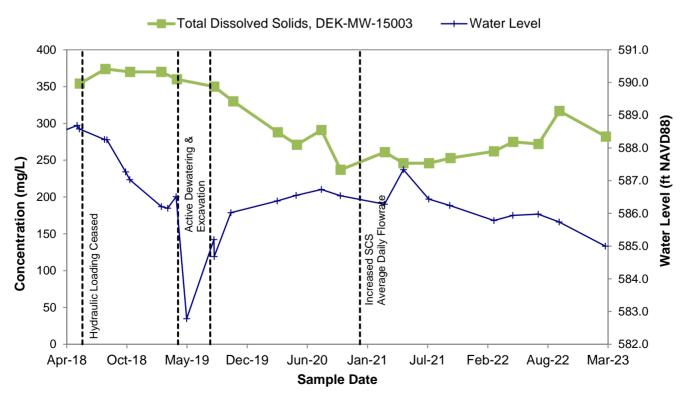
Appendix F Alternate Source Demonstration

Alternate Source Demonstration Time Series

Chloride at DEK-MW-15003



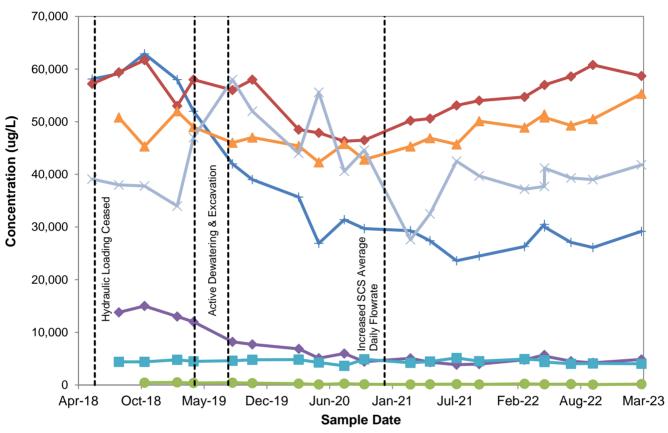
Total Dissolved Solids at DEK-MW-15003

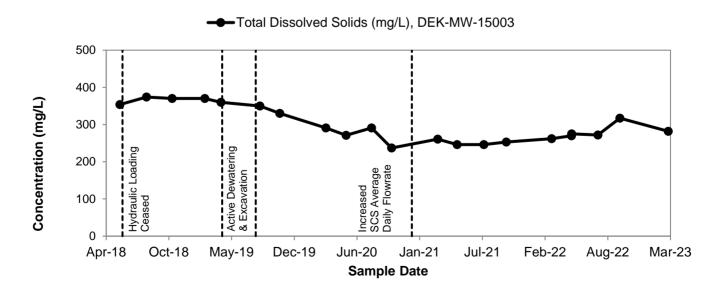


Alternate Source Demonstration Time-Series

DEK-MW-15003









Second Quarter 2023 Hydrogeological Monitoring Report

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

July 2023

Darby Litz

Project Manager/Hydrogeologist

Prepared For:

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

Prepared By:

TRC 1540 Eisenhower Place Ann Arbor, Michigan 48108

Wheles

Andrew Whaley

Project Geologist



TABLE OF CONTENTS

1.0	Intro	Introduction1					
	1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan	1				
	1.2	Program Summary	1				
	1.3	Site Overview	2				
	1.4	Geology/Hydrogeology	2				
2.0	Seco	ond Collection System Monitoring	3				
3.0	Gro	Groundwater Monitoring					
	3.1	Monitoring Well Network	5				
	3.2	May 2023 Detection Monitoring Event	5				
		3.2.1 Data Quality Review	6				
		3.2.2 Groundwater Flow Rate and Direction	6				
4.0	Data	a Evaluation	8				
	4.1	Statistical Evaluation of Trends	8				
	4.2	Detection Monitoring Data Discussion	9				
	4.3	Alternate Source Demonstration	9				
		4.3.1 Timing of Changes in Concentrations	g				
		4.3.2 Groundwater Flow Direction	10				
		4.3.3 Leachate Chemistry	10				
5.0	Con	clusions and Recommendations	11				
6.0	References						
TAE	BLES						
Table 1		Summary of Groundwater Elevation Data					
Tabl		Summary of Field Parameters					
Table 3 Table 4		Summary of Groundwater Sampling Results (Analytical) Summary of Statistical Exceedances: May 2023					
FIG	URES						
Figure 1		Site Location Map					
Figure 2 Figure 3		Site Layout Map Shallow Groundwater Centour Map May 2022					
ingu	163	Shallow Groundwater Contour Map – May 2023					



APPENDICES

Laboratory Analytical Reports Appendix A

Appendix B Field Notes

Data Quality Reviews Appendix C Appendix D Statistical Analysis

Secondary Leachate Collection System Monitoring Alternate Source Demonstration Appendix E

Appendix F



1.0 Introduction

Pursuant to the Federal CCR Rule¹, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018 to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Second Quarter 2023 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. 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, Format for Solid Waste Disposal Facility Monitoring Submittals, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (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 2023 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

1

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended.



- Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
- 2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the second quarter 2023, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

1.3 Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Karn site are the former Karn Bottom Ash Pond that was closed by removal and the Karn Landfill that was certified closed and now in post-closure care.

1.4 Geology/Hydrogeology

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. USGS topographic maps and aerial photographs dating back to 1938, 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 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, was generally encountered at 80 to 90 ft bgs.

The Site is bound by several surface water features (Figures 1 and 2): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay. In the vicinity of the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near the unlined ditch north of the Karn Lined Impoundment and near DEK-MW-15003, flowing outward toward the surrounding surface water bodies.



2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow rate of 25 gallons per acre per day (GPAD). The average daily flow rate for April through June 2023 (three-month average) was calculated as 1.5 GPAD and continues to demonstrate that the daily average flow rate is below the threshold value of the response action flow rate of 25 GPAD. Trend evaluations for weekly and monthly average flow rates continue to support that no additional engineering or operational modifications are necessary, and Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS Response Action Flow Rate, samples were collected from the surface water of the primary collection system (KLI-PCS) and from the secondary leachate collection system sump (KLI-SCS) to compare leachate chemistry to groundwater chemistry. The samples were analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids and chloride. A few notable observations:

■ Arsenic concentrations are higher in groundwater than the primary and secondary collection system: Arsenic was detected in the primary collection system at a concentration of 1 ug/L and in the secondary collection system at a concentration of 1 ug/L in May 2023. As shown in Appendix E, the arsenic concentrations observed in the primary and secondary collections system have been consistently low. In contrast, the arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 62 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.



- Vanadium is detected in the primary and secondary collection system and not in groundwater: Vanadium is generally present in the primary collection system samples at higher concentrations (8 ug/L in May 2023) than the vanadium concentration observed in the secondary collection system (4 ug/L in May 2023) (Appendix E). Vanadium was not detected in the wells nearest the observed liner damage: OW-12 (<2 ug/L) or DEK-MW-18001 (<2 ug/L) providing additional evidence that a release has not adversely affected groundwater conditions.
- Secondary Collection System chemistry has not appreciably changed: The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the primary and secondary collection systems, except for total dissolved solids (TDS) and sulfate in the secondary collection system. TDS and sulfate concentrations in the primary collection system leachate is significantly lower in concentration than the concentration in the secondary collection system leachate, suggesting that the elevated TDS and sulfate is not likely from the primary collection system leachate. The TDS and sulfate concentrations in the secondary collection system are beginning to stabilize and are also more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.



3.0 Groundwater Monitoring

3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance" (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

3.2 May 2023 Detection Monitoring Event

In accordance with the HMP, TRC conducted the second quarter 2023 monitoring event for the Karn Lined Impoundment between May 1st and 3rd, 2023. In addition to the routine groundwater samples collected from the monitoring well network, a water sample was collected from a sump in the secondary collection system (KLI-SCS) and a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry. A sample of surface water was also collected from a ditch located north of the lined impoundment (SW-Ditch) to further evaluate site geochemistry (Figure 2). The SW-Ditch surface water grab sample represents water quality from the potentiometric high point adjacent to the Karn Lined Impoundment.

Groundwater samples collected during the second quarter 2023 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

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



Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

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 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 B).

Monitoring wells were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater 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 one field blank, one equipment blank, one field duplicate (OW-12), and field matrix spike/matrix spike duplicate samples collected at DEK-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 data were found to be complete and usable for the purposes of the HMP program. The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

3.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in May 2023 are generally within the range of 578 to 587 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at equal elevation relative to the surrounding surface water features measured by the NOAA gauging station data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the



process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected in the vicinity of the former Karn Bottom Ash Pond in May 2023 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the Karn Lined Impoundment. Monitoring wells OW-11, OW-12, and DEK-MW-15003 delineate the newly established groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3.

The average hydraulic gradient observed on May 1, 2023 in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0050 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was calculated to be 0.25 ft/day or 91 ft/year in May 2023 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.



4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the second quarter 2023 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017 and in accordance with the December 23, 2015 mixing zone determination.

4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using SanitasTM Statistical Software (SanitasTM). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from July 2021 through May 2023 were analyzed using Mann-Kendall and Sen's Slope 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 slope was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.



Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:

- The increasing trend in chloride and total dissolved solids concentrations continue to be observed in DEK-MW-15003.
- The increasing trend for pH continued to be observed in OW-11.

4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, the groundwater conditions do not conclusively indicate a release from the unit, as discussed further in Section 4.3. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Both leaks have been repaired. Detection monitoring constituent concentrations at OW-12, located closest to the identified liner damage, exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends at noted in section 4.1 will continue to be evaluated within context of changes in the site operational status.

4.3 Alternate Source Demonstration

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

- pH in monitoring well OW-11: and
- Chloride and total dissolved solids in monitoring well DEK-MW-15003.

Although increasing trends of detection monitoring (Appendix III) constituents exist, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below. The Professional Engineer Certification Statement is included in Appendix F.

4.3.1 Timing of Changes in Concentrations

Time-series plots included in Appendix F illustrate that the change in chloride and TDS at DEK-MW-15003 is likely a result of changes in the groundwater flow regime or redox conditions as a result of the Bottom Ash Pond closure activities, rather than a result of a release from the unit.

Chloride and TDS at DEK-MW-15003 initially decreased after the Bottom Ash Pond closure activities. In early 2020, chloride concentrations began to increase, followed by increases in TDS beginning in 2021. Both constituents appear to be approaching the concentrations observed pre-construction. Chloride is one of the components of TDS. Other components of TDS, such as calcium, iron, magnesium, potassium, sodium, and sulfate have remained relatively consistent from 2020 to present and the increases in TDS are correlated with the increases in chloride. The slight increase in chloride began before the noted leak in the Karn Lined Impoundment liner system was observed; therefore, the recent increase in concentrations is not due to a release from the unit.



4.3.2 Groundwater Flow Direction

OW-11 and DEK-MW-15003 are not located downgradient of either area of the noted liner damage, due to the position of the wells relative to the groundwater elevation high point, as shown in Figure 3. Furthermore, OW-11 has distinct chemistry as compared to the KLI-SCS data as shown in Table 3. Boron, which can be used as a conservative tracer, is approximately six times higher in OW-11 than what has been observed in the KLI-SCS samples. The pH observed at OW-11 is 2 standard units higher than what is observed in the KLI-SCS sample and higher than other nearby wells, which indicate a source other than the Karn Lined Impoundment is influencing chemistry at OW-11.

4.3.3 Leachate Chemistry

Analysis of the KLI-PCS and KLI-SCS data provide additional lines of evidence to support a source other than the unit is contributing to groundwater conditions.

- Arsenic concentrations are higher in groundwater than in the secondary collection system; therefore, arsenic present in groundwater does not appear to be a result of a release from the unit (Section 2.0).
- Vanadium is detected in the primary and secondary collection system and not in groundwater in the wells nearest the observed liner damage OW-12 or DEK-MW-18001 (<2 ug/L), providing additional evidence that a release has not adversely affected groundwater conditions.



5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although increasing trends for detection monitoring constituents were observed in two wells in second quarter 2023, these trends were found to not be a result of operation of the Karn Lined Impoundment. No SSIs over background limits were identified at the Karn Lined Impoundment during the May 2023 monitoring event. The use of secondary collection system flow rates as a leak detection system was successful. Increased flow rates observed in fourth quarter 2020 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. The results of the mitigation efforts continue to be monitored and recent data demonstrate that the daily average flow rate has been reduced to less than the threshold value of the Response Flow Rate of 25 gallons per acre per day after the documented repairs and response activities were completed in 2021. The third quarter monitoring event is scheduled for July 2023.



6.0 References

- AECOM. October 30, 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company.
- Consumers Energy. December 19, 2017. Hydrogeological Monitoring Plan, Rev. 3. DE Karn Solid Waste Disposal Area.
- Natural Resource Technology. September 2005. Phase II Groundwater Discharge Evaluation at the Consumers Energy DE Kam and JC Weadock Solid Waste Disposal Areas.
- TRC. January 2019. 2018 Annual Groundwater Report for the DE Karn Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. November 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. January 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. April 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).
- USEPA. July 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).



Tables

Table 1

Summary of Groundwater Elevation Data DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

\A/~!!	TOC Coologie Unit of		Screen Interval	May 1, 2023			
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water (ft BTOC)	Groundwater Elevation (ft)		
DEK Bottom Ash Pon	d		•				
DEK-MW-15002	590.87	Sand	578.3 to 575.3	6.35	584.52		
DEK-MW-15005	589.72	Sand	572.3 to 567.3	9.90	579.82		
DEK-MW-15006	589.24	Sand	573.0 to 568.0	9.44	579.80		
DEK Bottom Ash Pon	d & Karn Lined Im	poundment	•				
DEK-MW-18001	593.47	Sand	579.2 to 574.2	8.89	584.58		
Karn Lined Impoundn	nent						
DEK-MW-15003	602.74	Sand	578.8 to 574.8	16.90	585.84		
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	7.08	584.50		
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	22.30	585.60		
OW-12	603.10	Silty Sand	584.2 to 579.2	17.14	585.96		
DEK Nature and Exter		1	1				
DEK-MW-15004	611.04	Sand	576.6 to 571.6	28.25	582.79		
MW-01	597.02	Sand	573.0 to 570.0	17.20	579.82		
MW-03	597.30	Sand	569.8 to 566.8	17.58	579.72		
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.44	580.00		
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	17.68	581.10		
MW-10	596.97	Sand	582.5 to 572.5	16.75	580.22		
MW-12	598.60	Sand	583.9 to 573.9	18.63	579.97		
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.55	579.82		
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.14	579.66		
MW-22	598.99	Ash/Sand	571.4 to 568.4	16.81	582.18		
MW-23	595.57	Ash/Sand	576.9 to 571.9	13.90	581.67		
DEK Static Water Lev	el						
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.50	579.84		
MW-04	598.01	NR	569.5 to 564.5	18.30	579.71		
MW-17	597.91	Sand	577.0 to 574.0	13.42	584.49		
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	25.90	583.32		
MW-19	597.28	NR	572.1 to 567.1	19.15	578.13		
MW-20	632.75	Sand	582.3 to 579.3	52.67	580.08		
MW-21	632.91	Sand	587.1 to 584.1	51.10	581.81		
OW-01	631.33	NR	572.5 to 567.5	51.14	580.19		
OW-02	598.01	Fly Ash	579.4 to 576.4	15.70	582.31		
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.18	580.76		
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.40	579.81		
OW-05	593.53	Sand	576.9 to 571.9	15.00	578.53		
OW-06	603.95	NR	580.9 to 575.9	17.20	586.75		
OW-07	596.41	Ash	583.3 to 580.3	15.11	581.30		
OW-08	593.93	NR	581.0 to 576.0	10.88	583.05		
OW-09	593.45	NR	585.5 to 580.5	10.33	583.12		
OW-13	588.52	NR	579.5 to 574.5	3.86	584.66		
OW-15	587.75	NR	572.8 to 567.8	3.40	584.35		

Notes:

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

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

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2

Summary of Field Parameters DE Karn Lined Impoundment – 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)
Karn Lined Impounds	nent						
DEK-MW-15003	5/2/2023	1.43	-208.7	8.0	344	13.7	0.2
DEK-MW-18001	5/3/2023	0.19	-228.5	7.6	858	9.6	9.9
KLI-PCS	5/2/2023	11.90	-85.7	9.3	241	8.7	12
KLI-SCS	5/2/2023	6.73	487.2	6.8	1,534	10.4	0.5
OW-10	5/2/2023	1.63	-151.3	7.3	550	9.2	34
OW-11	5/2/2023	1.89	-184.0	9.7	271	10.1	1.6
OW-12	5/2/2023	2.00	-102.1	7.1	855	10.9	6.3
SW-DITCH	5/2/2023	9.70	-17.8	8.4	391	16.2	8.4

Notes:

mg/L - Milligrams per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

Table 3

Summary of Groundwater Sampling Results (Analytical) DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS	KLI-SCS	SW-DITCH
					Sample Date:	5/2/2023	5/3/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023	5/2/2023
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Upgradient	Downg	radient	Upgradient	Downgradient		Supplemental	
Appendix III ⁽¹⁾	•												
Boron	ug/L	NC	500	500	4,000	701	931	998	3,400	1,340	593	603	33
Calcium	mg/L	NC	NC	NC	500EE	24.4	54.6	98.8	6.42	124	48.5	102	48
Chloride	mg/L	250**	250 ^E	250 ^E	50	58.9	62.2	56.9	56.1	59.4	51.3	53.6	42.8
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,960	< 1,000	< 1,000	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	50.2	148	8.28	17.6	265	114	496	26.1
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	285	575	517	224	820	337	1,400	281
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	8.0	7.6	7.3	9.7	7.1	9.3	6.8	8.4
Appendix IV ⁽¹⁾	•												
Antimony	ug/L	6	6.0	6.0	2.0	< 1.0	< 1.0	< 1.0	3	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic	ug/L	10	10	10	10	418	304	3	837	62	1	1	2
Barium	ug/L	2,000	2,000	2,000	1,200	36	152	146	24	168	425	62	58
Beryllium	ug/L	4	4.0	4.0	33	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1.0	< 1.0	1	< 1.0	< 1.0	2	< 1.0	< 1.0
Cobalt	ug/L	NC	40	100	100	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,960	< 1,000	< 1,000	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Lithium	ug/L	NC	170	350	440	20	20	26	< 10	44	< 10	< 10	< 10
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	28	11	< 5	157	7	51	10	8
Selenium	ug/L	50	50	50	5.0	1	1	2	5	1	2	4	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Additional MI Part 1	15 ⁽²⁾												
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	89	875	3,660	90	8,580	176	29	422
Copper	ug/L	1,000**	1,000E	1,000€	20	< 1.0	< 1.0	2	1	< 1.0	1	2	10
Nickel	ug/L	NC	100	100	120	< 2.0	< 2.0	3	2	3	< 2.0	4	3
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2.0	< 2.0	3	743	< 2.0	8	4	2
Zinc	ug/L	5,000**	2,400	5,000E	260	< 10	12	< 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.

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 21, 2020.
- ** 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.

 $\ensuremath{\mathsf{RED}}$ value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4

Summary of Statistical Exceedances DE Karn Lined Impoundment – 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: Karn Lined Impoundment – WDS# 392503

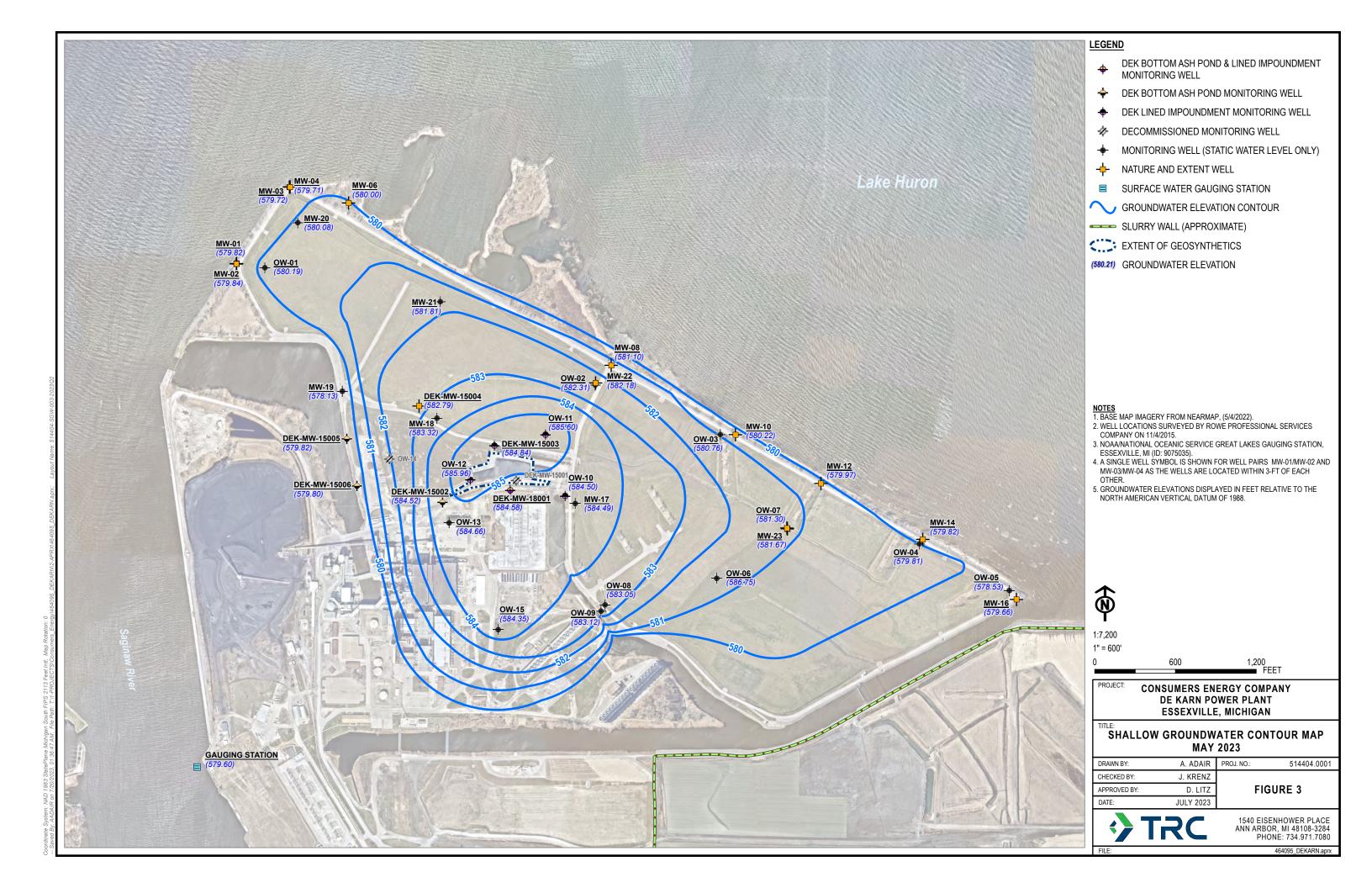
Well#	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	2 Qtr. 2023 (bold >201)	1 Qtr. 2023 (bold >201)	4 Qtr. 2022 (bold >201)	3 Qtr. 2022 (bold >201)
		No	Exce	edances				



Figures









Appendix A Laboratory Analytical Reports



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

To: CDBatts, Karn/Weadock

From: EBlaj, T-258

Date: May 19, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2023 Q2

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0402

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 05/01/2023 for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/03/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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. <u>Sample Receipt</u>

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

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; 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: Q2-2023 DEK Lined Impoundment

Date Received: 5/3/2023 **Chemistry Project:** 23-0402

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0402-01	DEK-MW-15003	Groundwater	05/02/2023 10:08	DEK Lined Impoundment
23-0402-02	OW-10	Groundwater	05/02/2023 12:15	DEK Lined Impoundment
23-0402-03	OW-11	Groundwater	05/02/2023 11:15	DEK Lined Impoundment
23-0402-04	OW-12	Groundwater	05/02/2023 13:55	DEK Lined Impoundment
23-0402-05	KLI-SCS	Groundwater	05/02/2023 12:50	DEK Lined Impoundment
23-0402-06	KLI-PCS	Groundwater	05/02/2023 13:10	DEK Lined Impoundment
23-0402-07	SW-DITCH	Groundwater	05/02/2023 14:20	DEK Lined Impoundment
23-0402-08	DUP-KLI	Groundwater	05/02/2023 00:00	DEK Lined Impoundment
23-0402-09	EB-KLI	Water	05/02/2023 14:30	DEK Lined Impoundment
23-0402-10	FB-KLI	Water	05/02/2023 11:15	DEK Lined Impoundment



05/19/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 DEK-MW-15003
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-01
 Collect Time:
 10:08 AM

Parameter(s) Result Flag Units RL Analysis of 50/9/20 Antimony ND ug/L 1.0 05/09/20 Arsenic 418 ug/L 1.0 05/09/20 Beryllium ND ug/L 1.0 05/09/20 Beryllium ND ug/L 1.0 05/09/20 Boron 701 ug/L 20.0 05/09/20 Cadmium ND ug/L 1.00 05/09/20 Calcium 24400 ug/L 1.0 05/09/20 Chromium ND ug/L 1.0 05/09/20 Cobalt ND ug/L 1.0 05/09/20 Copper ND ug/L 1.0 05/09/20 Iron 89 ug/L 1.0 05/09/20 Lead ND ug/L 1.0 05/09/20 Lithium 20 ug/L 1.0 05/09/20 Magnesium 3950 ug/L 5.0 05/09/20	x III-IV Total Metals Exp	CCR Rule Appendix III-IV Tota	netals by EPA 6020B: (
Arsenic 418 ug/L 1.0 05/09/21 Barium 36 ug/L 5.0 05/09/21 Beryllium ND ug/L 1.0 05/09/21 Beryllium ND ug/L 20.0 05/09/21 Cadmium ND ug/L 20.0 05/09/21 Calcium 24400 ug/L 1000.0 05/09/21 Chromium ND ug/L 1000.0 05/09/21 Chromium ND ug/L 1.0 05/09/21 Chromium ND ug/L 1.0 05/09/21 Chromium ND ug/L 1.0 05/09/21 Copaer ND ug/L 1.0 05/09/21 Iron 89 ug/L 20.0 05/09/21 Iron 89 ug/L 1.0 05/09/21 Lead ND ug/L 10.0 05/09/21 Lead ND ug/L 10.0 05/09/21 Lead ND ug/L 10.0 05/09/22 Magnesium 3950 ug/L 1000.0 05/09/21 Manganese 55 ug/L 5.0 05/09/22 Molybdenum 28 ug/L 5.0 05/09/22 Molybdenum 28 ug/L 5.0 05/09/22 Molybdenum 1 ug/L 2.0 05/09/22 Selenium 1 ug/L 1.0 05/09/22 Selenium ND ug/L 2.0 05/09/22 Selenium	esult Flag Units	Result	Parameter(s)
Barium 36 ug/L 5.0 05/09/20 Beryllium ND ug/L 1.0 05/09/20 Boron 701 ug/L 20.0 05/09/20 Cadmium ND ug/L 0.2 05/09/20 Cadcium 24400 ug/L 1.00.0 05/09/20 Chromium ND ug/L 1.0 05/09/20 Chromium ND ug/L 1.0 05/09/20 Cobalt ND ug/L 1.0 05/09/20 Copper ND ug/L 1.0 05/09/20 Iron 89 ug/L 1.0 05/09/20 Lead ND ug/L 10.0 05/09/20 Lithium 20 ug/L 10.0 05/09/20 Magnesium 3950 ug/L 10.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Mickel ND ug/L 1.0 05/09/20 Molybenum	D ug/L	ND	Antimony
Beryllium	18 ug/L	418	Arsenic
Boron 701	6 ug/L	36	Barium
Cadmium ND ug/L 0.2 05/09/2t Calcium 24400 ug/L 1000.0 05/09/2t Chromium ND ug/L 1.0 05/09/2t Cobalt ND ug/L 6.0 05/09/2t Copper ND ug/L 1.0 05/09/2t Iron 89 ug/L 1.0 05/09/2t Lead ND ug/L 1.0 05/09/2t Lithium 20 ug/L 10.0 05/09/2t Magnesium 3950 ug/L 100.0 05/09/2t Manganese 55 ug/L 5.0 05/09/2t Molybdenum 28 ug/L 5.0 05/09/2t Nickel ND ug/L 2.0 05/09/2t Nickel ND ug/L 10.0 05/09/2t Selenium 1 ug/L 1.0 05/09/2t Sodium 58000 ug/L 1.0 05/09/2t Thallium	D ug/L	ND	Beryllium
Calcium 24400 ug/L 1000.0 05/09/2t Chromium ND ug/L 1.0 05/09/2t Cobalt ND ug/L 6.0 05/09/2t Copper ND ug/L 1.0 05/09/2t Iron 89 ug/L 20.0 05/09/2t Lead ND ug/L 1.0 05/09/2t Lithium 20 ug/L 10.0 05/09/2t Magnesium 3950 ug/L 10.0 05/09/2t Manganese 55 ug/L 5.0 05/09/2t Molybdenum 28 ug/L 5.0 05/09/2t Nickel ND ug/L 5.0 05/09/2t Nickel ND ug/L 10.0 05/09/2t Selenium 1 ug/L 1.0 05/09/2t Sodium 58000 ug/L 10.0 05/09/2t Vanadium ND ug/L 2.0 05/09/2t Vandum	01 ug/L	701	Boron
Chromium ND ug/L 1.0 05/09/20 Cobalt ND ug/L 6.0 05/09/20 Copper ND ug/L 1.0 05/09/20 Iron 89 ug/L 20.0 05/09/20 Lead ND ug/L 1.0 05/09/20 Lithium 20 ug/L 10.0 05/09/20 Magnesium 3950 ug/L 100.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 10.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Sodium 58000 ug/L 1.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Mercury by EPA	D ug/L	ND	Cadmium
Cobalt ND ug/L 6.0 05/09/2t Copper ND ug/L 1.0 05/09/2t Iron 89 ug/L 20.0 05/09/2t Lead ND ug/L 1.0 05/09/2t Lithium 20 ug/L 10.0 05/09/2t Magnesium 3950 ug/L 1000.0 05/09/2t Manganese 55 ug/L 5.0 05/09/2t Molybdenum 28 ug/L 5.0 05/09/2t Nickel ND ug/L 2.0 05/09/2t Potassium 4470 ug/L 100.0 05/09/2t Selenium 1 ug/L 1.0 05/09/2t Silver ND ug/L 1.0 05/09/2t Sodium 58000 ug/L 1000.0 05/09/2t Vanadium ND ug/L 2.0 05/09/2t Vareadium ND ug/L 10.0 05/09/2t Mercury b	4400 ug/L	24400	Calcium
Copper ND ug/L 1.0 05/09/20 Iron 89 ug/L 20.0 05/09/20 Lead ND ug/L 1.0 05/09/20 Lithium 20 ug/L 10.0 05/09/20 Magnesium 3950 ug/L 1000.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 1.0 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Chromium
Iron	D ug/L	ND	Cobalt
Lead ND ug/L 1.0 05/09/20 Lithium 20 ug/L 10.0 05/09/20 Magnesium 3950 ug/L 1000.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Copper
Lithium 20 ug/L 10.0 05/09/20 Magnesium 3950 ug/L 1000.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Selenium 1 ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Sodium 58000 ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20<	9 ug/L	89	Iron
Magnesium 3950 ug/L 1000.0 05/09/20 Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Lead
Manganese 55 ug/L 5.0 05/09/20 Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	0 ug/L	20	Lithium
Molybdenum 28 ug/L 5.0 05/09/20 Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	950 ug/L	3950	Magnesium
Nickel ND ug/L 2.0 05/09/20 Potassium 4470 ug/L 100.0 05/09/20 Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01- Parameter(s) Result Flag Units RL Analysis I Mercury ND ug/L 0.2 05/11/20 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20 <td>5 ug/L</td> <td>55</td> <td>Manganese</td>	5 ug/L	55	Manganese
Potassium	8 ug/L	28	Molybdenum
Selenium 1 ug/L 1.0 05/09/20 Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01- Parameter(s) Result Flag Units RL Analysis I Mercury ND ug/L 0.2 05/11/20 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20	D ug/L	ND	Nickel
Silver ND ug/L 0.2 05/09/20 Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	470 ug/L	4470	Potassium
Sodium 58000 ug/L 1000.0 05/09/20 Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Result Flag Units RL Analysis I Mercury ND ug/L 0.2 05/11/20 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20	ug/L	1	Selenium
Thallium ND ug/L 2.0 05/09/20 Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Silver
Vanadium ND ug/L 2.0 05/09/20 Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	8000 ug/L	58000	Sodium
Zinc ND ug/L 10.0 05/09/20 Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Thallium
Mercury by EPA 7470A, Total, Aqueous Aliquot #: 23-0402-01-C01-C01-C01-C01-C01-C01-C01-C01-C01-	D ug/L	ND	Vanadium
Parameter(s) Result Flag Units RL Analysis I Mercury ND ug/L 0.2 05/11/20 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20	D ug/L	ND	Zinc
Mercury ND ug/L 0.2 05/11/20 Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20		, Total, Aqueous	lercury by EPA 7470A
Anions by EPA 300.0 Aqueous, NO2, NO3 Aliquot #: 23-0402-01-C02- Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20	esult Flag Units	Result	Parameter(s)
Parameter(s) Result Flag Units RL Analysis I Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20	D ug/L	ND	Mercury
Nitrate 119 ug/L 100.0 05/03/20 Nitrite ND ug/L 100.0 05/03/20		queous, NO2, NO3	Anions by EPA 300.0 A
Nitrite ND ug/L 100.0 05/03/20	esult Flag Units	Result	arameter(s)
	19 ug/L	119	Nitrate
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous Aliquot #: 23-0402-01-C02-	D ug/L	ND	Nitrite
	ist, CI, F, SO4, Aqueous	CR Rule Analyte List, Cl, F, S	Anions by EPA 300.0 C
Parameter(s) Result Flag Units RL Analysis I	esult Flag Units	Result	arameter(s)
Chloride 58900 ug/L 1000.0 05/05/20	8900 ug/L	58900	Chloride





Report Date: 05/19/23

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0402 Field Sample ID: **DEK-MW-15003** Collect Date: 05/02/2023 Lab Sample ID: 23-0402-01 Collect Time: 10:08 AM

Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	, SO4, Aqι	ieous	Aliquot #: 23-0	402-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	50200		ug/L	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h	n), Groundwate	er HL		Aliquot #: 23-0	402-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1570		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-01-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	285		mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by SM 2320B				Aliquot #: 23-0	402-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	71200		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	71200		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	230		ug/L	20.0	05/05/2023	AB23-0504-03



Laboratory Services A CENTURY OF EXCELLENCE

23-0402-02

Sample Site: **DEK Lined Impoundment** Laboratory Project: 23-0402 Field Sample ID: **OW-10**

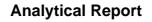
Collect Date: 05/02/2023 Collect Time: 12:15 PM

Report Date:

05/19/23

Lab Sample ID: Matrix: Groundwater

Metals by EPA 6020B: CCR R	——————————————————————————————————————	iai wetais	- Lxp	Aliquot #: 23-0	402-02-C01-A01	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	3		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	146		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	998		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	98800		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	2		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	3660		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	26		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	18000		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	329		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	ND		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	3		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	5700		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	2		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	61000		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	3		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total	Aqueous			Aliquot #: 23-0	402-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueou	s, NO2, NO3			Aliquot #: 23-0	402-02-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/03/2023	AB23-0503-0
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Ru	le Analyte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 23-0	402-02-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



05/19/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 OW-10
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-02
 Collect Time:
 12:15 PM

Anions by EPA 300.0 CCR Rule Analys	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	402-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	8280		ug/L	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h),	Groundwate	er HL		Aliquot #: 23-0	402-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3360		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-02-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	517	_	mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by CM 2220D				All:	402 02 005 404	Amaluati DI C
Alkalinity by SM 2320B	Result	Floa	Unito	-	402-02-C05-A01	Analyst: DLS
Parameter(s)		Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	424000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	424000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-02-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	120		ug/L	20.0	05/05/2023	AB23-0504-03
Metals by EPA 6020B: CCR Rule Appe	ndix III-IV Di	ss Metals	Ехра	Aliguot #: 23-0	402-02-C08-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-15
Arsenic	2		ug/L	1.0	05/09/2023	AB23-0510-15
Barium	129		ug/L	5.0	05/09/2023	AB23-0510-15
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-15
Boron	1040		ug/L	20.0	05/09/2023	AB23-0510-15
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-15
Calcium	97600		ug/L	1000.0	05/09/2023	AB23-0510-15
Chromium	3		ug/L	1.0	05/09/2023	AB23-0510-15
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-15
Copper	ND		ug/L	1.0	05/09/2023	AB23-0510-15
Iron	3050		ug/L	20.0	05/09/2023	AB23-0510-15
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-15
Lithium	25		ug/L	10.0	05/09/2023	AB23-0510-15
			-	1000.0	05/09/2023	AB23-0510-15
Magnesium	18100		ug/L	1000.0	03/09/2023	ADZ3-0310-13





Report Date: 05/19/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 OW-10
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-02
 Collect Time:
 12:15 PM

Metals by EPA 6020B: CCR Rule Appendix III		ss Metals Expa	Aliquot #: 23-0	Analyst: EB	
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Manganese	324	ug/L	5.0	05/09/2023	AB23-0510-15
Molybdenum	ND	ug/L	5.0	05/09/2023	AB23-0510-15
Nickel	3	ug/L	2.0	05/09/2023	AB23-0510-15
Potassium	5490	ug/L	100.0	05/09/2023	AB23-0510-15
Selenium	1	ug/L	1.0	05/09/2023	AB23-0510-15
Silver	ND	ug/L	0.2	05/09/2023	AB23-0510-15
Sodium	59500	ug/L	1000.0	05/09/2023	AB23-0510-15
Thallium	ND	ug/L	2.0	05/09/2023	AB23-0510-15
Vanadium	ND	ug/L	2.0	05/09/2023	AB23-0510-15
Zinc	ND	ug/L	10.0	05/09/2023	AB23-0510-15



05/19/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 OW-11
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-03
 Collect Time:
 11:15 AM

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	otal Metals	s Exp	Aliquot #: 23-0	402-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	3		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	837		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	24		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	3400		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	6420		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	1		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	90		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	ND		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	ND		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	157		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	2		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	4460		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	5		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	62900		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	743		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	402-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2, N	NO3			Aliquot #: 23-0	402-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	272		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analys	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	402-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	56100		ug/L	1000.0	05/05/2023	AB23-0505-06





05/19/23

Report Date:

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 OW-11
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-03
 Collect Time:
 11:15 AM

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, S	O4, Aqu	ieous	Aliquot #: 23-0	402-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	2960		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	17600		ug/L	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater	HL		Aliquot #: 23-0	402-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	12500		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-03-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	224		mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by SM 2320B				Aliquot #: 23-0	402-03-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	93900		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	15200		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	78800		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-03-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



05/19/23

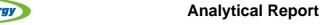


Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 OW-12
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-04
 Collect Time:
 01:55 PM

				Aliquot #: 23-0	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	62		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	168		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	1340		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	124000		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	8580		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	44		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	47400		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	271		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	7		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	3		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	8300		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	65700		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	402-04-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 23-0	402-04-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analy	te List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	402-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
i didilicici(3)		3	• • • • • • • • • • • • • • • • • • • •		, ,	





A CENTURY OF EXCELLENCE

Report Date:

05/19/23

Sample Site:DEK Lined ImpoundmentLaboratory Project:23-0402Field Sample ID:OW-12Collect Date:05/02/2023Lab Sample ID:23-0402-04Collect Time:01:55 PM

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, S	04, Aqւ	ieous	Aliquot #: 23-0	402-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	265000		ug/L	1000.0	05/06/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater	HL		Aliquot #: 23-0	402-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1110		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-04-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	820		mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by SM 2320B				Aliquot #: 23-0	402-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	323000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	323000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



05/19/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: KLI-SCS Collect Date: 05/02/2023 Lab Sample ID: 23-0402-05 Collect Time: 12:50 PM

Metals by EPA 6020B: CCR Rule App		riai Miciais	- xp	Aliquot #: 23-0	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	1		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	62		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	603		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	102000		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	2		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	29		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	37800		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	ND		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	10		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	4		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	3960		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	4		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	350000		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	4		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueo	us			Aliquot #: 23-0	402-05-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 23-0	402-05-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	1440		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analy	rte List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	402-05-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking





Report Date: 05/19/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: KLI-SCS Collect Date: 05/02/2023
Lab Sample ID: 23-0402-05 Collect Time: 12:50 PM

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F, SC)4, Aqւ	ieous	Aliquot #: 23-0	402-05-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	496000		ug/L	1000.0	05/06/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater H	lL		Aliquot #: 23-0	402-05-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-05-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by SM 2320B				Aliquot #: 23-0	402-05-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	602000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	602000		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-05-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



05/19/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

 Field Sample ID:
 KLI-PCS
 Collect Date:
 05/02/2023

 Lab Sample ID:
 23-0402-06
 Collect Time:
 01:10 PM

Metals by EPA 6020B: CCR Rule Appe	FIIGIX III-IV IC	tai wictai.		Aliquot #: 23-0	402-06-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	1		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	425		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	593		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	48500		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	2		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	1		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	176		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	10600		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	ND		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	51		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	4890		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	2		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	35500		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	8		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	402-06-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 23-0	402-06-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	764		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	666		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	402-06-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking





Report Date: 05/19/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: KLI-PCS Collect Date: 05/02/2023
Lab Sample ID: 23-0402-06 Collect Time: 01:10 PM

Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	402-06-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	114000		ug/L	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h),	, Groundwate	er HL		Aliquot #: 23-0	402-06-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-06-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	337		mg/L	10.0	05/03/2023	AB23-0503-07
Alkalinity by SM 2320B				Aliquot #: 23-0	402-06-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	57600		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Bicarbonate	57600		ug/L	10000.0	05/05/2023	AB23-0505-09
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-06-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



05/19/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0402-07

Collect Date: 05/02/2023
Collect Time: 02:20 PM

Metals by EPA 6020B: CCR Rule Appe	endix ili-iv 10	tai wictai.		Aliquot #: 23-0	402-07-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	2		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	58		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	33		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	48000		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	10		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	422		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	1		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	15900		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	23		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	8		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	3		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	2050		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	28000		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	2		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueou	us			Aliquot #: 23-0	402-07-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 23-0	402-07-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	927		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ueous	Aliquot #: 23-0	402-07-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



05/19/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0402-07

Collect Date: 05/02/2023
Collect Time: 02:20 PM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4,		804, Aqւ	ieous	Aliquot #: 23-0	402-07-C02-A02	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06		
Sulfate	26100		ug/L	1000.0	05/05/2023	AB23-0505-06		
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater	·HL		Aliquot #: 23-0	402-07-C03-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Ammonia	70		ug/L	25.0	05/12/2023	AB23-0512-02		
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-07-C04-A01	Analyst: LMO		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Total Dissolved Solids	281		mg/L	10.0	05/03/2023	AB23-0503-07		
Alkalinity by SM 2320B				Aliquot #: 23-0	402-07-C05-A01	Analyst: DLS		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Alkalinity Total	158000		ug/L	10000.0	05/05/2023	AB23-0505-09		
Alkalinity Bicarbonate	158000		ug/L	10000.0	05/05/2023	AB23-0505-09		
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09		
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-07-C07-A01	Analyst: Merit		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03		



05/19/23

23-0402



Sample Site:

Laboratory Project: **DEK Lined Impoundment** Field Sample ID: DUP-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-08 Collect Time: 12:00 AM

Matrix: Groundwater

Parameter(s) Antimony Arsenic Barium	Result ND	Flag	Units	RL	Analysis Date	Trackina
Arsenic	ND				Allalysis Date	Tracking
			ug/L	1.0	05/09/2023	AB23-0510-13
Rarium	3		ug/L	1.0	05/09/2023	AB23-0510-13
Danam	143		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	960		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	101000		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	2		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	3560		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	25		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	17600		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	313		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	ND		ug/L		05/09/2023	AB23-0510-13
Nickel	3		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	5700		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	2		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	60500		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	3		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueous	5			Aliquot #: 23-0	402-08-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2, N	O3			Aliquot #: 23-0	402-08-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/03/2023	AB23-0503-05
Nitrite	ND	ug/L		100.0	05/03/2023	AB23-0503-05
Anions by EPA 300.0 CCR Rule Analyte	List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	402-08-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	58900		ug/L	1000.0	05/05/2023	AB23-0505-06



05/19/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: DUP-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-08 Collect Time: 12:00 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	402-08-C02-A02	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06		
Sulfate	5790		ug/L	1000.0	05/05/2023	AB23-0505-06		
Nitrogen-Ammonia by SM4500NH3(h),	Groundwate	er HL		Aliquot #: 23-0	402-08-C03-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Ammonia	3680		ug/L	25.0	05/12/2023	AB23-0512-02		
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	402-08-C04-A01	Analyst: LMO		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Total Dissolved Solids	511	_	mg/L	10.0	05/03/2023	AB23-0503-07		
Alkalinity by SM 2320B				Aliquet #: 22-0	402-08-C05-A01	Analyst: DLS		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
	424000	ı iag			05/05/2023	AB23-0505-09		
Alkalinity Total			ug/L	10000.0				
Alkalinity Bicarbonate	424000		ug/L	10000.0	05/05/2023	AB23-0505-09		
Alkalinity Carbonate	ND		ug/L	10000.0	05/05/2023	AB23-0505-09		
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	402-08-C07-A01	Analyst: Merit		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03		
Metals by EPA 6020B: CCR Rule Appe	ndix III-IV Di	ss Metals	Ехра	Aliquot #: 23-0	402-08-C08-A01	Analyst: EB		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-15		
Arsenic	2		ug/L	1.0	05/09/2023	AB23-0510-15		
Barium	131		ug/L	5.0	05/09/2023	AB23-0510-15		
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-15		
Boron	1020		ug/L	20.0	05/09/2023	AB23-0510-15		
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-15		
Calcium	97700		ug/L	1000.0	05/09/2023	AB23-0510-15		
Chromium	2		ug/L	1.0	05/09/2023	AB23-0510-15		
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-15		
Copper	ND		ug/L	1.0	05/09/2023	AB23-0510-15		
Iron	3100		ug/L	20.0	05/09/2023	AB23-0510-15		
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-15		
			-					
Lithium	26		ua/L	10.0	05/09/2023	ADZ3-U3 IU- I3		
Lithium Magnesium	26 18100		ug/L ug/L	10.0 1000.0	05/09/2023 05/09/2023	AB23-0510-15 AB23-0510-15		





Report Date: 05/19/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: 23-0402

Field Sample ID: DUP-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-08 Collect Time: 12:00 AM

Matrix: Groundwater

Metals by EPA 6020B: CCF	R Rule Appendix III-IV Dis	ss Metals Expa	Aliquot #: 23-0	0402-08-C08-A01	Analyst: EB
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Manganese	323	ug/L	5.0	05/09/2023	AB23-0510-15
Molybdenum	ND	ug/L	5.0	05/09/2023	AB23-0510-15
Nickel	2	ug/L	2.0	05/09/2023	AB23-0510-15
Potassium	5470	ug/L	100.0	05/09/2023	AB23-0510-15
Selenium	1	ug/L	1.0	05/09/2023	AB23-0510-15
Silver	ND	ug/L	0.2	05/09/2023	AB23-0510-15
Sodium	60200	ug/L	1000.0	05/09/2023	AB23-0510-15
Thallium	ND	ug/L	2.0	05/09/2023	AB23-0510-15
Vanadium	ND	ug/L	2.0	05/09/2023	AB23-0510-15
Zinc	ND	ug/L	10.0	05/09/2023	AB23-0510-15



05/19/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: EB-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-09 Collect Time: 02:30 PM

Matrix: Water

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tai Metais	Exp	Aliquot #: 23-0	402-09-C01-A01	Analyst: E		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Arsenic	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Barium	ND		ug/L	5.0	05/09/2023	AB23-0510-13		
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Boron	ND		ug/L	20.0	05/09/2023	AB23-0510-13		
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13		
Calcium	ND		ug/L	1000.0	05/09/2023	AB23-0510-13		
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Cobalt	ND	ug/L		6.0	05/09/2023	AB23-0510-13		
Copper	ND	ug/L		1.0	05/09/2023	AB23-0510-13		
Iron	ND	ug/L		20.0	05/09/2023	AB23-0510-13		
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Lithium	ND	ug/L		10.0	05/09/2023	AB23-0510-13		
Magnesium	ND		ug/L 1000.0		05/09/2023	AB23-0510-13		
Manganese	ND		ug/L 5.0		05/09/2023	AB23-0510-13		
Molybdenum	ND		ug/L	5.0	05/09/2023	AB23-0510-13		
Nickel	ND		ug/L	2.0	05/09/2023	AB23-0510-13		
Potassium	ND		ug/L	100.0	05/09/2023	AB23-0510-13		
Selenium	ND		ug/L	1.0	05/09/2023	AB23-0510-13		
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13		
Sodium	ND		ug/L	1000.0	05/09/2023	AB23-0510-13		
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13		
Vanadium	ND		ug/L	2.0	05/09/2023	AB23-0510-13		
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-13		
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	402-09-C01-A02	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02		
Anions by EPA 300.0 Aqueous, NO2, N	NO3			Aliquot #: 23-0	402-09-C02-A01	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking		
Nitrate	ND		ug/L	100.0	05/03/2023	AB23-0503-05		
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-05		
Nitrogen-Ammonia by SM4500NH3(h),	Groundwate	er HL		Aliquot #: 23-0	402-09-C03-A01	Analyst: CLE		
Downwater/a)	Result	Flag	Units	RL	Analysis Date	Tracking		
Parameter(s)	rrooure	ı iag	Oiiito		, maryoro Dato	madiling		



Analytical Report

Report Date: 05/19/23

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0402 Field Sample ID: EB-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-09 Collect Time: 02:30 PM

Matrix: Water

Sulfide, Total by SM 4500 S2D			A	Aliquot #: 23-0	0402-09-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



05/19/23

Report Date:



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0402**

Field Sample ID: FB-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-10 Collect Time: 05/02/2023

Matrix: Water

				Allquot #. 20 0	402-10-C01-A01	-			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking			
Antimony	ND		ug/L	1.0	05/09/2023	B AB23-0510-			
Arsenic	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Barium	ND		ug/L	5.0	05/09/2023	AB23-0510-1			
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Boron	ND		ug/L	20.0	05/09/2023	AB23-0510-1			
Cadmium	ND	ug/L		0.2	05/09/2023	AB23-0510-1			
Calcium	ND	ug/L		1000.0	05/09/2023	AB23-0510-1			
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-1			
Copper	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Iron	ND		ug/L	20.0	05/09/2023	AB23-0510-1			
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Lithium	ND		ug/L	10.0	05/09/2023	AB23-0510-1			
Magnesium	ND		ug/L	1000.0	05/09/2023	AB23-0510-1			
Manganese	ND		ug/L 5.0		05/09/2023	AB23-0510-			
Molybdenum	ND		ug/L	5.0	05/09/2023	AB23-0510-1			
Nickel	ND		ug/L	2.0	05/09/2023	AB23-0510-1			
Potassium	ND		ug/L	100.0	05/09/2023	AB23-0510-1			
Selenium	ND		ug/L	1.0	05/09/2023	AB23-0510-1			
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-1			
Sodium	ND		ug/L	1000.0	05/09/2023	AB23-0510-1			
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-1			
Vanadium	ND		ug/L	2.0	05/09/2023	AB23-0510-1			
Zinc	ND		ug/L	10.0	05/09/2023	AB23-0510-1			
Mercury by EPA 7470A, Total, Aq	ueous			Aliquot #: 23-0	402-10-C01-A02	Analyst: CL			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin			
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-0			
Anions by EPA 300.0 Aqueous, N	O2, NO3			Aliquot #: 23-0	402-10-C02-A01	Analyst: KD			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin			
Nitrate	ND		ug/L	100.0	05/03/2023	AB23-0503-0			
Nitrite	ND		ug/L	100.0	05/03/2023	AB23-0503-0			
Nitrogen-Ammonia by SM4500NH	3(h), Groundwate	r HL		Aliquot #: 23-0	402-10-C03-A01	Analyst: CL			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Trackin			



Analytical Report

Report Date: 05/19/23

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0402 Field Sample ID: FB-KLI Collect Date: 05/02/2023 Lab Sample ID: 23-0402-10 Collect Time: 11:15 AM

Matrix: Water

Sulfide, Total by SM 4500 S2D			-	Aliquot #: 23-0	402-10-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0504-03



Laboratory Services
A CENTURY OF EXCELLENCE

Analytical Report Report Date:

05/19/23

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: 23	-0402					
Inspection Date: 5.03. 2			Inspection	By: uno		
Sample Origin/Project Name:						
Shipment Delivered By: Ente						
A CONTRACTOR OF THE PROPERTY OF THE PROPERTY OF				USPS	Airl	orne
Other/Hand Carry (wh						John
Tracking Number: 39	71 862	e 0833	Ship	ping Form Attacl	ned: Yes 🗶	_ No
Shipping Containers: Enter th						
Cooler X					Envelope	e/Mailer
Loose/Unpackaged Co						
Condition of Shipment: Enter						
Damaged Shipment Ol					Leal	king
Other				- Cittou		
CoCX Won Temperature of Containers: M As-Received Temperature	k Request_ Measure the	temperature	Air Data	Sheet		No
M&TE # and Expiration	on 2772	3 5.20	5. 23			
Number and Type of Contain	ers: Enter t	he total num	nber of sample	containers receiv	ed.	
Container Type	Water	Soil	O	ther	Broken	Leaking
VOA (40mL or 60mL)	16					
Quart/Liter (g/p)						
9-oz (amber glass jar)		_				
2-oz (amber glass)		_	-		1	
125 mL (plastic)	42	_				-
24 mL vial (glass)		_			-	
500 mL (plastic)	8	_	-) 	-
Other						_

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page 1 of 1

SAMPLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or W	O#:								A	NAL	YSI	SRE	EQUI	EST	ED		QA REQUIREMENT:
Q2-2023 DEK Lined				23-0402	REQUESTER	: Haro	ld l	Reg	iste	r				(Atta	ch Lis	st if N	lore :	Space	is N	eeded)		QA REQUIREMENT.
SAMPLING TEAM:	4. Whaley 5. Kren	7		TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ ST	'ANDARD ⊠ OT	HER_													Matalc	141		□ NPDES ⊠ TNI
SEND REPORT TO:	Caleb Batts			email:	phone:	phone:						2					M	É	10	☐ ISO 17025		
COPY TO:	Harold Regis	ter		MATRIX CODES: GW = Groundwater OX = Other			C	ONT	AI	NEF	RS			- Without					-	9	9	□ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air				PRE	SEF	RVA	TIV	Е	als	15	ال				College	3	3	☐ INTERNAL INFO
LAB	SAMPLE COLI	LECTION	X	S = Soil / General Solid WP = Wipo O = Oil WT = General		TOTAL#							Total Metals	us .	onia	-	inity	e e	3	2		OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TOT	None	HNO	H ₂ SO.	NaOH HCI MeOH	Other	Tota	Anions	Ammonia	TDS	Alkalinity	Sulfide	7.50	010		REMARKS	
23-0402-01	5/2/23	1008	GW	DEK-MW-15003		7	4	1	1	1			x	x	x	x	x	x	1			
-02		1215	GW	OW-10		8	4	7	1	1			x	x	x	x	x	x	X			
-03		1115	GW	OW-11		7	4	1	ĺ	1			x	x	x	х	x	x	1			
-04		1355	GW	OW-12		7	4	1	1	1			x	x	x	x	x	x				
-05		1250	W	KLI-SCS		7	4	1	1	1			x	x	x	x	x	x				
-06		1310	sw	KLI-PCS		7	4	1	1	1			x	x	x	x	x	x				
-07		1420	sw	SW-DITCH		7	4	1	1	1	ì		x	x	x	x	x	x				
-08			GW	DUP-KLI		8	4	2	1	1			x	x	x	x	x	x	X			
-09		1430	W	EB-KLI		4	1	1	1	1		N	x	x	x			x				
-10	V	1115	W	FB-KLI		4	1	1	1	1			x	x	х			x				
RELINQUISHED BY:			DATE/	TIME:	RECEIVED BY:								CC	MMI	ENTS							
and	n. A	4	5/	1/23 1500	Fed E	X											,					
RELINQUISHED BY:	1000	10	DATE/		RECEIVED BY:	-							Re	ceive	on I	ce? I	Ye	s 🗆	No	M&7	TE#:	27723
	Fed Ex		95	-03-23 10:20	A.								Ter	npera	ture:	2.3	-5.	8°C		Cal.	Due D	Date: 5-25-23
-					23-0402 Page 29	of 47							-									-



Report ID: S48156.01(01) Generated on 05/05/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S48156.01-S48156.10

Project: 23-0402 PR#23050668 Collected Date(s): 05/02/2023

Submitted Date/Time: 05/03/2023 16:41

Sampled by: Unknown P.O. #: 4400114090

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Certifications (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
р	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
х	Preserved from bulk sample

Glossary of Abbreviations

Glossary of A	DDIEVIGIOIS
Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0402 PR#23050668

23-03-4020 **P**15 e 33 of 47



Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S48156.01	23-0402-01 (DEK-MW-15003)	Groundwater	05/02/23 10:08
S48156.02	23-0402-02 (OW-10)	Groundwater	05/02/23 12:15
S48156.03	23-0402-03 (OW-11)	Groundwater	05/02/23 11:15
S48156.04	23-0402-04 (OW-12)	Groundwater	05/02/23 13:55
S48156.05	23-0402-05 (KLI-SCS)	Groundwater	05/02/23 12:50
S48156.06	23-0402-06 (KLI-PCS)	Groundwater	05/02/23 13:10
S48156.07	23-0402-07 (SW-DITCH)	Groundwater	05/02/23 14:20
S48156.08	23-0402-08 (DUP-KLI)	Groundwater	05/02/23 00:01
S48156.09	23-0402-09 (EB-KLI)	Groundwater	05/02/23 14:30
S48156 10	23-0402-10 (FB-KLI)	Groundwater	05/02/23 11:15



Lab Sample ID: S48156.01

Sample Tag: 23-0402-01 (DEK-MW-15003) Collected Date/Time: 05/02/2023 10:08

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.23	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.02

Sample Tag: 23-0402-02 (OW-10) Collected Date/Time: 05/02/2023 12:15

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:26, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.12	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.03

Sample Tag: 23-0402-03 (OW-11) Collected Date/Time: 05/02/2023 11:15

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:28, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.04

Sample Tag: 23-0402-04 (OW-12) Collected Date/Time: 05/02/2023 13:55

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.05

Sample Tag: 23-0402-05 (KLI-SCS)
Collected Date/Time: 05/02/2023 12:50

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:34, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.06

Sample Tag: 23-0402-06 (KLI-PCS)
Collected Date/Time: 05/02/2023 13:10

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:36, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.07

Sample Tag: 23-0402-07 (SW-DITCH)
Collected Date/Time: 05/02/2023 14:20

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.08

Sample Tag: 23-0402-08 (DUP-KLI)
Collected Date/Time: 05/02/2023 00:01

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:40, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.09

Sample Tag: 23-0402-09 (EB-KLI)
Collected Date/Time: 05/02/2023 14:30

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:42, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48156.10

Sample Tag: 23-0402-10 (FB-KLI)
Collected Date/Time: 05/02/2023 11:15

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	4.1	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 15:44, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	

Merit Laboratories Login Checklist

Lab Set ID:S48156

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0402 PR#23050668

Submitted: 05/03/2023 16:41 Login User: MMC

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	ction			Description	Note
Samı	ole Receiv	ving			
01.	X Yes	No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 4.1
02.	X Yes	No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	No	□ N/A	COC adequately filled out	_
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	No	□ N/A	Sample tag on bottles match COC	
09.	Yes	X No	□ N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	N/A	Do sample have correct chemical preservation	
11.	X Yes	No	□ N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	□ N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditi	ons			
13.	X Yes	No	□ N/A	All bottles intact	
14.	X Yes	No	□ N/A	Appropriate analytical bottles are used	
15.	X Yes	No	□ N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	
_					
Corre	ective acti	on for all	exceptions	is to call the client and to notify the project manager.	
Clien	t Review	Ву:		Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S48156 Submitted: 05/03/2023 16:41

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0402 PR#23050668

Initial Preservation Check: 05/04/2023 08:47 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S48156.01	125ml Plastic NaOH/Zn Acetate	>12			
S48156.02	125ml Plastic NaOH/Zn Acetate	>12			
S48156.03	125ml Plastic NaOH/Zn Acetate	>12			
S48156.04	125ml Plastic NaOH/Zn Acetate	>12			
S48156.05	125ml Plastic NaOH/Zn Acetate	>12			
S48156.06	125ml Plastic NaOH/Zn Acetate	>12			
S48156.07	125ml Plastic NaOH/Zn Acetate	>12			
S48156.08	125ml Plastic NaOH/Zn Acetate	>12			
S48156.09	125ml Plastic NaOH/Zn Acetate	>12			
S48156.10	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

	1		1
C.O.C. PAGE #_	1	_ OF _	4

REPOR		,	Laboratories, Inc.	CHAIN	OF	CL	JS	TOI	DY	RE	CO	R	Y					INVOICE TO
CONTACT NAME E	mil Blaj							CON	TACT	NAME							x s.	AME
COMPANY Cons	sumers E	nergy						СОМ	PANY	•								
ADDRESS 135 W	V. Trail S	treet						ADDE	RESS									
Jackson				STATE MI ZIP		920	1	CITY									STATE	ZIP CODE
PHONE NO. 517-7	788-5888		FAX NO. 517-788-2533	P.O. NO. 4400114	40900	,		PHO	NE NO	Э,				E-MAIL ADD	RESS			
E-MAIL ADDRESS emil.blaj@cmsenergy.com			-1						ANALYSIS	(ATTACH	LIST IF N	ORE SPA	CE IS REQU	JIRED)				
PROJECT NO./NAM				SAMPLER(S) - PLEASE	PRINT/SIG	N NA	ME				N/A	T		N			Certific	cations
			□1 DAY □2 DAYS □3 D	YS STANDARD	Потн	IER							111					VAP Drinking Wat
5 - 1 1 1 4 5 CM 0 1 4 1	110000000000000000000000000000000000000	Mary Control	TO X LEVEL II LEVEL III		_		_					1	ا ا اِ				DoD.	NPDES
MATRIX C	GW≃GROUN SL≈SLUDGE	DWATER	WW#WASTEWATER S=SC	The second secon	D=SOLI)				ainer. vativ		C. 15.45					Project	Locations it New York
MERIT	YEA	AR	SAMPLE IDENTIFICATION-DE		MATRIX	BOTTLES	17	를 다	ő	NECH	MeOH	Trees	l la				Other	
LAB NO.	DATE	TIME	0402			* 10B	2	E	Î	£ Z	2 8	5 6		+	++			Instructions
10,00,01	05/02/23	1008	23- 0169- 01 (DEK-MW-	15003)	GW	1	1	\perp	1	1	\sqcup	1						ed with NaOH/ZnAceta
.02	05/02/23	1215	23- 0169 -02 (OW-10)		GW	1	1	\perp	1	1	Н	1				3 7 7	"	
.03	05/02/23	1115	23- 0169 -03 (OW-11)		GW	1	1		1	1		V					"	
04	05/02/23	1355	23- 0169 -04 (OW-12)		GW	1	1			1		V					"	
.05	05/02/23	1250	23- 016 9-05 (KLI-SCS)		GW	1	1			1		V					"	
06	05/02/23	1310	23- 0169- 06 (KLI-PCS)		GW	1				1		V				3,124	")	
,57	05/02/23	1420	23- 0169 -07 (SW-DITCH	1)	GW	1				1		1					n	
.08	05/02/23	191	23-0 169 -08 (DUP-KLI)		GW	1				1		V					n	
.09	05/02/23	1430	23-0 169 -09 (EB-KLI)		GW	1				1		V					**	
.10	05/02/23	1115	23-0 169 -10 (FB-KLI)		GW	1				1		V					0	
			EB 05.05.23				1	1		1	Н	L		\perp				
RELINQUISHED B	Y: 6	./.		☐Sampler DAT		IME	_	REI	INOI	JISHEO	BY:	L						DATE TIME
SIGNATURE/ORG. RECEIVED BY: SIGNATURE/ORG.	ANIZATION	9	M Wilcold	5/3 DAI	1	64 OH	1	SIG	NATU	D BY:	RGANI							DATE TIME
RELINQUISHED B' SIGNATURE/ORG. RECEIVED BY:	Y;			DAT	E	IME		SE	AL NO).			SEAL INTACT	NOD	TALS	NOTES	TEMP	ON ARRIVAL 4.1

PLEASE NOTE: SIGNING ACKNOWLEDGES ADHERENCE TO MERIT'S SAMPLE ACCEPTANCE POLICY ON REVERSE SIDE



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

To: CDBatts, Karn/Weadock

From: EBlaj, T-258

Date: May 19, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2023 Q2

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0401R

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 05/01/2023, for the 2nd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 05/04/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

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

<u>Qualifier</u>	<u>Description</u>
*	Generic data flag, applicable description added in the corresponding notes section
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: Q2-2023 DEK Bottom Ash Pond & Lined Impoundment

Date Received: 5/4/2023 **Chemistry Project:** 23-0401

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0401-01	DEK-MW-18001	Groundwater	05/03/2023 06:40	DEK Bottom Ash Pond & Lined Impoundment
23-0401-02	DEK-MW-18001 MS	Groundwater	05/03/2023 06:40	DEK Bottom Ash Pond & Lined Impoundment
23-0401-03	DEK-MW-18001 MSD	Groundwater	05/03/2023 06:40	DEK Bottom Ash Pond & Lined Impoundment



05/19/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 23-0401

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 05/03/2023

 Lab Sample ID:
 23-0401-01
 Collect Time:
 06:40 AM

Matrix: Groundwater

Parameter(s)	Result					
	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Arsenic	304		ug/L	1.0	05/09/2023	AB23-0510-13
Barium	152		ug/L	5.0	05/09/2023	AB23-0510-13
Beryllium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Boron	931		ug/L	20.0	05/09/2023	AB23-0510-13
Cadmium	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Calcium	54600		ug/L	1000.0	05/09/2023	AB23-0510-13
Chromium	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Cobalt	ND		ug/L	6.0	05/09/2023	AB23-0510-13
Copper	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Iron	875		ug/L	20.0	05/09/2023	AB23-0510-13
Lead	ND		ug/L	1.0	05/09/2023	AB23-0510-13
Lithium	20		ug/L	10.0	05/09/2023	AB23-0510-13
Magnesium	10600		ug/L	1000.0	05/09/2023	AB23-0510-13
Manganese	144		ug/L	5.0	05/09/2023	AB23-0510-13
Molybdenum	11		ug/L	5.0	05/09/2023	AB23-0510-13
Nickel	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Potassium	5960		ug/L	100.0	05/09/2023	AB23-0510-13
Selenium	1		ug/L	1.0	05/09/2023	AB23-0510-13
Silver	ND		ug/L	0.2	05/09/2023	AB23-0510-13
Sodium	112000		ug/L	1000.0	05/09/2023	AB23-0510-13
Thallium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Vanadium	ND		ug/L	2.0	05/09/2023	AB23-0510-13
Zinc	12		ug/L	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqueou	s			Aliquot #: 23-0	401-01-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, NO2, N	103			Aliquot #: 23-0	401-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	05/04/2023	AB23-0504-05
Nitrite	ND		ug/L	100.0	05/04/2023	AB23-0504-05
Anions by EPA 300.0 CCR Rule Analyt	e List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	401-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	62200		ug/L	1000.0	05/05/2023	AB23-0505-06



Consumers Energy Count on Us® **Laboratory Services**

A CENTURY OF EXCELLENCE

Report Date: 05/19/23

DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: Sample Site: 23-0401

Collect Date: Field Sample ID: DEK-MW-18001 05/03/2023 Lab Sample ID: 23-0401-01 Collect Time: 06:40 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Anal	yte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	401-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	05/05/2023	AB23-0505-06
Sulfate	148000		ug/L	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	er HL		Aliquot #: 23-0	401-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1740		ug/L	25.0	05/12/2023	AB23-0512-02
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	401-01-C04-A01	Analyst: LMO
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	575		mg/L	10.0	05/05/2023	AB23-0505-05
Alkalinity by SM 2320B				Aliquot #: 23-0	401-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	192000		ug/L	10000.0	05/10/2023	AB23-0510-02
Alkalinity Bicarbonate	192000		ug/L	10000.0	05/10/2023	AB23-0510-02
Alkalinity Carbonate	ND		ug/L	10000.0	05/10/2023	AB23-0510-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	401-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	05/05/2023	AB23-0505-10



05/19/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0401**

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 05/03/2023

 Lab Sample ID:
 23-0401-02
 Collect Time:
 06:40 AM

Matrix: Groundwater

Metals by EPA 6020B: CCR Rule A	Appendix III-IV 10	tai wetais	Exp	Aliquot #: 23-0	401-02-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	109		%	1.0	05/09/2023	AB23-0510-13
Arsenic	92		%	1.0	05/09/2023	AB23-0510-13
Barium	111		%	5.0	05/09/2023	AB23-0510-13
Beryllium	104		%	1.0	05/09/2023	AB23-0510-13
Boron	99		%	20.0	05/09/2023	AB23-0510-13
Cadmium	105		%	0.2	05/09/2023	AB23-0510-13
Calcium	101		%	1000.0	05/09/2023	AB23-0510-13
Chromium	91		%	1.0	05/09/2023	AB23-0510-13
Cobalt	96		%	6.0	05/09/2023	AB23-0510-13
Copper	94		%	1.0	05/09/2023	AB23-0510-13
Iron	110		%	20.0	05/09/2023	AB23-0510-13
Lead	99		%	1.0	05/09/2023	AB23-0510-13
Lithium	99		%	10.0	05/09/2023	AB23-0510-13
Magnesium	103		%	1000.0	05/09/2023	AB23-0510-13
Manganese	96		%	5.0	05/09/2023	AB23-0510-13
Molybdenum	114		%	5.0	05/09/2023	AB23-0510-13
Nickel	94		%	2.0	05/09/2023	AB23-0510-13
Potassium	100		%	100.0	05/09/2023	AB23-0510-13
Selenium	98		%	1.0	05/09/2023	AB23-0510-13
Silver	93.9		%	0.2	05/09/2023	AB23-0510-13
Sodium	105		%	1000.0	05/09/2023	AB23-0510-13
Thallium	99		%	2.0	05/09/2023	AB23-0510-13
Vanadium	99		%	2.0	05/09/2023	AB23-0510-13
Zinc	93		%	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total, Aqu	ueous			Aliquot #: 23-0	401-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	104		%	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueous, N	O2, NO3			Aliquot #: 23-0	401-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	85		%	100.0	05/04/2023	AB23-0504-05
Nitrite	92		%	100.0	05/04/2023	AB23-0504-05
Anions by EPA 300.0 CCR Rule A	nalyte List, Cl, F,	SO4, Aqu	eous	Aliquot #: 23-0	401-02-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
raiameter(s)		9	00	• • • •	, , =	



Analytical Report

Report Date: 05/19/23

23-0401

Laboratory Project:

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Field Sample ID: **DEK-MW-18001 MS**

Collect Date: 05/03/2023 Lab Sample ID: 23-0401-02 Collect Time: 06:40 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule A	nalyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	401-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	94		%	1000.0	05/05/2023	AB23-0505-06
Sulfate	102		%	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH	3(h), Groundwate	r HL		Aliquot #: 23-0	401-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	102		%	25.0	05/12/2023	AB23-0512-02
Alkalinity by SM 2320B				Aliquot #: 23-0	401-02-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	97.9		%	10000.0	05/10/2023	AB23-0510-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	401-02-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	05/05/2023	AB23-0505-10



Report Date:

Collect Date:

Collect Time:

05/19/23

05/03/2023

06:40 AM



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: 23-0401

Field Sample ID: DEK-MW-18001 MSD

Lab Sample ID: 23-0401-03

Matrix: Groundwater

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals	Exp	Aliquot #: 23-0	401-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	110	Ċ	%	1.0	05/09/2023	AB23-0510-13
Arsenic	104	C	%	1.0	05/09/2023	AB23-0510-13
Barium	112	Q	%	5.0	05/09/2023	AB23-0510-13
Beryllium	106	Q	%	1.0	05/09/2023	AB23-0510-13
Boron	98	Ç	%	20.0	05/09/2023	AB23-0510-13
Cadmium	106	Ç	%	0.2	05/09/2023	AB23-0510-13
Calcium	97.8	Ç	%	1000.0	05/09/2023	AB23-0510-13
Chromium	93	Ç	%	1.0	05/09/2023	AB23-0510-13
Cobalt	97	Q	%	6.0	05/09/2023	AB23-0510-13
Copper	92	Q	%	1.0	05/09/2023	AB23-0510-13
Iron	104	Ç	%	20.0	05/09/2023	AB23-0510-13
Lead	97	Q	%	1.0	05/09/2023	AB23-0510-13
Lithium	98	Ç	%	10.0	05/09/2023	AB23-0510-13
Magnesium	101	Q	%	1000.0	05/09/2023	AB23-0510-13
Manganese	97	Ç	%	5.0	05/09/2023	AB23-0510-13
Molybdenum	113	Ç	%	5.0	05/09/2023	AB23-0510-13
Nickel	94	Ç	%	2.0	05/09/2023	AB23-0510-13
Potassium	102	Ç	%	100.0	05/09/2023	AB23-0510-13
Selenium	97	Ç	%	1.0	05/09/2023	AB23-0510-13
Silver	96.3	Ç	%	0.2	05/09/2023	AB23-0510-13
Sodium	103	Ç	%	1000.0	05/09/2023	AB23-0510-13
Thallium	98	Ç	%	2.0	05/09/2023	AB23-0510-13
Vanadium	100	Q	%	2.0	05/09/2023	AB23-0510-13
Zinc	94	Ċ	%	10.0	05/09/2023	AB23-0510-13
Mercury by EPA 7470A, Total	al, Aqueous			Aliquot #: 23-0	401-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	108	C	%	0.2	05/11/2023	AB23-0511-02
Anions by EPA 300.0 Aqueo	ous, NO2, NO3			Aliquot #: 23-0	401-03-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	86	C	%	100.0	05/04/2023	AB23-0504-05
Nitrite	93	C	%	100.0	05/04/2023	AB23-0504-05
Anions by EPA 300.0 CCR F	Rule Analyte List, Cl, F,	SO4, Aque	eous	Aliquot #: 23-0	401-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	98	C	%	1000.0	05/05/2023	AB23-0505-06



Analytical Report

Report Date: 05/19/23

23-0401

Laboratory Project:

Laboratory Services A CENTURY OF EXCELLENCE

DEK Bottom Ash Pond & Lined Impoundment Sample Site:

Field Sample ID: DEK-MW-18001 MSD Collect Date: 05/03/2023 Lab Sample ID: 23-0401-03 Collect Time: 06:40 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule A	nalyte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 23-0	401-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	93		%	1000.0	05/05/2023	AB23-0505-06
Sulfate	102		%	1000.0	05/05/2023	AB23-0505-06
Nitrogen-Ammonia by SM4500NH	3(h), Groundwate	r HL		Aliquot #: 23-0	401-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	101		%	25.0	05/12/2023	AB23-0512-02
Alkalinity by SM 2320B				Aliquot #: 23-0	401-03-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	101		%	10000.0	05/10/2023	AB23-0510-02
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	401-03-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	91		%	20.0	05/05/2023	AB23-0505-10





Report Date: 05/19/23

Data Qualifiers	Exception Summary
	No exceptions occurred.

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

General Standard Operating Procedure

TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Inspection Date: 5.04. 2	3	I I	nspection By: WO		
Sample Origin/Project Name	: 62-202	3 Rottom	Ash Pond + Lu	ned Impa	nd
Shipment Delivered By: Ente				A4 13 V	
PonyI Other/Hand)Carry (wh			USPS	Airb	orne
Tracking Number:				ched: Yes	_ No
Shipping Containers: Enter t					
Cooler <u>\(\times \) </u>	Cardboard Box		Custom Case		e/Mailer
Condition of Shipment: Enter Damaged Shipment O Other	bserved: None	<u>×</u>	Dented	Leal	cing
Shipment Security: Enter if a	ny of the shipp	ing containers	were opened before rece	int.	
Shipping Containers B			~		
Enclosed Documents: Enter the	he type of docu	ments enclosed	l with the shipment.		
CoC_★_ Wo	rk Request		Air Data Sheet	Other	
Temperature of Containers: 1	Measure the ter	nperature of se	veral sample containers.		
		Section 1997	Samples Received on	1.	o
M&TE # and Expiration	on LS 277	23 5.25.7	13		
Number and Type of Contain	ers: Enter the	total number o	f sample containers rece	ived.	
Container Type VOA (40mL or 60mh)	Water G	Soil _	Other	Broken	Leaking
Quart/Liter (g/p)					
9-oz (amber glass jar)					-
2-oz (amber glass)				_	
125 mL (plastic)	12				
24 mL vial (glass)	-				4
500 mL (plastic) Other	1			_	
7.0.0					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page ____ of ____

SAMPLING SITE /	CUS	TOME	R:			PROJECT NUMBER:	SAP CC or WO	D#:						ANALYSIS REQUESTED					D	OA DEOLUBEATEAT.		
Q2-2023 DEK Bo	ttom	Ash F	ond &	Lined Impo	ound.	23-0401	REQUESTER:	Haro	ld R	legis	ter			(Attach List if More Space is Needed)							eded)	QA REQUIREMENT:
SAMPLING TEAM	Ĭ:					TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD ☒ OTHER													□ NPDES ⊠ TNI			
SEND REPORT T	O:	Caleb	Batts			email:	phone:							1								□ ISO 17025
COPY TO: Harold Register TRC				MATRIX CODES: GW = Groundwater WW = Wastewater SL = Sludge			CONTAINERS PRESERVATIVE					slı								☐ 10 CFR 50 APP. B☐ INTERNAL INFO		
LAB		SAMPLE COLLECTION		ECTION	MATRIX	W = Water / Aqueous Liquid A = Air S = Soil / General Solid WP = Wi O = Oil WT = Ge	ipe eneral Waste	TOTAL#	9	5	3 H		H	al Metals	Anions	Ammonia	S	Alkalinity	Sulfide			□ OTHER
SAMPLE ID		DA	TE	TIME	MAT	FIELD SAMPLE ID / LO	OCATION	TO	None	HNO3	NaO	HCI	MeOF	Total	An	Am	TDS	Alk	Sul			REMARKS
23-0401-01		5/3	153	auc	GW	DEK-MW-18001	7	4	1	1			x	x	x	x	x	x				
-02		11	1	Kello	GW	DEK-MW-18001 MS	6	3	1	1			x	x	x		x	x				
-03		l	111	deile	, GW	DEK-MW-18001 MSD		6	3	1	1			х	x.	x		x	x			
									Ц			H										10
											H	L	4									
											-		1	-							Ш	
	4		_						-	-	+			L								
											+		4									8
RELINQUISHED B	SY:	_	_		DATE/	TIME:	RECEIVED BY:							CC	MMI	ENTS	3					**
(_	1		6769ce 7	4.							1		,,,,						
RELINQUISHED E	Y/			1	DATE/	TIME:	RECEIVED BY:								ceive							ue Date: 5-25-23

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: 23-640	10			
Inspection Date: 5.04.23		Inspection By: UM)	
Sample Origin/Project Name: 62.	-2023 Rott	om Ash Pond + 1	uned Impa	ond
Shipment Delivered By: Enter the typ	e of shipment car	rrier.		
Pony FedEx _	UPS	SUSPS_	Airl	borne
Other/Hand Carry (whom)				
Tracking Number:		Shipping Form At	tached: Yes	_ No
Shipping Containers: Enter the type a	and number of shi	pping containers received.		
Cooler <u>L</u> Cardboa	rd Box	Custom Case	Envelop	e/Mailer
Loose/Unpackaged Containers				
Condition of Shipment: Enter the as-				
Damaged Shipment Observed:	2.7			king
Other			_ Lea	King
Shipment Security: Enter if any of the	e shipping contain			
Shipping Containers Received	: Opened	Sealed —	_	
Enclosed Documents: Enter the type of	of documents enc	losed with the shipment.		
CoC Work Requ	est	Air Data Sheet	Other	
Temperature of Containers: Measure	the temperature of	of several sample container	S.	
As-Received Temperature Ran	Andrew Commencer			No
				, •
M&TE # and Expiration LS	al7723 50	15.13		
Number and Type of Containers: En	ter the total numb	per of sample containers rec	ceived.	
Container Type Water	Soil	Other	Broken	Leaking
VOA (40mL or 60m)	_			
Quart/Liter (g/p)	_			
9-oz (amber glass jar)	-		-	-
2-oz (amber glass)				_
125 mL (plastic) 12				-
24 mL vial (glass)	5—			4
300 mL (plastic)	_			
Other	_	_	-	-

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

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

Page _____ of ____

	G SITE / CU				PROJECT NUMBER:	SAP CC or Wo							ANALYSIS REQUESTED (Attach List if More Space is Needed) QA RI				QA REQUIREMENT:				
-		m Ash Pond & I	Ined Impo	ound.	23-0401	REQUESTER	: Haro	ld F	Regis	ster				(Attac	in Lis	t if N	lore S	pace	is Need	led)	
SAMPLIN	G TEAM:				TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ S	STANDARD 🛮 OT	NDARD Ø OTHER														□ NPDES ☑ TNI
SEND RE	PORT TO:	Caleb Batts			email:	phone:							1								□ ISO 17025
COP	Y TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other			CONTAINERS													☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Slu W = Water / Aqueous Liquid A = Air	dge	PRESERVATIVE					als						Ш		☐ INTERNAL INFO		
LAB SAMPLE COLLECTION		XIX	S = Soil / General Solid WP = W	ipe eneral Waste	TOTAL#					-	Total Metals	su	Ammonia		linity	de			□ OTHER		
	PLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	OCATION	TOTA None HNO ₃ H ₂ SO ₄ NaOH HCI MeOH Other Total	Anions	Amn	TDS	Alkalinity	Sulfide			REMARKS						
23-0	401-01	5/3/53	carc	GW	DEK-MW-18001		7	4	1	1 1			x	x	х	x	x	x			
	-02	11 7	Kello	GW	DEK-MW-18001 MS		6	3	1	1 1			x	x	x	14	x	x			
1	-03	1111	deile	, GW	DEK-MW-18001 MSD		6	3	1	1 1			x	x	x		x	x			
																					1
								ī		1											
								Ī		Ť	T										
-																					
								i		Ì											
											T										8)
								Ī	Ħ	T	T										
RELINQU	ISHED BY		1		TIME: 76900 7	RECEIVED BY:							CC	MMI	ENTS	:					
RELINQU	INQUISHED BY: DATE/TIME: RECEIVED BY:						Received on Ice? Yes No M&TE#: LS\$27723 Temperature: 1.6-2.1 °C Cal. Due Date: 5-25-23														



Report ID: S48227.01(01) Generated on 05/08/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions:

John Laverty (johnlaverty@meritlabs.com)

Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S48227.01-S48227.03

Project: 23-0401 PR#23050668 Collected Date(s): 05/03/2023

Submitted Date/Time: 05/04/2023 16:41

Sampled by: Unknown P.O. #: 4400114090

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Certifications (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP/ISO 17025	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Alaska CSLAP	#17-001
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Y	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
р	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
х	Preserved from bulk sample

Glossary of Abbreviations

Appreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0401 PR#23050668

Page 19 of 26

Generated on 05/08/2023 Report ID: S48227.01(01)



Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S48227.01	23-0401-01 (DEK-MW-18001)	Groundwater	05/03/23 06:40
S48227.02	23-0401-02 (DEK-MW-18001 Field MS)	Groundwater	05/03/23 06:40
S48227.03	23-0401-03 (DEK-MW-18001 Field MSD)	Groundwater	05/03/23 06:40



Lab Sample ID: S48227.01

Sample Tag: 23-0401-01 (DEK-MW-18001) Collected Date/Time: 05/03/2023 06:40

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	3.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 16:26, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S48227.02

Sample Tag: 23-0401-02 (DEK-MW-18001 Field MS)

Collected Date/Time: 05/03/2023 06:40

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	3.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 16:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.183	0.02	0.005	ma/L	1	18496-25-8	1

1-* Sample spike @ 0.20 mg/L



Lab Sample ID: S48227.03

Sample Tag: 23-0401-03 (DEK-MW-18001 Field MSD)

Collected Date/Time: 05/03/2023 06:40

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	3.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 05/05/23 16:32, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.182	0.02	0.005	ma/L	1	18496-25-8	1

1-* Sample spike @ 0.20 mg/L

Merit Laboratories Login Checklist

Lab Set ID:S48227

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0401 PR#23050668

Submitted: 05/04/2023 16:41 Login User: MMC

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email:emil.blaj@cmsenergy.com

Selec	tion			Description	Note
Samı	ole Receiv	/ing			
01.	X Yes	☐ No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 3.7
02.	X Yes	No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	□ N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	☐ No	N/A	COC adequately filled out	
07.	X Yes	☐ No	N/A	COC signed and relinquished to the lab	
08.	X Yes	No	N/A	Sample tag on bottles match COC	
09.	Yes	X No	□ N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	N/A	Do sample have correct chemical preservation	
11.	X Yes	No	N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditio	ons			
13.	X Yes	No	N/A	All bottles intact	
14.	X Yes	No	□ N/A	Appropriate analytical bottles are used	
15.	Yes	X No	□ N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	☐ No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	
Corre	ective action	on for all	exceptions	is to call the client and to notify the project manager.	
Clion	t Review I	Rv.		Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S48227 Submitted: 05/04/2023 16:41

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0401 PR#23050668

Initial Preservation Check: 05/05/2023 08:42 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S48227.01 125ml Plastic NaOH/Zn Acetate		>12			
S48227.02	125ml Plastic NaOH/Zn Acetate	>12			
S48227.03	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

	1 1	
C.O.C. PAGE #	OF_I	

REPOR)	Laboratories, Inc.	CHAIN	OF	cu	IS	TOE	YC	RE	СО	RD							INVOI	CE TO
CONTACT NAME E	Emil Blaj							CONTACT NAME XSAME												
	sumers I							COM	PANY											
ADDRESS 135 V								ADDR	RESS											
Jackson			-4:	STATE MI ZIP C	ODE 2	1920	1	CITY										STATE	ZIP CODE	
PHONE NO. 517-	788-5888		FAX NO. 517-788-2533	P.O. NO. 4400114	090		٦	PHON	NE NO).				E-MA	ADDRE	SS				
E-MAIL ADDRESS	-MAIL ADDRESS emil.blaj@cmsenergy.com OUOTE NO. ANALYSIS (ATTACH LIST IF MOR					ORE SP	ACE IS REQUI	RED)												
PROJECT NO./NAM				SAMPLER(S) - PLEASE PE	RINT/SI	GN NAJ	ME				N/A	7		T		П	TI	Certifica		
		_	□1 DAY □2 DAYS □3 DA	YS STANDARD	ОТ	HER												Поню /	/AP Drin	
DELIVERABLE	S REQUIR	ED S	TD X LEVEL II LEVEL III	LEVEL IV EDD		THEF	R _					0						□ DoD	□ NPC	DES
MATRIX (CODE:	GW=GROUN SL=SLUDG		WW=WASTEWATER S=SO DRINKING WATER O=OIL V		=SOLI					iners vative		Sulfide						Project I	Locations New	v York
MERIT LAB NO. FOR LAB USE ONLY	DATE	AR	SAMPLE 1 IDENTIFICATION-DE	TAG ESCRIPTION XELL STATES		# OF SOTTLES	NONE	호	NO.	NaOH	MeOH	Total	Total					Other Special	Instructions	
48227.01	05/03/23	0640	23-0401-01 (DEK-MW-I	8001)	GW	1	Ī	П		1		1							with NaOH/	
	05/03/23	0640	23-0401-02 (DEK-MW-1	8001 Field MS)	GW	1	T	П	T	1		1						4.		
.03	05/03/23	0640	23-0401-03 (DEK-MW-1	8001 Field MSD)				П		1		1						"		
																		Please spi	ke MS/MSD	and report
							L											spike cor	ncentration a	ind/or rec.
							L	П		Ц										
							L	11	1	Н										
<u> </u>					┡		L	H	1	H	-									
					-		L	H	+	H	+	L	-	11			+			
					\vdash		H	H	+	H	+	H	+	++	-		++	-		
					-	-	H	+	+	H	+		-	-	-		++			
-					_				1	Ш										
RELINQUISHED BY SIGNATURE/ORGA		A. c	DUSUMERS ENERGY	Sampler DATE		100 ME		SIGN	ATUE		BY: GANIZA	ATION							DATE	TIME
RECEIVED BY: SIGNATURE/ORG/		0	M Clilcott	5 4123		041		RECE			GANIZ/	ATION							DATE	TIME
RELINQUISHED BY SIGNATURE/ORGA				DATE		TIME		SEAL	NO.				SEAL INTAC	NO	INITIAL	S	NOTES	TEMP. O	N ARRIVAL	7
RECEIVED BY: SIGNATURE/ORGA	ANIZATION			DATE	1	TIME .		SEAL	NO.			15	SEAL INTAC	NOD	INITIAL	5			2	3.7



Appendix B Field Notes



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Compliance
PROJECT NUMBER:	514404.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	5/1/2023 TO 5/5/2023 \int S A J 3 Second Quarter Supplemental Sampling Event
PURPOSE OF FIELDWORK:	
WORK PERFORMED BY:	Jake Krenz, Javier Jasso, Andrew Whaley

Cluber while 5/4/23 SIGNED DATE

CHECKED BY S-10-23



GENERAL NOTES

		•			
PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comp DA	TE: 5/21	/23	TIME ARRIVED:0715
PROJECT NUMBER:			JTHOR: JJ		TIME LEFT: 1600
		WE	ATHER		
TEMPERATURE: _ <u>}</u>	°F WIND:	18-23	MPH_	VISIBIL	ITY: Cloudy-Rain
			ING PERFOR		
Sample KL	I Locations	DER 150	x03, BC	5-16, OU	-11, OW-12,
KLI PCS,	and SW D.	tch			-11, OW-12,
•					
Ship Sample	es via Fe	d EX			
•					
	BLEMS ENCOUNTERE	D		CORRECTI	VE ACTION TAKEN
None	· · · · · · · · · · · · · · · · · · ·				
			L		
	T	COMMU	UNICATION		
NAME	REPRESENTING			SUBJECT / COM	MENTS
Darby Litz	TRC	PM - Upda			
Caleb Batts	Consumers	Site Conta	ct		
	100/2020				
WASTE MATRIX	QUANTITY	GATION DEN	RIVED WASTE	COMMENT	re
Groundwater	NM	Purge to C	Ground	COMMENT	
O. Danawater	1.4141	I uige to C	JIOUIIU		
	11		,	1 0	1
aufon	why 5	14/23		Il ?	B-10-23
SICNED	1	DATE		CKED DY	DAT



GENERAL NOTES

PROJECT NUMBER: TEMPERATURE: 38 Collected Ba Collected Karr and DEK-Mu Collected KLI Shipped Sou PROBLEMS Rental Meter	WORK nckground S n BAP San N-15002. I Sample!	AUTHO WEATHE D-20 MPH / SAMPLING Lemple: poles: (LII-5)	VISIB PERFORMED MW-15016 EK- MW-15005	DEK-14W	1400 Snow
Collected Bacand DEK-Mu Collected Kanand DEK-Mu Collected KLJ Shipped Sou PROBLEMS Rental Meter	"F WIND: K WORK nckground S n BAP San w- 15002. I Sample!	WEATHED-20 MPH / SAMPLING cample: poles:)	PERFORMED MW-15016 EK- MW-15005	BEK-14W	Snow
Collected Barrand DEK-Mu Collected KLI Shipped Sou PROBLEMS Rental Meter	WORK nckground S n BAP San N-15002. I Sample!	0-20 MPH /SAMPLING emple: uples: 0	VISIB PERFORMED MW-15016 EK- MW-15005	DEK-14W	
Collected Barrand DEK-Mu Collected KLI Shipped Sou PROBLEMS Rental Meter	WORK nckground S n BAP San N-15002. I Sample!	ISAMPLING anyple: aples: D	PERFORMED MW-15016 EK- MW-15005	DEK-14W	
Collected Karnend DEK-Mu Collected KLJ Shipped Sou PROBLEMS Rental Meter	nckground S n BAP San N-15002. I Samphe!	ample: uples: D KLI-S	MW-15016 EK- MW-15005	,	-15006,
Collected Karnend DEK-Mu Collected KLJ Shipped Sou PROBLEMS Rental Meter	n BAP San N-15002. I Sample!	uples: D	EK- MW-1500S	,	-15006,
collected KLJ Shipped Sou PROBLEMS Rental Meter	N-15002. I Sample!	KLI-S	SC S	,	-15006,
Shipped Son PROBLEMS Rental Meter	•				
PROBLEMS Rental meter	mples from	5/1/23			
PROBLEMS Rental meter	mples tram	5/1/23			
Rental meter					
Rental Meter	BENCOUNTERED		CORREC	TIVE ACTION TAKE	EN
	ghing nega	rtive _	try to re	icalibrate	didat
pH readings			work, stoppe	d wing	meter
		COMMUNIC	ATION		
NAME F	REPRESENTING		SUBJECT / CC	DMMENTS	
Darby Litz TR0	C PM	1 - Updates			
Caleb Batts Cor	nsumers Sit	e Contact			
	INVESTIGATI	ION DERIVE	D WASTE SUMMARY		
WASTE MATRIX	QUANTITY		COMME	NTS	
Groundwater NM	Pu	irge to Groui	nd		
100				15 5/1	0/23
SIGNED SIGNED	5-9-23		I.~	ツト ノノバ	$u \cup u \cup v$

 (\bar{x})



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn E	BAP/LI: 2023 GW	SAMPLER NAME:	Jake Krenz, Javier Jas	sen Andrew Whale				
PROJECT NO.:	514404.000	1.0000	GAWIFLER WAWIE.	Jane Meliz, Javiel Jas	oo, Andrew Windle				
WATER LEVEL MEASU	REMENTS COLL	ECTED WITH:							
HER	ON DIPPER-T		TRC A2						
NAME AND MODEL OF INS	STRUMENT		SERIAL NUMBER	(IF APPLICABLE)					
PRODUCT LEVEL MEAS	SUREMENTS CO	DLLECTED WITH	:						
	NA			NA					
NAME AND MODEL OF INS	STRUMENT		SERIAL NUMBER	(IF APPLICABLE)					
DEPTH TO BOTTOM OF	WELL MEASU	REMENTS COLLI	ECTED WITH:						
HER	ON DIPPER-T			TRC A2					
NAME AND MODEL OF INS	STRUMENT	/ ** ////**	SERIAL NUMBER	(IF APPLICABLE)					
PURGING METHOD									
PERIS	STALTIC PUMP		TRC A2						
NAME AND MODEL OF PU	IMP OR TYPE OF	BAILER	SERIAL NUMBER	(IF APPLICABLE)					
SAMPLING METHOD									
PERIS	STALTIC PUMP			TRC A2					
NAME AND MODEL OF PU	JMP OR TYPE OF	BAILER	SERIAL NUMBER (IF APPLICABLE)						
GEOTECH I	DISPOSABLE FII	LTER	0.45 MICRON						
NAME AND MODEL OF FI	LTERATION DEVI	CE	FILTER TYPE AN	D SIZE					
DEDICAT	TED POLY TUBI	NG	✓ LOW	-FLOW SAMPLING EVENT					
TUBING TYPE			•						
PURGE WATER DISPO	SAL METHOD								
✓ GROUND	☐ DRUM	☐ POTW	POLYTANK	OTHER					
DECONTAMINATION A	ND FIELD BLAN	IK WATER SOUR	CE						
STO	ORE BOUGHT			LABORATORY PROVIDE	D				
POTABLE WATER SOURCE AU SIGNED	S	14/23 DATE	DI WATER SOUF CHECKED BY	1,	-10-23 DATE				

REVISED 04/2019

WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	Compliand	ce	MODEL: VSI PRO DSS	SAMPLER:	AW JK, JJJ
PROJECT NO.:	514404.0001.0000			SERIAL#: Rental	DATE: 5	-7-23
PH (CALIBRATION CHECK			SPECIFIC COND	UCTIVITY CALIBI	RATION CHECK
pH 7 (LOT #): 3 GB 359 (EXP. DATE): Feb/25	pH 4 / 10 (LOT #): 3 G.4 1 3 6 (EXP. DATE): 5	CAL. RANGE	TIME	CAL. READING (LOT#): 76C 493 (EXP. DATE): Mar /24	TEMPERATURE	CAL. RANGE TIME
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD			POST-CAL. READING / STANDARD		
7.00 17.00	4.00 /4.00	WITHIN RANGE	0643	1413 / 1413	21.2	WITHIN OLUO
1	1	WITHIN RANGE		/		WITHIN RANGE
1	1	WITHIN RANGE		/		WITHIN RANGE
1	1 .	WITHIN		/		WITHIN
ORP	CALIBRATION CHECK			D.O. CA	LIBRATION CHE	
CAL. READING	TEMPERATURE			CAL. READING	TEMPERATURE	
(LOT #): 2 K.K.K.K.OO180 (EXP. DATE): 10-11-27	(°CELSIUS)	CAL. RANGE	TIME		(°CELSIUS)	CAL. RANGE TIME
POST-CAL READING / STANDARD		1		POST-CAL. READING /SATURATED /	ur.	
231.2 / 271.2	21.2	X WITHIN RANGE	0646	11.23 / 11.23	20.1	WITHIN RANGE 0649
/		WITHIN RANGE] /		WITHIN RANGE
1		WITHIN RANGE		/		WITHIN RANGE
1		WITHIN		1		WITHIN RANGE
TURBID	ITY CALIBRATION CHEC	K			COMMENTS	
CALIBRATION	READING (NTU)			AUTOCAL SOLUTION	✓ STANDAR	D SOLUTION (S)
(LOT #):	(LOT #):	CAL.	TIME	(LOT #):		AND EXPIRATION DATES
(unit : BATE).	(EXP. DATE):	RANGE		(EXP. DATE):		IBRATION CHECK
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	WITHIN		CALIBRATED PARAMETERS		TON RANGES (1)
0.0 /0.0		RANGE			pH: +/- 0.2 S	
	/	RANGE		COND		OF CAL. STANDARD
	· · · · · · · · · · · · · · · · · · ·	RANGE WITHIN	1	│	ORP: +/- 25 m	•
		RANGE		☐ D.O.	D.O.: VARIES	
	NOTES		-,	TURB	TURB: +/- 5% 0	OF CAL. STANDARD
		, , , , , , , , , , , , , , , , , , ,				ANGES ARE SPECIFIC TO WATER QUALITY METER
	PROBLEMS ENCOUNTERED			CORRE	CTIVE ACTIONS	
		- 4,46.4				
1 2 0						
All M	5-8	1-23		h	5 5	10/23

PROJECT NAME: C	DEC Karn LP. 2023 GW Co	mpliance		MODEL: YEI Pro	ATION LOG 2 + FOIL 660 DSS	SAMPLER:	₩ }JJ, J	IK
PROJECT NO.: 5	14404.000 0 .0000			SERIAL #: AA	Office	DATE: 5/2/23		
PH C	ALIBRATION CHECK				PECIFIC CONDU	CTIVITY CALIBR	RATION C	HECK
pH 7	pH 4 / 10] C	AL. READING	TEMPERATURE		
(EXP. DATE): SEP/24	LOT #): 3CA 799 EXP. DATE): Jan /2 5 POST-CAL, READING/STANDARD	CAL. RANGE	TIME	(EXP. DAT	ZG11017 E): SeP(z.S al. reading/standard	(*CELSIUS)	CAL. RANGE	TIME
7.06 17.06	4.00 14.00	WITHIN RANGE	07 <i>4</i> 6	1116	1116	13.1	WITHIN RANGE	0794
1	1	WITHIN RANGE			1		WITHIN RANGE	
	1	WITHIN RANGE	·		1		WITHIN RANGE	
1	1	WITHIN RANGE			1		WITHIN RANGE	
ORP (CALIBRATION CHECK				D.O. CAL	IBRATION CHEC	CK	
CAL. READING	TEMPERATURE] <u>c</u>	AL. READING	TEMPERATURE		
(LOT #): ZZD 100135 (EXP. DATE):4/27	(°CELSIUS)	CAL. RANGE	TIME			(°CELSIUS)	CAL. RANGE	TIME
POST-CAL READING / STANDARD	h -	X WITHIN		1 10 0	READING /SATURATED AIR	1	Γ Ψ] WITHIN	1
728.9/228.9	12.7	RANGE	0 146	10.2	6 110.26	13,0	WITHIN RANGE	
		RANGE WITHIN			1		RANGE WITHIN	1
,		RANGE	1	-	7		RANGE WITHIN	ų.
	TY CALIBRATION CHEC	RANGE	<u> </u>			COMMENTS	RANGE	<u> </u>
CALIBRATION R		- N	T		TOCAL SOLUTION	STANDARD	SOLUTION	1 (S)
	(LOT#):	CAL.		(LOT#):		LIST LOT NUMBERS		
(EXP. DATE):	(EXP. DATE):	RANGE	TIME	(EXP. DA	TE):		BRATION CH	
POST-CAL, READING / STANDARD	POST-CAL. READING / STANDARD]	<u> </u>	CALIB	RATED PARAMETERS	CALIBRAT	ON RANGES	(1)
0.00 10.00			D15	a 1	рН	pH; +/- 0.2 S	.U.	
1		WITHIN RANGE	<u> </u>		COND	COND: +/- 1% O	F CAL. STA	NDARD
/		WITHIN RANGE	<u> </u>		ORP	ORP: +/- 25 m	V	
		WITHIN RANGE			D.O.	D.O.: VARIES		
	NOTES			_ □	TURB	TURB: +/- 5% C	F CAL. STA	NDARD
						(1) CALIBRATION RA	NGES ARE S WATER QUA	PECIFIC TO
			•	-				·
PF	ROBLEMS ENCOUNTERED				CORREC	TIVE ACTIONS	,	
		· · · · · · · · · · · · · · · · · · ·	****					
								



WATER LEVEL DATA

PROJECT NAME:	CEC Karn l	F: 2023 GW Co	mpliance	DATE:	5/1/27	
PROJECT NUMBER:	514404.000	0.0000		AUTHC	R: AW, JJ, JK	
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
MVV-01	104	TOC	17.20	2420	NA	NM
MVV-02	104)-	TOC	17.50	26.38	NA	NM
MVV-03	iolle	TOC	17.50	30.78	NA	NM
MVV-04	w/	TOC	14.70	33.60	NA	NM
MVV-06	1333	тос	9.44	24.31	it han e	Ammed
MVV-08	1119	TOC	17.48	24-801	NA	NM
MVV-10	(134	тос	14-75	2481	NA	NM
MW-12	1205	тос	18.63	7381	NA	NM
MW-14	1224	TOC	14.71	19.33	NA	NM
MW-16	1246,	TOC	16.14	21.30	NA	NM
MW-17	177	TOC	13.43	2434	NA	NM
MW-18	0954	TOC	25,90	39.65	NA	NM
MW-19	1001	тос	19.15	30.0	NA	NM
MW-20	1070	TOC	5267	7200	NA	NM
MW-21	(000	TOC	51.10	60.56	NA	NM
MW-22	113.	тос	14.81	29.54	NA NA	NM
MVV-23	1157	тос	13.90	15.10	NA	NM
OW-01	1015	TOC	51.14	64.00	NA	NM
OW-02	11)4	TOC	15.10	21.91	NA	NM
OW-03	1133	TOC	17.14	2670	NA	NM
OW-04	1276	TOC	10.10	1600	NA	NM
OW-05	1744	TOC	15.00	19.00	NA	NM
OW-06	1270	TOC	17.7-6	12480	NA	NM
OW-07	13-00	тос	115.11	23.91	NA	NM
OW-08	1313	тос	1089	1751G	NA	NM

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

DATE

CHECKED

5-10-23 DATE

SIGNED

REVISED 04/2019

TRC

WATER LEVEL DATA

PROJECT NAME:	CEC Karn I	F: 2023 GW Co	mpliance	DATE:	5 1/23	
PROJECT NUMBER:	514404.000	00.000		AUTHO	R: Jake Krenz,	Javier Jasso, And
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
OW-09	1310	TOC	(0.33	12.77	NA	NM
OW-10	1324	TOC	7.00	17.91	NA	NM
OW-11	0948	TOC	72.30	2547	NA	NM
OW-12	0934	тос	17-14	24.01	NA	NM
OW-13	0905	тос	384	14.38	NA	NM
OW-15	5101	тос	3.40	14.75	NA	NM
EW-01	1136	тос	13.65	DNIN	NA	NM
EW-02	1141	TOC	1525	11 15	NA	NM
EW-03	1203	TOC	14.44	(11)	NA	NM
EW-04	(213	TOC	14.41	100	NA	l NM
EW-05	1270	TOC	1400	15 11	NA	NM
EW-06	1246	TOC	1265	(11)	NA	NM
PZ-01	1108	TOC	[3,46	14.10	NA	NM .
PZ-02	1130	TOC	1532	23.)	NA	NM
PZ-03	ilul	тос	15.037	1940	NA	NM
PZ-04	1148	тос	1584	2091	NA	NM
PZ-05	110	TOC	iy.ul	21.71	NA	NM
PZ-06	1207	TOC	15/4	2035	NA	NM
PZ-07	1311	TOC	14.78	21.00	NA NA	NM
PZ-08	1217	TOC	14.10	2054	NA	NM
PZ-09	12.24	TOC	15.30	71-61	NA	NM
PZ-10	1235	тос	1114	17.74	NA	NM
PZ-11	いかつ	тос	1390	(8 W	NA	NM
				<u> </u>	 	
	_				<u> </u>	

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

SIGNED J/U/03
DATE

CHECKED 5-1

REVISED 04/2019



WATER LEVEL DATA

PROJECT NAME:	CEC Karn LF: 2023 GW Compliance				DATE:	5/1/53	
PROJECT NUMBER:	514404.000	00.000			AUTHO	R: Jake Krenz,	Javier Jasso, And
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	l .	H TO TOM ET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
DEK-MW-18001	0940		E.89	14.1	1		
DEK-MW-15002	0935		4.36	17.	75		
DEK-MW-15003	12/2CV		16.90	27.	457		
DEK-MW-15004	0996		28.11	41.	Cu		
DEK-MW-15005	010		9.90	23	رو		
DEK-MW-15006	0913-		9.44	21.	V		
DEK-MW-22001	0927		9.66	240	U		
DEK-MW-22002	0912		10-95	240	1/2		
DEK-MW-22003	0971		10.40	24.	ub		
DEK-MW-22004	0979		9.33	72.	.44		
DEK-MW-22005	0979		660	20	30		
DEK-MW-22006	3119		849	17.6	ili	!	
Tw-21-063	1034		16.17	λί.	00		
Tev-21-00).	(03)		1254	20	51		
10-21-001	1036		12.70	17.0	54		
Tw-71-0013	ious		22.90	3 Ce.			
Tw. 21-0045			20 00)D.	7.9.		
Tw-21 00125	1053		20)1	34.	17		
TWO LOUISID	1054		20.001	54.	7 (
Tw21-buils	1103		21-40	27.1	TT		
Tw->1. UU11I			21.)	35	30		
Tw-21-001117	1101		21.48	51.	<u>ን</u> ‹		
Tu-21-000	1106		20-54	296	U		
TU 21009			20.30	27.			
Tu-21-006	(251		1390	17.	54		

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

5/4/3 DATE

CHECKED CHECKED

5-10-23

DATE

REVISED 04/2019

\$IGNED--



WATER LEVEL DATA

PROJECT NAME: CEC KARN LF 2023 GW COMLPIANCE DATE: 5 1137							n
PROJECT NUMBER: 514404.0000.0000 AUT							
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	ВОТ	TH TO TOM EET)	DEPTH TO PRODUCT (FEET)	WATER ELEVATION
TW-21-004 TW-21-004 TW-21-004	125		1293-	184	V	1000	
TW-21-004	1300		9.74	(35	,U		·
Tw 21-005	1300 1304 1301		1047-	149			
Tu-21-00il	1301		1310	[(e.	<i>314</i>		
				<u> </u>			
							
				-			
					. 1118 14		
				-			
	<u> </u>						
				 			
L							

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

SIGNED

DATE

CHECKED

5-10-27

ATE

WATER SAMPLE LOG

PROJECT	NAME:	CEC K	arn BAP/LI: 20	23 GW C	PRI	EPARED		(CHEC	KED
PROJECT	NUMBE	R: 514404	4.0001.0000	BY:	AW, JK, (DATES (4	つ り BY:	2K	-	DATE: 5-10-23
SAMPLE	SAMPLE ID DELMU LECO WELL DIAMETER: 2" 4" 6" OTHER									
WELL MAT		✓ PVC	ss 🗆	IRON GAL	VANIZED S	TEEL	🗆 от	HER		
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI		LEACHATE	ОТ	HER		
PURC	SING	TIME:/X	O\U DA	TE 5/2/2:	3 S	AMPLE	TIME: OC			TE:5/3/03
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP:	1·6·4 si 分泌、p		O.G	&5 mg/	umhos/cm
DEPTH TO	WATER:	884	T/ PVC		TURBI	DITY: -9 9	NTU			
DEPTH TO	BOTTO	1:196×	T/ PVC		- Divo	NE 🗌 SLI	днт □	MODEF	RATE	☐ VERY
WELL VOL	UME:	NA	LITERS	GALLONS	TEMPE	RATURE: 4	<u></u> 0_0	OTHER	₹:	
VOLUME I	REMOVE	D:_Ce	LITERS	GALLONS	COLO	R: Cla	\$	ODOR:	ľ	101C
COLOR:	- (c	Smore	n od	OR: MOKO	_ FILTRA	TE (0.45 um)	YES	Z NC)	
		TUR	BIDITY	*	FILTRA	TE COLOR:		FILTRA	ATE ODO	PR:
NONE	□s	LIGHT 🗌	MODERATE	VERY	QC SA	MPLE: 🔀 MS	/MSD	DL	JP	
DISPOSAL	METHO	D: GROUI	ND 🗌 DRUM	OTHER	СОММ	IENTS:				
TIME	PURGE RATE	PH ·	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERA	IURE	VATER LEVEL	CUMULATIVE PURGE VOLUME
20 - 16	(ML/MIN)	400 400	(umhos/cm)	(mV)	(mg/L)	(NTU)	(Ω' ζ		_(FEET) るれへ	(GAL OR L) INITIAL
acolo	200	6		323	8.8	141	9.4		100	I I I I I I I I I I I I I I I I I I I
CEIT		7.57	863	-200	1.				•	·
0670		7.61	<i>6</i> 6 1	~)O(43	053	37	-('		Gec	3
7120		263	છ 5১	~210.6	036	14.5	G,	\	100)
0600		7.64	857	-3285	027	10.0	9, 1	, (lier	(4
0635		764	858	-2790	030	9.9	9,	. (700	5
deili		764	858	- 286.7	019	9.9	9.6	, (900	6
					<u> </u>					
			·		<u> </u>					<u></u>
N(pH: +/-			TEST IS COMPL 3 % ORP:		SUCCESSIV D.O.: +/- 0.3		ARE WITHIN			IG LIMITS: TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - Na	OH	E - HC	CL F
NUMBER	SIZE	TYPE	PRESERVATI			1	TYPE	PRES	SERVATI	IVE FILTERED
6	155	9/451	A		N 2		DI	B	<u> </u>	OY ON
30	701	PI	A				PI	- '()	
(250		0			· · · · ·	 			
3	7 61	176	B		-}			1		
3	701	19	C		N					
SHIPPING	<u> </u>		rop off D	ATE SHIPPED:	8~	4-23	AIRBIL	L NUMBE	R:	
COC NUM		1-1-		GNATURE:	<u></u>			SIGNED:		1/12
						$\rightarrow \overline{}$	<u> </u>		2 14	42-/

Y IPC	DAP/L				
PROJECT NAME:	CEC Karn LF : 20	23 GW Comp	PREPARED		CHECKED
PROJECT NUMBE	R: 514404.000 0.000	0 BY: A	MyJ, JK DATE:5/2	23 BY: 3K	DATE: 5-10-6
SAMPLE ID: DE WELL MATERIAL: SAMPLE TYPE:	K - MW -15 ☑ PVC ☐ SS ☑ GW ☐ WW		ER: 2" 4" ONIZED STEEL	6" OTHER OTHER OTHER	
PURGING				TIME: 100X	DATE: 5/2/23
PURGE METHOD:	1 0/38	31-1-0	PH: 8.01 St	CONDUCTIVIT	Y: 344.08 umhos/
DEPTH TO WATER:	1697 T/ PVC		TURBIDITY: 02		e granden produce a construir de construir con la construir de construir de construir de construir de construir
DEPTH TO BOTTOM	1:_ <u>\/\//</u>		NONE SLIC	SHT MOD	ERATE VERY
WELL VOLUME:	NA LITERS	GALLONS	TEMPERATURE: 13	<u>65</u> ℃ ОТНІ	
VOLUME REMOVED		GALLONS	COLOR: <u>Clea</u>	C ODO	R: NONe
COLOR:	lear	ODOR: NONE	FILTRATE (0.45 um)	YES U	NO
	TURBIDITY		FILTRATE COLOR:	FILT	RATE ODOR:
X NONE ☐ SI	IGHT MÓDERAT	E VERY	QC SAMPLE: MS/	MSD 2	DUP-
DISPOSAL METHOL	D: GROUND DR	UM 🗌 OTHER	COMMENTS: / Can	sducer in	well
TIME PURGE RATE (ML/MIN)	PH CONDUCTI (SU) (umhos/c		D.O. TURBIDITY (mg/L) (NTU)	TEMPERATURE	WATER CUMULATIV LEVEL PURGE VOLU (FEET) (GAL OR 1
0938 700	7.52 346.	73 16,5 2	26 009	11,52	16.47 INITIAL
947 1	7.60349.2	1 -1004 1	,50 034	17.50	17.05 16
948	7-66 541,7	110	.47 624	R/B	1 20
053	772 757	1 -121 8> 1	45 011	13.427	30
755	7.95 341.8	8-20001	.07 (\) (C)	17.52	40
1005		-5	41 0.14	D / -	()
1003	7.92 392.			15.65	1 310
1008 V	8.01 34/1	58-208.71.	93 029	15.65	V 60
pH: +/- 0.1			CCESSIVE READINGS A		
BOTTLES FILLED	PRESERVATIVE COL	DES A - NONE B	- HNO3 C - H2SO4	D - NaOH	E-HCL F
NUMBER SIZE	TYPE PRESER	VATIVE FILTERED	NUMBER SIZE	TYPE PR	ESERVATIVE FILTER
460	VOA A		12 125	PLAYIC C	
2 250	Plastic A				□ Y [_
2 235					
2 125	k	□ y Q N			
2 125	1 6	□ Y 🔯 N	I		
SHIPPING METHOD	Fed EX	<u> </u>	5/2/23	AIRBILL NUM	BER:
COC NUMBER:		SIGNATURE:	AG)	DATE SIGNE	D: 514/29

<>>	TR	C

WATER SAMPLE LOG

PROJECT NAME: CEC Ka	23 GW C	PREPARED			CHECKED				
PROJECT NUMBER: 514404.	BY:	ØŴJK, J.	DATE: 5/2	123 BY: 3	اد ا	DATE: 5-10-23			
SAMPLE ID: OLJ - O WELL DIAMETER: 2" 4" 6" OTHER									
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER									
SAMPLE TYPE:									
PURGING TIME: 1/4	'5 DA	TE: 5/2/23	S/	MPLE	TIME: 1215		TE: 5/2/23		
PURGE PUMP PERISTALTIC PUMP METHOD: BAILER PH: 7.26 SU CONDUCTIVITY: 549.80 umhos/ci ORP: -151.3 mV DO: 1.63 mg/L									
DEPTH TO WATER: 702 T/ PVC TURBIDITY: 34.12 NTU									
WELL VOLUME: NA	LITERS	GALLONS	TEMPE	RATURE:	.16 °C 07	HER:	<u> </u>		
VOLUME REMOVED: 60	LITERS	GALLONS	COLOF	: <u>alear</u> .	- black SPOI	OOR:	vone_		
COLOR: LIEG.									
TURBIDITY FILTRATE COLOR: UEC FILTRATE ODOR: NONE									
NONE SLIGHT NO PROUNT OF SERVICE STATE	MODERATE D	UVERY	QC SA			DUP- RA			
ICHAEL POINT OF THE SOLUTION OF FAIR									
RATE	CONDUCTIVITY		D.O.	TURBIDITY	TEMPERATURE	I FEAFF	CUMULATIVE PURGE VOLUME		
(ML/MIN) (SU) 1145 ZOO) 7.54	(umhos/cm)	(mV) -40.0	(mg/L)	(NTU)	<u>(°C)</u> }•,9 \{	(FEET)	(GAL OR 👸		
1150 7.29	47415	-125.2	1.06	3016	471	7.30	1,0		
1155 7.28	498.90	-1423	1.63	29.91	8,96	7.60	20		
1200 7.27	536.41	-149,4	1.64	31.45	4.12	7.88	3.6		
	551.20	-155.7	1.63	32.85	9.17	8.02	4.0		
1210 7.26	557,11	-152.7	1.64	35,50	9.15	8.05	5.0		
1215 4 7.26	549.80	-151.3	1.63	34.12	9.16	805	6.0		
						-			
							C.LIMITO.		
	NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1								
BOTTLES FILLED PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F									
NUMBER SIZE TYPE	PRESERVAT	IVE FILTERE	D NUMB	ER SIZE	TYPE I	PRESERVATI			
9 60 VOA	A			- 125	Plaste	<u> D</u>	□ Y X N		
Z 250 plastic	<u> </u>			125	Plastic	<u>B</u>			
2 125	_ <u>A</u>		+						
2	B		- 						
SHIPPING METHOD: Fed	<u> </u>	ATE SHIPPED:	5/4		AIRBILL NU				
COC NUMBER:	IGNATURE:		Aul_	DATE SIGN	DATE SIGNED: 5 6/23				

	ותי		BAP/L	VA I EI	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	ZWIF 1	-E LU	-			
PROJECT NAME: CEC Karn J.F. 2023 GW Comp PREPARED CHECKED							KED				
PROJECT	NUMBER	R: 51440	4.000 ∮ .0000		BY: 🧲	∰11' 1k	DATE:5	12/2	BY: 3	R	DATE:5-10-23
SAMPLE ID: OW - WELL DIAMETER: 2" 4" 6" OTHER											
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER											
SAMPLE TYPE:											
PUR	GING	TIME: 10	50 D	ATE: 5/2/	zş	SA	MPLE	TIME:	1115	DA	ATE:5/2/25
PURGE METHOI		PUMP BAILER	PERISTALTIC	PUMP		PH: S	1.65 -1840,			ITY: <u>27</u> C 89mg	>.52 umhos/cm /L
DEPTH TO	WATER:	23.60	T/ PVC			TURBIC	ITY: 1.54	NTL	J	*************	
DEPTH TO	воттом	WW	T/ PVC			MON. 🔼	E 🗌 SL	.IGHT	□ мо	DERATE	
WELL VOL	UME:	NA	LITERS	☐ GALLO	NS	TEMPER	RATURE: _1	0.10	°С ОТІ	HER:	
VOLUME	REMOVED:		LITERS	☐ GALLO	NS	COLOR	: <u>Cle</u> c	30	OD	OR:	None
COLOR:	_Cle	eac	0	OOR: <u><u></u><u></u><u></u><u></u> () / </u>	e	FILTRAT	E (0.45 um)	☐ YES	Z 8	NO	-
		TUR	BIDITY			FILTRAT	E COLOR:		FIL	TRATE ODO	OR:
NONE	SLI	IGHT 🗌	MODERATE	☐ VEF	RY	QC SAM	APLE: M	S/MSD	Ō	DUP-	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS: FB- HI / Transquer											
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. (mg/L)	TURBIDITY (NTU)		ERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL ORL)
1050		9,57	276.51	-75.	. 1	<u> دلی .</u>	212		5. <u>80</u>	23.60	INITIAL
1055	رين	9.59	276 57	1		100	1.26	10.		l .	1.0
1100		9.64	770.3			.91	0.55	9.8	*****	23,80	Z. CJ
	l	9.64	270.89		1						3,6
1105							0.86	9.9			
1110	-V	9.65	272.21		········· }·· · · ·		1.32	10,		 	1 4,0
1112		9.65	270,52	-184	. إن	87	1.55	∫Q,	10		5.0
*-*** 177 <i>2</i> ***********************************	e e mande denne dans nya wangin ku						81m. 4 **m#6 *********************************				
								<u> </u>	Alfa manga kalandaran dan serjaman		
									The second section of the section of the second section of the section of the second section of the section of the second section of the section of the second section of the section	***************************************	
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1											
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	В	- HNO3	C - H2SO	4 D-	NaOH	E - HC	CL F
NUMBER	. ——	TYPE	PRESERVAT		ERED	NUMBE		TY	PE PI	RESERVAT	
2	60	VOA	A	□ Y	N X	2	125	Plas	HC	\overline{D}	□ Y 🗓 N
l	250	Pla Str	A	ΠY	√ N						□Y □N
2	125	1	A	□Y	Δ) N	1	*****			Total III des fair 1886 assessed her	UY UN
7)		B	□ Y	N K					. ,	OY ON
	-	1	Č		X N		· M + Mail and B + 1 m + 1 m m the man most derive in man			************	
SHIPPING	METHOD:	Fed	EX_ [ATE SHIPPE	ED:	5/21	25	AIF	RBILL NUN	/BER:	,
COC NUM	COC NUMBER: SIGNATURE: AG DATE SIGNED: 514/28										

<>>	TR	C
	P F W	_

WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED							
PROJECT NUMBER: 514404.0001.0000 BY:	MJK, JJ DATE: 5/2/23	BY: 314 DATE: 5-10-23					
SAMPLE ID: OU - 12 WELL DIAMETER: 2" 4" 6" OTHER							
WELL MATERIAL: ✓ PVC SS IRON GALVANIZED STEEL OTHER							
SAMPLE TYPE:							
PURGING TIME: 1255 DATE: 5/2/23	SAMPLE TIME:	1300					
PURGE PUMP PERISTALTIC PUMP		ONDUCTIVITY: \$54.62 umhos/cm					
METHOD: BAILER	ORP: -102.1 mV DC						
DEPTH TO WATER: 17.172 T/ PVC	TURBIDITY: 6.31 NT						
DEPTH TO BOTTOM: 23.40T/ PVC	NONE SLIGHT	MODERATE VERY					
WELL VOLUME: NA LITERS GALLONS	TEMPERATURE: 10.84	°C OTHER:					
VOLUME REMOVED: 12.0 🗵 LITERS 🗌 GALLONS	COLOR: Llegic	ODOR: NOTE					
color: <u>Slight orange</u> odor: <u>None</u>	FILTRATE (0.45 um) YE	ES [XNO					
TURBIDITY	FILTRATE COLOR:	FILTRATE ODOR:					
□ NONE □ SLIGHT □ MODERATE 💢 VERY	QC SAMPLE: ☐ MS/MSD	DUP-					
DISPOSAL METHOD: ☐ GROUND ☐ DRUM ☐ OTHER COMMENTS: E 3 - KLI							
TIME PURGE PH CONDUCTIVITY ORP	D.O. TURBIDITY TEM	PERATURE WATER CUMULATIVE					
RATE (ML/MIN) (SU) (umhos/cm) (mV)	(mg/L) (NTU)	(°C) (FEET) (GAL OR (1)					
	2.94 694.48 9	62 17.12 INITIAL					
1300 7.16 811.84 -90.9 7	-5 11 / 4	5.11 17:20 1.0					
105 7.15 827.98 98.2	21015	28 1 28					
120 7.15 822.19 -48.6		0.40 3.0					
13/5 7.15 388.11 48.8 1	196 92.16 10	0.50 4.6					
1520 7.15 842.7099.2 1	.45 47.48 10	5.57 5.0					
1325 715 847.10-100.6	,95 40.12 10	160 6.6					
1830 7.14 848.16 -44.6 1	95 Se. 64 10	1.0					
1335 7.14 847.57-1014 1	.94 26.12 10	157 8.0					
1340 7.14 846.09 -101.7	90 816.23 0	.47 V 9.C					
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:							
pH: +/- 0.1 COND.: +/- 3 % ORP; +/- 10 D.C	D.: +/- 0.3 TURB: +/- 10 %	or = 10 TEMP.: +/-</td					
BOTTLES FILLED PRESERVATIVE CODES A - NONE	3 - HNO3 C - H2SO4 D	O - NaOH E - HCL F					
NUMBER SIZE TYPE PRESERVATIVE FILTERED	1 1 1	YPE PRESERVATIVE FILTERED					
7 60 VOA A DY DI	1 2 125	\$Plostic DY DN					
1 250 Playic A DY DI	1						
	N						
	ı l	☐ Y ☐ N					
	N	□Y □N					
SHIPPING METHOD: FEL EX DATE SHIPPED:	5/2/25	AIRBILL NUMBER:					
COC NUMBER: SIGNATURE: DATE SIGNED: EICHS							

TRC WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

PROJECT NAME:	CEC Karn LF 2023 GW Compli	Compli PREPARED			CHECKED			
PROJECT NUMBER:	514404.0000.0000	BY:	JJ, JK DATE:	BY:	JK	DATE: 5-10-23		

SAMPLEID: OW-12 WATER CUMULATIVE PURGE CONDUCTIVITY TURBIDITY TEMPERATURE ORP TIME LEVEL PURGE VOLUME RATE (GAL OR L) (ML/MIN) (SU) (umhos/cm) (mV) (mg/L) (FEET) 7,15 853.08-1028 1.96 10.76 1770 10.6 200 853,82 -1024 1.97 8.27 10.80 854.62 -1021 2.00 6.31 10.89 11.6 1350 120 10.89 1255

SIGNATURE:

center whyly

DATE SIGNED: 5/4/25

<>	TRC
-----------------	-----

WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED PROJECT NUMBER: 514404.0001.0000 BY: AN, JK, JJ DATE: 51404.0001.0000 DATE: 510-27								CKED		
PROJECT	NUMBER	: 514404	4.0001.0000		BY: (A)), lk' n	DATE:5/	1/23 BY:	3K	DATE:5-10-27
SAMPLE I	ERIAL:	1 - P	2 S ss] IRON [ER: 2" NIZED STE		6" 🗓 ОТНЕ		
SAMPLE TYPE: GW WW SW DI						ACHATE	OTHE	R		
PURC	SING	TIME:	ļ (DATE:		SAI	MPLE	TIME: 13 (C) [DATE: 5/2/23
PURGE PUMP PERISTALTIC PUMP METHOD: BAILER						PH: ORP:	<u>9-29</u> si -85.7 m		11000	ng/L umhos/cm
DEPTH TO WATER: T/PVC					TURBIDI	TY: 12.5/3	NTU		*	
DEPTH TO	воттом:	/	T/ PVC			□ NONE ☑ SLIGHT □ MODERATE □ VERY TEMPERATURE: 8.67 °C OTHER: ——				
WELL VOL	UME:	NA	LITERS	GALLO	NS	TEMPERA			OTHER:	
VOLUME F	REMOVED:		LITERS	☐ GALLO	NS	COLOR:	cleur-	gray fint	ODOR:	None
COLOR:	/			DDOR:		FILTRATE	E (0.45 um)	YES	NO K	
NONE	SLI		BIDITY MODERATE	□ VE	RY	FILTRATE QC SAMI	COLOR:		FILTRATE OI	DOR:
DISPOSAL	METHOD:	☑ GROU	ND DRU	M 🗌 OTHEF	₹	COMME	NTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVI			D.O. mg/L)	TURBIDITY (NTU)	TEMPERATUI	RE WATER LEVEL (FEET)	. PURGE VOLUME
180	NA	4-24	240.60				12.43	867	NA	INITIAL
									·	
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1										
NUMBER	r- ——	TYPE	PRESERVA		ERED	NUMBEI		TYPE	PRESERVA	
2_	60	VOA	A	□Y	Ø N)	125	Plastic	D	□ Y 🗓 N
'	250	Plastic			図 N	<u> </u>	-	 		
	125		C		N					□ Y □ N
1	V		<i>A</i>	Y	K N		<u> </u>			
	METHOD:	Fed	EX	DATE SHIPP		5/2	123		NUMBER:	Flate
COC NUM	BER:			SIGNATURE	: _	AW		DATE SIG	GNED:	514/23

(>	TAC

WATER SAMPLE LOG

PROJECT	PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED PROJECT NUMBER: 514404.0001.0000 BY: WJK, JJ DATE: 5 - 15 BY: TV DATE: 5 - 10 - 23									
PROJECT	NUMBER	k: 514404	.0001.0000	E	3Y: 6	҈Ѿ҅҅҇҅҅҅҅҅҅҅҅҅ӯҝ, ҅҅҅҅	J DATE:5/	2/25 BY:	3 に	DATE: 5-10-23
SAMPLE	D: S1	d-Di	+1.h	WELL D	IAMET	ER: 🗸	2"	6" 🔀 OTHE	R N	A
WELL MAT	ERIAL:	₽ PVC	ss 🗌	IRON 🔲 (BALVAI	NIZED S	STEEL	Д ОТНЕ	R NA	
SAMPLE T	/PE:	₽ GW	□ww 🗵	SW 🔲 [)I		LEACHATE	□ ОТНЕ	R	
PURG	PURGING TIME: DATE: 5/2/23						AMPLE	TIME: 147		ATE: 5/2/28
PURGE ☑ PUMP PERISTALTIC PUMP METHOD: ☐ DAILED						PH:	<u>\$35</u> s			2.75 umhos/cm
LI BAILER						ORP:			9.70 mg	/L
DEPTH TO POTTOM: T/ PVC TURBIDITY: 1 NONE SUGHT NODERATE VERY										
DEPTH TO BOTTOM:										
WELL VOL		NA	LITERS	GALLON		TEMPE	RATURE: 14		OTHER:	4.3
VOLUME F	REMOVED		LITERS	☐ GALLON	NS	COLO	R: <u>Lleat</u>		ODOR: _	None_
COLOR:	$-\!\!\!/-\!\!\!\!-$			OOR:		FILTRA	TE (0.45 um)	YES	A NO	
		TURI	BIDITY			FILTRA	TE COLOR:		FILTRATE ODG	DR:
NONE	SLI		MODERATE	VER	Υ	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:										
TIME	PURGE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPERATU	RE WATER	CUMULATIVE
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	Ι,	mg/L)	(NTU)	(°C)	(FEET)	PURGE VOLUME (GAL OR L)
1420	ALA	8:35	790,75			.70	15.39	16.16	NA	INITIAL
1,20	<u> </u>	0.02		1.0			0.27	10000	1771	
				ļ			·			
					_					
				-	_					-
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										
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	- HNO3	C - H2SO4	D - NaOH	1 E-H	CL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTE	ERED	NUME	BER SIZE	TYPE	PRESERVAT	IVE FILTERED
2	60	VOA	1)		N K	1	125	Plastic	D	N 🔀 Y 🗆
	250	plastic	A	ΠY	N					
	125	T']	A	ΠY	√ N					□Y □N
	125		B		N					
	125	V	2		Ŋ N	1				
CUIDDING		<u> Fol</u>				1	<u> </u>	AIDDU	MUMPED:	
	METHOD:	red		ATE SHIPPE	ט:	5/2/		 	NUMBER:	=1,11,5
COC NUM	BER:		S	SIGNATURE:		Α	4	DATE SI	GNED:	5/4/28

<>	TRC
-----------------	-----

WATER SAMPLE LOG

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED PROJECT NUMBER: 514404,0001,0000 BY: AW (B) J DATE (5-2-27) BY: L (5 DATE: 5/10/22)										
PROJECT	NUMBER	R: 514404	4,0001.0000	B,	Y: A	w ® 1	J DATE	2-27 BY:	45	DATE:5/10/22
SAMPLE	D: KL	I-SC	S	WELL DIA	AMETI	ER: 🗸	2"	6" OTHE	ER .	
WELL MAT				IRON G	ALVAI	NIZED S	TEEL	ОТН	======================================	
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗆 D	1		LEACHATE	□ отн	ER	
PURC	SING	TIME:	DA	TE:				TIME: 125	Ø	DATE: 5-7-53
PURGE METHOD	. =		PERISTALTIC F	PUMP			6.76 s		TIVITY: /S	
□ BAILER							6,73	mg/L		
DEPTH TO WATER: NA T/ PVC						l	DITY: <u>0.5</u> 3			. <u>.</u>
DEPTH TO BOTTOM: NONE SLIGHT MODER						MODERATE	□ VERY			
WELL VOL	UME:	NA .	LITERS	GALLON:	S		RATURE: 10		OTHER:	
VOLUME F	REMOVED:		LITERS	GALLON:	S	COLO	R: Clear	-	ODOR:	none
COLOR:		Cheur	OD	OR: ^2/^	<u> </u>	FILTRA	TE (0.45 um)	YES	DN NO	
_	_		BIDITY	_			TE COLOR:		FILTRATE C	DDOR:
M.NONE	☐ SLI		MODERATE	VERY	'	<u> </u>	MPLE: MS	MSD	DUP-	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:										
TIME ·	PURGE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPERATU	RE WATE	
	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	LEVE (FEE	
1320	NA	6.76	1574	487.2		.73	0.52	104	NA	INITIAL
1,4,0	·	<u> </u>			\ <u>\</u>	•				
					_					
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:										
pH: +/- 0.1 COND.: +/- 3% ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10% or = 10 TEMP.: +/-</td										
						- HNO3 C - H2SO4 D - N			1	HCL F
NUMBER		TYPE	PRESERVATI			NUMB		TYPE	PRESERV	
!	Ronh	Plastic	A			2	60mL	UOVA	<u> </u>	
	 		ß		N	-				
		_	L			<u> </u>				□Y □N
	4	<u> </u>	<u> </u>		Х	<u> </u>			<u> </u>	
	asoni	J	A A		И					□Y □N
SHIPPING	METHOD:	Fed	EX D	ATE SHIPPED	D: <u></u>	121	23	AIRBILL	NUMBER:	
COC NUM									GNED:	5-4-23

				CHAIN (AIN OF CUSTODY	S	[0]	DŸ						
Consumers Energy Count on	Energy Count on US®		COL	CONSUMERS ENERGY CO) 135 WEST TRAIL ST., JA	COMPANY – LABORATORY SERVICES ST., JACKSON, MI 49201 • (517) 788-1251	LA J	BOR /	(517) 788-1251	Y S]	ERV	TCE	82		Page l of l
SAMPLING SITE / CUSTOMER: O2-2023 DEK Lined Impoundment	TOMER:			PROJECT NUMBER: 23-0402	SAP CC or WO#: REGITESTER: Harold Register	#: Harold	Register		<u> </u>	ANA Attach L	LYSIS ist if Ma	ANALYSIS REQUESTED (Attach List if More Space is Needed)	TED (Needed)	QA REQUIREMENT:
SANDI ING TEAM.				TIRNAROLIND TIME REQUIRED:					-	_				רווא רו
SAMITEINO LEAN.	A. Whaley	ſ			☐ STANDARD 図OTHER	麗							51247	□ NrDES
SEND REPORT TO:	Caleb Batts			email:	phone:				T	દ ૭			711/	□ ISO 17025
	Harold Register	ter		X CODES:	4		CONTAINERS	NERS		121			F	☐ 10 CFR 50 APP. B
	TRC			UW = Groundwater OA = Outer WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			PRESE	PRESERVATIVE	tals				an	☐ INTERNAL INFO
LAB	SAMPLE COLLECTION	LECTION	ХIЯ	S = Soil / General Solid WP = Wipe O = Oil WT = General Waste	al Waste	LAL#	٠ ۲ ₍	Н	n Me	• 2no sinon		alinity īde	022	□ OTHER
SAMPLE ID	DATE	TIME	TAM	FIELD SAMPLE ID / LOC	/LOCATION		H ³ SC HIAC Mone	M [©] O HCI N [©] O	otho toT		TDS	Sulf	510	REMARKS
23-0402-01	5/2/23	3	ΜĐ	DEK-MW-15003		7 4	4 1 1	1	×	×	×	×		
-02		1215	GW	OW-10		β Δ	4 2 1	1	×	×	×	×	.×	
-03		 S	GW.	0W-11		7 4	4 1 1	1	×	×	×	×		
-04		1355	₩5	OW-12		7 4	4 1 1	1	×	×	×	×		
-05		1250	≱	KLI-SCS		7 4	4 1 1	1	×	×	×	×		
90-		5/2	SW	KLI-PCS		7 4	4 1 1	1	×	×	×	×		
-07		1420	MS t	SW-DITCH		7 4	4 1 1	1	×	×	×	×		
80-		1	M5	DUP-KLI		8	4 2 1	1	×	×	×	×	×	
60-		08H	≱	EB-KLI		4 1	$oxed{1} oxed{1} oxed{1} oxed{1}$	1	×	×		×		
-10	>	:115 2115	M	FB-KLI		4	1 1 1	1	×	×		×		
RELINQUISHED BY:		 	DATE/TIME:		RECEIVED BY:				§	COMMENTS:	ķ		_	
Callin 1	4	Bu	45/2	1/22 1500	Fed Ex							_		
RELINQUISHED BY:	P		DATE/TIME:)	RECEIVED BY:	,			Rece	sived on	Ice?	Received on Ice? Id Yes In No	o M&TE#:	# 27723
F	Fed Gx		\$0	05-03-22 10:20	×				Tem	perature	۲. در ا	Temperature: 2.3.5.8°C	Cal. Di	Cal. Due Date: S・みら・2
					23-0402 Page 29 of 47	147								

of QA REQUIREMENT: □ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS Cal. Due Date: 5- 26-23 M&TE#: LSb2723 ъ ☐ ISO 17025 OTHER. □ NPDES ĭNT ⊠ Page (Attach List if More Space is Needed) ANALYSIS REQUESTED Received on Ice? Tyes No ပွ Sulfide × × Temperature: 1.6-2.1 Alkalinity × × × CONSUMERS ENERGY COMPANY – LABORATORY SERVICES LDS × COMMENTS sinommA × × **snoinA** × × × Total Metals × × × 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 Other PRESERVATIVE CHAIN OF CUSTODY HOOM CONTAINERS нсі HOgN REQUESTER: Harold Register ^tOS^zH [£]ONH _ None 4 m m # JATOT 9 9 23-0401 Page 15 of 26 □ 24 HR □ 48 HR □ 3 DAYS □ STANDARD 図 OTHER SAP CC or WO#: RECEIVED BY: RECEIVED BY: FIELD SAMPLE ID / LOCATION OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste phone: TURNAROUND TIME REQUIRED **DEK-MW-18001 MSD** W = Water / Aqueous Liquid S = Soil / General Solid O = Oil 23-0401 **DEK-MW-18001 MS DEK-MW-18001** MATRIX CODES: GW = Groundwater WW = Wastewater PROJECT NUMBER: 5H57690 email: DATE/TIME: DATE/TIME: Chile GW Ğ₩ الكائمين **MATRIX** Q2-2023 DEK Bottom Ash Pond & Lined Impound. 5 53 Beek SAMPLE COLLECTION TIME Harold Register 7 Caleb Batts DATE Count on Us[®] SAMPLING SITE / CUSTOMER: Consumers Energy TRC SEND REPORT TO: RELINQUISHED BY: RELINQUISHED BY SAMPLING TEAM: LAB SAMPLE ID S Ę 23-0401-01 COPY TO:

21



Appendix C Data Quality Reviews

Laboratory Data Quality Review Groundwater Monitoring Event May 2023 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the May 2023 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0401R and S48227.01(01).

During the May 2023 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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, when collected. 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 and Merit. 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, ammonia, TDS, alkalinity, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of a detection or assessment monitoring program.
- Data are usable for the purposes of the detection or assessment monitoring program.
- When the data are evaluated through a detection or assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- A field blank was not collected with this data set.
- An equipment blank was not collected with this data set.
- MS and MSD analyses were performed on sample DEK-MW-18001 for total metals, anions, ammonia, total alkalinity, and sulfide. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters and therefore were not evaluated; further, with the exception of sulfide, 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.

- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample in this data set.

Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event May 2023 DE Karn Lined Impoundment

Groundwater, water, and surface water samples were collected by TRC for the May 2023 sampling event. Samples were analyzed for total and/or dissolved metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0402 and S48156.01(01).

During the May 2023 sampling event, a groundwater sample was collected from each of the following wells:

OW-10

OW-11

■ OW-12

DEK-MW-15003

During the May 2023 sampling event, the following water/surface water samples were collected:

KLI-PCS

KLI-SCS

SW-DITCH

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

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total & Dissolved Metals	SW-846 6020B
Total Mercury	7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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 and Merit. 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 and dissolved metals, total mercury, anions, alkalinity, TDS, ammonia, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

 One field blank (FB-KLI) and one equipment blank (EB-KLI) were collected with this data set. Target analytes were not detected in these blank samples.

- The field duplicate pair samples were DUP-KLI and OW-10; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits with the following exceptions:
 - Dissolved chromium was detected in the field duplicate pair at concentrations <5x the RL and the absolute difference was equal to the RL. Therefore, the positive results for dissolved chromium should be considered estimated in groundwater samples DUP-KLI and OW-10, as summarized in the attached table, Attachment A.
 - Sulfide was detected >5x the RL in sample OW-10 and was nondetect in DUP-KLI and the absolute difference was greater than the RL. Therefore, the positive and nondetect results for sulfide should be considered estimated in all groundwater samples in this data set, as summarized in the attached table, Attachment A.
 - The RPD for sulfate (35.4%) was > 30. Therefore, the positive results for sulfate should be considered estimated in all groundwater samples in this data set, as summarized in the attached table, Attachment A.
- 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/Surface Water Analytical Data DE Karn Lined Impoundment Erie, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DUP-KLI	5/2/2023	Dissolved Chromium, Sulfate,	
OW-10	5/2/2023	and Sulfide	
OW-11	5/2/2023		Field duplicate variability (relative percent difference or absolute difference above criteria); potential uncertainty exists.
OW-12	5/2/2023	Sulfate and Sulfide	
DEK-MW-15003	5/2/2023		



Appendix D Statistical Analysis

Appendix D

Statistical Summary for DE Karn Lined Impoundment Second Quarter 2023 Data from July 2021 to May 2023

		Karn Liı	ned Impoundment We	lls		
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	0	0	0	0	0
Calcium	Trend	0	\downarrow	0	0	0
Chloride	Trend	↑ ^{ASD}	0	0	\downarrow	0
Fluoride	Trend	O*	O*	O*	0	O*
Iron	Trend	0	↓*	0	0	0
pН	Trend	0	0	0	↑ ^{ASD}	0
Sulfate	Trend	0	0	0	\downarrow	0
Total Dissolved Solids	Trend	↑ ^{ASD}	0	0	0	0

Notes:

O* = Non-detect

O = No trend

= Upward trend, continuous

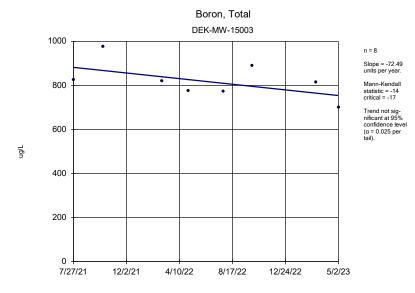
↑* = Upward trend, new

↑ = Upward trend, confirmed

= Downward trend, continuous

↓* = Downward trend, new

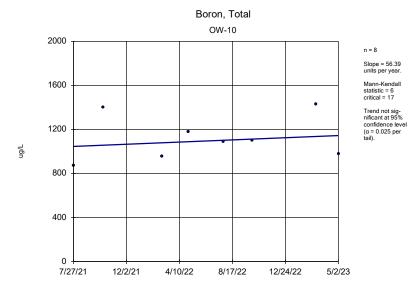
= Alternate Source Demonstration (Second Quarter 2023 Hydrogeological Monitoring Report for the Karn Lined Impoundment CCR Unit, TRC, July 2023.)



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

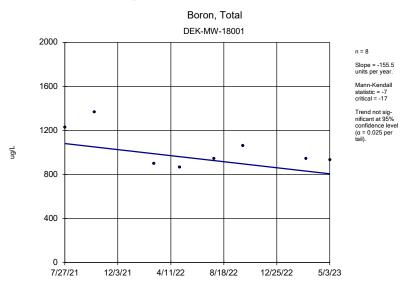
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

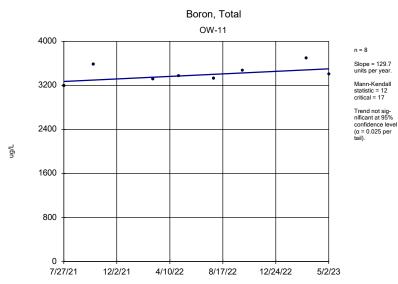
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

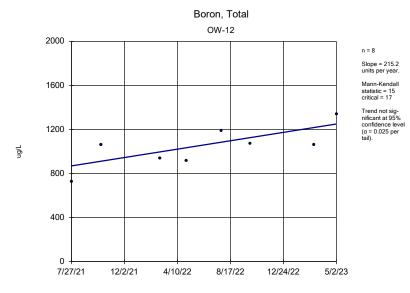
Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

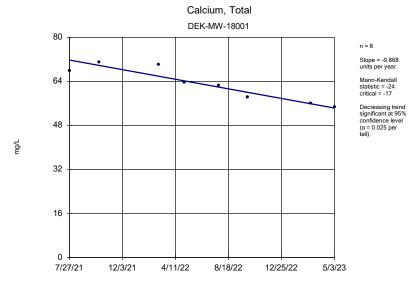
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

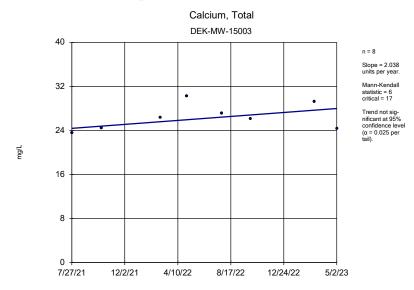
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

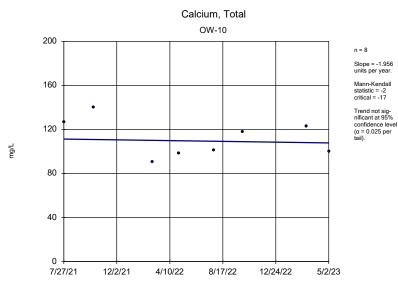
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

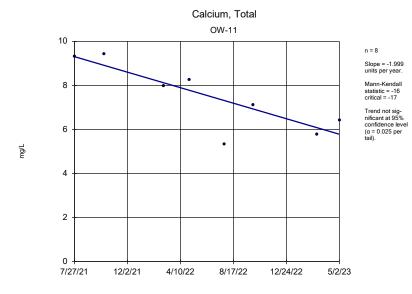
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

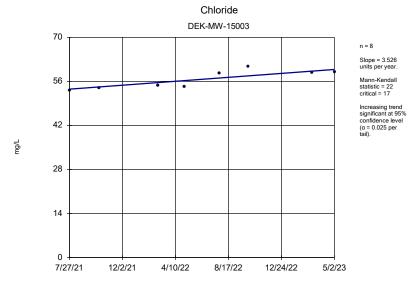
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

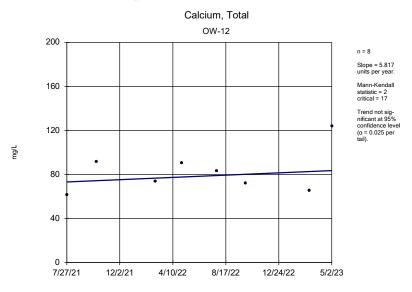
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas $^{\mbox{\tiny TM}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

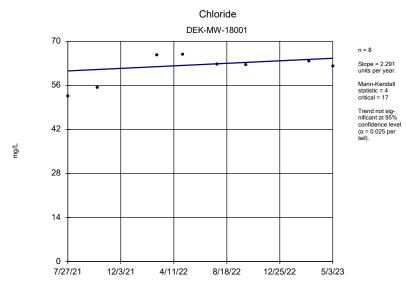
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

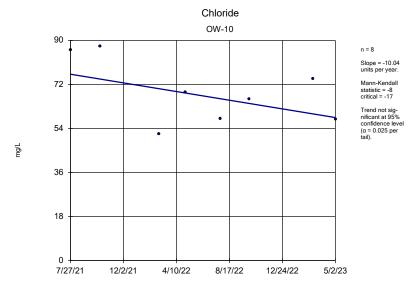
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

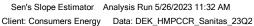
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



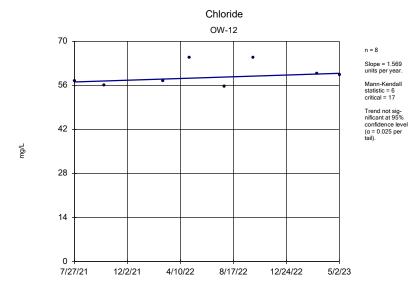
Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



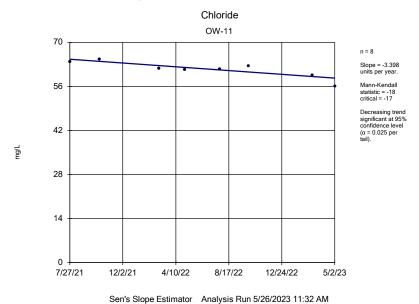


Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

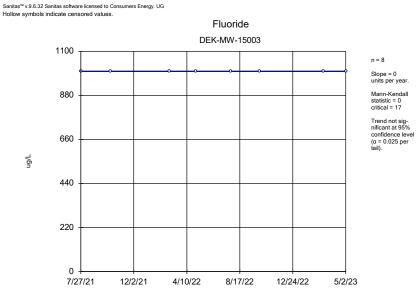


Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



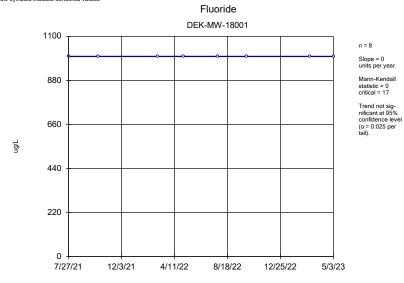
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

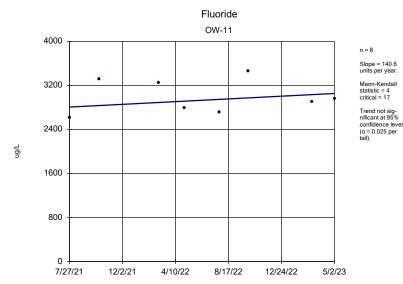
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

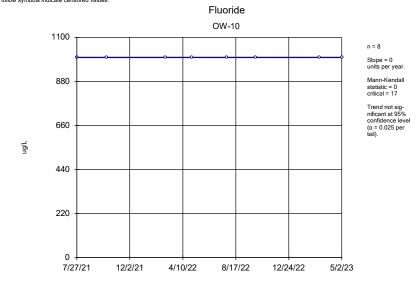
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

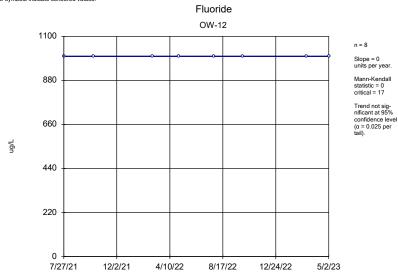
Sanitas^{tu} v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

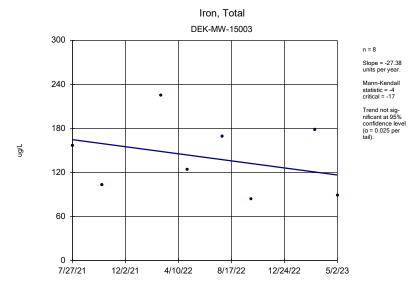
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

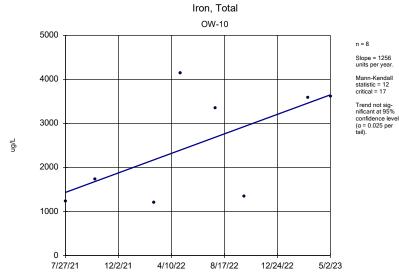
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

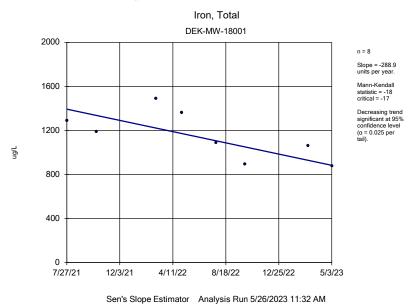
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas $^{\mbox{\tiny M}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



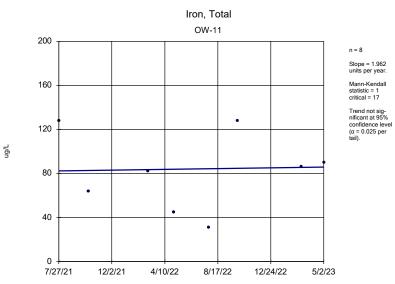
Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



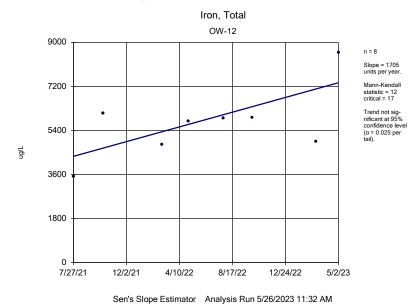
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

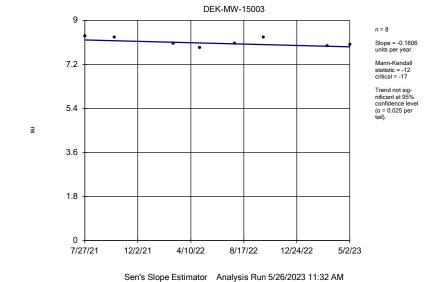


Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

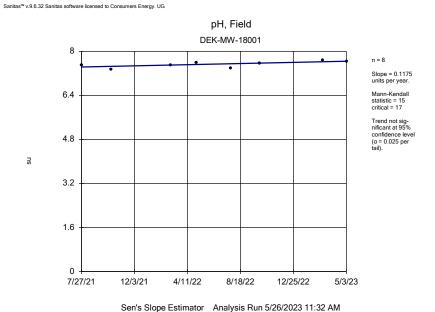


Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

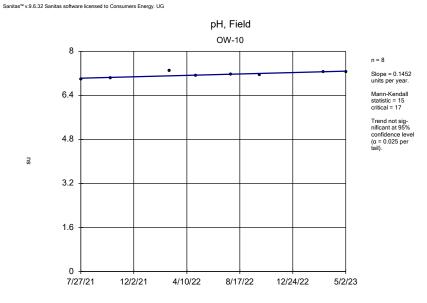


Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

pH, Field



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



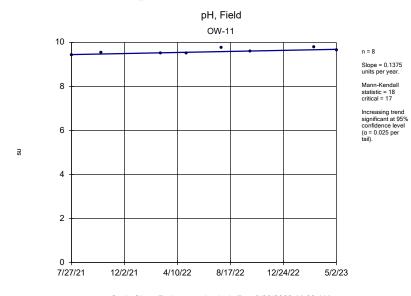
Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

7/27/21

12/2/21



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sulfate

DEK-MW-15003 n = 8 Slope = 2.129 units per year. Mann-kendall statistic = 2 critical = 17 Trend not significant at 95% confidence level (a = 0.025 per tail).

4/10/22

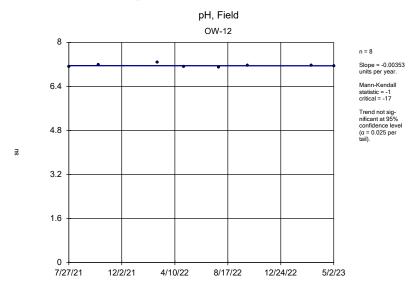
Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

8/17/22

12/24/22

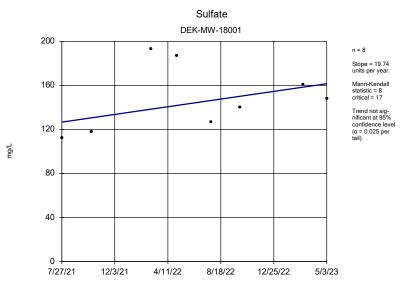
5/2/23



Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

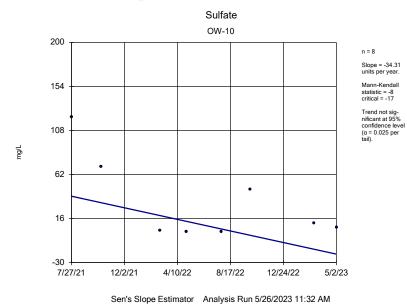
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



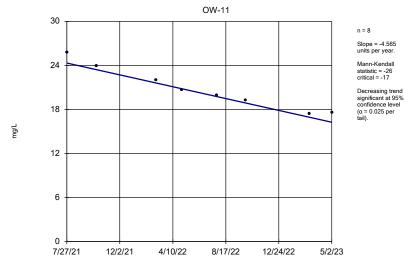


Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

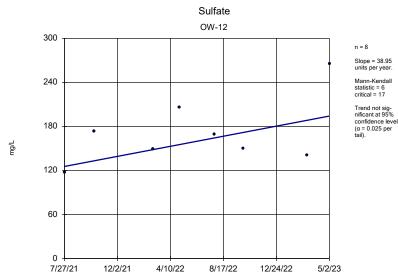


Sulfate

Sen's Slope Estimator Analysis Run 5/26/2023 11:32 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

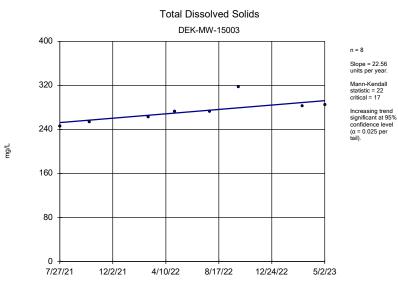
Sanitas $^{\text{\tiny{TM}}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

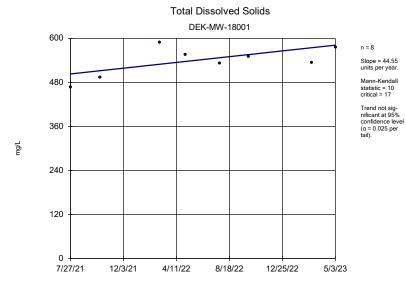
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

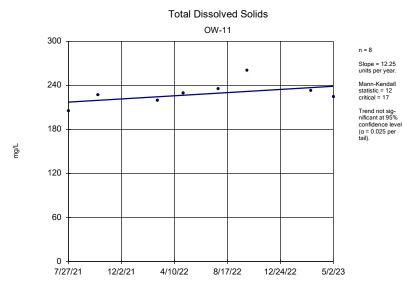
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

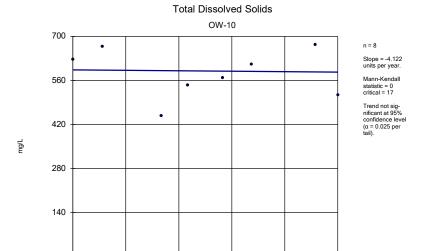
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2



Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

8/17/22

5/2/23

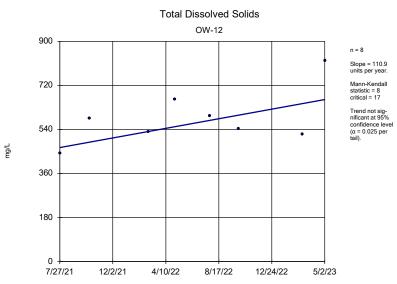
12/24/22

4/10/22

12/2/21

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

7/27/21

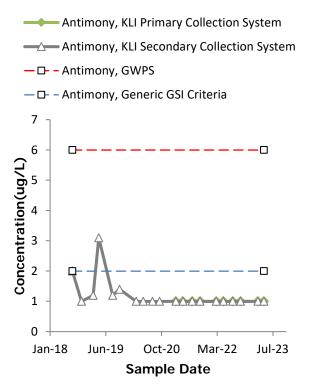


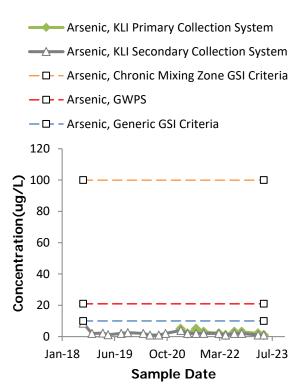
Sen's Slope Estimator Analysis Run 5/26/2023 11:33 AM

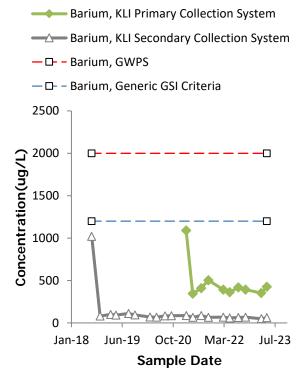
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q2

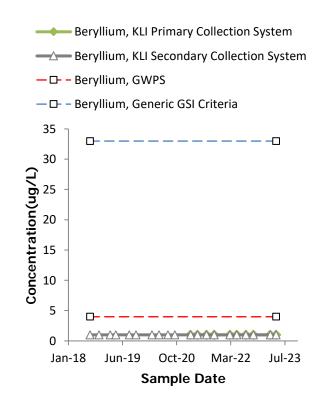


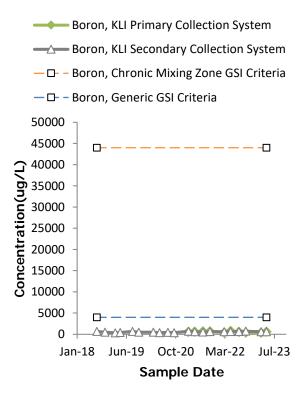
Appendix E Secondary Leachate Collection System Monitoring

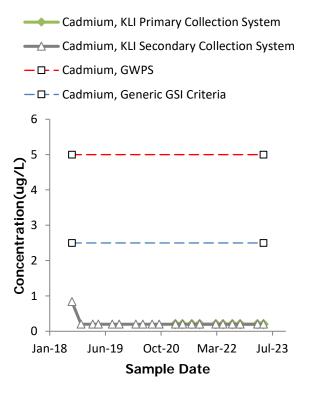


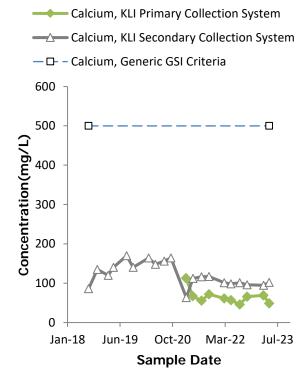


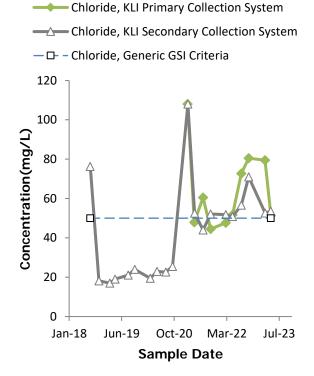


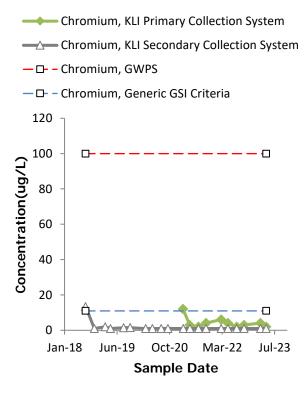


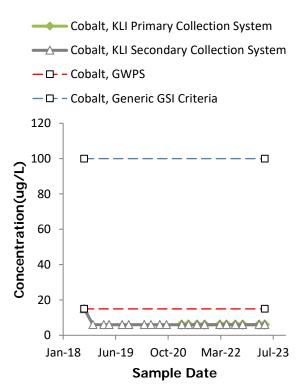


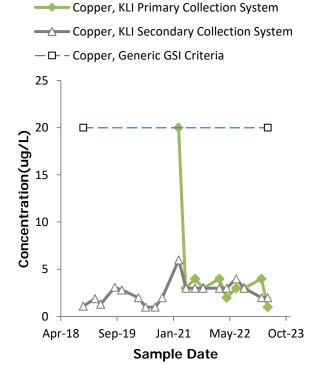


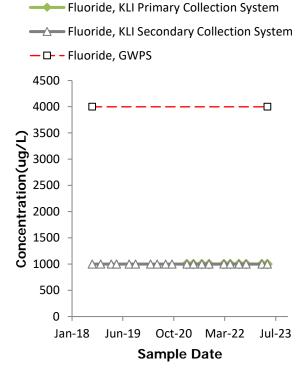


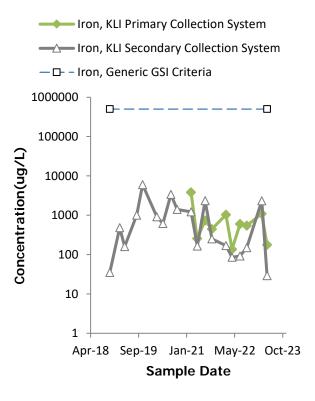


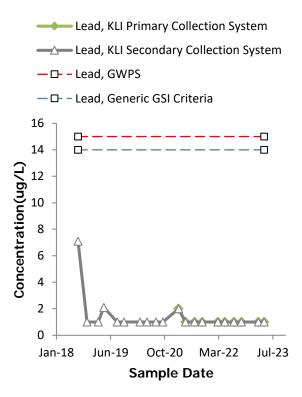


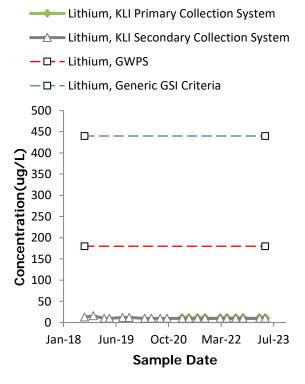


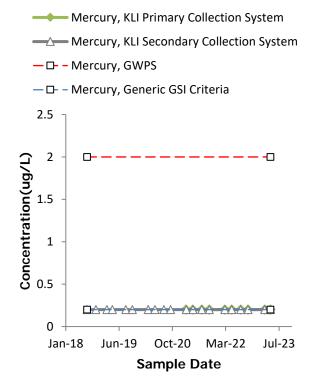


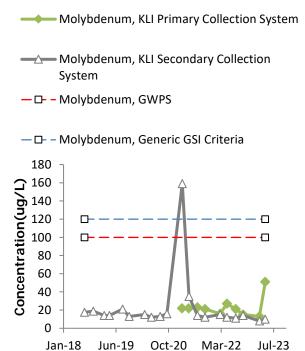




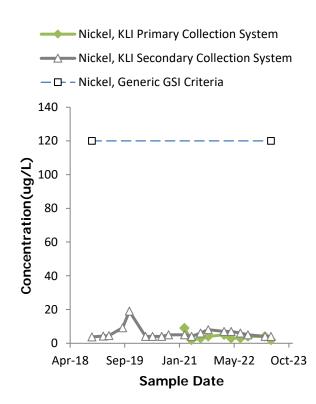


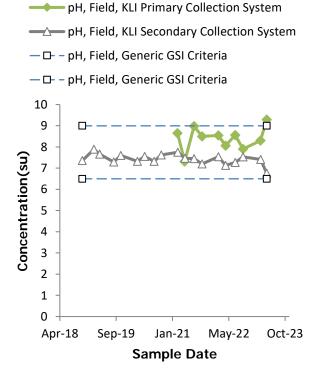


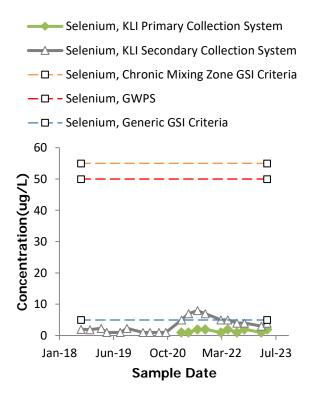


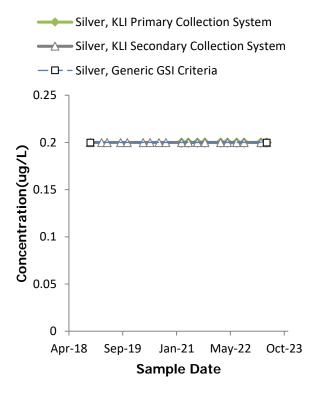


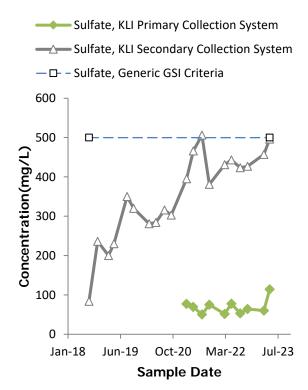
Sample Date

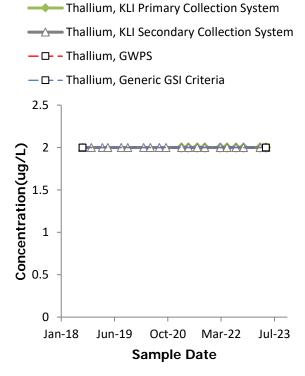


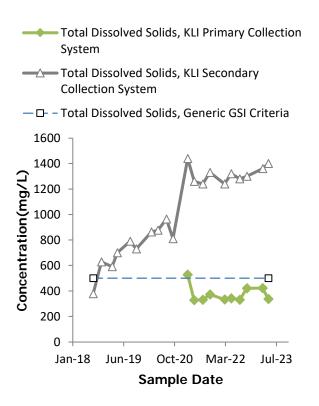


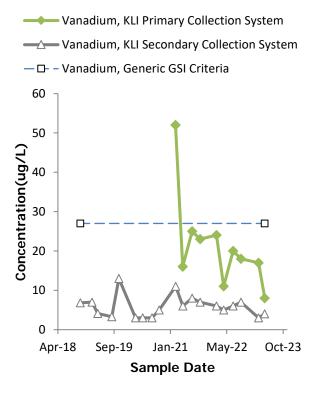


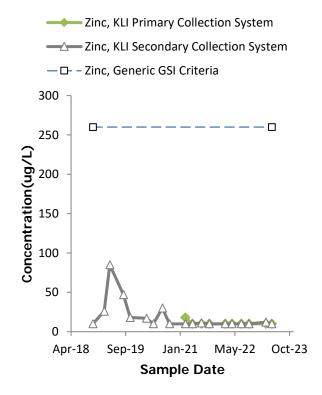














Appendix F Alternate Source Demonstration



A CMS Energy Company

Date: July 21, 2023

To: Operating Record

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

RE: Alternate Source Demonstration Professional Engineer Certification, §257.94(e)2

DE Karn Lined Impoundment 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 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment 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 21, 2023

Date of Certification

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

Name

6201056266

Professional Engineer Certification Number



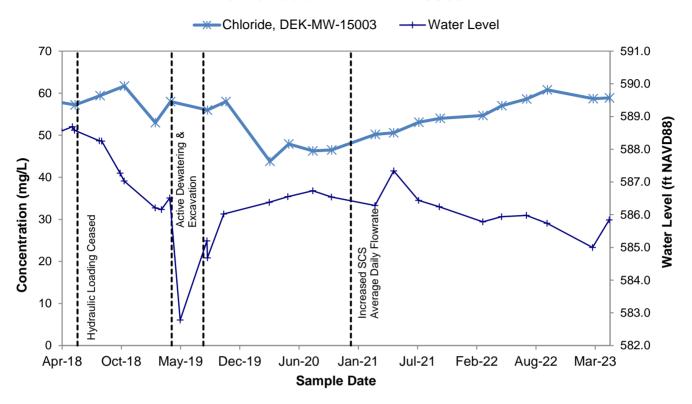
07/21/2023

References

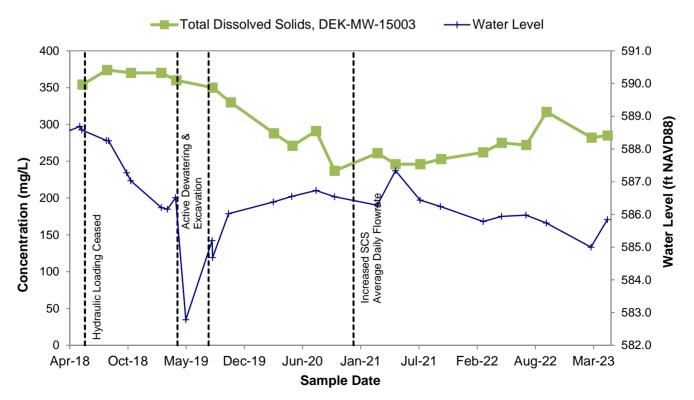
TRC (July 2023). <u>Second Quarter 2023 Hydrogeological Monitoring Report, DE Karn Lined Impoundment CCR Unit, Essexville, Michigan</u>

Alternate Source Demonstration Time Series

Chloride at DEK-MW-15003



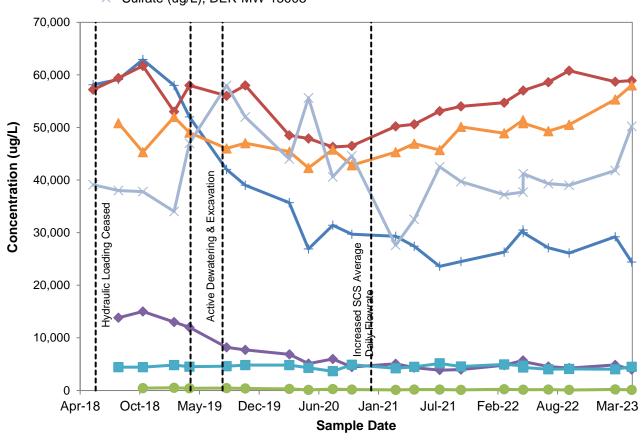
Total Dissolved Solids at DEK-MW-15003

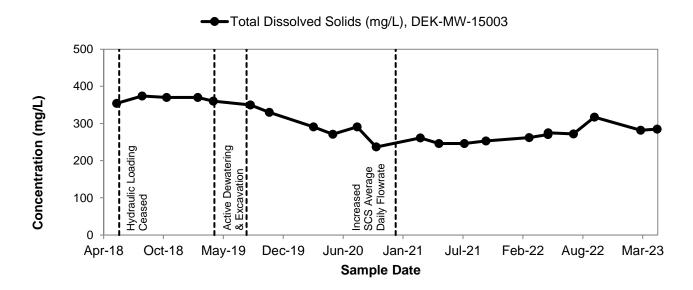


Alternate Source Demonstration Time-Series

DEK-MW-15003









Third Quarter 2023 Hydrogeological Monitoring Report

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

October 2023

Darby Litz

Project Manager/Hydrogeologist

Prepared For:

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

Prepared By:

TRC 1540 Eisenhower Place Ann Arbor, Michigan 48108

Andrew Whaley

Project Geologist



TABLE OF CONTENTS

1.0	Intro	Introduction1								
	1.1	Statement of Adherence to Approved Hydrogeological Monitoring Plan								
	1.2	Program Summary								
	1.3	Site Overview								
	1.4	Geology/Hydrogeology	2							
2.0	Sec	ond Collection System Monitoring	2							
3.0	Gro	undwater Monitoring	6							
	3.1	Monitoring Well Network	6							
	3.2	July 2023 Detection Monitoring Event	6							
		3.2.1 Data Quality Review	7							
		3.2.2 Groundwater Flow Rate and Direction	7							
4.0	Data	Evaluation	9							
	4.1	4.1 Statistical Evaluation of Trends								
	4.2	Detection Monitoring Data Discussion	10							
	4.3	Alternate Source Demonstration	10							
		4.3.1 Timing of Changes in Concentrations	10							
		4.3.2 Leachate Chemistry	1							
5.0	Con	clusions and Recommendations	12							
6.0	Refe	rences	13							
TAB	BLES									
Tabl		Summary of Groundwater Elevation Data								
Table		Summary of Field Parameters								
Table Table		Summary of Groundwater Sampling Results (Analytical) Summary of Statistical Exceedances: July 2023								
FIGI	URES									
Figu		Site Location Map								
Figu		Site Layout Map								
Figu	re 3	Shallow Groundwater Contour Map – July 2023								



APPENDICES

Appendix A Laboratory Analytical Reports

Appendix B Field Notes

Appendix C Data Quality Reviews
Appendix D Statistical Analysis

Appendix E Secondary Leachate Collection System Monitoring

Appendix F Alternate Source Demonstration



1.0 Introduction

Pursuant to the Federal CCR Rule¹, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018 to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Third Quarter 2023 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. 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, Format for Solid Waste Disposal Facility Monitoring Submittals, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (NREPA), also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 **Program Summary**

This Report provides results and summarizes the monitoring activities completed in the third quarter 2023 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended.



- 1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
- 2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the third quarter 2023, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

1.3 Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Consumers Energy permanently ceased the operation of the coal-fired boilers (DE Karn Units 1&2) at the Site in May 2023 and has commenced decommissioning activities for those electrical generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal and the Karn Landfill that was certified closed and now in post-closure care.

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit N0. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan to the EGLE that details a closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

1.4 Geology/Hydrogeology

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. USGS topographic maps and aerial photographs dating back to 1938, 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 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River



and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, was generally encountered at 80 to 90 ft bgs.

The Site is bound by several surface water features (Figures 1 and 2): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay. In the vicinity of the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near the unlined ditch north of the Karn Lined Impoundment and near DEK-MW-15003, flowing outward toward the surrounding surface water bodies.



2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow rate of 25 gallons per acre per day (GPAD). The average daily flow rate for July through September 2023 (three-month average) was calculated as 7.5 GPAD and continues to demonstrate that the daily average flow rate is below the threshold value of the response action flow rate of 25 GPAD. Trend evaluations for weekly and monthly average flow rates continue to support that no additional engineering or operational modifications are necessary, and Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS Response Action Flow Rate, samples were collected from the surface water of the primary collection system (KLI-PCS) and from the secondary leachate collection system sump (KLI-SCS) to compare leachate chemistry to groundwater chemistry. The samples were analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids and chloride. Consumers notes that as decommissioning of the Karn Units 1&2 proceeds, temporary changes to the mix of the miscellaneous low-volume waste may occur, causing changes in the concentrations of detected constituents in the primary collection system (KLI-PCS) as compared to historical. A few notable observations:

■ Arsenic concentrations are higher in groundwater than the primary and secondary collection system: Arsenic was detected in the primary collection system at a concentration of 1 ug/L and in the secondary collection system at a concentration of 1 ug/L in July 2023. As shown in Appendix E, the arsenic concentrations observed in the primary and secondary collections system have been consistently low. In contrast, the arsenic



concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 114 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.

- Vanadium is detected in the primary and secondary collection system and not in groundwater: Vanadium is present in the primary collection system (4 ug/L in July 2023) and in the secondary collection system (5 ug/L in July 2023) (Appendix E). Vanadium was not detected in the wells nearest the observed liner damage: OW-12 (<2 ug/L) or DEK-MW-18001 (<2 ug/L) providing additional evidence that a release has not adversely affected groundwater conditions.
- Secondary Collection System chemistry has not appreciably changed: The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the secondary collection system, except for total dissolved solids (TDS), and sulfate in the secondary collection system. TDS and sulfate concentrations in the primary collection system leachate is typically significantly lower in concentration than the concentration in the secondary collection system leachate, suggesting that the elevated TDS and sulfate is not likely from the primary collection system leachate. The TDS and sulfate concentrations in the secondary collection system are beginning to stabilize and are more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.



3.0 Groundwater Monitoring

3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance" (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

3.2 July 2023 Detection Monitoring Event

In accordance with the HMP, TRC conducted the third quarter 2023 monitoring event for the Karn Lined Impoundment between July 24th and 26th, 2023. In addition to the routine groundwater samples collected from the monitoring well network, a water sample was collected from a sump in the secondary collection system (KLI-SCS) and a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry. A sample of surface water was also collected from a ditch located north of the lined impoundment (SW-Ditch) to further evaluate site geochemistry (Figure 2). The SW-Ditch surface water grab sample represents water quality from the potentiometric high point adjacent to the Karn Lined Impoundment.

Groundwater samples collected during the third quarter 2023 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

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



Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11	519b(2) – Assessment Monitoring Constituents
Total Dissolved Solids (TDS)	Copper	Silver

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

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 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 B).

Monitoring wells were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater 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 one field blank, one equipment blank, one field duplicate (OW-10), and field matrix spike/matrix spike duplicate samples collected at DEK-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 data were found to be complete and usable for the purposes of the HMP program. The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

3.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in July 2023 are generally within the range of 579 to 586 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at equal elevation relative to the surrounding surface water features measured by the NOAA gauging station data or within approximately 6 feet higher, flowing toward the bounding surface



water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected in the vicinity of the former Karn Bottom Ash Pond in July 2023 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the Karn Lined Impoundment. Monitoring wells OW-11, OW-12, and DEK-MW-15003 delineate the newly established groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3.

The average hydraulic gradient observed on July 24, 2023 in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0046 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was calculated to be 0.23 ft/day or 84 ft/year in July 2023 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.



4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the third quarter 2023 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017 and in accordance with the December 23, 2015 mixing zone determination.

4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using Sanitas™ Statistical Software (Sanitas™). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from July 2021 through July 2023 were analyzed using Mann-Kendall and Sen's Slope 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 slope was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.

Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:



- The increasing trend in chloride concentrations continues to be observed in DEK-MW-15003.
- A new, unconfirmed increasing trend for pH is observed in DEK-MW-18001 this quarter.

4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, the groundwater conditions do not conclusively indicate a release from the unit, as discussed further in Section 4.3. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Both leaks have been repaired. Detection monitoring constituent concentrations at OW-12, located closest to the identified liner damage, exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends as noted in section 4.1 will continue to be evaluated within context of changes in the site operational status.

4.3 Alternate Source Demonstration

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

Chloride in monitoring well DEK-MW-15003.

Although increasing trends of detection monitoring (Appendix III) constituents exist, as noted in Section 4.1, the groundwater conditions do not conclusively indicate a release from the unit for several reasons as detailed below. The Professional Engineer Certification Statement is included in Appendix F.

4.3.1 Timing of Changes in Concentrations

Time-series plots included in Appendix F illustrate that the change in chloride and TDS at DEK-MW-15003 is likely a result of changes in the groundwater flow regime or redox conditions as a result of the Bottom Ash Pond closure activities, rather than a result of a release from the unit.

Chloride and TDS at DEK-MW-15003 initially decreased after the Bottom Ash Pond closure activities. In early 2020, chloride concentrations began to increase, followed by increases in TDS beginning in 2021. Both constituents appear to be approaching the concentrations observed pre-construction. Chloride is one of the components of TDS. Other components of TDS, such as calcium, iron, magnesium, potassium, sodium, and sulfate have remained relatively consistent from 2020 to present and the increases in TDS are correlated with the increases in chloride. The slight increase in chloride began before the noted leak in the Karn Lined Impoundment liner system was observed; therefore, the recent increase in concentrations is not due to a release from the unit.



4.3.2 Leachate Chemistry

Analysis of the KLI-PCS and KLI-SCS data provide additional lines of evidence to support a source other than the unit is contributing to groundwater conditions.

- Arsenic concentrations are higher in groundwater than in the secondary collection system; therefore, arsenic present in groundwater does not appear to be a result of a release from the unit (Section 2.0).
- Vanadium is detected in the primary and secondary collection system and not in groundwater in the wells nearest the observed liner damage OW-12 or DEK-MW-18001 (<2 ug/L), providing additional evidence that a release has not adversely affected groundwater conditions.



5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. Although increasing trends for detection monitoring constituents were observed in two wells in third quarter 2023, these trends were found to not be a result of operation of the Karn Lined Impoundment. No SSIs over background limits were identified at the Karn Lined Impoundment during the July 2023 monitoring event. The use of secondary collection system flow rates as a leak detection system was successful. Increased flow rates observed in fourth quarter 2020 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. The results of the mitigation efforts continue to be monitored and recent data demonstrate that the daily average flow rate has been reduced to less than the threshold value of the Response Flow Rate of 25 gallons per acre per day after the documented repairs and response activities were completed in 2021. The fourth quarter monitoring event is scheduled for October 2023.



6.0 References

- AECOM. October 30, 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company.
- Consumers Energy. December 19, 2017. Hydrogeological Monitoring Plan, Rev. 3. DE Karn Solid Waste Disposal Area.
- Natural Resource Technology. September 2005. Phase II Groundwater Discharge Evaluation at the Consumers Energy DE Kam and JC Weadock Solid Waste Disposal Areas.
- TRC. January 2019. 2018 Annual Groundwater Report for the DE Karn Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. November 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company.
- TRC. January 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. April 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).
- USEPA. July 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).



Tables

Table 1

Summary of Groundwater Elevation Data DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

	тос		Screen Interval	July 24, 2023			
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water (ft BTOC)	Groundwater Elevation (ft)		
DEK Bottom Ash Pon	l d			(11 100)	(11)		
DEK-MW-15002	590.87	Sand	578.3 to 575.3	6.65	584.22		
DEK-MW-15005	589.72	Sand	572.3 to 567.3	9.65	580.07		
DEK-MW-15006	589.24	Sand	573.0 to 568.0	8.87	580.37		
DEK Bottom Ash Pon			070.0 10 000.0	0.01	000.07		
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.05	584.42		
Karn Lined Impoundr		Cana	070.2 10 071.2	0.00	332		
DEK-MW-15003	602.74	Sand	578.8 to 574.8	17.20	585.54		
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	7.27	584.31		
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	22.38	585.52		
OW-12	603.10	Silty Sand	584.2 to 579.2	17.15	585.95		
DEK Nature and Exte		,	<u> </u>				
DEK-MW-15004	611.04	Sand	576.6 to 571.6	28.43	582.61		
MW-01	597.02	Sand	573.0 to 570.0	16.89	580.13		
MW-03	597.30	Sand	569.8 to 566.8	17.12	580.18		
MW-06	589.44	Sand and Silty Sand	578.5 to 563.5	9.29	580.15		
MW-08	598.78	Sand and Silty Clay	580.9 to 570.9	18.15	580.63		
MW-10	596.97	Sand	582.5 to 572.5	16.68	580.29		
MW-12	598.60	Sand	583.9 to 573.9	17.98	580.62		
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.12	580.25		
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	15.20	580.60		
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.13	581.86		
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.40	581.17		
DEK Static Water Lev	el						
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.24	580.10		
MW-04	598.01	NR	569.5 to 564.5	17.88	580.13		
MW-17	597.91	Sand	577.0 to 574.0	13.58	584.33		
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.11	583.11		
MW-19	597.28	NR	572.1 to 567.1	16.70	580.58		
MW-20	632.75	Sand	582.3 to 579.3	52.90	579.85		
MW-21	632.91	Sand	587.1 to 584.1	51.40	581.51		
OW-01	631.33	NR	572.5 to 567.5	51.26	580.07		
OW-02	598.01	Fly Ash	579.4 to 576.4	16.00	582.01		
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.25	580.69		
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.00	580.21		
OW-05	593.53	Sand	576.9 to 571.9	13.18	580.35		
OW-06	603.95	NR	580.9 to 575.9	22.45	581.50		
OW-07	596.41	Ash	583.3 to 580.3	15.28	581.13		
OW-08	593.93	NR	581.0 to 576.0	11.08	582.85		
OW-09	593.45	NR	585.5 to 580.5	10.50	582.95		
OW-13	588.52	NR	579.5 to 574.5	4.38	584.14		
OW-15	587.75	NR	572.8 to 567.8	4.13	583.62		

Notes:

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

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

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2

Summary of Field Parameters DE Karn Lined Impoundment – 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)
Karn Lined Impounds	nent						
DEK-MW-15003	7/26/2023	1.76	-159.6	8.2	379	19.2	0.0
DEK-MW-18001	7/26/2023	2.09	-130.9	7.7	679	16.2	0.0
KLI-PCS	7/26/2023	8.12	38.8	8.3	1414	27.9	0.5
KLI-SCS	7/26/2023	6.65	4.8	7.3	1,835	22.6	0.3
OW-10	7/26/2023	1.90	-118	7.1	700	15.4	9.3
OW-11	7/26/2023	2.10	-95.4	9.7	297	15.0	0.2
OW-12	7/26/2023	2.00	-92.6	7.1	665	18.9	6.2
SW-DITCH	7/26/2023	13.27	49.5	8.8	538	27.9	3.5

Notes:

mg/L - milligram per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

Table 3

Summary of Groundwater Sampling Results (Analytical) DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS	KLI-SCS	SW-DITCH
					Sample Date:	7/26/2023	7/26/2023	7/26/2023	7/26/2023	7/26/2023	7/26/2023	7/26/2023	7/26/2023
Constituent	Unit	EPA MCL	MI Residential*	MI Non- Residential*	MI GSI^	Upgradient	Downg	radient	Upgradient	Downgradient		Supplemental	
Appendix III ⁽¹⁾													
Boron	ug/L	NC	500	500	4,000	678	988	1,010	3,100	818	559	626	69
Calcium	mg/L	NC	NC	NC	500EE	24.1	55.5	113	5.8	66.5	159	103	54.1
Chloride	mg/L	250**	250 ^E	250 ^E	50	59	66.7	51.8	59.2	49.6	48.7	55.8	44.1
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	1,970	< 1,000	1,190	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500EE	49.5	139	29.1	18.5	151	668	464	31
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	261	548	560	216	510	1,090	1,400	325
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	8.2	7.7	7.1	9.7	7.1	8.3	7.3	8.8
Appendix IV ⁽¹⁾													
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	441	333	2	778	114	1	1	3
Barium	ug/L	2,000	2,000	2,000	1,200	33	144	163	18	96	119	57	43
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.4	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	1,970	< 1,000	1,190	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	20	21	31	< 10	32	57	< 10	< 10
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	31	11	< 5	151	17	22	11	< 5
Selenium	ug/L	50	50	50	5.0	1	1	3	4	< 1	2	4	1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	4	< 2	< 2
Additional MI Part 11	5 ⁽²⁾												
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	177	759	2,170	42	5,690	29	69	158
Copper	ug/L	1,000**	1,000E	1,000E	20	< 1	< 1	2	< 1	< 1	3	3	2
Nickel	ug/L	NC	100	100	120	< 2	< 2	< 2	2	< 2	4	5	3
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	4	840	< 2	4	5	< 2
Zinc	ug/L	5,000**	2,400	5,000E	260	< 10	< 10	< 10	< 10	< 10	< 10	27	< 10

October 2023

Notes:

ug/L - micrograms per liter; mg/L - milligrams 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 21, 2020.
- ** 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.

 $\ensuremath{\mathbf{BOLD}}$ value indicates an exceedance of one or more of the listed criteria.

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4

Summary of Statistical Exceedances DE Karn Lined Impoundment – 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

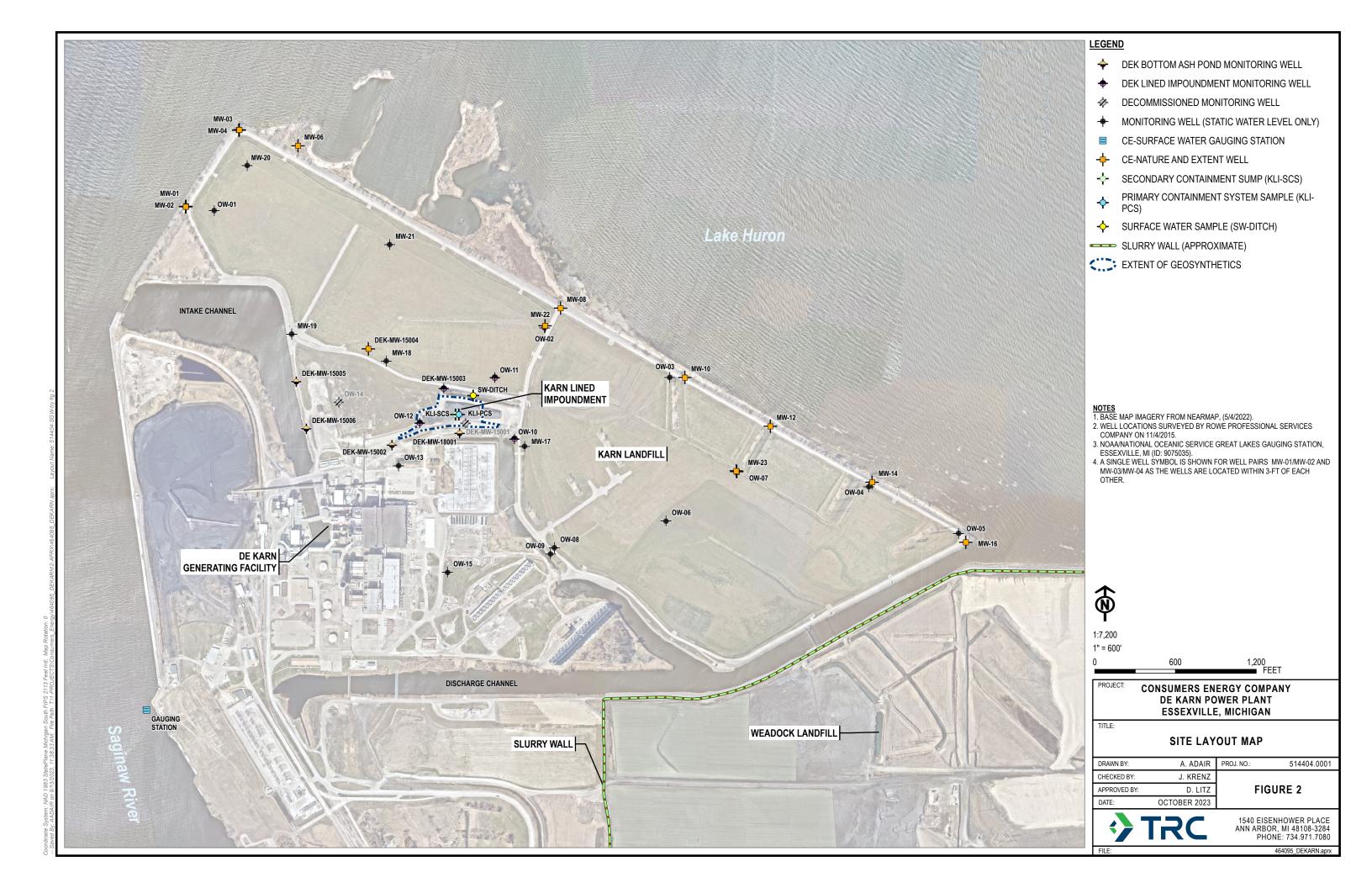
Facility: Karn Lined Impoundment – WDS# 392503

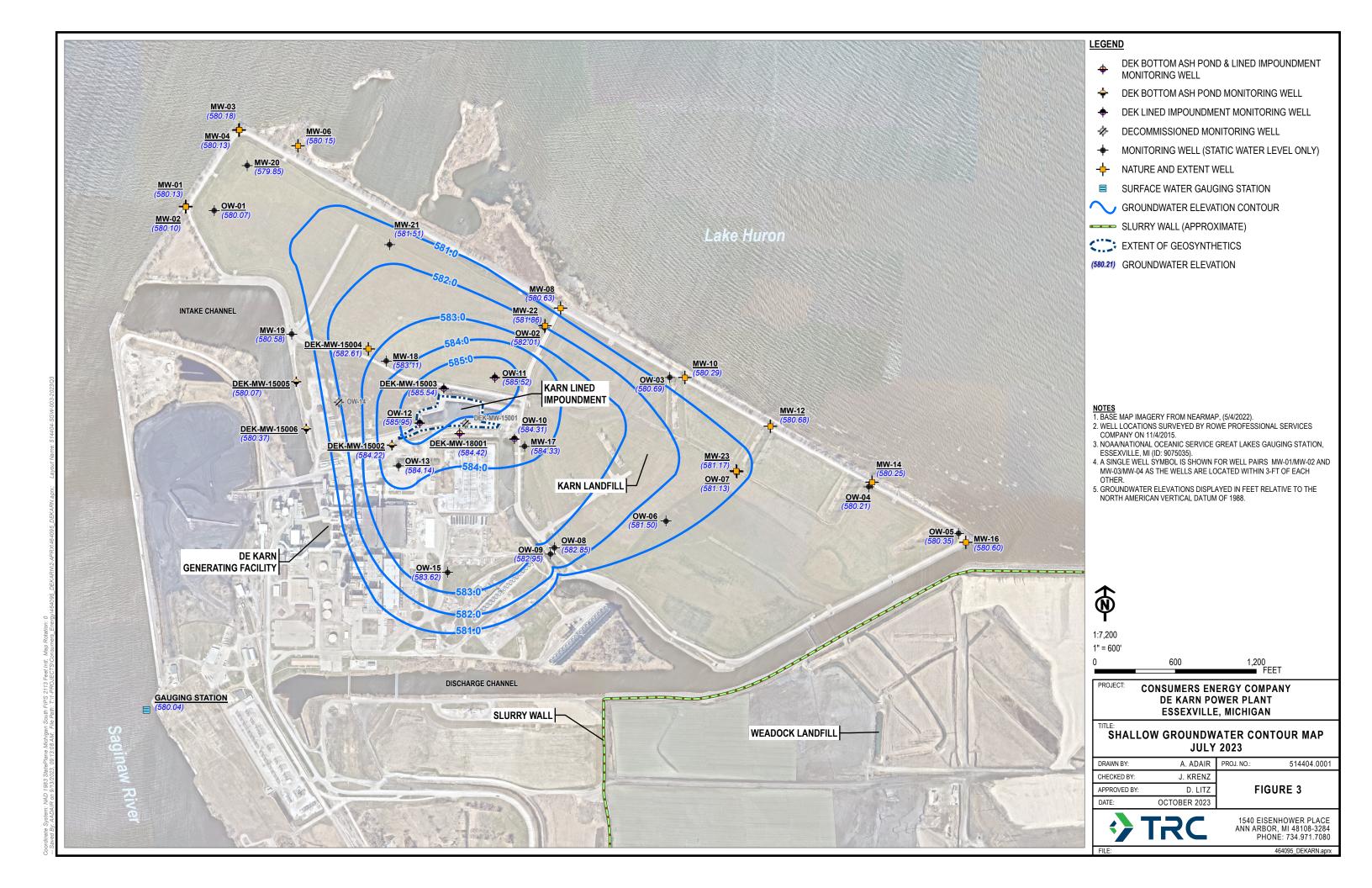
Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	3 Qtr. 2023 (bold >201)	2 Qtr. 2023 (bold >201)	1 Qtr. 2023 (bold >201)	4 Qtr. 2022 (bold >201)				
	No Exceedances											



Figures









Appendix A Laboratory Analytical Reports



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

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 11, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2023 Q3

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0719

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 07/24/2023 for the 3rd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 07/27/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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. <u>Sample Receipt</u>

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

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; 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: Q3-2023 DEK Lined Impoundment

Date Received: 7/27/2023 Chemistry Project: 23-0719

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0719-01	DEK-MW-15003	Groundwater	07/26/2023 08:20	DEK Lined Impoundment
23-0719-02	OW-10	Groundwater	07/26/2023 09:52	DEK Lined Impoundment
23-0719-03	OW-11	Groundwater	07/26/2023 09:08	DEK Lined Impoundment
23-0719-04	OW-12	Groundwater	07/26/2023 10:43	DEK Lined Impoundment
23-0719-05	KLI-SCS	Groundwater	07/26/2023 11:15	DEK Lined Impoundment
23-0719-06	KLI-PCS	Groundwater	07/26/2023 11:31	DEK Lined Impoundment
23-0719-07	SW-DITCH	Groundwater	07/26/2023 11:55	DEK Lined Impoundment
23-0719-08	DUP-KLI	Groundwater	07/26/2023 00:00	DEK Lined Impoundment
23-0719-09	EB-KLI	Water	07/26/2023 12:05	DEK Lined Impoundment
23-0719-10	FB-KLI	Water	07/26/2023 10:43	DEK Lined Impoundment



Report Date:

08/11/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 DEK-MW-15003
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-01
 Collect Time:
 08:20 AM

Mercury by EPA 7470A, Total, A	Aqueous			Allquot #: 23-0	719-01-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Rul	le Appendix III-IV To	tal Metals	з Ехр	Aliquot #: 23-0	719-01-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	441		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	33		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	678		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	24100		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	177		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	20		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	3910		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	58		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	31		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	4260		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	1		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	57700		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous	, NO2, NO3			Aliquot #: 23-0	719-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule	Analyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	719-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59000		ug/L	1000.0	07/29/2023	AB23-0728-16





Report Date: 08/11/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 DEK-MW-15003
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-01
 Collect Time:
 08:20 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous				Aliquot #: 23-0	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	49500		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	r HL		Aliquot #: 23-0	719-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1880		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 25400	;			Aliquot #: 23-0	719-01-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	261		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	50000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	50000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	200		ug/L	20.0	07/28/2023	AB23-0728-14



Report Date:

08/11/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 OW-10
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-02
 Collect Time:
 09:52 AM

Mercury by EPA 7470A, Total, Aqueous			Aliquot #: 23-0	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	з Ехр	Aliquot #: 23-0	719-02-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	2		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	163		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	1010		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	113000		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	2		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	2170		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	31		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	17700		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	206		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	5610		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	3		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	56200		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	4		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous, NO2, NO3				Aliquot #: 23-0	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	719-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	51800	_	ug/L	1000.0	07/29/2023	AB23-0728-16





Report Date: 08/11/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 OW-10
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-02
 Collect Time:
 09:52 AM

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous			Aliquot #: 23-0719-02-C02-A02		Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	29100		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	2810		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	560		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B			Aliquot #: 23-0	Analyst: DLS		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	421000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	421000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D			Aliquot #: 23-0719-02-C07-A01		Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	290		ug/L	20.0	07/28/2023	AB23-0728-14



Report Date:

08/11/23



A CENTURY OF EXCELLENCE

Sample Site: 23-0719

Laboratory Project: **DEK Lined Impoundment** Collect Date: Field Sample ID: OW-11 07/26/2023 Lab Sample ID: 23-0719-03 Collect Time: 09:08 AM

Mercury by EPA 7470A, Total, Aqueous				Aliquot #: 23-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Rul	le Appendix III-IV To	tal Metals	з Ехр	Aliquot #: 23-0	719-03-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	2		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	778		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	18		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	3100		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	5800		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	42		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	ND		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	151		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	2		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	4110		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	4		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	64400		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	840		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous		Aliquot #: 23-0	Analyst: KDR			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	222		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule	Analyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	719-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	59200		ug/L	1000.0	07/29/2023	AB23-0728-16



08/11/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 OW-11
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-03
 Collect Time:
 09:08 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous		Aliquot #: 23-0	Analyst: KDR			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	1970		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	18500		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	er HL		Aliquot #: 23-0	719-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	13400		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0719-03-C04-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	216		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-03-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	94000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	15200		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	78800		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-03-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 OW-12
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-04
 Collect Time:
 10:43 AM

Mercury by EPA 7470A, Total, Aq		Aliquot #: 23-0	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Rule	Appendix III-IV To	tal Metals	s Exp	Aliquot #: 23-0	719-04-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	114		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	96		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	818		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	66500		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	5690		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	32		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	23400		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	144		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	17		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	5140		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	60200		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous, N	O2, NO3			Aliquot #: 23-0	719-04-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule A	nalyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	719-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	49600		ug/L	1000.0	07/29/2023	AB23-0728-16





Laboratory Services

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Collect Date: 07/26/2023 Collect Time: 10:43 AM

Report Date:

08/11/23

Lab Sample ID: 23-0719-04 Matrix: Groundwater

Field Sample ID: **OW-12**

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous		Aliquot #: 23-0	Analyst: KDR			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	151000		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h	n), Groundwate	r HL		Aliquot #: 23-0	719-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	599		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0719-04-C04-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	510		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	193000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	193000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: KLI-SCS Collect Date: 07/26/2023
Lab Sample ID: 23-0719-05 Collect Time: 11:15 AM

Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
` ,		riay			-	
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals	s Ехр	Aliquot #: 23-0	719-05-C01-A02	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	1		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	57		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	626		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	103000		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	3		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	69		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	37200		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	8		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	11		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	5		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	3970		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	4		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	344000		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	5		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	27		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	719-05-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	1790		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR I	Rule Analyte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 23-0	719-05-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	55800		ug/L	1000.0	07/29/2023	AB23-0728-16





Report Date: 08/11/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: KLI-SCS Collect Date: 07/26/2023
Lab Sample ID: 23-0719-05 Collect Time: 11:15 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot #: 23-0719-05-C02-A02		Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	464000		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	719-05-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C	Aliquot #: 23-0719-05-C04-A01		Analyst: SLK			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1400		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-05-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	578000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	578000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-05-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: KLI-PCS Collect Date: 07/26/2023
Lab Sample ID: 23-0719-06 Collect Time: 11:31 AM

Mercury by EPA 7470A, Total,	Aqueous			Aliquot #: 23-0	719-06-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Ru	le Appendix III-IV To	tal Metals	з Ехр	Aliquot #: 23-0	719-06-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	1		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	119		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	559		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	0.4		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	159000		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	3		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	29		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	57		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	42400		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	7		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	22		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	4		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	12200		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	2		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	78300		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	4		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	4		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous	, NO2, NO3			Aliquot #: 23-0	719-06-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule	e Analyte List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	719-06-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	48700		ug/L	1000.0	07/29/2023	AB23-0728-16



08/11/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: KLI-PCS Collect Date: 07/26/2023 Lab Sample ID: 23-0719-06 Collect Time: 11:31 AM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous		Aliquot #: 23-0	Analyst: KDR			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	1190		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	668000		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(I	n), Groundwate	r HL		Aliquot #: 23-0	719-06-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C	;			Aliquot #: 23-0719-06-C04-A01		Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1090		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-06-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	45500		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	45500		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-06-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



A CENTURY OF EXCELLENCE

Sample Site:DEK Lined ImpoundmentLaboratory Project:23-0719Field Sample ID:SW-DITCHCollect Date:07/26/2023Lab Sample ID:23-0719-07Collect Time:11:55 AM

Mercury by EPA 7470A, Total, Ac		Aliquot #: 23-0	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR Rule	Appendix III-IV To	tal Metals	s Exp	Aliquot #: 23-0	719-07-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	3		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	43		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	69		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	54100		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	2		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	158		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	18300		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	102		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	3		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	3930		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	1		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	28000		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous, N	IO2, NO3			Aliquot #: 23-0	719-07-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	2170		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	198		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule A	Analyte List, CI, F,	SO4, Aqı	leous	Aliquot #: 23-0	719-07-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	44100		ug/L	1000.0	07/29/2023	AB23-0728-16



08/11/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0719-07

Collect Date: 07/26/2023
Collect Time: 11:55 AM

Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	719-07-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16	
Sulfate	31000		ug/L	1000.0	07/29/2023	AB23-0728-16	
Nitrogen-Ammonia by SM4500NH3(h)	, Groundwate	er HL		Aliquot #: 23-0	Aliquot #: 23-0719-07-C03-A01		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	908		ug/L	25.0	08/07/2023	AB23-0807-01	
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	719-07-C04-A01	Analyst: SLK	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Total Dissolved Solids	325		mg/L	10.0	07/28/2023	AB23-0728-08	
Alkalinity by SM 2320B				Aliquot #: 23-0	719-07-C05-A01	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	180000		ug/L	10000.0	08/02/2023	AB23-0802-03	
Alkalinity Bicarbonate	180000		ug/L	10000.0	08/02/2023	AB23-0802-03	
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03	
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-07-C07-A01	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14	





A CENTURY OF EXCELLENCE

Laboratory Services

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Collect Date: 07/26/2023 Collect Time: 12:00 AM

Report Date:

08/11/23

Lab Sample ID: 23-0719-08 Matrix: Groundwater

Field Sample ID: DUP-KLI

Mercury by EPA 7470A, Total				-	719-08-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR R	ule Appendix III-IV To	tal Metals	s Ехр	Aliquot #: 23-0	719-08-C01-A02	Analyst: EE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	2		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	165		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	983		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	113000		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	1		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	2		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	2140		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	30		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	16900		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	205		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	3		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	5880		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	3		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	54400		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	4		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueou	s. NO2. NO3			Aliquot #: 23-0	719-08-C02-A01	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND	_	ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Ru	le Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	719-08-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	53100		ug/L	1000.0	07/29/2023	AB23-0728-16





Control of

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Collect Date: 07/26/2023 Collect Time: 12:00 AM

Report Date:

08/11/23

Lab Sample ID: 23-0719-08 Matrix: Groundwater

Field Sample ID: DUP-KLI

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous A			Aliquot #: 23-0719-08-C02-A02		Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16
Sulfate	26300		ug/L	1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	719-08-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	3380		ug/L	25.0	08/07/2023	AB23-0807-01
Total Dissolved Solids by SM 2540C	Aliquot #: 23-0719-08-C04-A01		Analyst: SLK			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	55		mg/L	10.0	07/28/2023	AB23-0728-08
Alkalinity by SM 2320B				Aliquot #: 23-0	719-08-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	400000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Bicarbonate	400000		ug/L	10000.0	08/02/2023	AB23-0802-03
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	719-08-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	310		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

 Field Sample ID:
 EB-KLI
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0719-09
 Collect Time:
 12:05 PM

Matrix: Water

Mercury by EPA 7470A, Total, Aqueous				Aliquot #: 23-0	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCF	R Rule Appendix III-IV To	tal Metals	Ехр	Aliquot #: 23-0	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	ND		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	ND		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	ND		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	ND		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	ND		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	ND		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	ND		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	719-09-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrogen-Ammonia by SM4	500NH3(h), Groundwate	er HL_		Aliquot #: 23-0	719-09-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	08/07/2023	AB23-0807-01
	22	0710 Daga 2	1 of 15			



Analytical Report

Report Date: 08/11/23

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0719 Field Sample ID: EB-KLI Collect Date: 07/26/2023

Lab Sample ID: 23-0719-09 Collect Time: 12:05 PM

Matrix: Water

Sulfide, Total by SM 4500 S2D	Aliquot #: 23-0	Analyst: Merit				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



08/11/23



Laboratory Services

A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0719**

Field Sample ID: FB-KLI Collect Date: 07/26/2023 Lab Sample ID: 23-0719-10 Collect Time: 10:43 AM

Matrix: Water

Mercury by EPA 7470A, To	tal, Aqueous		Aliquot #: 23-0	719-10-C01-A01	Analyst: CLE
Parameter(s)	Result	Flag Unit	s RL	Analysis Date	Tracking
Mercury	ND	ug/L	0.2	08/01/2023	AB23-0801-01
Metals by EPA 6020B: CCR	R Rule Appendix III-IV To	tal Metals Exp	Aliquot #: 23-0)719-10-C01-A02	Analyst: EB
Parameter(s)	Result	Flag Unit	-	Analysis Date	Tracking
Antimony	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Barium	ND	ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Boron	ND	ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND	ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	ND	ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND	ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Iron	ND	ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	ND	ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	ND	ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	ND	ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	ND	ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND	ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	ND	ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	ND	ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND	ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	ND	ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND	ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND	ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND	ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aque	ous, NO2, NO3		Aliquot #: 23-0)719-10-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag Unit	-	Analysis Date	Tracking
Nitrate	ND	ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND	ug/L	100.0	07/27/2023	AB23-0727-05
Nitrogen-Ammonia by SM4	500NH3(h), Groundwate	er HL	Aliquot #: 23-0)719-10-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag Unit		Analysis Date	Tracking
Ammonia	ND	ug/L	25.0	08/07/2023	AB23-0807-01
		0710 Dago 22 of 45			



Analytical Report

Report Date: 08/11/23

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0719 Field Sample ID: FB-KLI Collect Date: 07/26/2023 Lab Sample ID: 23-0719-10 Collect Time: 10:43 AM

Matrix: Water

Sulfide, Total by SM 4500 S2D	Aliquot #: 23-0	Analyst: Merit				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	07/28/2023	AB23-0728-14



A CENTURY OF EXCELLENCE

Analytical Report

Report Date: 08/11/23

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

Pro	oject Log-In Number: _	23.6	119			
				Inspection By:	MR	
				LI		
	ipment Delivered By: En					
	Pony	FedEx	_ UPS _	USPS		
	Tracking Number:_					
Sh	ipping Containers: Ente	r the type and n	umber of shipp			
	Cooler () Loose/Unpackaged			Custom Case		/Mailer
Co	ndition of Shipment: En	iter the as-recei	ved condition o	of the shipment container.		
	Damaged Shipment Other			Dented		ing
Sh				s were opened before receip	t.	
En	CoC V	• •		sed with the shipment. Air Data Sheet	Other	
Te	mperature of Containers	s: Measure the t	emperature of	several sample containers.		*
				Samples Received on Ice	e: Yes_\(\infty\) No	0
Nu	M&TE # and Expir	ation <u>0 (54</u> 5-23- ainers: Enter th	24 ne total number	of sample containers receive	ed.	
	Container Type	Water	Soil	Other	Broken	Leaking
	VOA (40mL or 60ml	D 16				
	Quart/Liter (g/p)					
PH 0.3 FSP 13-1640.511	9-oz (amber glass ja 2-oz (amber glass)	ar)		· · · · · · · · · · · · · · · · · · ·		
(ot: 205572	125 mL (plastic)	40				
exp: 2.15.25	24 mL vial (glass)					
	250500 mL (plastic)	8				
	Other					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

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

Page ____ of ____

RECEIVED BY: Received on Ice? Yes \(\text{No M&TE #: \(\text{Ob402} \) Temperature: \(\frac{2.8-60}{2.8-60} \) Cal. Due Date: \(\frac{5-23.24}{2} \)	SAMP	LING SITE / CU	JSTOM	ER:			PROJECT NUMBER:	SAP CC or WC	D#:							A	NAI	YSI	SRF	EOUI	ESTEI)		
SEND REPORT TO: Caleb Bats			_				23-0719	REQUESTER:	Haro	old F	Regi	ster			(Attach List if More Space is Needed)						QA REQUIREN	MENT:		
COPY TO:	SAMP	LING TEAM:	À. L	Shale	y :																			
Comment Comm	SENI	D REPORT TO:	Calel	Batts			email:	phone:							1								☐ ISO 17025	
No. (СОРУ ТО:	Haro	ld Regist	ter		GW = Groundwater $OX = Othe$			CC	NT	AIN	VER!	5									□ 10 CFR 50 AP	P. B	
23-0719-01 7/26/2 0870 GW DEK-MW-15003 7 4 1 1 1 1			TRC				W = Water / Aqueous Liquid A = Air		-	P	RES	SER	VAT	IVE	tals								☐ INTERNAL IN	NFO
23-0719-01 7/26/2 0870 GW DEK-MW-15003 7 4 1 1 1 1			SAMP	LE COLL	ECTION	RIX	S = Soil / General Solid $WP = Wip$ $O = Oil$ $WT = Gen$	e eral Waste	LAL#		33	7 1		Ħ.	al Me	ons	nonia		ulinity	ide			□ OTHER	
-02	SA	MPLE ID	D	ATE	TIME	MAT	FIELD SAMPLE ID / LO	CATION	TO	None	HNC	H ₂ S(HCI	MeC	Tot	Ani	Am	TDS	Alka	Sulf			REMARK	(S
-02	2	23-0719-01	7/2	6/23	0820	GW	DEK-MW-15003		7	4	1	1 1	L		x	х	x	x	x	x				
-04 OW-12 7 4 1 1 1		-02		,			OW-10		7	4	1	1 1			x	x	x	x	x	x				
-05 1)		-03			0908	GW	OW-11		7	4	1	1 1			x	x	x	x	x	x				
-06 13 SW KLI-PCS 7 4 1 1		-04			1043	GW	OW-12		7	4	1	1 1			x	X,	x	x	x	x				
-07 1 55 SW SW-DITCH 7 4 1 1 1		-05			1115	W	KLI-SCS		7	4	1	1 1			x	х	x	x	x	x				
-07 1155 SW SW-DITCH 7 4 1 1 1 1		-06			1131	SW	KLI-PCS		7	4	1	1 1			x	x	x	x	х	x				
-09 1705 W EB-KLI 4 1 1 1 x x x x x x -10 10/3 W FB-KLI 4 1 1 1 x x x x x x RELINQUISHED BY: DATE/TIME: RECEIVED BY: COMMENTS: RECEIVED BY: Received on Ice? Yes No M&TE #: OUTO 2 Temperature: 2.8 - 60 °C Cal. Due Date: 5-23.24		-07		*		SW	SW-DITCH		7	4	1	1 1			х	x	x	x	х	х				
RELINQUISHED BY: DATE/TIME: RECEIVED BY: COMMENTS: Received on Ice? Yes \(\text{No.} \) M&TE#: \(\text{0540.2} \) Temperature: \(\frac{2.8-60}{2.8-60} \) Cal. Due Date: \(\frac{5-23.24}{2.8-60} \)		-08			~~	GW	DUP-KLI		7	4	1	1 1			х	x	x	х	х	х				
RELINQUISHED BY: DATE/TIME: RECEIVED BY: COMMENTS: Received on Ice? Yes \(\) No M&TE #: \(\) OLGO 2 Temperature: \(\) A. & -60 \(\) Cal. Due Date: \(\) 5-23-24		-09			1705	W	EB-KLI		4	1	1	1 1			х	x	x			х				
RECEIVED BY: Received on Ice? Yes \(\text{No} \) M&TE #: \(\text{OU402} \) Temperature: \(\frac{2.8-60}{2.8-60} \) Cal. Due Date: \(\frac{5-23.24}{2.8-60} \)	,	-10	4	•	1043	W	FB-KLI		4	1	1	1 1			x	x	х			x				
RECEIVED BY: Received on Ice? Yes \(\text{No} \) M&TE #: \(\text{OU402} \) Temperature: \(\frac{2.8-60}{2.8-60} \) Cal. Due Date: \(\frac{5-23.24}{2.8-60} \)																								
RECEIVED BY: Received on Ice? Yes \(\text{No} \) M&TE #: \(\text{OU402} \) Temperature: \(\frac{2.8-60}{2.8-60} \) Cal. Due Date: \(\frac{5-23.24}{2.8-60} \)		-																						
Temperature: 2.8-60°C Cal. Due Date: 5-23.24	ay	an 1	I had		**	712	7/23 000	A.											,					
22 0740 Dags 27 of 45	RELIN	QUISHED BY:			D	OATE/I		ECEIV # D BY: 23-0719 Page 27 o	.f 1/5						1									_



Report ID: S51522.01(01) Generated on 07/28/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S51522.01-S51522.10

Project: 23-0719 PR#23071027 Collected Date(s): 07/26/2023

Submitted Date/Time: 07/27/2023 16:48

Sampled by: Unknown P.O. #: 4400114090

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Certifications (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Laboratory Certifications		
Authority	Certification ID	
Michigan DEQ	#9956	
DOD ELAP & ISO/IEC 17025:2	2017 #69699	
WBENC	#2005110032	
Ohio VAP	#CL0002	
Indiana DOH	#C-MI-07	
New York NELAC	#11814	
North Carolina DENR	#680	
North Carolina DOH	#26702	
Pennsylvania DEP	#68-05884	
Wisconsin DNR	FID# 399147320	

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
р	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
x	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0719 PR#23071027

23a-g0-₹4490 **Patg**e 31 of 45



Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S51522.01	23-0719-01 (DEK-MW-15003)	Groundwater	07/26/23 08:20
S51522.02	23-0719-02 (OW-10)	Groundwater	07/26/23 09:52
S51522.03	23-0719-03 (OW-11)	Groundwater	07/26/23 09:08
S51522.04	23-0719-04 (OW-12)	Groundwater	07/26/23 10:43
S51522.05	23-0719-05 (KLI-SCS)	Groundwater	07/26/23 11:15
S51522.06	23-0719-06 (KLI-PCS)	Groundwater	07/26/23 11:31
S51522.07	23-0719-07 (SW-DITCH)	Groundwater	07/26/23 11:55
S51522.08	23-0719-08 (DUP-KLI)	Groundwater	07/26/23 00:01
S51522.09	23-0719-09 (EB-KLI)	Groundwater	07/26/23 12:05
S51522.10	23-0719-10 (FB-KLI)	Groundwater	07/26/23 10:43



Lab Sample ID: S51522.01

Sample Tag: 23-0719-01 (DEK-MW-15003) Collected Date/Time: 07/26/2023 08:20

Matrix: Groundwater COC Reference:

Sample Containers

Type Preservative(s) Refrigerated? Arrival Temp. (C) Thermometer # 1 125ml Plastic NaOH/Zn Acetate Yes 5.7 IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:41, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.20	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.02

Sample Tag: 23-0719-02 (OW-10) Collected Date/Time: 07/26/2023 09:52

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:43, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.29	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.03

Sample Tag: 23-0719-03 (OW-11) Collected Date/Time: 07/26/2023 09:08

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:45, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.04

Sample Tag: 23-0719-04 (OW-12) Collected Date/Time: 07/26/2023 10:43

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:49, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.05

Sample Tag: 23-0719-05 (KLI-SCS)
Collected Date/Time: 07/26/2023 11:15

Matrix: Groundwater COC Reference:

Sample Containers

Type Preservative(s) Refrigerated? Arrival Temp. (C) Thermometer # 1 125ml Plastic NaOH/Zn Acetate Yes 5.7 IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:51, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	ma/L	1	18496-25-8	



Lab Sample ID: S51522.06

Sample Tag: 23-0719-06 (KLI-PCS)
Collected Date/Time: 07/26/2023 11:31

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:53, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.07

Sample Tag: 23-0719-07 (SW-DITCH)
Collected Date/Time: 07/26/2023 11:55

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:55, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.08

Sample Tag: 23-0719-08 (DUP-KLI)
Collected Date/Time: 07/26/2023 00:01

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:57, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.31	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.09

Sample Tag: 23-0719-09 (EB-KLI) Collected Date/Time: 07/26/2023 12:05

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Retrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:59, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	



Lab Sample ID: S51522.10

Sample Tag: 23-0719-10 (FB-KLI)
Collected Date/Time: 07/26/2023 10:43

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 11:01, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	mg/L	1	18496-25-8	

Merit Laboratories Login Checklist

Lab Set ID:S51522

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0719 PR#23071027

Submitted: 07/27/2023 16:48 Login User: PFD

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	tion			Description	Note
Samı	ole Receiv	/ing			
01.	X Yes	No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.7
02.	X Yes	☐ No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	□ N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	No	□ N/A	COC adequately filled out	_
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	☐ No	□ N/A	Sample tag on bottles match COC	
09.	Yes	X No	□ N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	□ N/A	Do sample have correct chemical preservation	
11.	X Yes	No	□ N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditi	ons			
13.	X Yes	No	□ N/A	All bottles intact	
14.	X Yes	No	□ N/A	Appropriate analytical bottles are used	
15.	X Yes	□No	□ N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	
Corre	ective acti	on for all	exceptions	is to call the client and to notify the project manager.	
				Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S51522 Submitted: 07/27/2023 16:48

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0719 PR#23071027

Initial Preservation Check: 07/27/2023 17:03 PFD

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S51522.01	125ml Plastic NaOH/Zn Acetate	>12			
S51522.02	125ml Plastic NaOH/Zn Acetate	>12			
S51522.03	125ml Plastic NaOH/Zn Acetate	>12			
S51522.04	125ml Plastic NaOH/Zn Acetate	>12			
S51522.05	125ml Plastic NaOH/Zn Acetate	>12			
S51522.06	125ml Plastic NaOH/Zn Acetate	>12			
S51522.07	125ml Plastic NaOH/Zn Acetate	>12			
S51522.08	125ml Plastic NaOH/Zn Acetate	>12			
S51522.09	125ml Plastic NaOH/Zn Acetate	>12			
S51522.10	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

			1		1
.o.c.	PAGE	#		OF	1

REPOR			Laboratories, Inc.	CHAIN	OF	CU	IST	ΓΟΕ	YC	RE	СО	RD)						IN	IVOIC	E TO
CONTACT NAME E	mil Blaj			_				CONT	ACT	NAME			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						X SAME		
COMPANY Cons	sumers E	nergy						COMF	PANY					73.00 TO THE TOTAL THE TOTAL TO AL TO THE TO		728-120-11 H-12-11			***************************************		
ADDRESS 135 V	V. Trail S	treet						ADDR	ESS			111111111111111111111111111111111111111	***************************************						***************************************	***************************************	
^{спү} Jackson	***************************************			STATE MI ZIP CO	DDE 4	920	1	CITY					*					STAT	E	ZIP CODE	
PHONE NO. 517-	788-5888	BESTELLES CONTRACTOR SERVICE SERVICE SERVICE CONTRACTOR SERVICE SER	FAX NO. 517-788-2533	P.O. NO. 44001140	900)		PHON	IE NO				······	E-MAIL	ADDRESS	***************************************					
E-MAIL ADDRESS	emil.blaj@	vcmsene	ergy.com	QUOTE NO.									ANALYSIS	(ATTAC	CH LIST	IF MOF	RE SPA	CE IS RE	QUIRED	D)	
PROJECT NO./NAM				SAMPLER(S) - PLEASE PR	INT/SIG	SN NA	ME				N/A	7	TIT	T	TT	T	П	Cert	ification	าร	
-			☐1 DAY ☐2 DAYS ☐3 DAY	S SSTANDARD F	Тоть	HER				************	IV/A								HO VAP		king Water
			D X LEVEL II LEVEL III				R											Do	D	NPD	ES
MATRIX (GW=GROUN	DWATER	WW=WASTEWATER S=SOIL	. L=LIQUID SD=	SOLI	0]	I	# C	onta	iners	&	Sulfide							ect Loc		
	SL=SLUDGE				=WAS		L	Pre		ative			1 1 1						etroit	New	York
MERIT LAB NO.	DATE	TIME	SAMPLE TA IDENTIFICATION-DES		MATRIX	# OF SOTTLES	NONE	豆	H.SO.	NaOH	MeOH	Total							her cial Inst	tructions	
5152201	07/26/23	0820	23-0719-01 (DEK-MW-15	(003)	GW	1	r			1		1					\Box	-	and the second second		ZnAcetate
	07/26/23	0952	23-0719-02 (OW-10)		GW	1	T	\forall	+	1	\dagger	1						"			
	07/26/23		23-0719-03 (OW-11)		GW	1	T	H	1	1	1	1						"			
-04	07/26/23	1043	23-0719-04 (OW-12)		GW	1	T	\sqcap	T	1	T	1						"		,	
,05	07/26/23	1115	23-0719-05 (KLI-SCS)		GW	1			+	1	+	V						-		***************************************	
		1131	23-0719-06 (KLI-PCS)		GW	1	Г			1		1						"	-		
,07	07/26/23	1155	23-0719-07 (SW-DITCH)		GW	1	Γ			1		1						"			
0	07/26/23	-	23-0719-08 (DUP-KLI)		GW	1				1		1						"			
.09	07/26/23	1205	23-0719-09 (EB-KLI)		GW	1				1		1						"			
.19	07/26/23	1043	23-0719-10 (FB-KLI)		GW	1				1		1						"			
RELINQUISHED BY		4:	ONNITERS ENERGY	Sampler DATE	T	IME 648	R			SHED	BY: GANIZ	ATIO	N							DATE	TIME
RECEIVED BY: SIGNATURE/ORG/		7	Vatur	7/27/2	2 /	IME 04		RECE	EIVED	BY:	GANIZ								***	DATE	TIME
RELINQUISHED BY	Y:		proj w	DATE		IME	4	SEAL	10000	27071	1146	. 11101	SEAL INTACT		INITIALS		NOTES:	TI	MP. ON AF	RRIVAL	
SIGNATURE/ORGA RECEIVED BY: SIGNATURE/ORGA	,	MANAGE AND ADDRESS OF THE SAME		DATE	T	IME		SEAL	NO.		***************************************		SEAL INTACT	NO 🗆	INITIALS				S,	7	



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

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: August 11, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2023 Q3

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0718

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 07/24/2023, for the 3rd Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 07/27/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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. <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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

<u>Description</u>
Reporting Limit
Result not detected or below Reporting Limit
Non TNI analyte
Laboratory Control Sample
Laboratory Reagent Blank (also referred to as Method Blank)
Duplicate
Matrix Spike
Matrix Spike Duplicate
Relative Percent Difference
Method Detection Limit
Practical Quantitation Limit
Target Detection Limit
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
PΙ	Possible interference may have affected the accuracy of the laboratory result
Q	Matrix Spike or Matrix Spike Duplicate recovery outside acceptance criteria
R	Result confirmed by new sample preparation and reanalysis
X	Other notation required; comment listed in sample notes and/or case narrative



Work Order Sample Summary

Customer Name: Karn/Weadock Complex

Work Order ID: Q3-2023 DEK Bottom Ash Pond & Lined Impoundment

Date Received: 7/27/2023 Chemistry Project: 23-0718

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0718-01	DEK-MW-18001	Groundwater	07/26/2023 12:30	DEK Bottom Ash Pond & Lined Impoundment
23-0718-02	DEK-MW-18001 MS	Groundwater	07/26/2023 12:30	DEK Bottom Ash Pond & Lined Impoundment
23-0718-03	DEK-MW-18001 MSD	Groundwater	07/26/2023 12:30	DEK Bottom Ash Pond & Lined Impoundment



Report Date:

08/11/23



Laboratory Services

A CENTURY OF EXCELLENCE

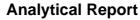
Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0718**

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0718-01
 Collect Time:
 12:30 PM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqu		Aliquot #: 23-0	718-01-C01-A01	Analyst: CLE		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	07/31/2023	AB23-0731-03
Metals by EPA 6020B: CCR Rule A	ppendix III-IV To	tal Metals	s Ехр	Aliquot #: 23-0	718-01-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Arsenic	333		ug/L	1.0	08/02/2023	AB23-0802-04
Barium	144		ug/L	5.0	08/02/2023	AB23-0802-04
Beryllium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Boron	988		ug/L	20.0	08/02/2023	AB23-0802-04
Cadmium	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Calcium	55500		ug/L	1000.0	08/02/2023	AB23-0802-04
Chromium	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Cobalt	ND		ug/L	6.0	08/02/2023	AB23-0802-04
Copper	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Iron	759		ug/L	20.0	08/02/2023	AB23-0802-04
Lead	ND		ug/L	1.0	08/02/2023	AB23-0802-04
Lithium	21		ug/L	10.0	08/02/2023	AB23-0802-04
Magnesium	10500		ug/L	1000.0	08/02/2023	AB23-0802-04
Manganese	139		ug/L	5.0	08/02/2023	AB23-0802-04
Molybdenum	11		ug/L	5.0	08/02/2023	AB23-0802-04
Nickel	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Potassium	5140		ug/L	100.0	08/02/2023	AB23-0802-04
Selenium	1		ug/L	1.0	08/02/2023	AB23-0802-04
Silver	ND		ug/L	0.2	08/02/2023	AB23-0802-04
Sodium	115000		ug/L	1000.0	08/02/2023	AB23-0802-04
Thallium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Vanadium	ND		ug/L	2.0	08/02/2023	AB23-0802-04
Zinc	ND		ug/L	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous, NC)2, NO3			Aliquot #: 23-0	718-01-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Nitrite	ND		ug/L	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	SO4, Aqւ	ieous	Aliquot #: 23-0	718-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	66700		ug/L	1000.0	07/29/2023	AB23-0728-16





A CENTURY OF EXCELLENCE

Report Date: 08/11/23

DEK Bottom Ash Pond & Lined Impoundment Sample Site:

Laboratory Project: 23-0718 Collect Date: 07/26/2023 Collect Time: 12:30 PM

07/28/2023

AB23-0728-14

20.0

Lab Sample ID: 23-0718-01 Matrix: Groundwater

Sulfide

Field Sample ID: DEK-MW-18001

Anions by EPA 300.0 CCR Rule An	Aliquot #: 23-0	718-01-C02-A02	Analyst: KDR				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	ND		ug/L	1000.0	07/29/2023	AB23-0728-16	
Sulfate	139000		ug/L	1000.0	07/29/2023	AB23-0728-16	
Nitrogen-Ammonia by SM4500NH3	Aliquot #: 23-0	718-01-C03-A01	Analyst: CLE				
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	2240		ug/L	25.0	08/07/2023	AB23-0807-01	
Total Dissolved Solids by SM 2540	С		Aliquot #: 23-0	718-01-C04-A01	Analyst: SLK		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Total Dissolved Solids	548		mg/L	10.0	07/28/2023	AB23-0728-08	
Alkalinity by SM 2320B				Aliquot #: 23-0	718-01-C05-A01	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	202000		ug/L	10000.0	08/02/2023	AB23-0802-03	
Alkalinity Bicarbonate	202000		ug/L	10000.0	08/02/2023	AB23-0802-03	
Alkalinity Carbonate	ND		ug/L	10000.0	08/02/2023	AB23-0802-03	
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	718-01-C07-A01	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	

ug/L

ND



Report Date:

08/11/23

23-0718



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project:

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0718-02
 Collect Time:
 12:30 PM

Matrix: Groundwater

Mercury by EPA 7470A, Total, Aqueo		Aliquot #: 23-0	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	110		%	0.2	07/31/2023	AB23-0731-03
Metals by EPA 6020B: CCR Rule App	endix III-IV To	tal Metals	s Ехр	Aliquot #: 23-0	718-02-C01-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	110		%	1.0	08/02/2023	AB23-0802-04
Arsenic	100		%	1.0	08/02/2023	AB23-0802-04
Barium	101		%	5.0	08/02/2023	AB23-0802-04
Beryllium	100		%	1.0	08/02/2023	AB23-0802-04
Boron	98		%	20.0	08/02/2023	AB23-0802-04
Cadmium	101		%	0.2	08/02/2023	AB23-0802-04
Calcium	97.9		%	1000.0	08/02/2023	AB23-0802-04
Chromium	98		%	1.0	08/02/2023	AB23-0802-04
Cobalt	98		%	6.0	08/02/2023	AB23-0802-04
Copper	92		%	1.0	08/02/2023	AB23-0802-04
Iron	88		%	20.0	08/02/2023	AB23-0802-04
Lead	95		%	1.0	08/02/2023	AB23-0802-04
Lithium	102		%	10.0	08/02/2023	AB23-0802-04
Magnesium	103		%	1000.0	08/02/2023	AB23-0802-04
Manganese	95		%	5.0	08/02/2023	AB23-0802-04
Molybdenum	112		%	5.0	08/02/2023	AB23-0802-04
Nickel	93		%	2.0	08/02/2023	AB23-0802-04
Potassium	105		%	100.0	08/02/2023	AB23-0802-04
Selenium	100		%	1.0	08/02/2023	AB23-0802-04
Silver	96.7		%	0.2	08/02/2023	AB23-0802-04
Sodium	103		%	1000.0	08/02/2023	AB23-0802-04
Thallium	94		%	2.0	08/02/2023	AB23-0802-04
Vanadium	102		%	2.0	08/02/2023	AB23-0802-04
Zinc	96		%	10.0	08/02/2023	AB23-0802-04
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 23-0	718-02-C02-A01	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	93		%	100.0	07/27/2023	AB23-0727-05
Nitrite	94		%	100.0	07/27/2023	AB23-0727-05
Anions by EPA 300.0 CCR Rule Analy	yte List, Cl, F,	SO4, Aqu	ieous	Aliquot #: 23-0	718-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	116		%	1000.0	07/29/2023	AB23-0728-16



Analytical Report

Report Date: 08/11/23

23-0718

Laboratory Project:

Laboratory Services A CENTURY OF EXCELLENCE

DEK Bottom Ash Pond & Lined Impoundment Sample Site:

Field Sample ID: DEK-MW-18001 MS

Collect Date: 07/26/2023 Lab Sample ID: 23-0718-02 Collect Time: 12:30 PM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous				Aliquot #: 23-0	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Fluoride	85		%	1000.0	07/29/2023	AB23-0728-16	
Sulfate	99		%	1000.0	07/29/2023	AB23-0728-16	
Nitrogen-Ammonia by SM4500NH3(n), Groundwate	er HL		Aliquot #: 23-0	718-02-C03-A01	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Ammonia	99		%	25.0	08/07/2023	AB23-0807-01	
Alkalinity by SM 2320B				Aliquot #: 23-0	718-02-C04-A01	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Alkalinity Total	94.8		%	10000.0	08/02/2023	AB23-0802-03	
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	718-02-C06-A01	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Sulfide	92		%	20.0	07/28/2023	AB23-0728-14	



Report Date:

08/11/23

23-0718



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project:

 Field Sample ID:
 DEK-MW-18001 MSD
 Collect Date:
 07/26/2023

 Lab Sample ID:
 23-0718-03
 Collect Time:
 12:30 PM

Matrix: Groundwater

Mercury by EPA 7470A, Total,	-	Aliquot #: 23-0718-03-C01-A01					
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	112		% 0.2 07/31/2023		07/31/2023	AB23-0731-03	
Metals by EPA 6020B: CCR Ru	ıle Appendix III-IV To	tal Metals	Ехр	Aliquot #: 23-0	718-03-C01-A02	Analyst: EE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	105		%	1.0	08/02/2023	AB23-0802-04	
Arsenic	90		%	1.0	08/02/2023	AB23-0802-04	
Barium	99		%	5.0	08/02/2023	AB23-0802-04	
Beryllium	96		%	1.0	08/02/2023	AB23-0802-04	
Boron	101		%	20.0	08/02/2023	AB23-0802-04	
Cadmium	100		%	0.2	08/02/2023	AB23-0802-04	
Calcium	99.2		%	1000.0	08/02/2023	AB23-0802-04	
Chromium	97		%	1.0	08/02/2023	AB23-0802-04	
Cobalt	93		%	6.0	08/02/2023	AB23-0802-04	
Copper	88		%	1.0	08/02/2023	AB23-0802-04	
Iron	86		%	20.0	08/02/2023	AB23-0802-04	
Lead	99		%	1.0	08/02/2023	AB23-0802-04	
Lithium	99		%	10.0	08/02/2023	AB23-0802-04	
Magnesium	101		%	1000.0	08/02/2023	AB23-0802-04	
Manganese	93		%	5.0	08/02/2023	AB23-0802-04	
Molybdenum	111		%	5.0	08/02/2023	AB23-0802-04	
Nickel	91		%	2.0	08/02/2023	AB23-0802-04	
Potassium	102		%	100.0	08/02/2023	AB23-0802-04	
Selenium	95		%	1.0	08/02/2023	AB23-0802-04	
Silver	96.9		%	0.2	08/02/2023	AB23-0802-04	
Sodium	105		%	1000.0	08/02/2023	AB23-0802-04	
Thallium	96		%	2.0	08/02/2023	AB23-0802-04	
Vanadium	100		%	2.0	08/02/2023	AB23-0802-04	
Zinc	92		%	10.0	08/02/2023	AB23-0802-04	
Anions by EPA 300.0 Aqueous	s, NO2, NO3			Aliquot #: 23-0	718-03-C02-A01	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	93		%	100.0	07/27/2023	AB23-0727-05	
Nitrite	94		%	100.0	07/27/2023	AB23-0727-05	
Anions by EPA 300.0 CCR Rul	e Analyte List, Cl, F,	SO4, Aqu	eous	Aliquot #: 23-0	718-03-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	115		%	1000.0	07/29/2023	AB23-0728-16	



Analytical Report

Report Date: 08/11/23

Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment**

Field Sample ID: **DEK-MW-18001 MSD**

Lab Sample ID: 23-0718-03

Matrix: Groundwater

Laboratory Project: 23-0718

Collect Date: 07/26/2023 Collect Time: 12:30 PM

Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	ieous	Aliquot #: 23-0	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	84		%	1000.0	07/29/2023	AB23-0728-16
Sulfate	102	%		1000.0	07/29/2023	AB23-0728-16
Nitrogen-Ammonia by SM4500NH3	(h), Groundwate	er HL		Aliquot #: 23-0	718-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	100		%	25.0	08/07/2023	AB23-0807-01
Alkalinity by SM 2320B				Aliquot #: 23-0	718-03-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	102		%	10000.0	08/02/2023	AB23-0802-03
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	718-03-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	07/28/2023	AB23-0728-14





Report Date: 08/11/23

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

*							
		Log-In Number:					
					Inspection By:		
3	Sample	Origin/Project Name:	93-202	3 DEK	CBAP4LI		
,	Shipme	nt Delivered By: Ente	r the type of sh	ipment carrie	r.		
					USPS		
		Tracking Number:					
	Shippin	g Containers: Enter th	ne type and nur	nber of shipp	ing containers received.		
		Cooler (Cooler			Custom Case Other		Mailer
	Conditi				f the shipment container.		
	Conuiti	Damaged Shipment O	bserved: None		Dented		ng
	Shipme		ny of the shipp	ing containers	s were opened before receip		
	Enclose	d Documents: Enter th	ne type of docu	ments enclos	ed with the shipment.		
		CoC Wo	rk Request		Air Data Sheet	Other	
	Temper	rature of Containers: 1	Measure the ter	nperature of s	several sample containers.		
		As-Received Tempera	ture Range <u>S</u> -	4-5.9°C	Samples Received on Ic	e: Yes 🗶 No)
		M&TE # and Expiration	on 01540	2			
	Number	r and Tyne of Contain	5.23-7	total number	of sample containers receive	ved.	
		Container Type		Soil	Other	Broken	Leaking
		VOA (40mL or 60mL)	Water $\begin{tabular}{c} \hline \end{tabular}$	3011	Other	Droken	Leaking
PH 0.3		Quart/Liter (g/p)					
FSP 13-1010-5	()	9-oz (amber glass jar)					
104: 205522		2-oz (amber glass)					
OXP: 2.15.25		125 mL (plastic)	12				
		24 mL vial (glass)					
	750	500 mL (plastic)	1				
		Other					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

Page _____ of ____

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

SAMPLING SITE / CU	JSTOMER:			PROJECT NUMBER:	SAP CC or WC)#:						ANALYSIS REQUESTED										
Q3-2023 DEK Botto		-	ound.	23-0718	REQUESTER:	Haro	old R	egis	ter			(Attach List if More Space is Needed)								QA REQUIREMENT:		
SAMPLING TEAM:	A. Whale,	,		TURNAROUND TIME REQUIRED:								~									□ NPDES	
	/			□ 24 HR □ 48 HR □ 3 DAYS □ STANDARD 図 OTHER													⊠ TNI					
SEND REPORT TO:	Caleb Batts			email:	phone:																□ ISO 17025	
COPY TO:	Harold Regist	er		MATRIX CODES: GW = Groundwater OX = Other			_		INE													☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sludg W = Water / Aqueous Liquid A = Air		PRESERVATIVE			Ξ	Metals		-							☐ INTERNAL INFO			
LAB	SAMPLE COLL	ECTION	MATRIX	S = Soil / General Solid $WP = Wipe$ $O = Oil$ $WT = Gene$		TOTAL#	0	ے آج		H	h-	al M	Anions	Ammonia		Alkalinity	ide				□ OTHER	
SAMPLE ID	DATE	TIME	MAT	FIELD SAMPLE ID / LOC	CATION	TO	None	HNC	NaO	HCI	Other	Total	Ani	Am	TDS	Alk	Sulfide				REMARKS	
23-0718-01	7/26/23	1230	GW	DEK-MW-18001		7	4	1 1	1			x	х	x	x	x	х					
-02		1230	GW	DEK-MW-18001 MS		6	3	1 1	1			x	x	x		х	х					
-03	4	1230	GW	DEK-MW-18001 MSD		6	3	1 1	1			x	x	x		x	x					
											1	1								1		
RELINQUISHED BY:	1	, I	DATE/T	YIME: R	ECEIVED BY:	1						CON	име	NTS:								
0.1.	/ , /	1/4 -	-	7/27/23 0800	T'																	
RELINQUISHED BY:	. WI	I	DATE/T	TIME: R	ECEIVED BY:							Rece	eived	on Ic	e? d	Yes		No	M&7	ΓE #:	015402	
												Tem	perat	ure: 5	5.4.	5.9	_°C		Cal.	Due	Date: 5-23-24	
					23-0718 Page 13 of	f 24																



Report ID: S51521.01(01) Generated on 07/28/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S51521.01-S51521.03

Project: 23-0718 PR#23071027 Collected Date(s): 07/26/2023

Submitted Date/Time: 07/27/2023 16:48

Sampled by: Unknown P.O. #: 4400114090

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Certifications (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Certifications

Authority	Certification ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025::	2017 #69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
p	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
X	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0718 PR#23071027

23-00-7480 Page 17 of 24



Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S51521.01	23-0718-01 (DEK-MW-18001)	Groundwater	07/26/23 12:30
S51521.02	23-0718-02 (DEK-MW-18001 Field MS)	Groundwater	07/26/23 12:30
S51521.03	23-0718-03 (DEK-MW-18001 Field MSD)	Groundwater	07/26/23 12:30



Lab Sample ID: S51521.01

Sample Tag: 23-0718-01 (DEK-MW-18001) Collected Date/Time: 07/26/2023 12:30

Matrix: Groundwater COC Reference:

Sample Containers

Type Preservative(s) Refrigerated? Arrival Temp. (C) Thermometer # 1 125ml Plastic NaOH/Zn Acetate Yes 5.7 IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:21, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.005	ma/L	1	18496-25-8	



Lab Sample ID: S51521.02

Sample Tag: 23-0718-02 (DEK-MW-18001 Field MS)

Collected Date/Time: 07/26/2023 12:30

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:25, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.183	0.02	0.005	ma/L	1	18496-25-8	1

1-* Sample spiked @ 0.20 mg/L



Lab Sample ID: S51521.03

Sample Tag: 23-0718-03 (DEK-MW-18001 Field MSD)

Collected Date/Time: 07/26/2023 12:30

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	5.7	IR

Inorganics

Method: SM4500-S2 D, Run Date: 07/28/23 10:27, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.184	0.02	0.005	mg/L	1	18496-25-8	1

1-* Sample spiked @ 0.20 mg/L

Merit Laboratories Login Checklist

Lab Set ID:S51521

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0718 PR#23071027

Submitted: 07/27/2023 16:48 Login User: PFD

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	tion			Description	Note
Samp	ole Receiv	/ing			
01.	X Yes	No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 5.7
02.	X Yes	No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	□ N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chaiı	n of Custo	ody			
06.	X Yes	No	N/A	COC adequately filled out	
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	No	N/A	Sample tag on bottles match COC	
09.	Yes	X No	N/A	Subcontracting needed? Subcontacted to:	
Prese	ervation				
10.	X Yes	No	N/A	Do sample have correct chemical preservation	
11.	X Yes	No	N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottle	e Conditio	ons			
13.	X Yes	No	N/A	All bottles intact	
14.	X Yes	No	N/A	Appropriate analytical bottles are used	
15.	X Yes	☐ No	N/A	Merit bottles used	
16.	X Yes	No	N/A	Sufficient sample volume received	
17.	Yes	X No	N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	
_					
Corre	ective action	on for all	exceptions	is to call the client and to notify the project manager.	
Clien	t Review I	Ву:		Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S51521 Submitted: 07/27/2023 16:48

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0718 PR#23071027

Initial Preservation Check: 07/27/2023 17:07 PFD

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S51521.01	125ml Plastic NaOH/Zn Acetate	>12			
S51521.02	125ml Plastic NaOH/Zn Acetate	>12			
S51521.03	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

					-
200	PAGE	#	1	OF	1
,.v.v.	LUCIT	11		O.	

REPOR		\	Laboratories, Inc.	CHA	IN OF	CU	IST	O	YC	RE	CO	RD							INV	DICE	E TO
CONTACT NAME E	mil Blaj						7	CONT	ACT N	IAME								X SA	ME		
COMPANY Cons	sumers E	Energy			***************************************		1	COMF	PANY												
ADDRESS 135 V	V. Trail S	Street					1	ADDR	ESS			***************************************									
спу Jackson		***************************************		STATE MI Z	P CODE	4920	1	CITY		-				************		-		STATE	ZIP CO	ODE	
PHONE NO. 517-	788-5888		FAX NO. 517-788-2533	P.O. NO. 44001				PHON	IE NO.				***************************************	E-MA	L ADDRESS		***************************************				
E-MAIL ADDRESS	emil.blaj@	@cmsen	ergy.com	QUOTE NO.		****	1					F	NALYS	IS (ATT	ACH LIST	IF MOF	RE SPA	CE IS REQU	RED)		
PROJECT NO./NAM	The second second			SAMPLER(S) - PLEAS	E PRINT/SI	IGN NAI	ME L				N/A	7		ŤΤ	TT	T	П	Certifica		***************************************	
			☐1 DAY ☐2 DAYS ☐3 DAY	S STANDARD	ОТ	HER					1471							ОНЮ			
DELIVERABLE	S REQUIRI	ED ST	TD X LEVEL LEVEL	LEVEL IV DEC		OTHER	٦_					6						□D ₀ D		NPDES	3
	GW=GROUN	IDWATER	WW=WASTEWATER S=SOIL		SD=SOL W=WA	ID]			ontai			Sulfide						Project	-	_	.
MERIT	YE.		DRINKING WATER 0=0IL WI					П	serv	П		=						☐ Detroi☐ Other		New Yo	ork
LAB NO.	DATE	TIME	IDENTIFICATION-DES		MATRIX	# OF	NONE	고	H,SO,	NaOH	MeOH	Total						Special		ions	
	07/26/23	1230	23-0718-01 (DEK-MW-18	3001)	GW	1			T	1		1						preserve	l with Na	aOH/Zn	Acetate
2	07/26/23	1230	23-0718-02 (DEK-MW-18	001 Field MS)	GW	1			T	1		1						"		***************************************	
.03	07/26/23	1230	23-0718-03 (DEK-MW-18	001 Field MSD) GW	1				1		1						"	more reconstruction disproved		
																		Please sp	ike MS/N	ASD and	d report
																		spike co	ncentrat	ion and	/or rec.
		- 1-																			
			×																		1
										Ш											
					\perp		Ц		\perp												
						_															
						_			\perp												
RELINQUISHED BY		4:0	ONDURERS ENERGY	Sampler DA	ATE	TIME 648			NQUIS		BY:	ATION			ORNICO CANADA CONTRACTOR CONTRACT				DA	TE	TIME
RECEIVED BY: SIGNATURE/ORGA			Pato	7/2		TIME 8		RECE	EIVED	BY:	GANIZA					1111		***************************************	DA	TE	TIME
RELINQUISHED BY	Y:		The state of the s	DA	CHARLES AND ADDRESS OF THE CASE OF	TIME	1	SEAL	Section 2015				SEAL INTAC		INITIALS		NOTES:	TEMP.	ON ARRIVAL	-	
RECEIVED BY: SIGNATURE/ORGA		***************************************		DA	ME	TIME		SEAL	NO.		***************************************		YES BEAL INTAC YES	NO 🗆	INITIALS				7		



Appendix B Field Notes



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Compliance
PROJECT NUMBER:	514404.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION: -	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	7/24/2023 TO 7/26/2023
PURPOSE OF FIELDWORK:	Third Quarter Supplemental Sampling Event
- ,	
WORK PERFORMED BY:	Jake Krenz, Javier Jasso, Andrew Whaley

SIGNED 8/1/2:

CHECKED BY DATE



REVISED 04/2019

GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comp DATE	<u> </u>	124/23		TIME ARRIVI	ED: 0800
PROJECT NUMBER:	514404.0001.0	0000 AUTI		(JK) AW		TIME LEFT:	1500

2 -		WEAT					
TEMPERATURE: 65-6	SO °F WIND:	0-5 MF	<u>'H</u>	\	/ISIBILITY: -	clear	.
		RK / SAMPLIN					
Collected !	samples from	MW-1	5008	and	14w-	15019,0	nd DUP-
Background							
					· ·		
PROB	LEMS ENCOUNTERE	D		COR	RECTIVE A	CTION TAKE	:N
		COMMUN	ICATION				
NAME	REPRESENTING			SUBJECT	/ COMMEN	TS	
Darby Litz	TRC	PM - Update					
Galeb-Batts >> Peter Madziar	Consumers	Site Contact					
Leter Luncial							
MACTEMATON	QUANTITY	GATION DERIV	'ED WAS		MMENTS	····	·,~
WASTE MATRIX Groundwater	NM	Purge to Gro			VIIVIEN 13		
Groundwater	INIVI	ruige to Git	<u>Juliu</u>				
	<u> </u>						
		1					
10/	2 0	11.102		10	0		
He?	ly 81	1/23	-	#6	10	7	8 1-3
SIGNED	U	DATE	Cl	HEOKED BY		F 0	DATE
/ICED 04/2040				and	n w	Meer	- 814ta
ISED 04/2019							



GENERAL NOTES

				· ·		0700
PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comr DATE	: 7/	26/27	TIME ARRIVE	D-0800
PROJECT NUMBER:	514404.0001.0	000 AUTH		(IK) AW	TIME LEFT:	1230
· · · · · · · · · · · · · · · · · · ·		······································				
		WEAT	HER			
TEMPERATURE: 8) °F WIND:	5-10 MP	<u>н</u>	VISIBILITY:	clear	
		RK / SAMPLIN				
collected so	mples from	All	DEK	-BAP wells	as wel	
as QA/Q	c samples	for D	EK-B.	AP.		
	-					
collected s	camples from	n MW-	15002	2 and MI	w-15016	
collected s as well a DEK/Jew	s remarboler	ું વ	A/QC	i somples	·krom	
DEK/Jew	Background 1	wells				
PROBL	EMS ENCOUNTERED)		CORRECTIVE	ACTION TAKE	N
		- Andrews - Andr				
			-			
		COMMUN	CATION			
NAME	REPRESENTING			SUBJECT / COMME	NTS	
Darby Litz	TRC	PM - Update	5			
Galeb Batts Perfect Much Zing	Consumers	Site Contact				
reser runcias						
	INVESTIG	ATION DERIV	ED WAS			
WASTE MATRIX	QUANTITY			COMMENTS		
Groundwater	NM	Purge to Gro	und			
078	L	<u></u>			<u>n</u>	
Le 9	Ky 8/1	1/23		alun ul	led :	\$14/23
SIGNED	0	DATE	C	HECKED BY	8	DATE



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comr DAT	E: 7/2	6/23	TIME ARRIVED 650
PROJECT NUMBER			HOR: JJ	A	TIME LEFT: 1400
	- Laure	WEΔ	THER		
TEMPERATURE: 70	wind:		PH	VIS	BIBILITY: 1tazy - Llowy
		ORK / SAMPLII			170 217 0.0017
((() 0)/-					
Scale	Meter	T	ما سم	L , , , 1/5	NEH MUISON
OW 10 OU	11, OW12,	ku scs,	The	PCS,	DEH MW 1500), HLI SW dithh
Sarrific De	/ MM - 180	20 [
PROI	BLEMS ENCOUNTERE	D		CORRE	CTIVE ACTION TAKEN
None				-	
	1.207				United the second of the secon
		COMMU	NICATION		
NAME	REPRESENTING			SUBJECT / (COMMENTS
Darby Litz	TRC	PM - Updat	es		
Caleb Batte	Consumers	Site Contact	t		
Peter M.					
		GATION DERI	VED WAS		·
WASTE MATRIX	QUANTITY			COMM	MENTS
Groundwater	NM	Purge to Gr	ound		
	1 0	<u></u>		/1	
	11.1/2 -	1/2/15		110	1 21-
SIGNED	May	DATE DATE		HECKED BY	



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	
PROJECT NO.:	514404.0001.0000	SAMPLER NAME: Jake Krenz, Javier Jasso, Andrew Whale
WATER LEVEL MEAS	UREMENTS COLLECTED WITH:	
HEF	RON DIPPER-T	TRC A2
NAME AND MODEL OF IN	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)
PRODUCT LEVEL ME	ASUREMENTS COLLECTED WITH	l:
	NA	NA
NAME AND MODEL OF I	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)
DEPTH TO BOTTOM O	OF WELL MEASUREMENTS COLL	ECTED WITH:
HE	RON DIPPER-T	TRC A2
NAME AND MODEL OF I	NSTRUMENT	SERIAL NUMBER (IF APPLICABLE)
PURGING METHOD		
PER	ISTALTIC PUMP	TRC A2
NAME AND MODEL OF F	UMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)
SAMPLING METHOD		
PER	ISTALTIC PUMP	TRC A2
NAME AND MODEL OF F	PUMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)
GEOTECH	DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF F	ILTERATION DEVICE	FILTER TYPE AND SIZE
DEDICATUBING TYPE	TED POLY TUBING	LOW-FLOW SAMPLING EVENT
PURGE WATER DISPO	DSAL METHOD	
☑ GROUND	☐ DRUM ☐ POTW	□ POLYTANK □ OTHER
DECONTAMINATION A	AND FIELD BLANK WATER SOUF	RCE
ST	ORE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOUP	RCE By 8/1/23	allen What 8 14/29
SIGNED REVISED 04/2019	DATE	CHECKED BY CHECKED BY

TRC

WATER QUALITY METER CALIBRATION LOG

PROJECT NA	AME:	CEC Karn BAP/LI: 2023 GW	/ Compliand	ce	MODEL:	YS1	Pro	DSS	SAMPLER:	AW,	<i>Ø</i> , .	IJ
PROJECT NO	D.:	514404.0001.0000			SERIAL #	#: / 4	na f	Arborr .	DATE: 7 1261	23		
	PH (CALIBRATION CHECK					SPEC	IFIC CONDU	CTIVITY CALIBR	RATIO	ON C	HECK
(LOT #): 360 (EXP. DATE): N	• •	pH 4 / 10 (LOT #): 3 G L 916 (EXP. DATE): MW/25 POST-CAL. READING / STANDARD	CAL. RANGE	TIME		(LOT #):	36E (E): (EADING 040 May /24 DING/STANDARD	TEMPERATURE (°CELSIUS)	CA RAN	AL. NGE	TIME
701	17:01	4.00 / 4.00	WITHIN RANGE	0719		141	7	/ 1413	25.0	X	WITHIN RANGE	0715
	1	1	☐ WITHIN RANGE					1			WITHIN RANGE	
	1	1	WITHIN RANGE					1			WITHIN RANGE	
	1	. 1	☐ WITHIN RANGE					1			WITHIN RANGE	
	ORP	CALIBRATION CHECK	,		_			D.O. CAL	IBRATION CHE	ĊК		
CAL. R	EADING	TEMPERATURE				С	AL. RI	EADING	TEMPERATURE			
(LOT #): (EXP. DATE):	DING / STANDARD	(°CELSIUS)	CAL. RANGE	TIME		DOET CAL	BEAD(A	IG/SATURATED AIR	(°CELSIUS)	RAN	AL. NGE	TIME
		24,4	WITHIN RANGE	0791	1			/ 8.2	23,3	×	WITHIN	0723
222.2	<u>/ 2aa.a</u> /	24.7	☐ WITHIN	0121		8,	ď	/ 0.	&3; S	П	WITHIN	0147
	<u>'</u>		RANGE					, ,		П	RANGE WITHIN	
	<u>'</u>		RANGE WITHIN		_			,			RANGE WITHIN	
	TUDDID	 ITY CALIBRATION CHEC	RANGE					<u> </u>	COMMENTS		RANGE	
	, r. I	1	7	ΔΙΙΤ	OCAI	SOLUTION	U STANDARD	SOLI	ITION	(S)		
(1 OT 4).	DI	(LOT #): A710000	CAL. RANGE	TIME		(LOT #): (EXP. DA			LIST LOT NUMBERS	ST LOT NUMBERS AND EXPIRATION DA		ON DATE:
POST-CAL. REA	DING / STANDARD	POST-CAL. READING / STANDARD				CALIBI	RATED	PARAMETERS	CALIBRATI	ON RAI	NGES ()
0.0	10.0	10-0 /10.1	WITHIN RANGE	7725			pН		pH: +/- 0.2 S.	U.		
	1	1	☐ WITHIN RANGE				cor	ND	COND: +/- 1% O	F CAL.	STAN	IDARD
	1	1	☐ WITHIN RANGE				OR	5	ORP: +/- 25 m\	/		
	1	1	☐ WITHIN RANGE		=		D.O).	D.O.: VARIES			
		NOTES			_	a .	TUF	RB	TURB: +/- 5% O	F CAL	. STAN	IDARD
									(1) CALIBRATION RAI THE MODEL OF THE			
	PROBLEMS ENCOUNTERED							CORRECT	IVE ACTIONS			
									n			•
SIGNED		× 8,	P/1/23 DATE	? -		(CH	<i>GN</i>	An/	while	_	8	141z

TRC

WATER QUALITY METER CALIBRATION LOG

PROJECT NA	AME:	CEC Karn BAP/LI: 2023 GW Compliance			MODEL: VSI	PRO	888	SAMPLE	R:	AW, UK).	IJ
PROJECT NO	D.:	514404.0001.0000		•	SERIAL#: A	n A	rbor	DATE:	7/2	4/23	
	PH (CALIBRATION CHECK				SPE	CIFIC CONDU	CTIVITY	CALIBE	RATION C	HECK
(LOT #): 36((EXP. DATE): M	47 2914 127/3425 DING/STANDARD	pH 4 / 10 (LOT #): 3 G C 9 1 6 (EXP. DATE): Max/25 POST-CAL. READING/STANDARD	CAL. RANGE	TIME	(EXP. I	CAL. F DATE):	READING COYO May /24 ADING/STANDARD	TEMPE	RATURE sius)	CAL. RANGE	TIME
7.01	17.01	4,00/4.00	WITHIN RANGE	ななり		360	1 1360	27	3.]	WITHIN RANGE	1258
	1	1	☐ WITHIN RANGE		''		1			☐ WITHIN RANGE	
	1	1	☐ WITHIN RANGE				1.			☐ WITHIN RANGE	
******	1	1	WITHIN RANGE		_		1			WITHIN RANGE	
	ORP	CALIBRATION CHECK			J L		D.O. CAL	IBRATIO	N CHE		
	EADING	TEMPERATURE				CAL. I	READING	ТЕМРЕ	RATURE		
(LOT #): 22 (EXP. DATE): 7		(°CELSIUS)	CAL. RANGE	TIME	POST-C	CAL. READ	DING /SATURATED AIR	,	LSIUS)	CAL. RANGE	TIME
223.7	1 227,7	25.5	WITHIN RANGE	1236		1,2	1 8.2	23	. T	WITHIN RANGE	1240
A-11.1	1	00013	m WITHIN	1220	"	,~	/ 0,~		<i>.</i> u	WITHIN	72.0
	1		RANGE				1			RANGE WITHIN	
-	<u>'</u> 1		RANGE				1			RANGE WITHIN	
	TUDDIO	ITY CALIBRATION CHEC	RANGE		J			COMM	ENTE	RANGE	
		READING (NTU)	<u> </u>	<u> </u>		UTOCA	L SOLUTION			SOLUTION	(S)
(LOT #):		(LOT #): A7102	CAL.	TIME	(LOT#					AND EXPIRAT	
(EXP. DATE):	PE	(EXP. DATE):	RANGE	TIME	(EXP. I	DATE):		UI	NDER CALIE	BRATION CHE	СК
POST-CAL. REA	DING / STANDARD	POST-CAL. READING / STANDARD				IBRATE	D PARAMETERS		CALIBRATI	ON RANGES ⁽	1)
0.0	10.0	10.019.81	WITHIN RANGE	1276	_	рŀ	1	pH:	+/- 0.2 S.	U.	
	1	1	☐ WITHIN RANGE			C	DND	COND:	+/- 1% Of	F CAL. STAN	IDARD
	1	1	☐ WITHIN RANGE			OI	RP	ORP:	+/- 25 m\	/	
	1	1	WITHIN RANGE		1 -	D.	O.	D.O.:	VARIES		
		NOTES			- -	Τl	JRB	TURB:	+/- 5% OI	F CAL. STAN	IDARD
						_				NGES ARE SP WATER QUAL	
	P	ROBLEMS ENCOUNTERED			1		CORRECT	IVE ACTION	ıs		
								^		 .	
\mathcal{A}	e ·	My 81	1/23	•		ay	In L	Man	L	84	123

♦ TRC

WATER QUALITY METER CALIBRATION LOG

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	/ Complian	ce	MODEL: Inside 600	SAMPLER: (W), JK, JJ		
PROJECT NO.:	514404.0001.0000			SERIAL #: OFFE	DATE: 7/2/01	123	
PH (CALIBRATION CHECK	٠		SPECIFIC CONDU	CTIVITY CALIBI	RATION CHECK	
pH 7 (LOT #): 3C-C914 (EXP. DATE): Mai 25 POST-CAL READING/STANDARD	pHD) 10 (LOT #): SC=CG-16 (EXP. DATE): MOSTZ-5 POST-CAL READING/STANDARD	CAL. RANGE	TIME	CAL, READING (LOT #): Y FOYO (EXP. DATE): MAY ZY POST-CAL, READING / STANDARD	TEMPERATURE	CAL. RANGE TIME	
7.00 /7.00	4.00 14.00	WITHIN RANGE	ÖTZL	139.6 13916	24.42	WITHIN RANGE	
1	1	☐ WITHIN RANGE		/		WITHIN RANGE	
/	/	RANGE		/		RANGE	
	CALIBRATION CHECK		Ι		BRATION CHEC	CK	
CAL. READING (LOT #): 22 1/20180 (EXP. DATE): O(+ 27	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME	CAL READING	TEMPERATURE (°CELSIUS)	CAL. RANGE TIME	
POST-CAL. READING / STANDARD 730.0 / 230.0	24.37	WITHIN RANGE		POST-CAL READING /SATURATED AIR 8.26 / 8.26	23.47	WITHIN: RANGE	
1		WITHIN RANGE		<i>I</i>		WITHIN RANGE WITHIN RANGE	
1		WITHIN RANGE		/		WITHIN RANGE	
TURBID	ITY CALIBRATION CHEC	CK			COMMENTS		
	READING (NTU)	,		AUTOCAL SOLUTION	✓ STANDARD	SOLUTION (S)	
(LOT #): A3097 (EXP. DATE): AP\$ 25	(LOT #): (EXP. DATE):	CAL. RANGE	TIME	(LOT #): (EXP. DATE):		AND EXPIRATION DATES BRATION CHECK	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	ļ. <u>.</u>		CALIBRATED PARAMETERS	CALIBRATI	ON RANGES (1)	
100 100	//	WITHIN RANGE		□ pH	pH: +/- 0.2 S. COND: +/- 1% O	U. F CAL, STANDARD	
1	1	☐ WITHIN	1	□ ORP	ORP: +/- 25 m\	· /	
1		WITHIN RANGE		□ D.O.	D.O.: VARIES		
	NOTES			☐ TURB	TURB: +/- 5% O	F CAL. STANDARD	
						NGES ARE SPECIFIC TO WATER QUALITY METER	
	PROBLEMS ENCOUNTERED			CORRECTI	VE ACTIONS		
	ROBLEMS ENCOUNTERED			·	VE ACTIONS		
			•				
and 1	shorter 7	12612	3	<u> Le s</u>	my_	8-1-23	
sīgn Ē Ď	0	DATE	-	CHECKED BY	0	DATE	



WATER LEVEL DATA

PROJECT NAME:	CEC Karn	BAP/LI: 2023 GV	V Compliance		DATE: 7 () 4(5)2					
PROJECT NUMBER:	514404.00	01.0000			AUTHO	R: Jake Krenz,	Javier Jasso, And			
WELL LOCATION	TIME	REFERENCE	DEPTH TO WATER (FEET)	DEPTH TO BOTTOM (FEET)		DEPTH TO PRODUCT (FEET)	WATER ELEVATION			
DE Karn Bottom Ash I	Pond									
DEK-MW-15002	0435		(e-6)	15.	10					
DEK-MW-15004	1016		28.43	u1	74					
DEK-MW-15005	0930		9.45	32.	30					
DEK-MW-15006	0937		667	21-	5.3					
DE Karn Bottom Ash I	Pond and Li	ned Impoundme	nt	· •			!			
DEK-MW-18001	0134		aoi	19	10					
DEK-MW-15003	1001		17:20	19/	<i>y</i> u					
Karn Lined Impoundn	nent									
OW-10	1331		7.27	179	1					
OW-11	1009		22,38	24	<i>ሃ</i>)					
OW-12	094	ĺ	1715	23	,41					
Background		,								
MVV-15002	U8=1		7.15	اننا	ei					
MVV-15008	deso		५७३	170	xc					
MVV-15016	0896		لالهاكا	٤	ر رو					
MVV-15019	0840		5.54	الدا	# 7					
		,								
			-							

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

SIGNED

DATE

CHECKED CHECKED

8-1-23

DATE

♦ TRC

WATER SAMPLE LOG

PROJECT	PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED											
PROJECT	NUMBE	R: 51440	4.0001.0000	В	r: AW,	(K) J J	DATE: 7 -2	6-23	Y: AW		DATE:	814123
SAMPLE	ID: N	1W-15	5002	WELL DIA	AMETER	₹: ☑ 2	2"	6" 🗌	OTHER	-		
WELL MAT	ERIAL:	☑ PVC	□ ss □	IRON 🔲 G	ALVANIZ	ZED S1	reel		OTHER		en, compressor and access comment	Committee Management and Committee
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗆 D		□ L	EACHATE		OTHER		es appearance and the second contract	
PUR	GING	TIME: 0	730 DA	TE: 7-26- 3	23	SA		TIME: C			•	26- 23
PURGE METHOI	٦.	PUMP BAILER	PERISTALTIC F	PUMP		_	6.61 s -56.8 m			ITY: <u>\$3</u> . 8 _ m	the second second second	umhos/cm
DEPTH TO	WATER:	7.17	T/ PVC		Т	URBID	ITY: 5.3	<u>7</u> NTU		to,		
) ВОТТОМ		T/ PVC		×	NON	E 🗌 SLI	GHT	□ мо	DERATE		VERY
WELL VOL	.UME:	NA	LITERS	GALLONS	3 TI	EMPER	RATURE:	5,5.	C OTH	IER:		
VOLUME	REMOVED	16	LITERS	☐ GALLONS	s c	OLOR	clear		ODO	OR:	Non	~E
COLOR:		lear	OD-	OR: 1000	FI FI	LTRAT	E (0.45 um)	☐ YES	Ż	NO	pla appearance	
		TUR	BIDITY	,	FI	<u>LTRA</u> T	E COLOR:		FIL	TRATE O	OOR:	
⊠ NONE	☐ SLI	GHT 🗌	MODERATE	☐ VERY	, <u>c</u>	C SAN	/IPLE: MS	/MSD		DUP-		_
DISPOSAL	METHOD	☑ GROUI	ND 🗌 DRUM	OTHER	C	OMME	ENTS:					
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.		TURBIDITY		RATURE	WATER	PURG	IULATIVE E VOLUME
47.70	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg		(NTU)	(°		(FEET)		AL OR L)
0132	700	6.56	1799	38.1	2.		9.31	lan e andres	, 9	7.35	1	VITIAL
0737	200	6.75	דטרו	34.3	1.3	9	6.51	15	٠٩	7.45		J
0742	200	6.82	1736	2,8	1,0	>	6.41	16	.0	7.50		2
0747	700	6,88	1723	-18.3).	0	5.41	15	5,8	da i e e e e e e		3
0752	200	6,92	1679	-36.8	0.	9	5.43	15	5,5	7.55	_ z	1
0757	200	6.71	2975	- 78.5	0.	9	5.16	15	15	7.55	•	5
0802	200	6.65	3541	- 42.3	0,	9	5.33	15	.5	7.55	6	
0807	200	6,64	4030	- 47.1	0,	9	5.47	15	15	7.55	-	7
0812	200	6.62	4356	-49.5	٥.	g	5.51	15	.4	7.55		8
6817		6.62	hara erromentenakeren ala	-52,4	0.	9	5.61	15	7.3	7,59	人名俄塞伊 机轴 医皮肤红	9
NO	TE: STABI	LIZATION 1	TEST IS COMPL 3 % ORP:	ETE WHEN 3		ESSIVE		ARE WITH	HIN THE		ING LIMI	
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	В- Н	NO3	C - H2SO4	D - 1	NaOH	E - H	HCL F	
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTER	RED N	UMBE	R SIZE	TYPI	E PF	RESERVA	TIVE	FILTERED
	1	Plastic	A	□ Y 🗷	化原二基子							Y
	125ml		<u>Α</u>	+ + + + + + + + + + + + + + + + + + + +							H	$+$ Ξ
	128 mL	V	<u> </u>									ΥЦИ
Nya 16 - W6 - 17 - 14 - 17 18 1				□ Y □								Y N Y N
SHIPPING	METHOD:	lab	Jula to DY	TE SHIPPED);	7-2	7-23	AIRE	BILL NUM	IBER:		
COC NUM				GNATURE:	A	ė	Dy	DAT	E SIGNE	D:	8-1	-27
			<u></u>		$(I)^{-}$		-					



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Co		PREPARED		CHECKE	D
PROJECT NUMBER:	514404.0001.0000	BY:	AW(JK)JJ DATE: 7-26-23	BY: 🔏	la DA	TE:84/23

SAMPLE	ID: N	NW- 15	5002						
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY	ORP (mV)	D.O.	TURBIDITY (NTU)	TEMPERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0827		6.62	4701	-57.8	0,9	5.27	15.2	7.55	10
0827	200	6.61	4833	-54.8	0.8	5,47	15.3	7.55	11
0832	200	6.60		-55.1	0,8	5.53	15.3	7.55	process of the Total Comment
0877	200	6.61	5052	-55.5	0.8	5.66	15,3	7.55	
0842	200	6,60	5222	-55.5	da a come. 🗂 com d	5.59	15,6	7.55	Anna de la Calabra de Caractería de la Calabra de Calab
0847	200	6.60		-56,4	0.8	5.43	15.6	7,55	
0857	200	6.61	5346	-56.8	0.8	5.37	1515	7,55	Santana Para da
, , , ,		6,0.							}, <i>I</i>
				America de la como de america de la como de	ļ				
and the second									· · · · · · · · · · · · · · · · · · ·
, a '					1			1	
								: : : :	I
						*			
									ļ
10-10-1 - 110-1 - 1-1-1-1-1-1-1-1-1-1-1-			1						and the second of the second of the second
and the second s	Parameter Communication Commun				.				
					} 				
or and organization									
									ļ
					<u>.</u>			1	
NAME OF THE OWNER, WAS ASSESSED.							gar comment of the second contract of the cont		
		ļ.	<u>.</u>		1				
								,	
					1		A SAME AND A TRANSPORT OF THE SAME		The sign of the special section of the section of t
	1			Ì	1				

PROJECT	NAME:	CEC K	(arn BAP/LI: 20)23 GW C		PR	EPARED			CHEC	KED
PROJECT	NUMBER	R: 51440	4.0001.0000	B	Y: A	v.Ø	JJ DATE:7-2	4-27 E	BY: Au		DATE 8 KY/23
SAMPLE ID: MW~ 15008 WELL DIAMETER: 2" 4" 6" OTHER											
WELL MAT	ERIAL:	☑ PVC	□ ss □	IRON 🗌 G	ALVAI	NIZED S	STEEL		OTHER		**************************************
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗆 D	ı		LEACHATE		OTHER		
PURC		TIME: 12	- ,	TE: 7-24-	સ3		AMPLE	TIME: 1			ATE: 7. 24-27
PURGE METHOD		PUMP BAILER	PERISTALTIC I	PUMP			a magnetic transcription of the second	U CON	IDUCTIVI	17: 13: 19 mg	***************************************
		4.64					DITY: <u>0.6</u> 1	<u>3</u> мти			
DEPTH TO	воттом	17,42	T/ PVC			Z NO			and a specimen	DERATE	☐ VERY
WELL VOL	UME:		_ .	GALLON		TEMPE	RATURE: 1	1.9 .	C OTH	IER: _	
VOLUME REMOVED 5 A LITERS A GALLONS COLOR: CLEAR ODOR: NOR											
COLOR: Clear ODOR: nome FILTRATE (0.45 um) YES X NO											
TURBIDITY FILTRATE COLOR: FILTRATE ODOR:											
NONE SLIGHT MODERATE VERY QC SAMPLE: MS/MSD DUP- Backgrand											
DISPOSAL METHOD☑ GROUND ☐ DRUM ☐ OTHER COMMENTS:											
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. mg/L)	TURBIDITY (NTU)		RATURE C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1258	200	_	1902	35.8	-	1, [0.87		3,0	4.66	
1303			1455			. 1	0.36		0.0	4,66	i je naka a na a na a na a na a na a
1308		6,42	1422	-40,6		0	0,42	and the second	5,6	4.66	a francis and a conservation of the con-
1313	200	استعراد السنام	1373	-47.5		2,4	Ø,57			4.66	dance clair a second
1	200	6,46	the more experience and the second		- 1	.9	0,41	i	5,0	4,66	garan and a second
1318				-2815		manager to the second	A office was a second				5
1723	200	677	1340		0	9	0,63		4,5	4,66	3
	e san incression e se		NET COLUMN AND TO A PROPERTY OF THE SPECIAL SECTION OF	Control design of the control of the					17 mm (c) 100 mm (c) 100 mm		And the same of th
			hag milyap Kitaba carabag sanga ha akal milaka haki Kita Kiri.			and the groups against			w		fortier and a consequence of
		e hanna an heide an heide an de ann an heide	erto, estas apartocias en personales (1), estas con es	The salar of the section of the sect			and the second s				
i por	· ···· · · · · · · · · · · · · · · · ·									1	
NO	TE: STABII	LIZATION T	EST IS COMPL	ETE WHEN 3	SUC	CESSIV	'E READINGS A	ARE WIT	HIN THE	FOLLOWI	NG 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	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - 1	NaOH	E - HO	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTER	RED	NUMB	ER SIZE	TYP	E PR	ESERVAT	IVE FILTERED
2	500 NL	plashie	A	□ Y 🗷	I N		<u> </u>	t :			□ Y □ N
a	125mL		В	□ Y ⊠					ļ		□ Y □ N
a	125mL	\downarrow	Ā	□ Y 🗓			1				□ Y □ N
	1	on a service beneficing] N			ļ		2010-01-01-00-00-00-01-01-01-01-01-01-01-	□ Y □ N
EHIDDING											
SHIPPING METHOD: Lab Stop off DATE SHIPPED: 7-27-23 AIRBILL NUMBER:											
COC NUM	BER:		SI	GNATURE:	#	ye	My	DAT	E SIGNE	D:	8-1-23
					V		-				

PROJEC1	NAME:	CEC k	Karn BAP/L	I: 2023 GW C		PRI	EPARED		СН	ECKED
PROJECT	NUMBER	R: 51440	4.0001.000	0	BY: A	AW,(JK)J	J DATE:7-2	.6-23 BY:	Acu	DATE: 8 K/(2)
SAMPLE	ID: M	w-15	016	WELL	DIAME	ΓER: 🔽	2" 🗌 4" 🔲	6" OT	HER	
WELL MAT	ERIAL:	☑ PVC	□ ss	☐ IRON ☐	GALVA	NIZED S	STEEL	□ от	HER	
SAMPLE T	YPE:	☑ GW	□ ww	□ sw □	DI		LEACHATE	□ от	HER	and the second s
PUR	GING	TIME: O	9/6	DATE: 7-26	6-27	S.	AMPLE	TIME: Ø		DATE: 7-26-23
PURGE METHOI	·	PUMP BAILER	PERISTAL1	TIC PUMP		PH: ORP:	a design when a standard contract	U CONDU	о,9	mg/L umhos/cm
DEPTH TO) WATER:	4.63	T/ PVC			TURBI	DITY: 6,04	L NTU	on the second second section and the second	
DEPTH TO	о воттом	7.75	T/ PVC			M M	NE 🗆 SLI	IGHT □	MODERAT	E 🗌 VERY
WELL VOL			LITERS	☐ GALLO	NS	ТЕМРЕ	RATURE:	<u>4.7</u> °c	OTHER:	
VOLUME	REMOVED	3	🔀 LITERS	☐ GALLO	NS	COLO	R: <u>Clear</u>		ODOR:	none
COLOR:		eleur		ODOR: NOV	re	FILTRA	TE (0.45 um)	☐ YES	M NO	
NO.			BIDITY		D)/		TE COLOR:	4400	FILTRATE	ODOR:
NONE			MODERATI	E			MPLE: MS	MINISD		
DISPUSA		U GROO	IND L.J DIN	OW L. OTTE	<u> </u>	COIVIIV	LIVIO.	T	1	en I oundu ATRIE
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIN			D.O. (mg/L)	TURBIDITY (NTU)	TEMPERAT	URE WATI	EL PURGE VOLUME
0918	200	7.00	1554	4		2.0	7.63	20.7		
0923	The second second	6.85				Esta a si		n.s		
	200		1551	-750		1,5	6.14			The second section is a second section of the second section of
0878	200	6.83	1263			0.9	5.87	19,4	i iki safaran m	
0 9 33	200	6.83	1559	- 83,	9	0,9	6.04	19.3	Sic	oa 3
							encounts, a way to dust part of a size			
		The state of the s		ļ						
		1			1					10.0
							1			
						ar in the second of the	The state of the s			
NO.	TE: STARI	I IZATION T	TEST IS CO	MPI ETE WHEI	N 3 SH	CESSIV	E READINGS	ARE WITHIN	THE FOLLO	OWING LIMITS:
pH: +/-		COND.: +/-		RP: +/- 10		.: +/- 0.3			= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLE	SFILLED	PRESERV	ATIVE COD	DES A - NONE	В	- HNO3	C - H2SO4	4 D - NaC	DH E	- HCL F
NUMBER		TYPE	PRESER\	ATIVE FILT	ERED	NUMB	ER SIZE	TYPE	PRESER	VATIVE FILTERED
	500, L	/kshic	A	□ Y	N K	2		Control of the Contro		□ Y □ N
1	12546		Δ	□ Y	₽ N	1		1		□Y□N
1	128mL		A	ΠY	IXÍ N			*		□ Y □ N
	1		-} 	Y	□ N			. l		□ Y □ N
SHIPPING	METHOD:	lab Di	RG OF	DATE SHIPP	ED:	7-2	7-23	AIRBILL	NUMBER:	
COC NUM				SIGNATURE		Ne	The	DATE S	SIGNED:	8-1-23
L				+	7	7	- 0	- :		- " +/-+2"

PROJEC1	NAME:	CEC F	(arn BAP/LI: 20	023 GW C		PR	EPARED			. CHEC	KED
PROJECT	NUMBER	R: 51440	4.0001.0000	BY	′: AV	v, 🔞.	J DATE: 7-	24-23	BY: Ac	ر	DATE: 814/23
SAMPLE WELL MAT SAMPLE T	ERIAL:			IRON 🗌 GA	ALVAN	IIZED S	2"		OTHER OTHER		
PURG	SING	TIME:	3 4 3 DA	TE:7-24-	23	SAMPLE TIME: 1405 DATE:7-2				ATE: 7-24-23	
PURGE METHOL	·	PUMP BAILER	PERISTALTIC F	PUMP				U CO		TY: 16	76 umhos/cm
DEPTH TO WATER: 5.55 T/ PVC DEPTH TO BOTTOM 16.86, T/ PVC							DITY: 4.9				
						X NO	**************************************		server represent to	DERATE	· 🗌 VERY
WELL VOL	,	71		GALLONS			RATURE:		1		
	REMOVED			☐ GALLONS			R: <u>Clear</u>		ODO		none_
COLOR:		Clear		OR: None	=		TE (0.45 um)	∐ YES	·····		the state of the s
NONE	[] (· ·		BIDITY		- 1		TE COLOR:	MOD		TRATE ODO	OR:
DISPOSAL METHOD☑ GROUND ☐ DRUM ☐ OTHER COMMENTS:											
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		0.O. mg/L)	TURBIDITY (NTU)		erature °C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1346	100	6.60		~ 37.3	- 	·3	4.39	1	1.0	5.66	INITIAL
1350	200			-43.9		9	4.06	i	1.1	5.66	21
1355	200	6.54	1639	-51.9		. 1	3,75	Janes	11.10 1 -11.10 10 10 10 10 10 10	5.66	i propinski propinski sambanami.
***************************************	*		the contract of the second	-57.9		*******			.,, ,,,		farmer commencer in the contract of the contra
1400	200		a serial constant angles on as			0		for an Toron		5.66	4
1405	200	6.53	1636	-61.4	E	.9	4,90	/ /7	1.7	5.66	4
							Control Control (March 1997)				
and the second second second			1	TARREST CONTRACTOR							
and or the state of the state of			Andrew Control Control Control Control Control	a come coprocept they can a pare .			A 2017 F 12		Markey Constructor		
						er com com tombo	a distribution of particular control of the control		e e està camana		
NO.	TE: STARII	LIZATION T	TEST IS COMPL	ETE WHEN 3	SUC	CESSIV	E READINGS	ARE WI	THIN THE	FOLLOWIN	IG LIMITS:
pH: +/-		COND.: +/-				+/- 0.3			or =</td <td></td> <td>TEMP.: +/-</td>		TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	1 D-	NaOH	E - HO	CL F
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTER	ED	NUME	ER SIZE	TYF	PE PR	RESERVAT	IVE FILTERED
1 500nL plastic At											
5	3 DSmL V A DY N DY N DY N										
SHIPPING	SHIPPING METHOD: Lab Sap off DATE SHIPPED: 7-27-23 AIRBILL NUMBER:										
COC NUM	BER:		SI	GNATURE:	<u>_</u>	le	My	DA [*]	TE SIGNE	D:	8-1-23
											

PROJEC1	Г NAME:	CEC k	(arn BAP/LI:	2023 GW C	PF	REPARED		CHEC	KED
PROJEC1	г иимвеі	R: 51440	4.0001.0000	BY:	AW, (K	JJ DATE: 7-2	6-23 BY: AC	ა	DATES K//23
SAMPLE	1D: PE	K-mu	1-1500	2 WELL DIA	METER: 🔽	2"	6" OTHER	₹	
WELL MAT] IRON □ GA			☐ OTHE	2 30 3000 0 20 40 40 40	post son the control of the control
SAMPLE T	YPE:	☑ GW	□ ww □]SW □ DI		LEACHATE	☐ OTHE	?	e de la companya de l
PUR	GING	TIME: 10	000	DATE: 7-26- 2		SAMPLE	TIME: 102		TE: 7-26-23
PURGE METHOI	٦.	PUMP BAILER	PERISTALTI	C PUMP			. were transport to the contract of	VITY: <u>919</u> <u>08</u> mg	d umhos/cm
DEPTH TO	O WATER:	6.74	T/ PVC		TURE	BIDITY: 5.6	<u>6</u> мти	ACCUSED OF STREET STATE	
	о вотт	1	T/ PVC N	M	⊠ NG	ONE 🗆 SLI	GHT □ M	ODERATE	☐ VERY
WELL VOL	.UME:		LITERS	☐ GALLONS	TEMP	ERATURE: <u>/</u>	<u>4,5 </u> ℃ 0	THER:	
VOLUME	REMOVED	_5	∠ LITERS	☐ GALLONS	COLO	DR: <u>Chee</u>	0	DOR:	none
COLOR:		Cleur		DDOR: hove	FILTR	ATE (0.45 um)	☐ YES [no on 1	and the second seco
		TUR	BIDITY		FILTR	ATE COLOR:		ILTRATE ODG	
NONE	☐ SLI	GHT 🗌	MODERATE	☐ VERY	QC S	AMPLE: MS	/MSD	DUP- <u>D</u>	EK-BAP
DISPOSAI	L METHOD	☑ GROU	ND 🗌 DRU	M ☐ OTHER	сом	MENTS:			
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVI		D.O. (mg/L)	TURBIDITY (NTU)	TEMPERATURI	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1002	100	2.49	894	-51,6	1,4	6.09	15.9	6.98	INITIAL
1007	200	7.36	Ye 7		1.0		14.9	6.98	1
		7.37	919	- 8S,2		A CONTRACTOR OF THE		6.98	A contract to the second
1012	in a mark to the contract of the	\$ 1. 00 1. 1. Talan Ta	}	and the same and t		5,47	14.7	a fatige and a	from a constraint of the second
1017	200	7.37	912	and for the same section of the	0.9	i fano en el nord de la consta			Jan a serem sam and and area
1022	200	7.37	917	and have been a second or and	0,9	5.62	14,4	6.98	
1027	200	7.37	914	-101,4	0.8	5,66	14.5	6.48	5
* * * * * * * * * * * * * * * * * * * *		The state of the s							
									Autorities of the second secon
NO	TE: STABI	LIZATION T	TEST IS COM	PLETE WHEN 3	SUCCESSI	VE READINGS	ARE WITHIN TH	E FOLLOWI	NG LIMITS:
pH: +/-	0.1	COND.: +/-	3 % OF	RP: +/- 10 [D.O.: +/- 0.	3 TURB: +/-	10 % or <	/= 10	TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODE	S A - NONE	B - HNO3	3 C - H2SO4	D - NaOH	E - HO	CL F
NUMBER	SIZE	TYPE	PRESERVA	ATIVE FILTERI	ED NUM	BER SIZE	TYPE	PRESERVAT	IVE FILTERED
2	250mL	Plastic	A	□ y 🗷	N L	1 60mL	VOA	A	□ Y 🗷 N
2	125mL	Ì	Δ	□ y ⊠	N	V			□ Y □ N
8	1		٨		N				□ Y □ N
2									
	METHOD	1 1 5	<u> </u>	DATE SHIPPED:		27-27	AIRRII I NI	IMREP.	
COC NUM	IBER:			SIGNATURE:	12	My	DATE SIGN	1ED:	8-1-23
					\mathcal{U}	U.			

PROJECT	ΓNAME:	CEC K	(arn BAP/LI: 2	2023 GW C		PRI	EPARED			CHEC	KED
PROJECT	Г NUMBE	R: 51440	4.0001.0000	BY	′: A\	w, @) J	J DATE: 7.	26-23	BY: ACJ		DATE: \$14/2}
SAMPLE WELL MAT SAMPLE T	ERIAL:	☑ PVC	□ss □	WELL DIA IRON □ GA SW □ DI	ALVAI	NIZED S	and the second second second second second		OTHER OTHER OTHER		
PURC	GING	TIME:	36	ATE: 7-26-	23	S	AMPLE	TIME:	1203	D/	ATE: 7-26-23
Visit and the second										TY: mg	
	O WATER:		T/ PVC				DITY: <u>5.13</u>				
	ВОТТОМ		T/ PVC		⊠ NOI	a tara ya maa ayaa ah ah	IGHT		DERATE	☐ VERY	
WELL VOL			LITERS LITERS	GALLONS			RATURE: 1	<u>-</u>			1.000
	REMOVED			GALLONS	•				ODC		none
COLOR: ODOR: TURBIDITY NONE SLIGHT MODERATE VERY						FILTRA QC SA	TE (0.45 um) TE COLOR: MPLE: MS		FIL	TRATE ODO	OR:
DISPOSAL	L METHOD	☑ GROUI	ND DRUM	1 OTHER		COMM	ENTS:				
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVIT			D.O. mg/L)	TURBIDITY (NTU)	1	ERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1138	200	7.63	837 837	~120,1 ~136,2		,6	5.65	ingeriore on a con-	3. 7 3,7	9.86	INITIAL
1148	Marian Marian	7.55	a transfer and the control of the control	- 141.4		9,9	6,98	1	7, (9.86	2
	200		969	-140.2			BP 5 5.18	ete en uzum.	3,9	9,86	3
1128	200	7.51	984	- 138,2		0,9	4.51		3,9	9,86	4
1203	1.000.000.000.000.000.000	7,49	991	- 136,0					3,9	9.86	5
					and the second second	D.8					
NO pH: +/-		LIZATION T		PLETE WHEN 3 P: +/- 10		CESSIV +/- 0.3			THIN THE		NG LIMITS: TEMP.: +/-
BOTTLE	SFILLED		ATIVE CODES			HNO3	C - H2SO	т —	NaOH	E - H(
NUMBER	SIZE	TYPE	PRESERVA			NUMB		 		RESERVAT	
	250mC 125mL	Plastic	A B C D	Y X	N] N] N	,	, 60nL	Vc)4	. A	Y
SHIPPING	METHOD:	lab Dr	op 0f4 1	DATE SHIPPED);	7-2	17-23	AIF	RBILL NUM	IBER:	
COC NUM	BER:			SIGNATURE:		Je	My	DA	TE SIGNE	D: _	8-1-23
					(/					

TRC

PROJECT	ΓNAME:	CEC K	(arn BAP/LI: 20			EPARED		CHEC	KED
PROJEC	NUMBER	R: 514404	4.0001.0000	BY:	AW, (K)	JJ DATE: 73	6-23 BY: AW		DATE 8 (4/23
SAMPLE	ID: DEI	K-14h	- 1500E	WELL DIAM	IETER: 🔽	2" 🗌 4" 🔲	6" OTHER		
WELL MAT	TERIAL:			IRON 🗌 GAL	VANIZED S	STEEL	☐ OTHER		- 10 00 00 00 00 00 00 00 00 00 00 00 00
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗆 DI		LEACHATE	☐ OTHER		
PUR	GING	TIME: 10	48 DA	TE: 7-26-2	/	AMPLE	TIME: 1120		TE:7-26-23
PURGE METHOI	n	PUMP BAILER	PERISTALTIC F	PUMP	1.04 (0.00) (0.00)	7,68 s -148,9 m	and a second professional and a second and a	TY: <u>98</u> 0,8 mg,	umhos/cm
DEPTH TO	O WATER:	9.11	T/ PVC		TURBI	DITY: <u>5.3</u>	2 NTU	en-managerate	
DEPTH TO	о воттом	NM	T/ PVC		ои 🗷	NE 🗌 SLI	GHT 🗆 MOI	DERATE	☐ VERY
WELL VOL	.UME:	NA	LITERS	GALLONS	TEMPE	ERATURE: 1	4.5_°C OTH	IER: <u>"</u>	
VOLUME	REMOVED	6	LITERS	☐ GALLONS	COLO	R: <u>Clear</u>	<u>ODC</u>	DR:	rone
COLOR:		lear	OD	OR: 1018	_ FILTRA	ATE (0.45 um)	☐ YES 🗹	NO	
		TUR	BIDITY		FILTRA	TE COLOR:	FIL	TRATE ODC	PR:
NONE	☐ SLI	GHT 🗌	MODERATE	☐ VERY	QC SA	MPLE: MS	/MSD 🗆	DUP-	
DISPOSA	L METHOD	☑ GROUI	ND 🗌 DRUM	OTHER	COMM	MENTS: FB.	- DEK-BAP	Collect	ed\
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME
) ED	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L) INITIAL
1020	200	7.84		-81.7	3.1	7.19	15.4	9,23	
1055	200	7,67	953				14.5	9,23	}
1100	200	7.68		-126.8	and the second	5.72	a contra o alla carre persona con e se	9.23	former and artists on the
1105	mo	7.70		-136.3		5,67	14.5	9,23	
1110	200	7.69	976	- 142.3	0.9	5.64	14.7	9,23	4
1115	200	7.69	977	-146.7	0.8	5,26	14.5	9.23	5
1130	200	7.68	983	~ 148.9	0,8	2.35	14.5	9.23	6
- 2-1-60 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -								•	
		a constant							
			and a great settle of a seem and the female of a few financial of					100 mm mm m m m m m m m m m m m m m m m	
							ARE WITHIN THE		
pH: +/-		COND.: +/-			.O.: +/- 0.3				TEMP.: +/-
BOTTLE	S FILLED		ATIVE CODES		B - HNO3	C - H2SO4		E - HC	
NUMBER	SIZE	TYPE	PRESERVATI		D NUME		TYPE PF	RESERVATI	
}	250 mL	Plashic	A		N 2	60mL	VOA	A	□ Y XLN
	125mL	ļ.,l	A		N				□ Y □ N
1	1	Ligging	ß	□ Y D	N				DY DN
1 C DY R N							□ Y □ N		
SHIPPING	SHIPPING METHOD: (ab Dop Of Bate SHIPPED: 7-27-23 AIRBILL NUMBER:								
COC NUMBER: SIGNATURE: AC DATE SIGNED: 8-1-23									
LOCATON			31		#	- mg	- DATE OIGHE		
					V				

<>>	T	2	C
---------------------	---	---	---

PROJECT NAME: CEC I	Karn BAP/LI: 2023 GW C	F	PREPARED		CHEC	KED				
PROJECT NUMBER: 51440	4.0001.0000	BY: W	K, JJ DATE: 7	26/23 BY:	ZK	DATE: 8-1-23				
WELL DIAMETER: □ 2" □ 4" □ 6" □ OTHER WELL MATERIAL: □ PVC □ SS □ IRON □ GALVANIZED STEEL □ OTHER SAMPLE TYPE: □ GW □ WW □ SW □ DI □ LEACHATE □ OTHER										
PURGING TIME:	932 DATE: 7/2	6/23	SAMPLE	TIME: 095	Z DA	TE: 7/26/23				
PURGE ☑ PUMP METHOD: ☐ BAILER	PERISTALTIC PUMP	PH OR	P: -118.0 r	nV DO: _	IVITY: <u>699</u> 1.90 mg	.54_ umhos/cm /L				
	DEPTH TO WATER: 7.25 T/ PVC TURBIDITY: 9.29 NTU									
DEPTH TO BOTTOM 1791 T/ PVC DA NONE SLIGHT MODERATE VERY										
WELL VOLUME: NA	LITERS GALLO	+	MPERATURE:		THER:					
/ 1000	_ LITERS ☐ GALLO	"	LOR: <u>Clear</u>		DOR:	None				
color: <u>Clear</u>	ODOR: NO	ne_ fil	TRATE (0.45 um)	☐ YES []	NO NO	tennergy and the				
	RBIDITY		RATE COLOR:		ILTRATE ODO	DR:				
☐ NONE 🗷 SLIGHT ☐ DISPOSAL METHOD☑ GROU	MODERATE		SAMPLE: MS MMENTS:	· ·	V DOB- T	<u> </u>				
942 7.04	CONDUCTIVITY ORP (umhos/cm) (mV) 691.47 - 76. 677.44 - 84.6 692.61 - 110.2 697.40 - 114.5 699.54 - 115.	(mg/l 7 2.45 5 1.92 2 1.72 3 1.84	(NTU) 5 17.49 6.08	TEMPERATURI (°C) 16.69 15.57 15.59 15.51 15.40	7.25	CUMULATIVE PURGE VOLUME (GAL OR L) INITIAL I.O Z.O 3.O 4.O				
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS: pH: +/- 0.1										
ļ	VATIVE CODES A - NONE			тт	E - HC					
NUMBER SIZE TYPE			MBER SIZE		PRESERVATI					
2 125 Plase 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	A Y B Y Y Y Y Y Y Y Y	Ø N	2 250	Plashe	.	Y 内 N				
SHIPPING METHOD: DYOP	DATE SHIPF	PED: 7/2	7/23	AIRBILL N	JMBER:					
COC NUMBER:	SIGNATURE	/\		DATE SIGN	NED:	7/27/28				

*>TRC

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C	PREPARED	CHECKED
PROJECT NUMBER: 514404.0001.0000 BY: (W. JK, JJ DATE: 7/26/23	BY: 3K DATE: 8-1-23
SAMPLE ID: OLA -) WELL DIAME	「ER: ☑ 2" ☐ 4" ☐ 6" ☐	OTHER
WELL MATERIAL: ☑ PVC ☐ SS ☐ IRON ☐ GALVA	NIZED STEEL	OTHER
SAMPLE TYPE: ☑ GW ☐ WW ☐ SW ☐ DI	☐ LEACHATE ☐	OTHER
PURGING TIMEOS45 DATE-7/26/23	SAMPLE TIME:	0908 DATE: 7/26/23
PURGE ☑ PUMP PERISTALTIC PUMP		ONDUCTIVITY: 296,89 umhos/cm
METHOD: BAILER	ORP: <u>-95.4</u> mV DC	
DEPTH TO WATER: 72.27/ PVC	TURBIDITY: 0.15 NT	The state of the s
DEPTH TO BOTTOM NIM TI PUC Transduler	NONE SLIGHT	☐ MODERATE ☐ VERY
WELL VOLUME: NA LITERS GALLONS	TEMPERATURE: 14,95	°C OTHER:
VOLUME REMOVED 4.0 □ LITERS □ GALLONS	color: Clear	ODOR: NONE
COLOR: Clear ODOR: NOW	FILTRATE (0.45 um) YE	
TURBIDITY	FILTRATE COLOR:	FILTRATE ODOR:
NONE - □ SLIGHT □ MODERATE □ VERY	QC SAMPLE: MS/MSD	DUP-
DISPOSAL METHOD GROUND DRUM OTHER	COMMENTS:	
PURGE		WATER CUMULATIVE
TIME RATE PH CONDUCTIVITY ORP		LEVEL PURGE VOLUME
	(mg/L) (NTU)	(°C) (FEET) (GAL OR (1)
848 200 9.14 321.77 -23.9 5	.00 47.62 16	22.23 INITIAL
853 9.35 711.16 -57.9 2	30 23.94 14	184 2320 1.0
858 9.64 302.32 -85.6 Z	20 4.08 15	7.01 2.0
		92 3.0
908 9.70 296.89-95.4 2	1	95 4 40
7.70.07.07.07.07	19.	
	pengan salah menanggalah dan salah menandak sebagai kecamatan sebagai kecamatan sebagai sebagai sebagai sebagai	and the same and t
	may also dimensional for Affrican complete and the control of the affricance of the control of t	
	entropy and the same and the sa	
	·	
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SU	CCESSIVE READINGS ARE W	ITHIN THE FOLLOWING LIMITS:
pH: +/- 0.1 COND.: +/- 3 % ORP: +/- 10 D.O	: +/- 0.3 TURB: +/- 10 %	or = 10 TEMP.: +/-</td
BOTTLES FILLED PRESERVATIVE CODES A - NONE B	- HNO3 C - H2SO4 D	- NaOH
NUMBER SIZE TYPE PRESERVATIVE FILTERED	NUMBER SIZE T	YPE PRESERVATIVE FILTERED
	 	SYIC A DYRN
	The second secon	
1 125 Plastic A Y XX N		
A STANDARD CONTRACTOR OF THE PROPERTY OF THE P		
C C Y X N		
		LIY LIN
SHIPPING METHOD: DOP OFF DATE SHIPPED:	7/27/23 A	IRBILL NUMBER:
COC NUMBER: SIGNATURE:	AW D	ATE SIGNED: 7/26/23

·> TRC

PROJECT NAME:	CEC K	arn BAP/LI: 2	2023 GW C		PRE	PARED		CH	ECKED
PROJECT NUMBER	: 514404	.0001.0000		BY: A	ึ้ ง), มห, มม	DATE:7/2	6/23 BY:	2K	DATE: 8-1-23
WELL MATERIAL:	and the same of th								
PURGING	TIME: 162	28 [ATE: 7/2	6/23	SA	MPLE	TIME: O	Λ	DATE: 7/26/23
PURGE F		PERISTALTIC					U CONDU	CTIVITY: 6	65.37 umhos/cm
DEPTH TO WATER:					TURBID	ITY: 6.20	<u>)</u> ити	- Salestenger Selecting track & C	, and the state of
DEPTH TO BOTTOM_	DEPTH TO BOTTOM								
WELL VOLUME:		LITERS	☐ GALLO	ONS		ATURE: 18	<u>,93 °c</u>	OTHER:	
VOLUME REMOVED		∠ LITERS	☐ GALLO		COLOR:	clear		ODOR:	None
color: Sligh	+ aray	0	DOR: NO	ne_	FILTRAT	E (0.45 um)	☐ YES	⊠ NO	
		BIDITY			FILTRATI	COLOR:		FILTRATE	ODOR:
☐ NONE 🔀 SLIC		MODERATE	☐ VE			IPLE: MS		DUP-	
DISPOSAL METHOD[☑ GROUN	ID DRUM	I ☐ OTHE	R	COMME	NTS: FB.	· KLL		
TIME PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVIT		1	D.O. mg/L)	TURBIDITY (NTU)	TEMPERAT	URE WAT	EL PURGE VOLUME
1038	7.18 7.15	677.41 [54.45 654.12 665.37	-95.2 -93.6	2 Z , Z	,25 (16.03 7.39 7.18 6.20	20.79 19.22 18.98 18.93		2 INITIAL 1.6 2.0 3.0
	LIZATION T		PLETE WHE P: +/- 10		CESSIVE	READINGS TURB: +/-		THE FOLLO	DWING LIMITS: TEMP.:`+/-
BOTTLES FILLED	PRESERV	ATIVE CODES	S A - NONE	В-	- HNO3	C - H2SO4	D - NaC	DH E	- HCL F
NUMBER SIZE	TYPE	PRESERVA	TIVE FIL	TERED	NUMBE	R SIZE	TYPE	PRESER	VATIVE FILTERED
2 60	VOA Plastic	\$ B \ \	Y	K N K N			Plosh'C		Y 12 N N N N N N N N N N
SHIPPING METHOD: COC NUMBER:	Drof		DATE SHIPF SIGNATURE		7/27 AL	123	-	NUMBER:	7/26/22

<>		7	C
-----------------	--	---	---

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C	PREPARED CHECKED
PROJECT NUMBER: 514404.0001.0000 BY: (W, JK, JJ DATE: 7/26/23 BY: 5/4 DATE: 8-1-23
SAMPLE ID: KL1-SCS WELL DIAME	TER: 1 2" 4" 6" 1 OTHER PUMP SUHEL
WELL MATERIAL: PVC SS IRON GALV	ANIZED STEEL 🗓 OTHER 🕠)
SAMPLE TYPE: GW WW SW DI	□ LEACHATE \ OTHER LIFE
PURGING TIME: DATE:	SAMPLE TIME: 1115 DATE: 7/2663
PURGE PUMP PERISTALTIC PUMP	ORP: 4.8 mV DO: 6.65 mg/L umhos/cm
METHOD. BAILER	the contract of the contract o
DEPTH TO WATER: T/ PV0	┥
DEPTH TO BOTTOM PVC	1, -
WELL VOLUME: LITERS GALLONS	TEMPERATURE: 2261 °C OTHER:
VOLUME REMOVED LITERS GALLONS	COLOR: L'EGT ODOR: NOTE
COLOR: ODOR:	FILTRATE (0.45 um) YES NO
TURBIDITY	FILTRATE COLOR: FILTRATE ODOR:
□ NONE □ SLIGHT □ MODERATE □ VERY	QC SAMPLE: MS/MSD DUP-
DISPOSAL METHOD☑ GROUND ☐ DRUM ☐ OTHER	COMMENTS:
TIME PURGE PH CONDUCTIVITY ORP	D.O. TURBIDITY TEMPERATURE WATER CUMULATIVE LEVEL PURGE VOLUME
	(mg/L) (NTU) (°C) (FEET) (GAL OR L)
1110 NH 7.28 17927 04 0	6.90 0.39 ZZ.63 N)) INITIAL
I want to the state of the stat	.65 0.31 22.61 NA -
113 NA 113 10 37 10 7 . 5 C	103 9-31
	CCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMITS:
	.: +/- 0.3 TURB: +/- 10 % or = 10 TEMP.: +/-</td
	- HNO3 C - H2SO4 D - NaOH E - HCL F
NUMBER SIZE TYPE PRESERVATIVE FILTERED	NUMBER SIZE TYPE PRESERVATIVE FILTERED
2 60 VOA A DYA	1 250 Plestic A DY IXN
1 125 Plosix A 17 12 1	
	□ Y □ N
	1-01
SHIPPING METHOD: DOP OFF DATE SHIPPED:	7/7/73 AIRBILL NUMBER:
COC NUMBER: SIGNATURE:	A_L DATE SIGNED: $7/26/6$

<>>	TR	C
---------------------	-----------	---

PROJECT NAME:	CEC K	(arn BAP/LI: 2	.023 GW C		PREP	ARED			CHEC	KED
PROJECT NUMBER	R: 514404	1.0001.0000		BY: 🖋	Ŵ⊃ĸ, IJ	DATE:7/2	26/23 E	3Y: 3	K	DATE: 8-1-23
SAMPLE ID: K 2 WELL MATERIAL: SAMPLE TYPE:	PVC	and the second control of the second control	IRON 🗌	GALVA	NIZED STE	☐ 4" ☐ EL ACHATE	X	OTHER OTHER OTHER	N)) N)	}
PURGING	TIME:	D/	ATE: '7				TIME: 1			TE: 7/26/23
10102	PUMP BAILER	PERISTALTIC	PUMP				U CON	NDUCTIVI		umhos/cm
DEPTH TO WATER:		T/ PVe				ry: <u>さ,5</u>	_			
DEPTH TO BOTTOM		AT PVC			☑ NONE				DERATE	☐ VERY
WELL VOLUME:		LITERS	☐ GALLO			TURE: 2		C OTH		
VOLUME REMOVED		LITERS	☐ GALLO	NS	COLOR:	Clear	\subseteq			one
COLOR:			OOR:		FILTRATE	(0.45 um)	☐ YES	X	NO	e ne per participation of the second
		BIDITY			FILTRATE				TRATE ODO	DR:
2		MODERATE				PLE: MS	S/MSD		DUP-	
DISPOSAL METHOD	☑ GROUI	ND DRUM	OTHER	₹	COMMEN	ITS:				
TIME PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	- 1	D.O. T	URBIDITY (NTU)		RATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1126 NA 1131 —	1	1390.1 1413.8	27.8 38.8	A (P.39 C	3.97 D.54	27.3	,91	NA	ANITIAL NA
	LIZATION T	TEST IS COMP	LETE WHEN		+/- 0.3	READINGS TURB: +/-		HIN THE		NG LIMITS:
BOTTLES FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	1 D-	NaOH	E - HO	CL F
NUMBER SIZE	TYPE	PRESERVAT	IVE FILT	ERED	NUMBER	SIZE	TYP	E PR	ESERVAT	IVE FILTERED
2/0	NOA	A	Y	X N	1	250	PLS	Lic .	A	U X N
1 125	Plostic	Å B C	□ Y □ Y	15 N 15 N 15 N						Y
SHIPPING METHOD:	Drof	off o	ATE SHIPP	ED:	7127	123	AIRI	BILL NUM	BER:	
COC NUMBER:	<u>دـــــــــ</u>	S	SIGNATURE:		AW		DAT	E SIGNE	D:	7/26/23

<>>	T	7	C
---------------------	---	---	---

PROJECT NAME:	CEC Karn BAP/LI:	2023 GW C	PREPARED		CHECKED
PROJECT NUMBER:	514404.0001.0000	BY: 😢	WJK, JJ DATE:	1/26/23 BY: 3	K DATE:8-1-23
SAMPLE ID: 大し WELL MATERIAL: January SAMPLE TYPE: ユ	Anadamandra, Naras Comine Co. Co., Okini, Ok. (2011) Springs and Anadam Springs.] IRON 🗌 GALVA	ANIZED STEEL	6" Z OTHER D OTHER	· WH
<u> </u>					
PURGING 1	ΓΙΜΕ:	DATE:	SAMPLE	1133	
METHOD	PUMP PERISTALTI	C PUMP	ORP: 49,5	mV DO: 13.	VITY: <u>537,62</u> umhos/cm 27 mg/L
DEPTH TO WATER: _	T/ P/e		TURBIDITY: 3	. <u>51</u> _{NTU}	
DEPTH TO BOTTOM_	T/ PVC		NONE 🗆	SLIGHT 🗆 M	ODERATE VERY
WELL VOLUME:	MA LITERS	☐ GALLONS	TEMPERATURE:		THER:
VOLUME REMOVED_	LITERS	☐ GALLONS	COLOR: CK	ar oi	DOR: None
COLOR:		DDOR:	FILTRATE (0.45 un	n) 🗌 YES 🔀	NO
	TURBIDITY		FILTRATE COLOR:	F	ILTRATE ODOR:
☑ NONE ☐ SLIG	HT MODERATE	☐ VERY	QC SAMPLE:		DUP
DISPOSAL METHOD⊡	☐ GROUND ☐ DRU	M 🗌 OTHER	COMMENTS: E	3-161-120	25
TIME PURGE RATE	PH CONDUCTIVE	1	D.O. TURBIDIT		LEVEL PURGE VOLUME
(ML/MIN)	(SU) (umhos/cm		(mg/L) (NTU)	(°C) Z7.44/	(FEET) (GAL OR L)
	8.77 532.5 8.78 11-8		3-76 Z.04 3-27 3.51	27.89	region for the contract of the
NOTE: STARIL	IZATION TEST IS COM	PLETE WHEN 3 SUG	CCESSIVE READING	S ARE WITHIN TH	E FOLLOWING LIMITS:
				+/- 10 % or </td <td></td>	
BOTTLES FILLED F	PRESERVATIVE CODE	S A - NONE B	- HNO3 C - H25	SO4 D - NaOH	E-HCL F
NUMBER SIZE	TYPE PRESERVA	ATIVE FILTERED	NUMBER SIZE	TYPE I	PRESERVATIVE FILTERED
2 60	VOA A	□ Y 🗓 N	1 250	> Plastic	A DYRN
1 125 F	Plostic A	□ Y 🗓 N			
	B	□ Y 🔯 N			□ Y □ N
	1 6	□ Y X N			□ Y □ N
	N	□ Y 🗖 N			\square \vee \square \square
SHIPPING METHOD:	Dono off	DATE SHIPPED:	7/27/23	AIRBILL NU	JMBER:
COC NUMBER:	<u> </u>	SIGNATURE:	261	DATE SIGN	= 1=7.75

_**◇** TRC

PROJECT NAME:	CEC Karı	n BAP/LI: 20	23 GW C		PRE	PARED		CH	ECKED
PROJECT NUMBER	R: 514404.0	001.0000	B,	Y: 🔥	Ñ, K, JJ	DATE: 7/2	6/23 BY:	3K	DATE: 8-1-23
SAMPLE ID: DE	k MW-1	5003	WELL DI	AMETE	ER: ☑ 2	"	6" 🗌 OT	HER	
WELL MATERIAL: [☑ PVC 🔲	ss 🔲	RON 🗌 G	ALVAI	NIZED ST	EEL	□ от	HER	
SAMPLE TYPE: [☑ GW 🗆	ww 🗆	sw 🗆 D	1	LI	EACHATE	□ от	HER	
PURGING	TIME:074	S DA	TE: 7 (26/	z3		MPLE	TIME: 05	44	DATE: 7/26/2]
METHOD	PUMP PE BAILER	RISTALTIC P	UMP			8,17 s	U CONDU V DO:	СТІVІТҮ: <u>}</u>	78.67 umhos/cm
	3/- 0.1	PVC				ITY: 0.00			HIG/L
DEPTH TO WATER:				$\overline{}$	NON 🔼			MODERAT	E 🗆 VERY
DEPTH TO BOTTOM		PVC/Tra					7.22°c		VEIVI
WELL VOLUME:	NA 🗆		☐ GALLON☐ GALLON		TEMPER		1.L C.	OTHER:	A tald 2
VOLUME REMOVED					COLOR:			ODOR:	None
COLOR:	1eox		DR: NONE			E (0.45 um)	∐ YES	DA NO	I CONTRACT TO THE STATE OF THE
	TURBIE					E COLOR:		FILTRATE	ODOR:
X NONE ☐ SLI		DDERATE	☐ VER	Υ		IPLE: MS	/MSD	DUP-	
DISPOSAL METHOD	☑ GROUND	∐ DRUM [_ OTHER		COMME	NTS:			
TIME PURGE RATE	рн со	ONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPERAT	URE WAT	
(ML/MIN)	(SU) ((umhos/cm)	(mV)		mg/L)	(NTU)	(°C)	(FEE	
0745 200	•	102.28	190,4	3.8		2.98	20.4	7 17.1	INITIAL
750 100	5.0	18/2	1)2.1	were the second		1.47	189	manager of in the second	kannan arrang di kanan saman arrang merupakan berhanda dan berhanda berhanda berhanda berhanda berhanda berhand
755	8.04 3	65.22	-101.9	1,	75	0.00	18.79		90 20-1.5
800	807 3	67.66	-129.6	5 1.		0.60	18.94	18.	72 3-0 20
	_		-148	1	_	2.20	19.20		50 2.5
The state of the same of the s		75.20				0,10	19.21	arms on the same	
B15	1 75	78.19	-161.2	· mar a procession on		(5,00)	19.7	18.	
		78.67			.76	0.00	19.22		50 4.0
820	0.11.2	1 0,00	1) 1 ,	61	16	0.00	11,000	10	
		, e de ga constitución el primeiro en troca de cela cela const	againing the contribution of the state of the contribution of the state of the stat			AND A SECOND CONTRACTOR OF THE SECOND CONTRACT			AND THE RESIDENCE OF THE PROPERTY OF THE PROPE
NOTE: STABI	LIZATION TES	ST IS COMPL	ETE WHEN	3 SUC	CESSIVE	READINGS	ARE WITHIN	THE FOLLO	OWING LIMITS:
pH: +/- 0.1	COND.: +/- 3	% ORP:	+/- 10	D.O.:	+/- 0.3	TURB: +/-	10 % or	= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLES FILLED	PRESERVAT	IVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - Na	DH E	- HCL F
NUMBER SIZE	TYPE F	RESERVATI	/E FILTE	RED	NUMBE	R SIZE	TYPE	PRESER	VATIVE FILTERED
2 60	VOA	A		Ø N	1	250	Plastic	_ <i>A</i>	□ Y 🖾 N
1 125	Nost:C	A	ΠΥŪ	N					□ Y □ N
	1 1	'N	ע Y ק	N			*		□ Y □ N
	1	Ž	□ Y 5		21.000 Specification to 100			1	DY DN
	- W	$\bar{\Delta}$						an in the second control of the pro-	
	N.	~			 	155	1		
SHIPPING METHOD:	DOOD C	26.E DA	TE SHIPPE	υ: <u> </u>	1127	Izz	- AIRBILI	NUMBER:	
COC NUMBER:		SI	GNATURE:		AW		DATE S	SIGNED:	7176123

◆ TRC

PROJECT	I NAME:	CEC K	(arn BAP/LI: 20	23 GW C		PREF	PARED		CH	HECKED
PROJECT	T NUMBER	R: 51440	4.0001.0000	BY:	e Ø	Уж, JJ	DATE: 7/	26/23 BY:	JK	DATE: 8-1-23
SAMPLE	ID: DE	KMI	V-18007	WELL DIA	METER	₹: 🗸 2"	'	6" OTH	IER	
WELL MAT	rerial:	✓ PVC	ss _	IRON GA	LVANI	ZED STE	EEL	П ОТ⊦	IER	
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI			ACHATE	□ от⊦	IER	
	GING	TIME: 12		TE: 7/26/2	_		MPLE	TIME: 123		DATE: 7/26/23
PURGE METHOI		PUMP BAILER	PERISTALTIC F	PUMP			1.70 s -RO9 m		2.09	mg/L umhos/cm
DEPTH TO	O WATER:	4.04	T/ PVC		Т	URBIDI	TY: <u>0</u> ,00	D_NTU		
DEPTH TO	о воттом:	NM	T/ PVC Tra	nsduce		NONE	SLI	GHT 🔲	MODERAT	E VERY
WELL VOL		NA	LITERS	GALLONS	T	EMPER/		<u>.15</u> °c	OTHER:	
VOLUME	REMOVED:		LITERS	GALLONS		COLOR:	_ Cle	34 <u>C</u>	ODOR:	<u>None</u>
COLOR:	<u></u>	265	OD:	OR: <u>None</u>	_ FI	ILTRATE	E (0.45 um)	YES	X, NO	
l			BIDITY				COLOR:		FILTRATE	ODOR:
NONE			MODERATE	☐ VERY	C	C SAME	PLE: MS	/MSD	DUP-	<u>-</u>
DISPOSAI	L METHOD:	☑ GROUI	ND DRUM	OTHER	C	OMMEN	NTS:			
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.		TURBIDITY	TEMPERATU] LEV	EL PURGE VOLUME
1-1-	(ML/MIN)	(SU)	(umhos/cm)	(mV)	1	g/L)	(NTU)	(°C)	(FEE	
1215		7,73	712.38	-131.7	2.	36 0	2.27_	19-21	9.0	
1220		7,72	695,71	-132.9	Z.	10	0.00	17.93	<u> </u>	1.6
1725		7,70	679.28	-1314	2.	12 0	3.00	16.32		2.0
1230	Y/	7.70	678,94	-130.9	2.0	39 0	Ø.OO	16,15	V	3.0
					1					
			····	· · · · · · · · · · · · · · · · · · ·	1					
		***************************************		***************************************	 					
		<u> </u>								
pH: +/-		COND.: +/-	TEST IS COMPL 3 % ORP:		SUCCE).O.: +/		TURB: +/-		= 10</td <td>TEMP.: +/-</td>	TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	В - Н	NO3	C - H2SO4	D - NaOl	H E	- HCL F
NUMBER	SIZE	TYPE	PRESERVATIV	/E FILTERE	ED N	NUMBER	R SIZE	TYPE	PRESER	
6	10	VOA	A		N	T	250	Plastic	/4	
13	12.5	Plasti(Å		N			, , , , , , , ,	 	N N
1	† <u>* </u>	1-1-3/-/	Ŕ			·				
1			- 2						 	
1	V	-								
	METUOS	<u> </u>	<u> </u>		! !	12:51	75	1	<u> </u>	
	METHOD:	Deal		TE SHIPPED:	1	1271	<u> </u>		NUMBER:	
COC NUM	BER:		- SIC	SNATURE:	/-1	(4)		DATE SI	GNED:	7/2/2/2

· 29				CHAIN OF CUST	OF CU			\mathbf{Z}	ODY	7									
Consumers Energy Counton	Energy Count on Us®	_	CO	CONSUMERS ENERGY COMPANY 135 WEST TRAIL ST., JACKSON, M			38	RA	- LABORATORY SERVICES [49201 • (517) 788-1251	-125		R	∑ [S				Page of
SAMPLING SITE / CUSTOMER:	JSTOMER:			PROJECT NUMBER:	SAP CC or WO#:							Ą	[ALX	ANALYSIS REQUESTED	REQ	ÜES	TED		OA BEOLIBENENT.
23-2023 DEK Lined Impoundment	l Impoundment			23-0719	REQUESTER: Harold Register	arold	Reg	ster			6	ttach	List	(Attach List if More Space is Needed)	re Sp	ace is	Need	ied)	QA NEQUINEWENT:
SAMPLING TEAM:	A. Whale	4		TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS □ ST.	□ STANDARD 🖾 OTHER	~													□ NPDES
SEND REPORT TO:	Caleb Batts			email:	phone:														□ ISO 17025
COPY TO:	Harold Register	er		MATRIX CODES: GW = Groundwater OX = Other		0	CONT	TAINERS	RS										☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air			PRE	ERV	PRESERVATIVE		tals								☐ INTERNAL INFO
LAB	SAMPLE COLLECTION	ECTION	RIX	S = Soil / General Solid WP = Wipe O = Oil WT = General Waste		FAL#)3)I-1	r	al Me		monia		alinity	ide			□ OTHER
SAMPLE ID	DATE	TIME	МАТ	FIELD SAMPLE ID / LOCATION	ŕ	None	HNC	H ₂ SC NaO	HCI McO	Othe	 	Ani	 	TDS	 	Sulf		<u> </u>	REMARKS
23-0719-01	7/16/15	07.8C	GW	DEK-MW-15003		7 4	-	1			×	×	×	×	×	×			
-02		0952	GW	OW-10		7 4	-	-			×	×	×	×	×	×	 	<u> </u>	
-03		OPOS+	GW	OW-11		7 4	, , ,	1 1			×	×	×	×	×	×	ļ	 	
-04		D/S	GW	OW-12		7 4	<u> </u>	,			×	×	×	×	×	×		-	
-05) V	¥	KLI-SCS		7 4	-	1		<u> </u>	×	×	×	×	×	×			
-06			SW	KLI-PCS		7 4	-	-			×	×	×	×	×	×			\
-07		11155	SW	SW-DITCH		7 4	-	-			×	×	×	×	×	×			
-08		1	GW	DUP-KLI		7 4	-	1			×	×	×	*	×	×			
-09		noś	₩	EB-KLI		4		7			×	×	×			×			
-10	<	1043	*	FB-KLI		4	-	11			×	×	×	-	ļ	×			
																		_	
ELINQUISHED BY:	•		DATE/TIME:		RECEIVED BY:	_			F	_	COMMENTS:	MEN	TS:		_	-	-	-	
aul		3	7/7	17 CSC	Z.									,					
ELINQUISHED BY:		П	DATE/TĪMĖ:		RECEIVID BY:						Recei	ved o	عن مرا عن مرا	Received on Ice? ✓ Yes ☐ No Temperature: 3.8-60°C	Sex Les	ი ი ი		M&TE#:	M&TE#: 05年02 Cal. Due Date: 5- なシャ
					23-0719 Page 27 of 45	ľ				-									

Count on Use Count on Use Count on Use Count on Use Caleb Batts Caleb Batts Harold Register TRC DATE TIME DATE TIME 123C GW DEK-MW- DEK-MW- DATE/TIME: DATE/TIME: DATE/TIME: DATE/TIME: CONSUMERS PROJECT NUMB TURNAROUND 1 CA HR	70				CHAIN OF CUSTODY	OF CU		$\overline{\mathbf{Z}}$	\subseteq		K											
DATETIME: DATETIME: DATE TIME: SAP CC or WO#: Can Mode:	Consumers	energy Count on Us®)	SUMERS ENERGY COI	MPANY – I	10 A		(S1)	7) 78		? ? ? ? ? ? ? ? ? ?	S	7	1		Š					ا سب
Acade December D	AMPLING SITE / CU	STOMER:			PROJECT NUMBER:	SAP CC or WO#:								A N	ALX	SIS/	RE	QII	ITS:	ä		OA BEOTHBEACHT.
Caleb Barrier Control	ე3-2023 DEK Bottor	n Ash Pond & L	ined Impor	ınd.	23-0718	REQUESTER: Ha	rold	Reg	ister				Â	ttach	List	if M	ore S	pace	is N	eede	<u> </u>	(A KEQUIKEMENT:
Caleb Batts		1. Whales																				□ NPDES
Harold Register	SEND REPORT TO:	Caleb Batts				phone:						<u> </u>										□ ISO 17025
TRC	COPY TO:	Harold Registe	Fi		CODES: W = Groundwater		0	NON!	[AII]	ER	0,	<u></u>										☐ 10 CFR 50 APP. B
Sample Collection Sample		TRC			ıs Liquid		! 	PE PE	SER	VAT	EN.	tala	lais									☐ INTERNAL INFO
DATE TIME	LAB	SAMPLE COLLI	CTION	RIX						11						S 	alinity	fide				□ OTHER
7 1 1	SAMPLE ID	DATE	TIME	МАТ	FIELD SAMPLE ID / LOC/			f				1			 -	TDS	Alk	Súli				REMARKS
	23-0718-01	7h6h3	20	G₩	DEK-MW-18001			+	-	 		<u></u>			×	×	×	×			-	
1235 GW DEK-MW-18001 MSD 6 3 1 1	-02			GW	DEK-MW-18001 MS		├		-	├-		<u></u>	 	 	×		×	×			 	
RECEIVED BY: RECEIVED BY: COMMENTS: Commenture: 5.4.5.7. °C	-03	<	 	GW	DEK-MW-18001 MSD		ļ	 	 	 -			-		×	ļ	×	×				
DATE/TIME: DATE/TIME: RECEIVED BY: COMMENTS: Received on Ice? It Yes I No Temperature: 5.4-5.9 °C							-		ļ				-	-		_					-	
DATE/INE: RECEIVED BY: COMMENTS: Received on Ice? Page 13 of 24 Temperature: 5.4-5.4 °C							ļ	ļ	-				ļ								 	
DATE/TIME: RECEIVED BY: COMMENTS: Received on fee? Description: 5.4.5.7 °C												<u> </u>			-						<u> </u>	
DATE/TIME: RECEIVED BY: COMMENTS: Received on Ice? (Myes: □ No Temperature: 5.4-5.7] °C							ļ				ļ	1	-	-	-	ļ					 	
DATE/TIME: RECEIVED BY: COMMENTS: RECEIVED BY: COMMENTS: Received on Ice? Payes No. 12 of 24.							-								-						-	
DATE/TIME: RECEIVED BY: COMMENTS: RECEIVED BY: COMMENTS: Received on Ice? BY: Temperature: 5.4-5.9 °C															_							
DATE/TIME: RECEIVED BY: COMMENTS: COMMENTS: RECEIVED BY: COMMENTS: Received on Ice? If Yes I No Received on Ice? If Yes I No Received on Ice? If Yes I N						,																
DATE/TIME: RECEIVED BY: COMMENTS: COMMENTS: Received on Ice? Layer on Ice? Received on Ice? Layer on Ice? Lay																						
DATE/TIME: RECEIVED BY: Received on Ice? The Yes Ino 23.0718 Base 13.624 Temperature: 5.4-5.7 °C	ELINQUISHED BY:	-) D,	VIE/I		DEIVED BY:							MO	Ē	TS:							
. Temperature: <u>5.4 - 5.9</u> °C	ELINOUISHED BY:	Lash	D.		Alts office	CEIVEI BY:						∞	ecei	red o	n Ice	.∘ I∂•	Yes		ć'	Z	%TE	
					23	23-0718 Page 13-of-24	1						emp	ratu	\oldsymbol{Q}	2	2.5	င်္ဂ		Ω	al. D	iue Date: 5-21-24

19				CHAIN OF CUST	OF CU	9	\supset	\subseteq		ODY											
S Consumers Energy	Energy			CONSUMERS ENERGY COMPANY – LABO	MPANY – I	A		R.		9	~	SI	R	Y	RATORY SERVICES	Ø		•			Page 1 of 1
	Count on Us®			135 WEST TRAIL ST., JACKSON, MI 49201	ACKSON, MI 492	01	•	(517	7) 78	(517) 788-1251	251										
AMPLING SITE / CUSTOMER:	JSTOMER:			PROJECT NUMBER:	SAP CC or WO#:						<u> </u>		AN	ALX	SIS/	RE	ANALYSIS REQUESTED	STE	Ħ		OA REOURREMENT:
ე3-2023 DEK Bottom Ash Pond Wells	om Ash Pond We	lls		23-0717	REQUESTER: Harold Register	arold	Reg	ister			┢━	₽	ttach	List	if M	ore S	(Attach List if More Space is Needed)	is Ne	edea	1 💆	\(\lambda \) \(\la
AMPLING TEAM:				TURNAROUND TIME REQUIRED: □ 74 HR □ 48 HR □ 3 DAYS □ STA	□ STANDARD ☑ OTHER	~															□ NPDES
SEND REPORT TO:	Caleb Batts			email:	phone:																☐ ISO 17025
COPY TO:	Harold Register	ä		MATRIX CODES: GW = Groundwater OX = Other			CONTAINERS	(AII)	ERS	0 2	l										☐ 10 CFR 50 APP. B
	TRC			WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		‡ T	PER	PRESERVATIVE	VAT	IVE	4-1-	anis		a		У					☐ INTERNAL INFO
LAB	SAMPLE COLLECTION	ECTION	RIX	l		TAL #			'n		al Me		ions	moni	S	calinit	fide				OTHER
SAMPLE ID	DATE	TIME	МАТ	FIELD SAMPLE ID / LOCATION		TO'	HNO	H ₂ St NaC	HCI	MeC	Othe		-		TD	Alk	Sul				REMARKS
23-0717-01	7-26-23	1201	GW	DEK-MW-15002		7 4	-	-	 -		×	 	×	×	×	×	×				
-02		Soel	GW	DEK-MW-15005		7 4	-	1	 -		×	-	×	×	×	×	×				
-03		Oel	GW	DEK-MW-15006		7 4		-			×	 	×	×	×	×	×				
-04		1	GW	DUP-DEK-BAP-01		7 4	_		,		×	ļ	×	×	×	×	×			<u> </u>	3
-05		1120	€	FB-DEK-BAP		4	—		<u> </u>	ļ	×		×	×	ļ		×				
-06	خ	acel	₹	EB-DEK-BAP		4	11		<u> </u>		×	 	×	×	<u>_</u>	ļ	×			1	
						ļ		-			<u> </u>			ļ		ļ				†····	
						ļ		-			<u> </u>		-	ļ	ļ		ļ				
												-		_							
ELINQUISHED BY:		<i>/)</i>	DATE/TIME:		RECEIVED BY:							COMMENTS:	NEW MEN	TS:							
Marian	1 Mas		1/	7/23 0800	T(J				,	•					
ELINQUISHED BY:	. \	\	DATE/TIME:		RECEIVED BY:							ecei	/ed o	n Ice		۶ کا	Received on Ice? IPYes □ No	δ	<u>∑</u>	M&TE#:	M&TE#: 237
				2	23-0717 Page 19 of 33	ັນ						dirip	1 2111] [5	Temperature. 7, 6	إ	'4		6		

Cal. Due Date: 5-23-24	Cal. Du	Temperature: 2.8-3.6 °C	e 1.0	peratur	Temp				J.	13.05	23.0721 Page 13 of 13				, t	1	Zoroz Bio	ţ
Mæte#: 015402	M&TE:	Received on Ice? Id√Yes □ No	nice?it	rived or	Rece					3Y: (RECEIVED BY:	C	1/2 0/20	7/27	اد	La Maria	EI MOI IISHER BY:	
			TS:	COMMENTS:	COM					, 3Y.	RECEIVED BY:		Æ:	DATE/TIME:	ם	->>	ELINQUISHED BY:	ELIN

					×				-				FB- Background	W	0933	7-26-23	-06	
			×	×	×			-	3 2				DUP-Background	GW		7-24-23	-05	
			×	×	×			-	3 2				MW-15019	G₩	199	7-24-27	-04	
			×	×	×			-	3 2				MW-15016	GW	0933	7-26-23	-03	
			*	×	×			1-	3 2				MW-15008	GW	1323	7-24-23	-02	
			×	×	×			-	3 2				MW-15002	GW	0852	7-26-27	23-0721-01	
REMARKS			TD	 	-	HCI MeC	H ₂ Se NaC	Non HN0	-		ID / LOCATION		FIELD SAMPLE	МАТ	TIME	DATE	SAMPLE ID	\ S
OTHER			· S	ions	al Mo	ЭH	Ή	O ₃	TAL #		WP = Wipe WT = General Waste		S = Soil / General Solid O = Oil	RIX	ECTION	SAMPLE COLLECTION	LAB	
☐ INTERNAL INFO					etals	TIVE	PRESERVATIVE	PRES	 		udge		WW = Wastewater W = Water / Aqueous Liquid			TRC		
☐ 10 CFR 50 APP. B						S	TAINERS	CONT			ther	0x=0	MATRIX CODES: GW = Groundwater	Z	er .	Harold Register	COPY TO:	
□ ISO 17025											phone:		email:	o		Caleb Batts	SEND REPORT TO:	SEN
⊠ TNI								-		⊠ OTHER	□ STANDARD		□ 24 HR □ 48 HR □ 3 DAYS					
□ NPDES												JIRED:	TURNAROUND TIME REQUIRED:				SAMPLING TEAM:	SAMI
C A MAN CONTRACTOR IN THE COLUMN TO THE COLU	Needed)	More Space is	List if N	Attach	~		ster	Regi	arold	REQUESTER: Harold Register	REQUI	,	23-0721		lls	23-2023 JCW-DEK Background Wells	023 JCW-DEK	23-2
OA REOLUREMENT:	TED	ANALYSIS REQUESTED	ALYSI	AN						SAP CC or WO#:	SAP C		PROJECT NUMBER:	ď		JSTOMER:	SAMPLING SITE / CUSTOMER:	SAMI
Pageof		ES)RATORY SERVICES (517) 788-1251	ER	Y SI	RATORY (517) 788-1251	RA]	BO:	LABC 9201 •	<u>4</u>	OMPA , JACKSO	RAIL ST	CONSUMERS ENERGY COMPANY – LA	CON		Energy Count on Us®	Consumers	P12909
						Y	ODY		S	CU	CHAIN OF CUST		CH ₂					29



Appendix C Data Quality Reviews

Laboratory Data Quality Review Groundwater Monitoring Event July 2023 DE Karn Bottom Ash Pond

Groundwater samples were collected by TRC for the July 2023 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0717 and S51520.01(01).

During the July 2023 sampling event, a groundwater sample was collected from each of the following wells:

DEK-MW-15002

DEK-MW-15005

■ DEK-MW-15006

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, and Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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 and Merit. 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, TDS, ammonia, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters 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

- One field blank (FB-DEK-BAP) and one equipment blank (EB-DEK-BAP) were collected with this data set. Total metals, nitrate, nitrite, ammonia, and sulfide were not detected in these blanks.
- The field duplicate pair samples were DUP-DEK-BAP-01 with DEK-MW-15002; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits.
- Laboratory duplicate and MS/MSD analyses were not performed on a sample from this data set.

Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event July 2023 DE Karn Lined Impoundment

Groundwater, water, and surface water samples were collected by TRC for the July 2023 sampling event. Samples were analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analyses were subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0719 and S51522.01(01).

During the July 2023 sampling event, a groundwater sample was collected from each of the following wells:

■ OW-10

OW-11

OW-12

DEK-MW-15003

During the July 2023 sampling event, the following water/surface water samples were collected:

KLI-PCS

KLI-SCS

SW-DITCH

Each sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B
Total Mercury	SW-846 7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D

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 and Merit. 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, total mercury, anions, alkalinity, TDS, ammonia, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

 One field blank (FB-KLI) and one equipment blank (EB-KLI) were collected with this data set. Target analytes were not detected in these blank samples.

- The field duplicate pair samples were DUP-KLI and OW-10; relative percent differences (RPDs) between the parent and duplicate sample were within the QC limits with the following exception:
 - The RPD for TDS (164.2%) was > 30. Therefore, the positive results for TDS should be considered estimated in all groundwater samples in this data set, as summarized in the attached table, Attachment A.
- 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/Surface Water Analytical Data
DE Karn Lined Impoundment
Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-15003	7/26/2023		
OW-10	7/26/2023		Field duplicate variability (relative percent difference above criteria); potential uncertainty exists. Observed TDS
OW-11	7/26/2023	Total Dissolved Solids	concentrations were generally consistent with historical results and deemed usable for the purposes of the detection
OW-12	7/26/2023		monitoring program.
DUP-KLI	7/26/2023		



Appendix D Statistical Analysis

Appendix D

Statistical Summary for DE Karn Lined Impoundment Third Quarter 2023

Data from October 2021 to July 2023

Karn Lined Impoundment Wells									
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12			
Boron	Trend	↓*	0	0	0	0			
Calcium	Trend	0	\downarrow	0	0	0			
Chloride	Trend	↑ ^{ASD}	0	0	↓	0			
Fluoride	Trend	O*	O*	O*	0	O*			
Iron	Trend	0	↓	0	0	0			
рН	Trend	0	^*	0	0	0			
Sulfate	Trend	0	0	0	\downarrow	0			
Total Dissolved Solids	Trend	0	0	0	0	0			

Notes:

O* = Non-detect

O = No trend

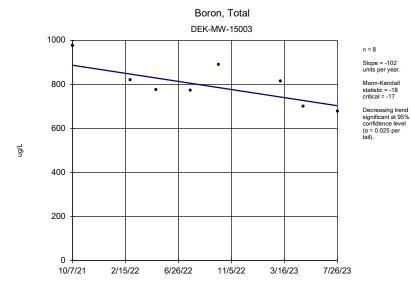
↑ = Upward trend, continuous

↑* = Upward trend, new

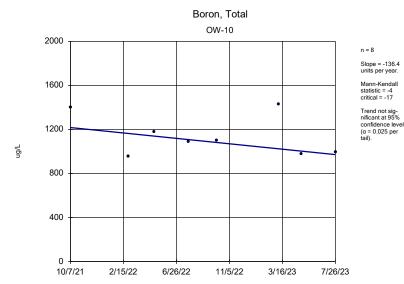
= Upward trend, confirmed= Downward trend, continuous

↓* = Downward trend, new

† ASD = Alternate Source Demonstration (Second Quarter 2023 Hydrogeological Monitoring Report for the Karn Lined Impoundment CCR Unit, TRC, July 2023.)

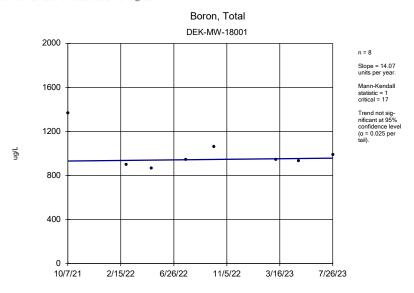


Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



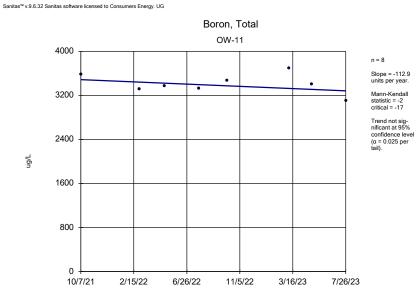
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



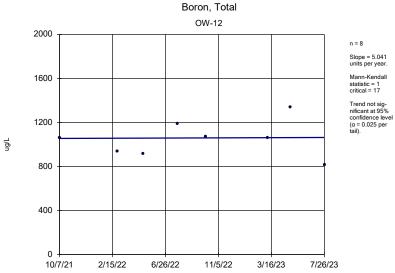
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

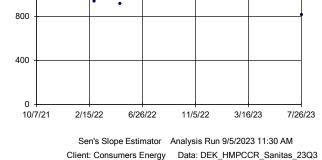
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

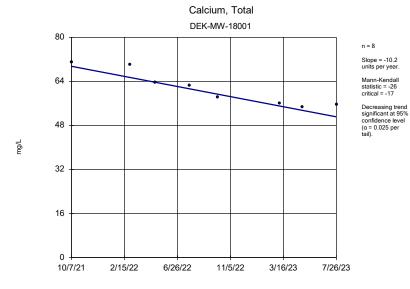


Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

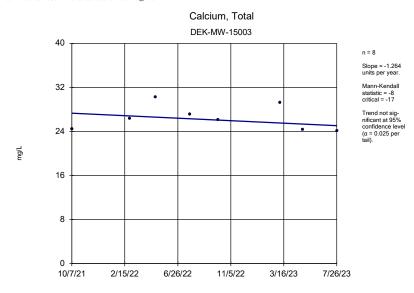
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3





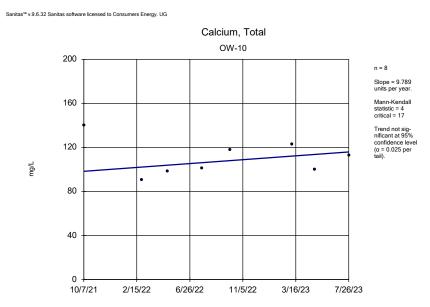


Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

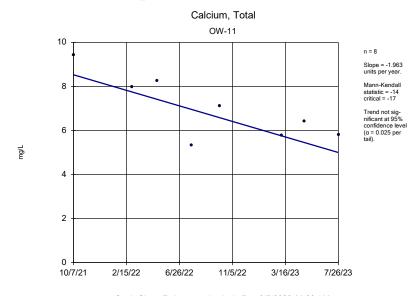


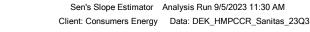
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

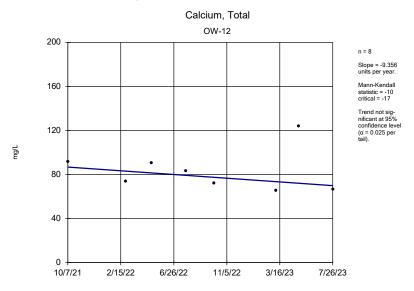




Chloride DEK-MW-15003 70 Slope = 3.093 units per year. 56 Mann-Kendall statistic = 20 critical = 17 Increasing trend significant at 95% confidence level 42 (α = 0.025 per tail). 28 14 10/7/21 2/15/22 6/26/22 11/5/22 3/16/23 7/26/23

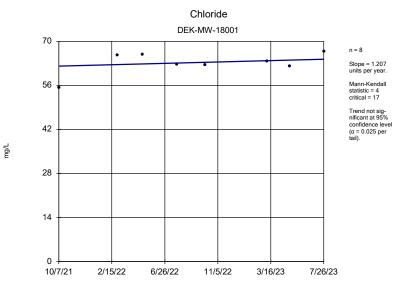
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



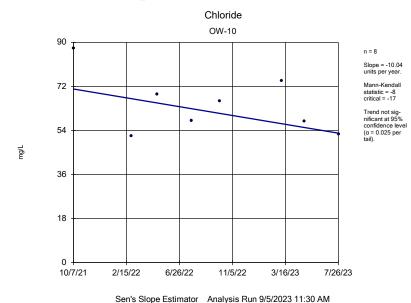
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

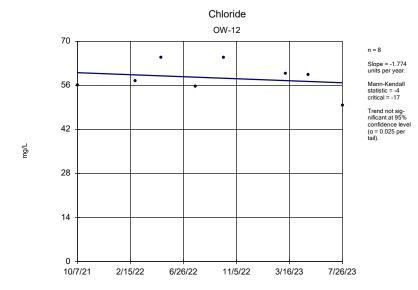


Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

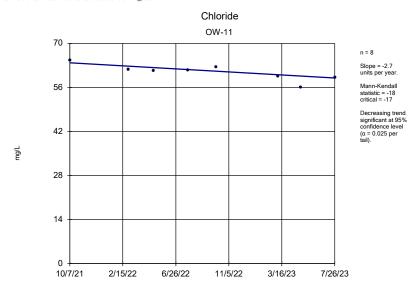


Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

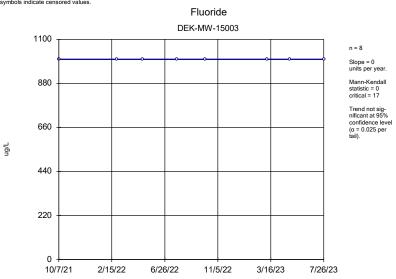
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

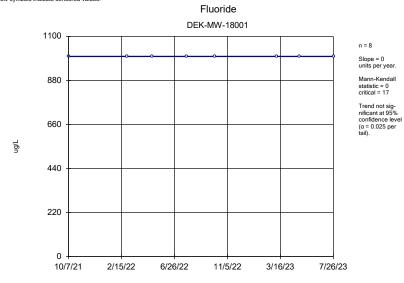




Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

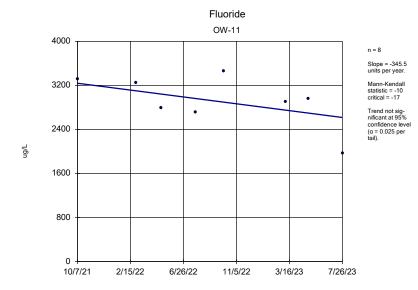
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

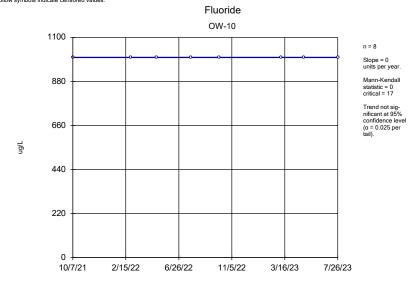
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

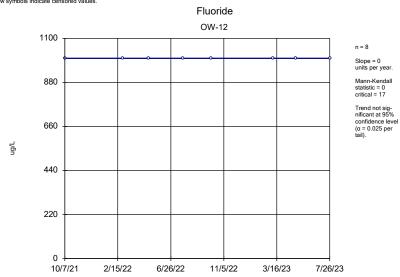
Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

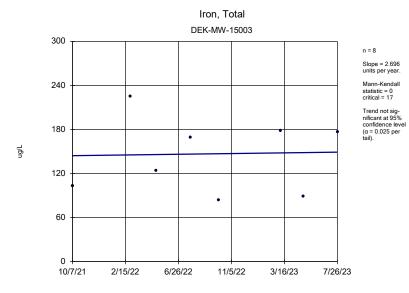
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

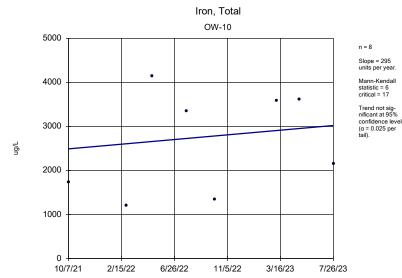
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

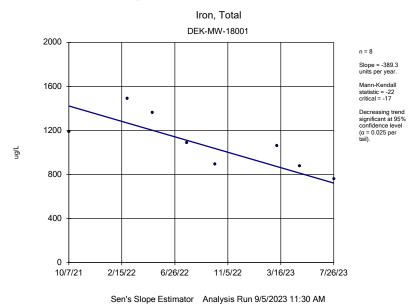
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas $^{\text{\tiny{TM}}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



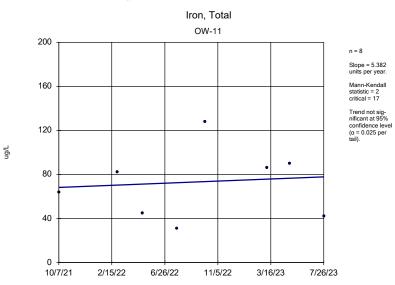
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



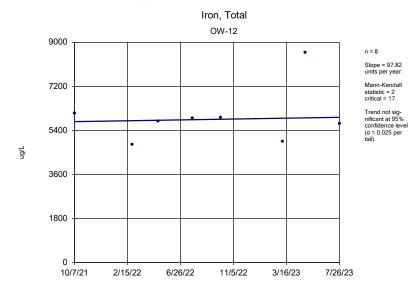
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

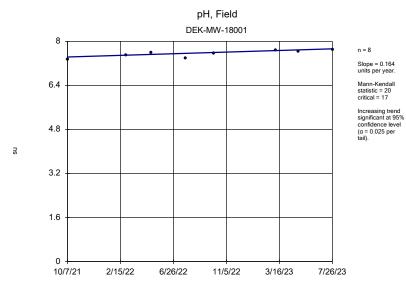
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

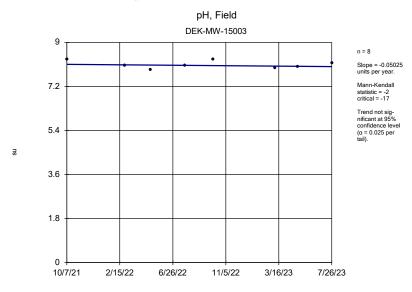
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3





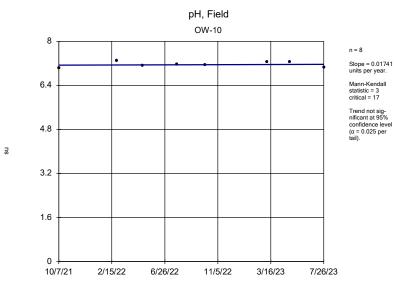
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



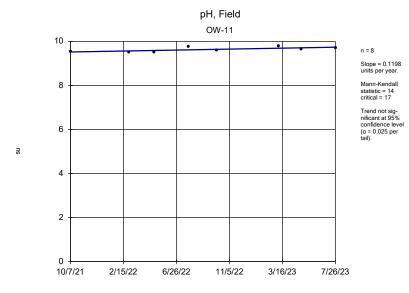
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM



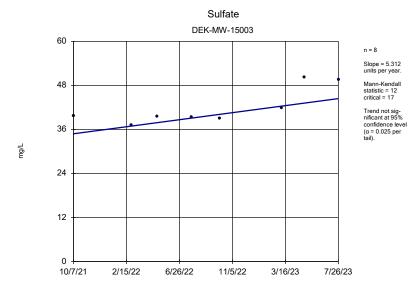
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



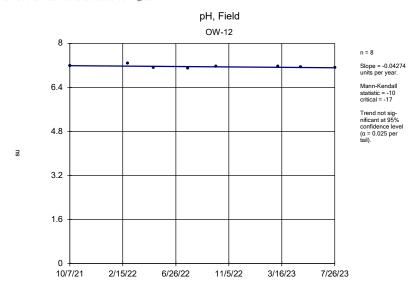
Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



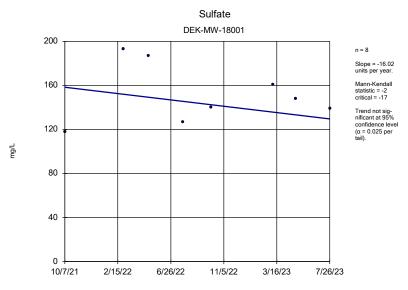
Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



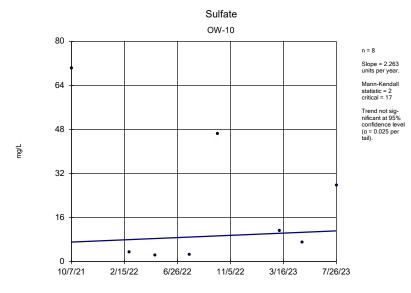
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sen's Slope Estimator Analysis Run 9/5/2023 11:30 AM



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

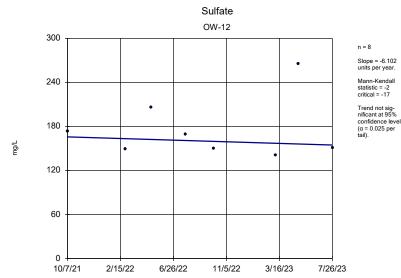
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

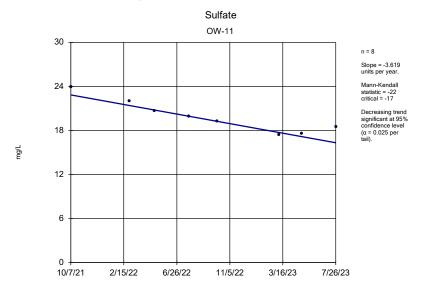
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas $^{\text{\tiny{TM}}}$ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



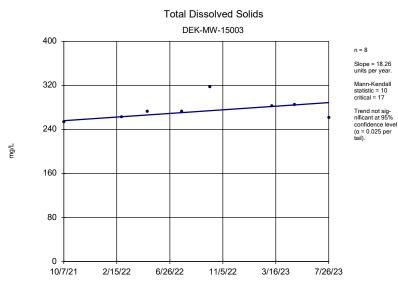
Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



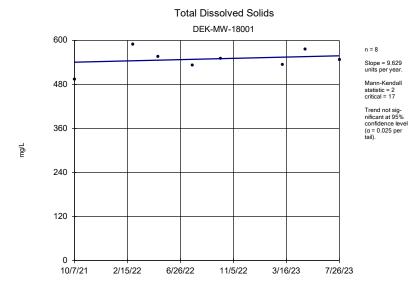
Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

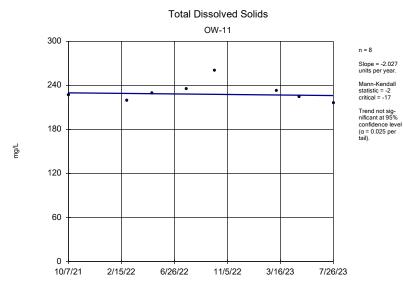
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

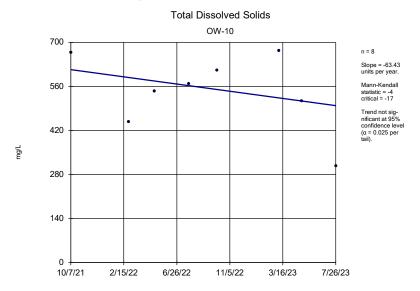
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

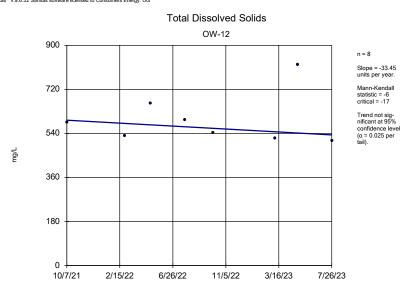
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3



Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

Sanitas™ v.9.6.32 Sanitas software licensed to Consumers Energy. UG

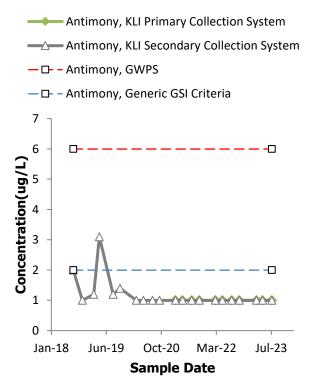


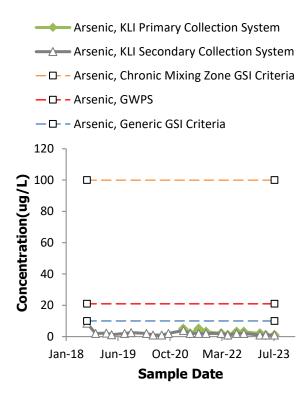
Sen's Slope Estimator Analysis Run 9/5/2023 11:31 AM

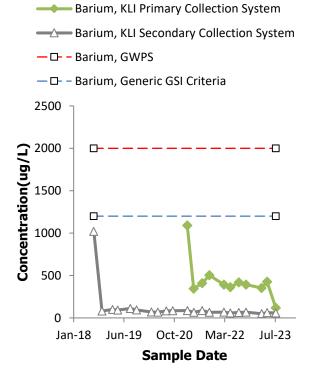
Client: Consumers Energy Data: DEK_HMPCCR_Sanitas_23Q3

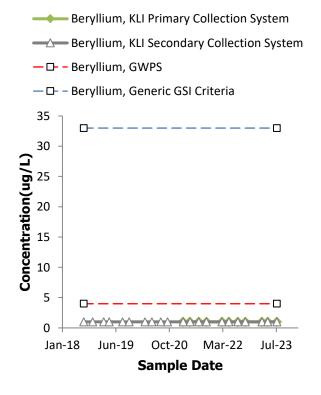


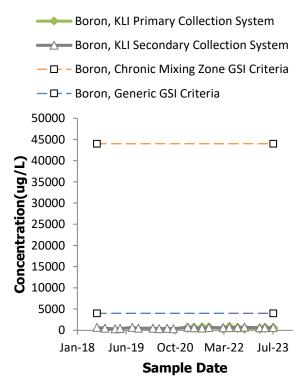
Appendix E Secondary Leachate Collection System Monitoring

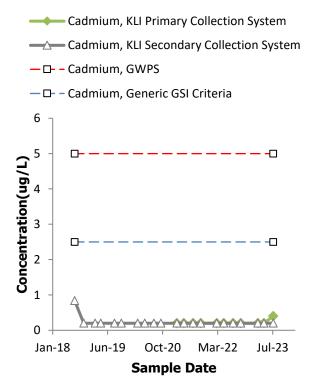


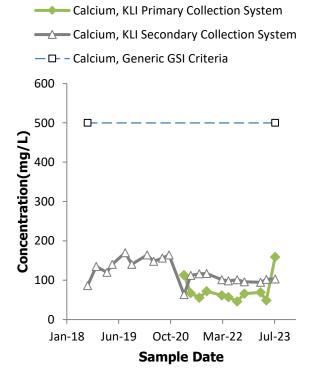


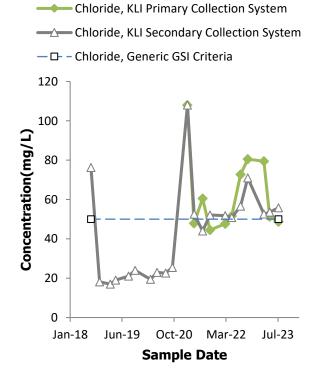


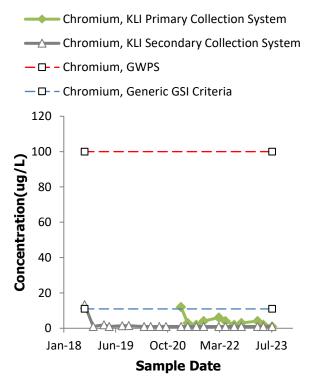


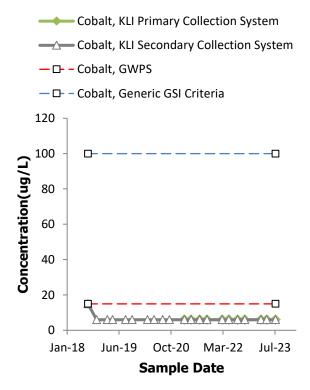


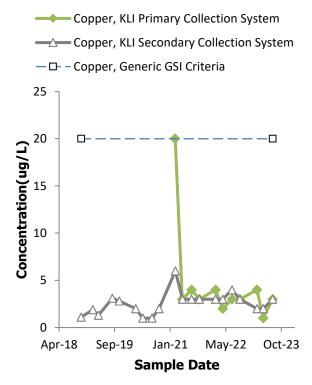


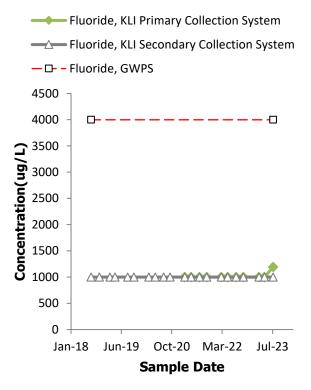


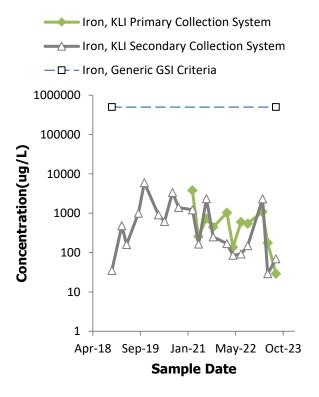


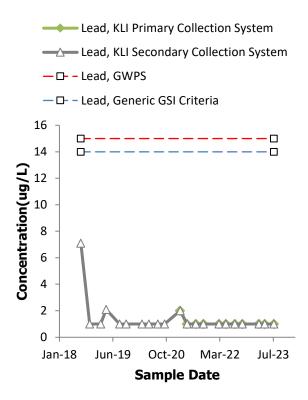


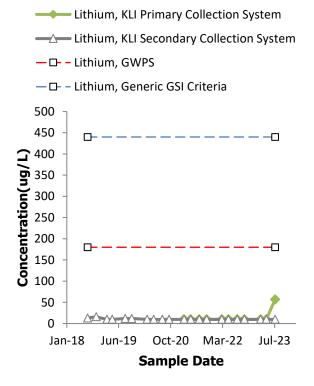


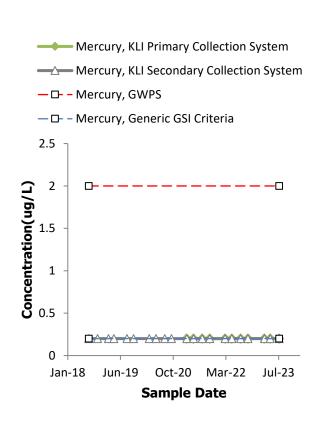


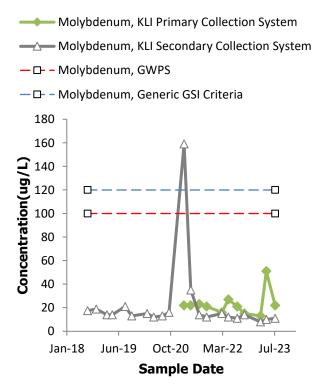


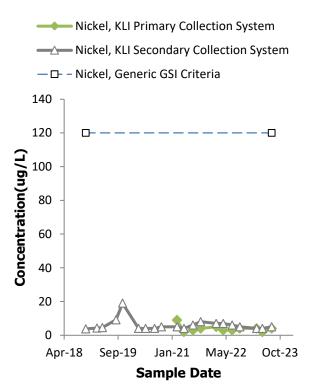


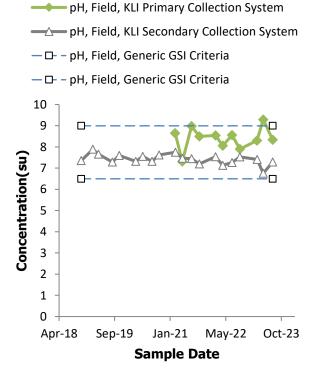


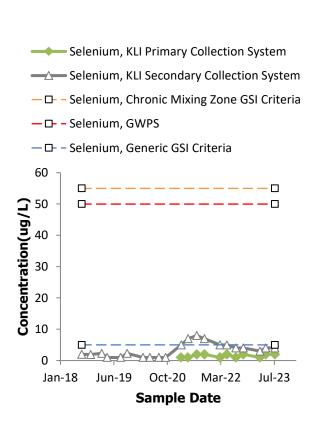


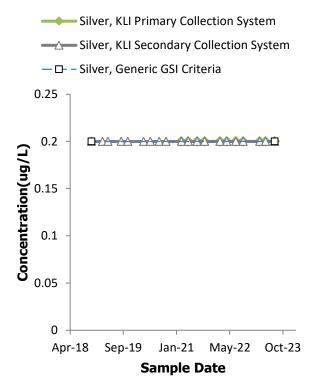


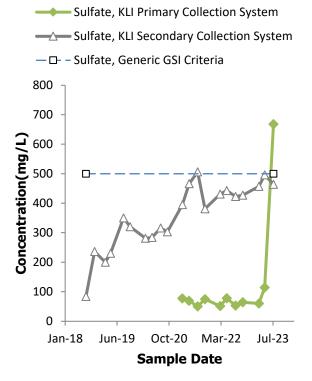


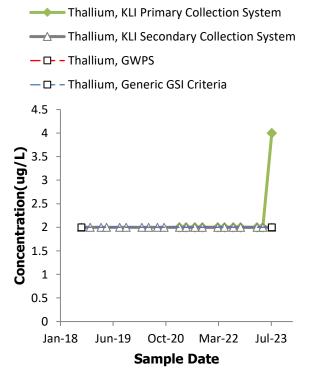


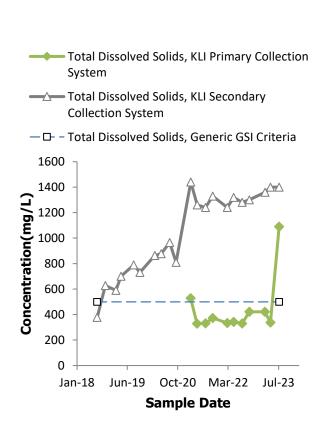


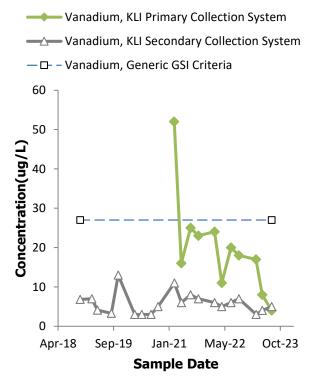


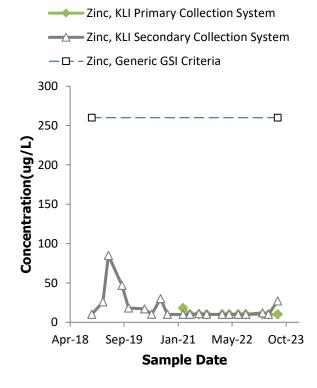










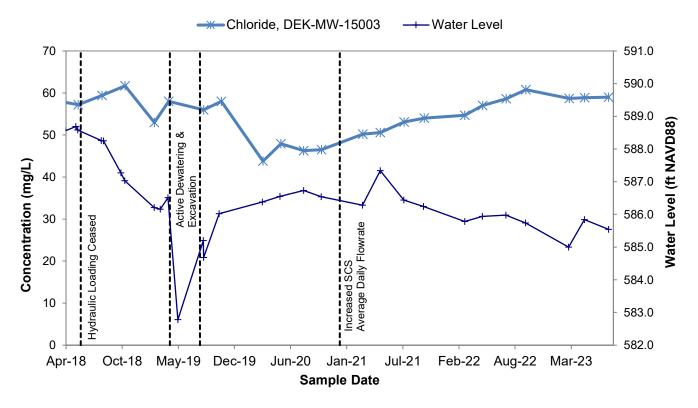




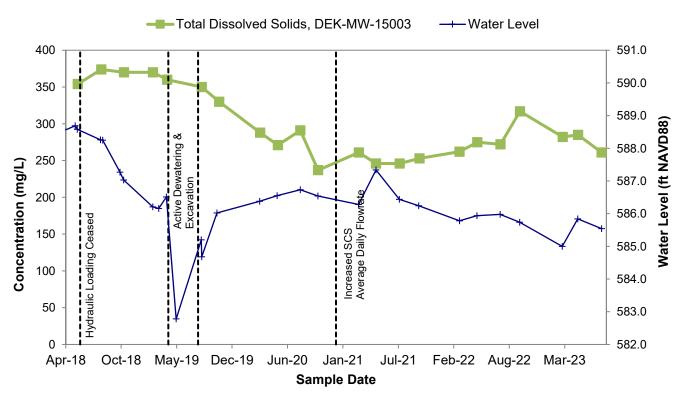
Appendix F Alternate Source Demonstration

Alternate Source Demonstration Time Series

Chloride at DEK-MW-15003



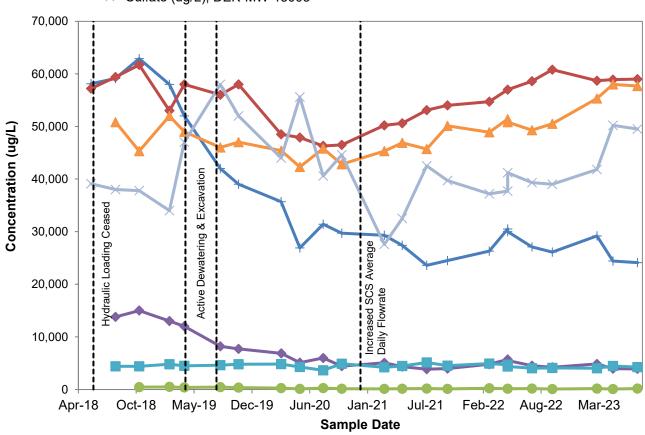
Total Dissolved Solids at DEK-MW-15003

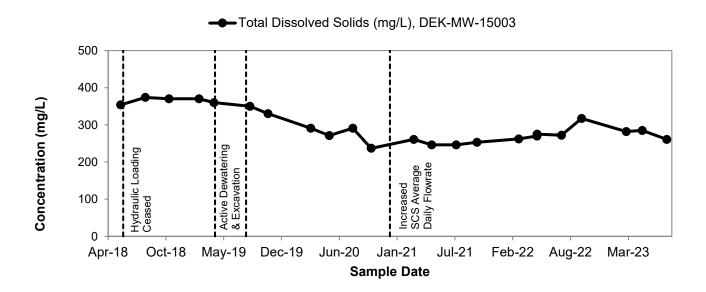


Alternate Source Demonstration Time-Series

DEK-MW-15003









Fourth Quarter 2023 Hydrogeological **Monitoring Report**

DE Karn Lined Impoundment CCR Unit

Essexville, Michigan

January 2024

Project Manager/Hydrogeologist

Prepared For:

Consumers Energy 1945 W. Parnall Road Jackson, MI 49201

Prepared By:

TRC 1540 Eisenhower Place Ann Arbor, Michigan 48108

Wheley

Andrew Whaley

Project Geologist



TABLE OF CONTENTS

1.0	Introduction1									
	1.1 1.2	Statement of Adherence to Approved Hydrogeological Monitoring Plan Program Summary								
	1.3	Site Overview								
	1.4	Geology/Hydrogeology	2							
2.0	Seco	and Collection System Monitoring	4							
3.0	Grou	ındwater Monitoring	6							
	3.1	Monitoring Well Network	6							
	3.2	October 2023 Detection Monitoring Event	6							
		3.2.1 Data Quality Review	7							
		3.2.2 Groundwater Flow Rate and Direction	7							
4.0	Data	Data Evaluation								
	4.1	Statistical Evaluation of Trends	9							
	4.2	Detection Monitoring Data Discussion	10							
	4.3	Alternate Source Demonstration	10							
		4.3.1 Leachate Chemistry	10							
5.0	Cond	clusions and Recommendations	11							
6.0	Refe	rences	12							
TAB	LES									
Table		Summary of Groundwater Elevation Data								
Table Table		Summary of Field Parameters								
Table		Summary of Groundwater Sampling Results (Analytical) Summary of Statistical Exceedances: October 2023								
FIGU	JRES									
Figur	e 1	Site Location Map								
Figur	e 2	Site Layout Map								
Figur	e 3	Shallow Groundwater Contour Map – October 2023								



APPENDICES

Appendix A Laboratory Analytical Reports

Appendix B Field Notes

Appendix C Data Quality Reviews
Appendix D Statistical Analysis

Appendix E Secondary Leachate Collection System Monitoring



1.0 Introduction

Pursuant to the Federal CCR Rule¹, Consumers Energy initiated a detection monitoring program for the Karn Lined Impoundment that went into service on June 7, 2018. After Consumers Energy established the groundwater monitoring system and detection monitoring program pursuant to the requirements and schedule of §257.90 - §257.94, the State of Michigan enacted Public Act No. 640 of 2018 (PA 640) on December 28, 2018 to amend the Natural Resources and Environmental Protection Act, also known as Part 115 of PA 451 of 1994, as amended (a.k.a., Michigan Part 115 Solid Waste Management). The amendments to the solid waste statute amended state groundwater monitoring requirements for coal ash impoundments; therefore, Consumers Energy submitted the *Karn Lined Impoundment Hydrogeological Monitoring Plan* (HMP) to the Michigan Department of Environment, Great Lakes, and Energy (EGLE) to comply with the requirements of Part 115, Rule 299.4905, and the CCR Rule. The HMP was approved by the EGLE on November 13, 2020 and incorporated, by reference, in Solid Waste Disposal Area Operating License No. 9629 issued on December 10, 2020.

1.1 Statement of Adherence to Approved Hydrogeological Monitoring Plan

This Fourth Quarter 2023 Karn Lined Impoundment Hydrogeological Monitoring Report (Report) has been prepared by TRC on behalf of Consumers Energy to satisfy quarterly groundwater monitoring requirements during the active life of the coal ash impoundment. 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, Format for Solid Waste Disposal Facility Monitoring Submittals, dated July 5, 2013. All references herein to the EGLE are inclusive of the MDEQ. Information contained in this report was prepared in adherence to the facility's approved HMP that was approved by the EGLE on November 13, 2020. This HMP is compliant with the requirements set forth in Public Act No. 640 of 2018 (PA 640) to amend the Natural Resources and Environmental Protection Act (NREPA), also known as Part 115 of PA 451 of 1994, as amended (Part 115) (a.k.a., Michigan Part 115 Solid Waste Management).

1.2 **Program Summary**

This Report provides results and summarizes the monitoring activities completed in the fourth quarter 2023 at the Karn Lined Impoundment located at 2742 Weadock Highway in Essexville, Michigan (Figure 1). Groundwater in the vicinity of the Karn Lined Impoundment has been documented to be affected by the management of CCR prior to the construction of the unit (January 2019, TRC). Given that the constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, the compliance monitoring program for the Karn Lined Impoundment consists of two parts to evaluate if there are new releases from the unit:

¹ USEPA final rule for the regulation and management of Coal Combustion Residuals (CCR) under the Resource Conservation and Recovery Act (RCRA) published April 17, 2015, as amended.



- 1. Monitoring of secondary collection system flow rates and water quality to detect leaks in the liner; and
- 2. Groundwater monitoring to determine if there are potential new releases from the Karn Lined Impoundment.

Based on sampling results for the fourth quarter 2023, the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP.

1.3 Site Overview

The Karn Lined Impoundment is located within the DE Karn Power Plant site (Site) located north of the former JC Weadock Power Plant, east of the Saginaw River, south and west of Saginaw Bay (Figure 1). Two coal-fired power generating units (Karn Units 1 & 2) began generating electricity in 1958 and 1959, respectively. Consumers Energy permanently ceased the operation of the coal-fired boilers (DE Karn Units 1&2) at the Site in May 2023 and has commenced decommissioning activities for those electrical generating units. Karn Units 3 & 4, co-located with the coal-fired generating units, are oil- and natural gas-fueled. Two other areas of coal ash management within the Site are the former Karn Bottom Ash Pond that was closed by removal and the Karn Landfill that was certified closed and now in post-closure care.

The Karn Lined Impoundment was put into service in June 2018 to replace the former Karn Bottom Ash Pond that directly supported Karn 1&2 power generation operations. The Karn Lined Impoundment serves a twofold purpose for treatment pursuant to National Pollutant Discharge Elimination System (NPDES) Permit N0. MI0001678 and as a temporary storage for bottom ash prior to removal and disposal in the JC Weadock Solid Waste Disposal Area (Weadock Landfill) governed by Solid Waste Disposal Area Operating License No. 9640 issued on March 11, 2021. On July 7, 2023, Consumers Energy submitted a Closure Work Plan to the EGLE that details a closure by removal of CCR in accordance with 257.102(c) of the self-implementing requirements of the CCR Rule. By reference, performance of this work would also satisfy state requirements pursuant to Section 11519b(9) of Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.11501 et seq. EGLE provided written concurrence with the Closure Work Plan on October 25, 2023.

1.4 Geology/Hydrogeology

The majority of the Karn Lined Impoundment area is comprised of surficial CCR and sand fill, as described in the HMP. USGS topographic maps and aerial photographs dating back to 1938, 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 to 30 feet below ground surface (ft bgs) overlying a clay till which is observed at depths ranging from 25 to 75 ft bgs. In general, the alluvium soils (sands) are deeper along the Saginaw River



and there are shallower lacustrine deposits (clays, silts and sands deposited in or on the shores of glacial lakes) at other areas. The clay till acts as a hydraulic barrier that separates the shallow groundwater from the underlying sandstone. A sandstone unit, which is part of the Saginaw formation, was generally encountered at 80 to 90 ft bgs.

The Site is bound by several surface water features (Figures 1 and 2): the Saginaw River to the west, Saginaw Bay (Lake Huron) to the north and east, and a discharge channel to the south. In general, shallow groundwater is encountered at a similar or slightly higher elevation relative to the surrounding surface water features. Groundwater flow in the upper aquifer is largely controlled by the surface water elevations of Saginaw River and Saginaw Bay. In the vicinity of the Karn Lined Impoundment, the shallow groundwater flow is generally radial, with a potentiometric high point near the unlined ditch north of the Karn Lined Impoundment and near DEK-MW-15003, flowing outward toward the surrounding surface water bodies.



2.0 Second Collection System Monitoring

Consumers Energy initiated secondary collection system flow monitoring to comply with the EGLE-approved HMP in December 2020. The SCS serves as a leak detection system and the SCS flow rate data is used to demonstrate compliance with Part 115. Consumers Energy continues to comply with the requirements for unmonitorable units under Rule 437 of the Part 115 Rules.

Increased average daily flow rates noted for the period from December 10, 2020 – January 6, 2021 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. Following repairs to the liner in 2021, the daily average flow rates were reduced, and the three-month average dropped below the response action flow rate of 25 gallons per acre per day (GPAD). The average daily flow rate for October through December 2023 (three-month average) was calculated as 1.5 GPAD and continues to demonstrate that the daily average flow rate is below the threshold value of the response action flow rate of 25 GPAD. Trend evaluations for weekly and monthly average flow rates continue to support that no additional engineering or operational modifications are necessary, and Consumers continues to document this information in their operating record.

In response to the prior exceedance of the SCS Response Action Flow Rate, samples were collected from the surface water of the primary collection system (KLI-PCS) and from the secondary leachate collection system sump (KLI-SCS) to compare leachate chemistry to groundwater chemistry. The samples were analyzed for the following constituents:

- Primary Indicator Parameters: Section 11511a(3)(c) Detection Monitoring Constituents
- Alternative Indicator Parameters: Section 11519b(2) Assessment Monitoring Constituents
- Optional Analyses in support of Piper or Stiff diagrams

The KLI-PCS and KLI-SCS data were evaluated for comparison to groundwater quality and water chemistry and to also assess potential of hazard and mobility of constituents. A series of time-series plots are included in Appendix E to illustrate water quality data changes over time for the secondary collection system from the start of operation in June 2018 to present. This analysis demonstrates that each monitored constituent is generally present in the secondary collection system (KLI-SCS) at concentrations less than the Groundwater Protection Standard (GWPS) established under 40 CFR 257.95(h) for the Karn Bottom Ash Pond or generic groundwater surface water interface (GSI) criteria adopted by the Department pursuant to Section 20120a, with the exception of total dissolved solids and chloride. Consumers notes that as decommissioning of the Karn Units 1&2 proceeds, temporary changes to the mix of the miscellaneous low-volume waste may occur, causing changes in the concentrations of detected constituents in the primary collection system (KLI-PCS) as compared to historical. A few notable observations:

Arsenic concentrations are higher in groundwater than the primary and secondary collection system: Arsenic was detected in the primary collection system at a concentration of 3 ug/L and in the secondary collection system at a concentration of 1 ug/L in October 2023. As shown in Appendix E, the arsenic concentrations observed in the



primary and secondary collections system have been consistently low. In contrast, the arsenic concentration observed in OW-12, the monitoring well located closest to the repaired liner areas, is 112 ug/L, which is consistent with concentrations observed in August 2020, before the liner damage occurred. Arsenic present in groundwater does not appear to be a result of a release from the unit.

- Vanadium is detected in the primary and secondary collection system and not in groundwater: Vanadium is present in the primary collection system (6 ug/L in October 2023) and in the secondary collection system (4 ug/L in October 2023) (Appendix E). Vanadium was not detected in the wells nearest the observed liner damage: OW-12 (<2 ug/L) or DEK-MW-18001 (<2 ug/L) providing additional evidence that a release has not adversely affected groundwater conditions.
- Secondary Collection System chemistry has not appreciably changed: The time series plots in Appendix E show relatively stable trends in chemistry for samples collected from the secondary collection system, except for total dissolved solids (TDS), and sulfate in the secondary collection system. The TDS and sulfate concentrations in the secondary collection system are more closely linked to water coming through the system from the intake water than as a byproduct of the commingled ash and other waste products. TDS and sulfate concentrations in KLI-SCS increased between 2018 and 2021 and have since began to stabilize.

Water quality data collected for this event are included in the attached laboratory reports (Appendix A). Groundwater chemistry is discussed in Section 4.1. Groundwater conditions will continue to be monitored.



3.0 Groundwater Monitoring

3.1 Monitoring Well Network

In accordance with §257.91, Consumers Energy developed a groundwater monitoring system for the Karn Lined Impoundment prior to the initial receipt of waste in the CCR unit (TRC, 2018c). Given the radial groundwater flow direction and that constituents associated with CCR currently managed at the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the Karn Bottom Ash Pond, the groundwater monitoring system design incorporates an intrawell statistical approach for detection monitoring as described in the HMP and in accordance with the "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance" (USEPA, 2009). Five monitoring wells that are screened in the uppermost saturated unit were selected for the Karn Lined Impoundment HMP detection monitoring (DEK-MW-15003, DEK-MW-18001, OW-10, OW-11, and OW-12). Monitoring well locations are shown on Figure 2.

3.2 October 2023 Detection Monitoring Event

In accordance with the HMP, TRC conducted the fourth quarter 2023 monitoring event for the Karn Lined Impoundment between October 2 and 4, 2023. In addition to the routine groundwater samples collected from the monitoring well network, a water sample was collected from a sump in the secondary collection system (KLI-SCS) and a surface water sample was collected from the primary collection system (KLI-PCS), as discussed in Section 2 above, such that leachate chemistry could be compared to groundwater chemistry. A sample of surface water was also collected from a ditch located north of the lined impoundment (SW-Ditch) to further evaluate site geochemistry (Figure 2). The SW-Ditch surface water grab sample represents water quality from the potentiometric high point adjacent to the Karn Lined Impoundment.

Groundwater samples collected during the fourth quarter 2023 event were submitted to Consumers Energy Laboratory Services in Jackson, Michigan, for analysis of the following metals and inorganic indicator constituents.

Section 11511a(3)(c) – Detection Monitoring Constituents	Section 11519b(2) – Assessment Monitoring Constituents					
Boron	Antimony	Fluoride	Thallium			
Calcium	Arsenic	Lead	Vanadium			
Chloride	Barium	Lithium	Zinc			
Fluoride	Beryllium	Mercury	Radium 226/228			
Iron	Cadmium	Molybdenum				
рН	Chromium, total	Nickel				
Sulfate	Cobalt	Selenium				



Section 11511a(3)(c) – Detection Monitoring Constituents	Section 115	19b(2) – Assessment Monitoring Constituents
Total Dissolved Solids (TDS)	Copper	Silver

Samples were also analyzed for additional constituents including magnesium, sodium, potassium, and bicarbonate, carbonate, and total alkalinity to provide further evaluation of groundwater chemistry. Analytical results from this event monitoring event are included in the attached laboratory reports (Appendix A).

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 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 B).

Monitoring wells were purged with peristaltic pumps utilizing low-flow sampling methodology. Field parameters were stabilized at each monitoring well prior to collecting groundwater samples. Stabilized field parameters for each monitoring well are summarized in Table 2. Field notes are included as Appendix B. The samples were collected in vendor-provided, nitric acid pre-preserved (metals only) and unpreserved sample containers and submitted to the laboratory for analysis. Porewater 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 one field blank, one equipment blank, one field duplicate (OW-12), and field matrix spike/matrix spike duplicate samples collected at DEK-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 data were found to be complete and usable for the purposes of the HMP program.

The data quality reviews for the Karn Lined Impoundment network wells are summarized in Appendix C.

3.2.2 Groundwater Flow Rate and Direction

Groundwater elevation data collected during this groundwater monitoring event are provided in Table 1. The data were used to construct the groundwater contour map (Figure 3).

Groundwater elevations measured at the site in October 2023 are generally within the range of 579 to 586 feet above mean sea level (ft NAVD88) and groundwater is typically encountered at



equal elevation relative to the surrounding surface water features measured by the NOAA gauging station data or within approximately 6 feet higher, flowing toward the bounding surface water features.

Although the point source discharge of sluiced bottom ash into the former Karn Bottom Ash Pond historically created localized mounding of the potentiometric surface, the new Karn Lined Impoundment went into service on June 7, 2018 and has been continuously collecting the process water and bottom ash that went into the former bottom ash pond. Since the former bottom ash pond is no longer being hydraulically loaded with sluiced ash and has been dewatered by gravity, the characteristic groundwater mound centered within the former surface pool area is no longer present. The groundwater elevation data collected in the vicinity of the former Karn Bottom Ash Pond in October 2023 demonstrate a reduction in groundwater elevation measurements by several feet when compared to the measurements collected prior to June 2018, when active loading was occurring to the bottom ash pond. Groundwater at the Site is locally influenced by incidental infiltration from precipitation over the uncovered acreage and the unlined low volume miscellaneous wastewater conveyance associated with the permitted NPDES discharge system, which is located just north of the Karn Lined Impoundment. Monitoring wells OW-11, OW-12, and DEK-MW-15003 delineate the newly established groundwater elevation high point that was previously centered over the former Karn Bottom Ash Pond with porewater flow generally flowing radially towards the adjacent surface water features from this newly established potentiometric "high", as illustrated in Figure 3.

The average hydraulic gradient observed on October 2, 2023 in the vicinity of the former Karn Bottom Ash Pond and Karn Lined Impoundment is estimated at 0.0049 ft/ft. The gradients were calculated using the monitoring well pairs DEK-MW-15004/DEK-MW-15005, DEK-MW-15003/DEK-MW-15006, and OW-11/MW-08, as well as the monitoring well water elevation difference and distance between DEK-MW-18001 and the discharge channel. The discharge channel surface water elevation was taken from the NOAA gauging station data on the same date as the water level measurements. Using the mean hydraulic conductivity of 15 ft/day (ARCADIS, 2016) and an assumed effective porosity of 0.3, the estimated average seepage velocity was calculated to be 0.24 ft/day or 88 ft/year in October 2023 which is reduced relative to previous estimated seepage velocities (e.g., 0.33 ft/day or 120 ft/year August 2018).

Due to the operational changes of the former bottom ash pond and the completion of the landfill capping activities in 2020, the gradient between the area of the Karn Bottom Ash Pond and Karn Lined Impoundment and the surrounding surface water bodies is flattening out as compared to previous quarters and is also attempting to reach a new equilibrium, as expected. The general flow direction relative to the Karn Lined Impoundment is similar to that identified in previous monitoring rounds and continues to demonstrate that the downgradient wells are appropriately positioned to detect the presence of Appendix III/IV parameters that could potentially migrate from the Karn Lined Impoundment.



4.0 Data Evaluation

Based on sampling results for this event the Karn Lined Impoundment remains in detection monitoring in accordance with the HMP. The following section summarizes the statistical approach applied to assess the fourth quarter 2023 groundwater data in accordance with the detection monitoring program.

Water quality data are included in the attached laboratory reports (Appendix A). Groundwater analytical data for the most recent quarterly monitoring event is summarized in Table 3 along with the associated Part 201 generic drinking water criteria and the generic GSI criteria. GSI compliance is evaluated through monitoring performed at the Karn Landfill in accordance with the EGLE-approved Consumers Energy's revised Karn Landfill HMP (Hydrogeological Monitoring Plan, Rev. 3, DE Karn Solid Waste Disposal Area) dated December 19, 2017 and in accordance with the December 23, 2015 mixing zone determination.

4.1 Statistical Evaluation of Trends

Groundwater in the vicinity of the Karn Lined Impoundment has been affected by CCR management before commencement of operation (January 2019, TRC). Given that the constituents associated with CCR currently managed in the Karn Lined Impoundment are indistinguishable from the constituents already present in groundwater from past operation of the former Karn Bottom Ash Pond, intrawell trend tests, in conjunction with KLI-SCS flow rates, will be utilized to assess whether a release has occurred from operation of the unit. The detection monitoring constituent concentrations will be analyzed using Mann-Kendall and Sen's Slope trend tests to determine if there is an upward trend that may indicate a release from the Karn Lined Impoundment. The data will be analyzed in the context of the Site hydrogeologic characteristics, and an assessment made as to whether the source of an upward trend, if identified, is from a possible release from the Karn Lined Impoundment, another on-site release, or on-site migration of nearby impact (i.e., former Karn Bottom Ash Pond).

Time-series plots and statistical trend analyses are used to evaluate groundwater quality each quarter, which are included as Appendix D. Consumers Energy manages and evaluates its analytical data using SanitasTM Statistical Software (SanitasTM). Consumers Energy conducts intra-well trend analyses to examine data for each monitoring well-constituent pair in the groundwater monitoring system over time to determine if changes in water quality are occurring that may be associated with the Karn Lined Impoundment. Data from February 2022 through October 2023 were analyzed using Mann-Kendall and Sen's Slope 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 slope was statistically significant. The graphical output of the Sen's Slope/Mann-Kendall trend tests and time series are presented in Appendix D. Appendix D also includes a table summarizing these trends and the associated statistical trend charts.

Data trends for detection monitoring constituents are generally stable (i.e., no trend) or declining for the majority of the monitoring well/constituent pairs with the following exceptions:



- The increasing trend in chloride concentrations in DEK-MW-15003 did not continue to be observed this quarter.
- The new, unconfirmed increasing trend for pH observed in Q3 2023 at DEK-MW-18001 did not continue to be observed this quarter.
- A new, unconfirmed increasing trend for sulfate is observed in DEK-MW-15003.

4.2 Detection Monitoring Data Discussion

Groundwater quality is generally consistent with previous monitoring events and the majority of the well/constituent pairs are exhibiting no trend or decreasing concentrations. Although increasing trends of detection monitoring (Appendix III) constituents exist, the groundwater conditions do not conclusively indicate a release from the unit, as discussed further in Section 4.3. The location of one of the identified liner damage locations was approximately 40-ft upgradient from monitoring well OW-12 and the second location was approximately 130-ft upgradient from monitoring well DEK-MW-18001. Both leaks have been repaired. Detection monitoring constituent concentrations at OW-12, located closest to the identified liner damage, exhibit no statistically significant increasing trends, indicating that if a release to groundwater occurred due to the apparent leak in the liner system, the effects on local groundwater quality at this point appear to be negligible. The increasing trends as noted in section 4.1 will continue to be evaluated within context of changes in the site operational status.

4.3 Alternate Source Demonstration

At this time, Consumers Energy is not asserting an Alternate Source Demonstration (ASD) for any Statistically Significant Increases (SSI) from this reporting period

4.3.1 Leachate Chemistry

Analysis of the KLI-PCS and KLI-SCS data provide additional lines of evidence to support a source other than the unit is contributing to groundwater conditions.

- Arsenic concentrations are higher in groundwater than in the secondary collection system; therefore, arsenic present in groundwater does not appear to be a result of a release from the unit (Section 2.0).
- Vanadium is detected in the primary and secondary collection system and not in groundwater in the wells nearest the observed liner damage OW-12 or DEK-MW-18001 (<2 ug/L), providing additional evidence that a release has not adversely affected groundwater conditions.



5.0 Conclusions and Recommendations

Consumers Energy will continue the detection monitoring program for the Karn Lined Impoundment unit based on the data evaluations completed in Section 4.0 of this report in conformance with the Karn Lined Impoundment HMP. There are no confirmed increasing trends for detection monitoring constituents; therefore, no SSIs over background limits were identified at the Karn Lined Impoundment during the October 2023 monitoring event. The use of secondary collection system flow rates as a leak detection system was successful. Increased flow rates observed in fourth quarter 2020 triggered investigations by Consumers Energy that quickly identified deficiencies in the liner system and prompted actions to address the damaged liner. The results of the mitigation efforts continue to be monitored and recent data demonstrate that the daily average flow rate has been reduced to less than the threshold value of the Response Flow Rate of 25 gallons per acre per day after the documented repairs and response activities were completed in 2021. The first quarter monitoring event is scheduled for March 2024.



6.0 References

- AECOM. 2009. Potential Failure Mode Analysis (PFMA) Report. DE Karn Electric Generation Facility Ash Dike Risk Assessment Essexville, Michigan. Prepared for Consumers Energy Company. October 30.
- Consumers Energy. 2017. Hydrogeological Monitoring Plan, Rev. 3. DE Karn Solid Waste Disposal Area. December 19,
- Natural Resource Technology. 2005. Phase II Groundwater Discharge Evaluation at the Consumers Energy DE Kam and JC Weadock Solid Waste Disposal Areas. September.
- TRC. 2019. 2018 Annual Groundwater Report for the DE Karn Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company. January.
- TRC. 2020. Karn Lined Impoundment Hydrogeological Monitoring Plan for the DE Karn Power Plant Lined Impoundment, Essexville, Michigan. Prepared for Consumers Energy Company. November.
- TRC. 2023. Fourth Quarter 2022 Hydrogeological Monitoring Report for the DE Karn Lined Impoundment CCR Unit, Essexville, Michigan. Prepared for Consumers Energy Company. January.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA facilities, Unified Guidance. Office of Conservation and Recovery. EPA 530/R-09-007.
- USEPA. 2015. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule. 80 Federal Register 74 (April 17, 2015), pp. 21301-21501 (80 FR 21301). April.
- USEPA. 2018. 40 CFR Part 257. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals from Electric Utilities; Amendments to the National Minimum Criteria (Phase One, Part One); Final Rule. 83 Federal Register 146 (July 30, 2018), pp. 36435-36456 (83 FR 36435). July.



Tables

Table 1

Summary of Groundwater Elevation Data DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

	тос	Ocalesia Heitat	Screen Interval	October 2, 2023			
Well Location	Elevation (ft)	Geologic Unit of Screen Interval	Elevation (ft)	Depth to Water	Groundwater Elevation		
				(ft BTOC)	(ft)		
DEK Bottom Ash Pon					1		
DEK-MW-15002	590.87	Sand	578.3 to 575.3	7.25	583.62		
DEK-MW-15005	589.72	Sand	572.3 to 567.3	10.00	579.72		
DEK-MW-15006	589.24	Sand	573.0 to 568.0	9.48	579.76		
DEK Bottom Ash Pon			T		T		
DEK-MW-18001	593.47	Sand	579.2 to 574.2	9.30	584.17		
Karn Lined Impounds			T === 0				
DEK-MW-15003	602.74	Sand	578.8 to 574.8	17.31	585.43		
OW-10	591.58	Silty Sand and Silty Clay	576.0 to 571.0	7.72	583.86		
OW-11	607.90	Silt/Fly Ash	587.5 to 582.5	22.68	585.22		
OW-12	603.10	Silty Sand	584.2 to 579.2	17.48	585.62		
DEK Nature and Exter		Cond	E76.6 to E74.6	20 50	E00 E4		
DEK-MW-15004 MW-01	611.04 597.02	Sand Sand	576.6 to 571.6 573.0 to 570.0	28.50 17.43	582.54 579.59		
MW-03	597.02	Sand		17.43	579.59		
MW-06	597.30		569.8 to 566.8 578.5 to 563.5	9.93	579.66		
MW-08	598.78	Sand and Silty Sand	580.9 to 570.9	18.43	580.35		
MW-10	596.76	Sand and Silty Clay Sand	582.5 to 572.5	17.10	579.87		
MW-12	598.60	Sand	583.9 to 573.9	18.88	579.72		
MW-14	594.37	Sand and Silty Clay	584.7 to 574.7	14.75	579.72		
MW-16	595.80	Sand and Sand/Bottom Ash	584.1 to 574.1	16.20	579.60		
MW-22	598.99	Ash/Sand	571.4 to 568.4	17.32	581.67		
MW-23	595.57	Ash/Sand	576.9 to 571.9	14.41	581.16		
DEK Static Water Lev		Asil/Sailu	370.9 10 371.9	14.41	301.10		
MW-02	597.34	Sand and Silty Clay	572.5 to 567.5	17.75	579.59		
MW-04	598.01	NR	569.5 to 564.5	18.40	579.61		
MW-17	597.91	Sand	577.0 to 574.0	13.83	584.08		
MW-18	609.22	Silty Sand and Silty Clay	575.8 to 573.8	26.18	583.04		
MW-19	597.28	NR	572.1 to 567.1	17.31	579.97		
MW-20	632.75	Sand	582.3 to 579.3	53.08	579.67		
MW-21	632.91	Sand	587.1 to 584.1	51.22	581.69		
OW-01	631.33	NR	572.5 to 567.5	51.73	579.60		
OW-02	598.01	Fly Ash	579.4 to 576.4	14.20	583.81		
OW-03	597.94	Fly Ash and Sand	573.6 to 568.6	17.60	580.34		
OW-04	590.21	Sand and Bottom/Fly Ash	579.1 to 574.1	10.58	579.63		
OW-05	593.53	Sand	576.9 to 571.9	13.61	579.92		
OW-06	603.95	NR	580.9 to 575.9	22.50	581.45		
OW-07	596.41	Ash	583.3 to 580.3	15.34	581.07		
OW-08	593.93	NR	581.0 to 576.0	11.25	582.68		
OW-09	593.45	NR	585.5 to 580.5	10.68	582.77		
OW-13	588.52	NR	579.5 to 574.5	5.00	583.52		
OW-15	587.75	NR	572.8 to 567.8	4.97	582.78		

Notes:

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

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

TOC: Top of well casing.

ft BTOC: Feet below top of well casing.

NR: Not Recorded

Table 2

Summary of Field Parameters DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

Sample Location	Sample Date	Dissolved Oxygen	Oxidation Reduction Potential	pH	Specific Conductivity	Temperature	Turbidity
DE Kama Line d Image		(mg/L)	(mV)	(SU)	(umhos/cm)	(°C)	(NTU)
DE Karn Lined Impour	nament						
DEK-MW-15003	10/4/2023	0.50	-152.1	8.2	458	20.2	5.2
DEK-MW-18001	10/4/2023	0.38	-96.0	7.4	870	14.4	2.4
KLI-PCS	10/4/2023	7.70	134.0	8.5	2,525	22.3	9.9
KLI-SCS	10/4/2023	4.60	53.8	7.4	1,919	18.8	6.6
OW-10	10/4/2023	0.20	-153.6	7.2	836	15.0	18.9
OW-11	10/4/2023	1.10	-23.2	9.8	343	15.4	5.8
OW-12	10/4/2023	0.30	-133.3	7.2	893	17.6	6.5
SW-DITCH	10/4/2023	6.80	160.0	7.8	686	20.9	7.9

Notes:

mg/L - milligram per Liter.

mV - Millivolts.

SU - Standard Units.

umhos/cm - Micromhos per centimeter.

°C - Degrees Celcius.

NTU - Nephelometric Turbidity Unit.

Table 3

Summary of Groundwater Sampling Results (Analytical) DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

					Sample Location:	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12	KLI-PCS	KLI-SCS	SW-DITCH
					Sample Date:	10/4/2023	10/4/2023	10/4/2023	10/4/2023	10/4/2023	10/4/2023	10/4/2023	10/4/2023
				MI Non-	Campio Dato.						10/ 1/2020		10/ 1/2020
Constituent	Unit	EPA MCL	MI Residential*	Residential*	MI GSI^	Upgradient	Downgr	radient	Upgradient	Downgradient		Supplemental	
Appendix III ⁽¹⁾													
Boron	ug/L	NC	500	500	4,000	716	987	1,200	3,410	1,040	2,230	601	83
Calcium	mg/L	NC	NC	NC	500EE	25	52.5	105	7.8	89	544	106	49.4
Chloride	mg/L	250**	250 ^E	250 ^E	50	58.7	69.4	73.2	57.1	56.8	50.8	55.7	71.2
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,620	< 1,000	6,150	< 1,000	< 1,000
Sulfate	mg/L	250**	250 ^E	250 ^E	500 ^{EE}	52.4	158	2.66	17.9	197	1,550	489	32.1
Total Dissolved Solids	mg/L	500**	500 ^E	500 ^E	500	284	551	580	208	646	2,450	1,390	442
pH, Field	SU	6.5 - 8.5**	6.5 - 8.5 ^E	6.5 - 8.5 ^E	6.5 - 9.0	8.2	7.4	7.2	9.8	7.2	8.5	7.4	7.8
Appendix IV ⁽¹⁾													
Antimony	ug/L	6	6.0	6.0	2.0	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1
Arsenic	ug/L	10	10	10	10	435	398	2	907	112	3	1	3
Barium	ug/L	2,000	2,000	2,000	1,200	41	155	176	25	130	106	58	58
Beryllium	ug/L	4	4.0	4.0	33	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Cadmium	ug/L	5	5.0	5.0	2.5	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	0.3	< 0.2	< 0.2
Chromium	ug/L	100	100	100	11	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1
Cobalt	ug/L	NC	40	100	100	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
Fluoride	ug/L	4,000	NC	NC	NC	< 1,000	< 1,000	< 1,000	2,620	< 1,000	6,150	< 1,000	< 1,000
Lead	ug/L	NC	4.0	4.0	14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Lithium	ug/L	NC	170	350	440	21	19	29	< 10	34	13	< 10	< 10
Mercury	ug/L	2	2.0	2.0	0.20#	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Molybdenum	ug/L	NC	73	210	120	27	9	< 5	138	14	203	9	< 5
Radium-226	pCi/L	NC	NC	NC	NC	< 0.129	0.148	< 0.192	< 0.137	0.259			
Radium-228	pCi/L	NC	NC	NC	NC	< 0.522	< 0.581	< 0.745	< 0.496	< 0.488			
Radium-226/228	pCi/L	5	NC	NC	NC	0.526	< 0.581	< 0.745	< 0.496	0.600			
Selenium	ug/L	50	50	50	5.0	< 1	< 1	2	3	< 1	5	4	< 1
Thallium	ug/L	2	2.0	2.0	2.0	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Additional MI Part 11	5 ⁽²⁾												
Iron	ug/L	300**	300 ^E	300 ^E	500,000EE	139	720	1,640	52	7,750	191	107	104
Copper	ug/L	1,000**	1,000E	1,000E	20	< 1	< 1	2	< 1	< 1	3	2	2
Nickel	ug/L	NC	100	100	120	< 2	< 2	2	< 2	< 2	5	3	2
Silver	ug/L	100**	34	98	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Vanadium	ug/L	NC	4.5	62	27	< 2	< 2	4	334	< 2	6	4	< 2
Zinc	ug/L	5,000**	2,400	5,000 ^E	260	< 10	< 10	< 10	< 10	< 10	< 10	10	< 10

Notes:

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

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

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

NC - no criteria; -- - not analyzed.

- * Michigan Part 201 Generic Drinking Water Cleanup Criteria, December 30, 2013, updated October 12, 2023.
- ** Secondary Maximum Contaminant Level (SMCL), EPA Secondary Drinking Water Regulations (SDWR) April, 2012.
- ^- Michigan Part 201 Groundwater Surface Water Interface (GSI) Criteria. Hardness-dependent criteria calculated using hardness of 258 mg CaCO3/L (average of SW-01 [Lake Huron] and SW-02 [Saginaw River] collected in April 2018) per footnote {G} of Michigan Part 201 criteria tables. Chromium GSI criterion based on hexavalent chromium per footnote {H}. GSI criterion is protective for surface water used as a drinking water source as described in footnote {X}. GSI criterion for chloride is 50 mg/L when the discharge is to the Great Lakes or connecting waters per footnote {FF}
- # If detected above 0.20 ug/L, further evaluation of low-level mercury may be necessary to evaluate the GSI pathway per Michigan Part 201 and MDEQ policy and procedure 09-014 dated June 20, 2012.
- E Criterion is the aesthetic drinking water value per footnote {E}.
- EE Criterion is based on the total dissolved solids GSI value per footnote {EE}.
- (1) 40 CFR Part 257 Appendix III Detection Monitoring Constituents and Appendix IV Assessment Monitoring Constituents.
- (2) Per Michigan Part 115 Amendment Public Act No. 640 of 2018 Section 11511a(3)(c) and 11519b(2) additional detection monitoring constituent (iron) and assessment monitoring constituents (copper, nickel, silver, vanadium, and zinc) are reported.

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

RED value indicates an exceedance of the MCL.

All metals were analyzed as total unless otherwise specified.

Table 4

Summary of Statistical Exceedances DE Karn Lined Impoundment – Hydrogeological Monitoring Program Essexville, Michigan

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

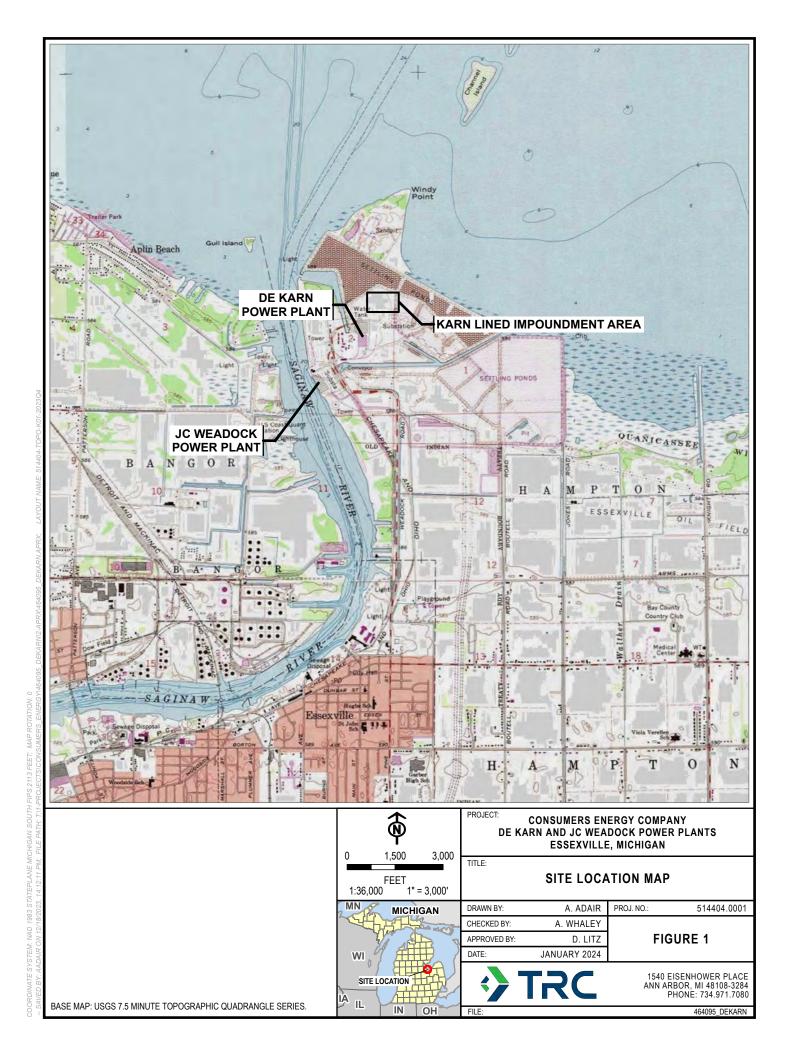
Data is in (X) ug/L or () mg/L unless otherwise stated

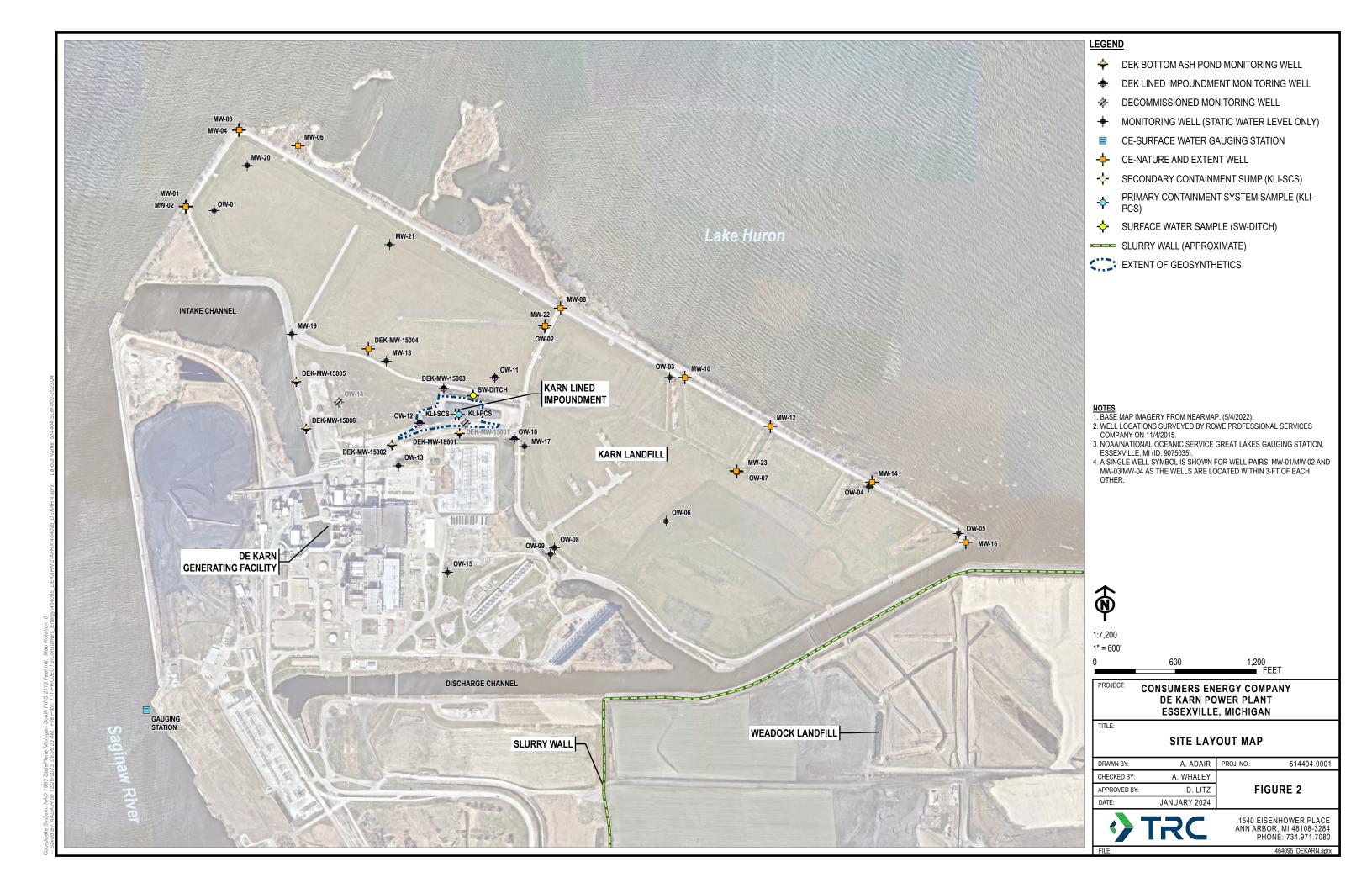
Facility: Karn Lined Impoundment – WDS# 392503

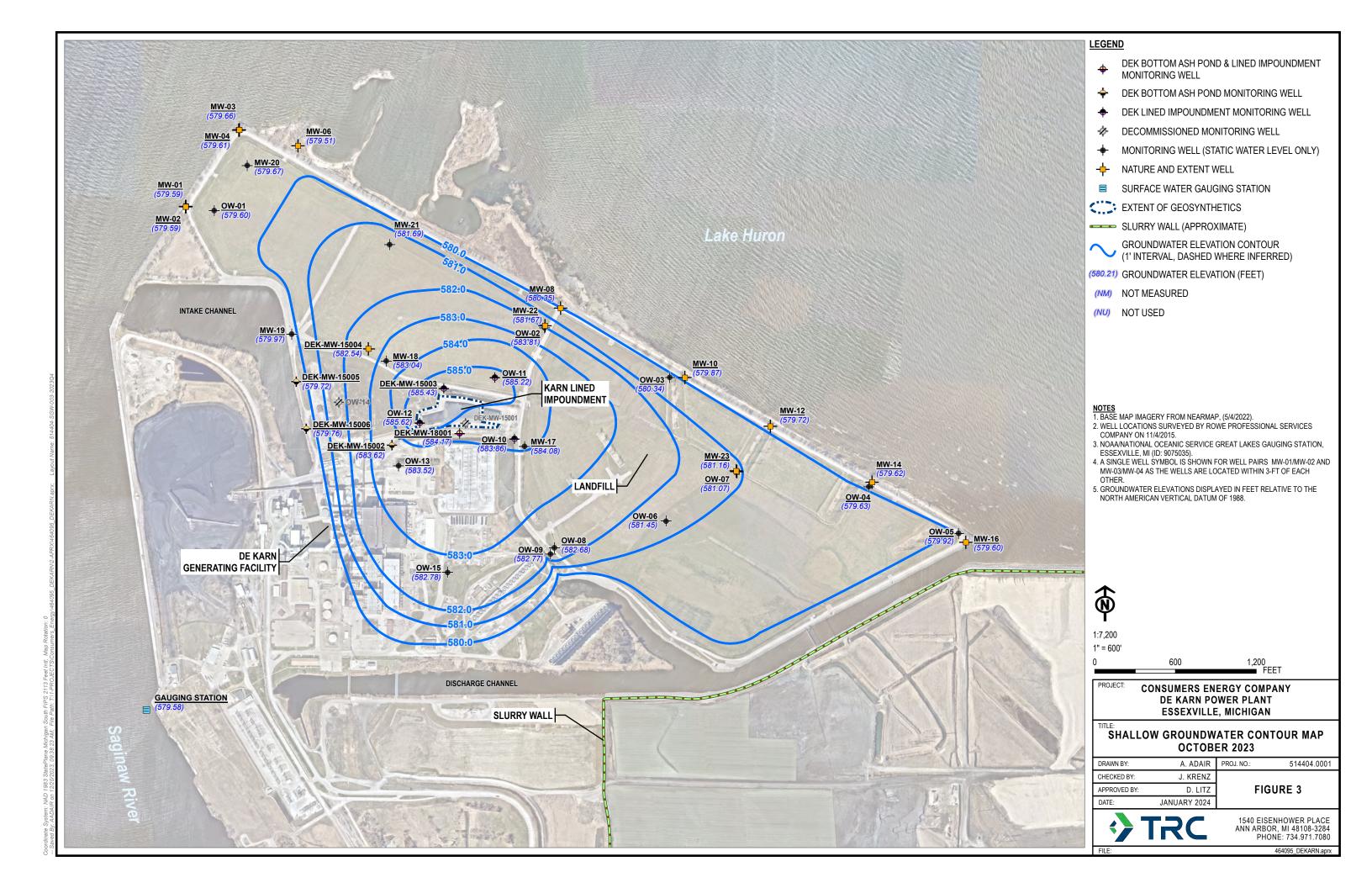
Well #	Location	Parameter	Part 201 GRCC	Statistical Limit (or 'CC' for Control Charts)	4 Qtr. 2023 (bold >201)	3 Qtr. 2023 (bold >201)	2 Qtr. 2023 (bold >201)	1 Qtr. 2023 (bold >201)			
	No Exceedances										



Figures









Appendix A Laboratory Analytical Reports



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

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 20, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN LINED IMPOUNDMENT – 2023 Q4

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0931R

TRC Environmental, Inc. conducted groundwater monitoring at the DE Karn Lined Impoundment area during the week of 10/02/2023 for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/05/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Samples for Total & Dissolved Organic Carbon have been subcontracted to Brighton Analytical LLC and the results are listed under the analyst initials "BAL". The original reports from both labs are attached. Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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 in the attached Sample Log-In Shipment Inspection Form during sample check-in. Identification of all samples included in the work order/project is provided in the sample summary section. All sample preservation and temperature upon receipt was verified by the sample custodian and confirmed to meet method requirements.

II. Methodology

Unless otherwise indicated, sample preparation and analysis was performed in accordance with the corresponding test methods from "Methods for the Determination of Inorganic Substances in Environmental Samples (EPA/600/R-93/100); SW-846, "Test Methods for Evaluating Solid Waste – Physical/Chemical Methods", USEPA (latest revisions), and Standard Methods for the Examination of Water and Wastewater, APHA-AWWA-WPCF, 22nd Edition, 2012.

III. Results/Quality Control

Analytical results for this report are presented by laboratory sample ID, container, & aliquot number. Results for the field blanks, field duplicates, and recoveries of the field matrix spike & matrix spike duplicate samples are included in the results section; 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: Q4-2023 DEK Lined Impoundment

Date Received: 10/5/2023 **Chemistry Project:** 23-0931

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0931-01	DEK-MW-15003	Groundwater	10/04/2023 13:47	DEK Lined Impoundment
23-0931-02	OW-10	Groundwater	10/04/2023 14:57	DEK Lined Impoundment
23-0931-03	OW-11	Groundwater	10/04/2023 12:24	DEK Lined Impoundment
23-0931-04	OW-12	Groundwater	10/04/2023 15:44	DEK Lined Impoundment
23-0931-05	KLI-SCS	Groundwater	10/04/2023 11:10	DEK Lined Impoundment
23-0931-06	KLI-PCS	Surface Water	10/04/2023 10:55	DEK Lined Impoundment
23-0931-07	SW-DITCH	Surface Water	10/04/2023 10:34	DEK Lined Impoundment
23-0931-08	DUP-KLI	Groundwater	10/04/2023 00:00	DEK Lined Impoundment
23-0931-09	EB-KLI	Water	10/04/2023 16:08	DEK Lined Impoundment
23-0931-10	FB-KLI	Water	10/04/2023 14:57	DEK Lined Impoundment





A CENTURY OF EXCELLENCE

Report Date: 10/20/23

Sample Site: Laboratory Project: **DEK Lined Impoundment** 23-0931

Field Sample ID: **DEK-MW-15003** Collect Date: 10/04/2023 Lab Sample ID: 23-0931-01 Collect Time: 01:47 PM

Metals by EPA 6020B: CCR	K Kule Appendix III-IV To	otal Metal	s Exp	Aliquot #: 23-0	931-01-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Arsenic	435		ug/L	1.0	10/10/2023	AB23-1010-09
Barium	41		ug/L	5.0	10/10/2023	AB23-1010-09
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	716		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Calcium	25000		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	139		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	21		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	3820		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	67		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	27		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	3710		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	51100		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 23-0	931-01-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	931-01-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	223		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	931-01-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	58700		ug/L	1000.0	10/12/2023	AB23-1011-03



10/20/23



Countries

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 DEK-MW-15003
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-01
 Collect Time:
 01:47 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aque			ieous	Aliquot #: 23-0	931-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	52400		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h),	Groundwater I	HL		Aliquot #: 23-0	931-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1830		ug/L	25.0	10/11/2023	AB23-1011-04
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	931-01-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	284		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-01-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	83400		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	83400		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-01-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	180		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B, Ac	queous			Aliquot #: 23-0	Analyst: BAL	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	3000		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5310B, Aqueous				Aliquot #: 23-0	931-01-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	3500		ug/L	1000.0	10/10/2023	AB23-1015-02



10/20/23



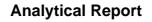
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 OW-10
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-02
 Collect Time:
 02:57 PM

Parameter(s) Antimony Arsenic Barium Beryllium	Result ND 2	Flag	Units	RL	Analysis Date	Tracking
Arsenic Barium	2					
Barium			ug/L	1.0	10/10/2023	AB23-1010-09
	176		ug/L	1.0	10/10/2023	AB23-1010-09
Bondlium	176		ug/L	5.0	10/10/2023	AB23-1010-09
Derymum	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	1200		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Calcium	105000		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	1		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	2		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	1640		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	29		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	18300		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	242		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	2		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	4820		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	2		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	65500		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	4		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueous				Aliquot #: 23-0	931-02-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2, N	03			Aliquot #: 23-0	931-02-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR Rule Analyte	List, CI, F,	SO4, Aqı	ieous	Aliquot #: 23-0	931-02-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	73200		ug/L	1000.0	10/12/2023	AB23-1011-03



10/20/23



Laboratory Project: Sample Site: **DEK Lined Impoundment** 23-0931

Field Sample ID: **OW-10** Collect Date: 10/04/2023 Lab Sample ID: 23-0931-02 Collect Time: 02:57 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot #: 23-0	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	2660		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH	3(h), Groundwate	r HL		Aliquot #: 23-0	931-02-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	5340		ug/L	25.0	10/11/2023	AB23-1011-04
Total Dissolved Solids by SM 254	0C			Aliquot #: 23-0	931-02-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	580		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-02-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	440000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	440000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-02-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	200		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310	B, Aqueous			Aliquot #: 23-0	931-02-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	7900		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM	5310B, Aqueous			Aliquot #: 23-0	931-02-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	8200		ug/L	1000.0	10/10/2023	AB23-1015-02
Mercury by EPA 7470A, Dissolved	k			Aliquot #: 23-0	931-02-C10-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/13/2023	AB23-1013-08
Metals by EPA 6020B: CCR Rule	Appendix III-IV Di	ss Metals	Ехра	Aliquot #: 23-0	931-02-C10-A02	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/13/2023	AB23-1014-01
	23-0)931R Page	8 of 63			





Report Date: 10/20/23

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0931 Collect Date: Field Sample ID: **OW-10** 10/04/2023 Lab Sample ID: 23-0931-02 Collect Time: 02:57 PM

Metals by EPA 6020B: CCF	R Rule Appendix III-IV Dis	ss Metals Expa	Aliquot #: 23-0	931-02-C10-A02	Analyst: EB
Parameter(s)	Result	Flag Units	RL	Analysis Date	Tracking
Arsenic	2	ug/L	1.0	10/13/2023	AB23-1014-01
Barium	145	ug/L	5.0	10/13/2023	AB23-1014-01
Beryllium	ND	ug/L	1.0	10/13/2023	AB23-1014-01
Boron	1280	ug/L	20.0	10/13/2023	AB23-1014-01
Cadmium	ND	ug/L	0.2	10/13/2023	AB23-1014-01
Calcium	115000	ug/L	1000.0	10/13/2023	AB23-1014-01
Chromium	ND	ug/L	1.0	10/13/2023	AB23-1014-01
Cobalt	ND	ug/L	6.0	10/13/2023	AB23-1014-01
Copper	ND	ug/L	1.0	10/13/2023	AB23-1014-01
Iron	1410	ug/L	20.0	10/13/2023	AB23-1014-01
Lead	ND	ug/L	1.0	10/13/2023	AB23-1014-01
Lithium	29	ug/L	10.0	10/13/2023	AB23-1014-01
Magnesium	18700	ug/L	1000.0	10/13/2023	AB23-1014-01
Manganese	237	ug/L	5.0	10/13/2023	AB23-1014-01
Molybdenum	ND	ug/L	5.0	10/13/2023	AB23-1014-01
Nickel	ND	ug/L	2.0	10/13/2023	AB23-1014-01
Potassium	5060	ug/L	100.0	10/13/2023	AB23-1014-01
Selenium	1	ug/L	1.0	10/13/2023	AB23-1014-01
Silver	ND	ug/L	0.2	10/13/2023	AB23-1014-01
Sodium	67300	ug/L	1000.0	10/13/2023	AB23-1014-01
Thallium	ND	ug/L	2.0	10/13/2023	AB23-1014-01
Vanadium	ND	ug/L	2.0	10/13/2023	AB23-1014-01
Zinc	ND	ug/L	10.0	10/13/2023	AB23-1014-01



10/20/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 OW-11
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-03
 Collect Time:
 12:24 PM

Metals by EPA 6020B: CCR F	Tule Appendix III-IV 10	lai Wetais		Aliquot #: 23-0	931-03-C01-A01	Analyst: El
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	1		ug/L	1.0	10/10/2023	AB23-1010-09
Arsenic	907		ug/L	1.0	10/10/2023	AB23-1010-09
Barium	25		ug/L	5.0	10/10/2023	AB23-1010-09
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	3410		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-0
Calcium	7800		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	52		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	138		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	4070		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	3		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	60500		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	334		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Tota	I, Aqueous			Aliquot #: 23-0	931-03-C01-A02	Analyst: CLI
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-0
Anions by EPA 300.0 Aqueo	us, NO2, NO3			Aliquot #: 23-0	931-03-C02-A01	Analyst: TM
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-0
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-0
Anions by EPA 300.0 CCR R	ule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	931-03-C02-A02	Analyst: KDI
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	57100		ug/L	1000.0	10/12/2023	AB23-1011-0





Report Date: 10/20/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 OW-11
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-03
 Collect Time:
 12:24 PM

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueou			Aliquot #: 23-0	Analyst: KDR	
Result	Flag	Units	RL	Analysis Date	Tracking
2620		ug/L	1000.0	10/12/2023	AB23-1011-03
17900		ug/L	1000.0	10/12/2023	AB23-1011-03
<u> 3roundwater H</u>	<u>L</u>			931-03-C03-A01	Analyst: CLE
Result	Flag	Units	RL	Analysis Date	Tracking
12000		ug/L	25.0	10/11/2023	AB23-1011-04
			Alignot #: 23-0	Q31_Q3_CQ4_AQ1	Analyst: SLK
Pocult	Elag	Unite			Tracking
	riay			-	•
208		mg/L	10.0	10/05/2023	AB23-1006-05
			Aliquot #: 23-0	931-03-C05-A01	Analyst: DLS
Result	Flag	Units	RL	Analysis Date	Tracking
95500		ug/L	10000.0	10/10/2023	AB23-1010-08
16700		ug/L	10000.0	10/10/2023	AB23-1010-08
78800		ug/L	10000.0	10/10/2023	AB23-1010-08
			Aliquot #: 23-0	931-03-C07-A01	Analyst: Merit
Result	Flag	Units	RL	Analysis Date	Tracking
ND		ug/L	20.0	10/07/2023	AB23-1009-11
ueous			Aliquot #: 23-0	931-03-C08-A01	Analyst: BAL
Result	Flag	Units	RL	Analysis Date	Tracking
6200		ug/L	1000.0	10/10/2023	AB23-1015-01
3. Aqueous			Aliquot #: 23-0	931-03-C09-A01	Analyst: BAL
Result	Flag	Units	RL	Analysis Date	Tracking
7600	•	ug/L	1000.0	10/10/2023	AB23-1015-02
	Result 2620 17900 Broundwater H Result 12000 Result 208 Result 95500 16700 78800 Result ND ueous Result 6200 3, Aqueous Result Result	Result Flag 2620 17900 Broundwater HL Result Flag 12000 Result Flag 208 Result Flag 95500 16700 78800 Result Flag ND ueous Result Flag ND ueous Result Flag 8200 Result Flag 8300	Result Flag Units 2620 ug/L 17900 ug/L Broundwater HL Result Flag Units 12000 ug/L Result Flag Units 208 mg/L Result Flag Units 95500 ug/L 16700 ug/L 78800 ug/L ND ug/L ueous Result Flag Units 6200 ug/L 3, Aqueous Flag Units Result Flag Units 6200 ug/L Units	Result Flag Units RL 1000.0 17900 ug/L 1000.0 12000 ug/L 25.0 12000 ug/L 25.0 12000 ug/L 10.0 12000 12000 ug/L 10.0 12000.0 12000 ug/L 10000.0 12000 ug/L 1000.0 12000	Result



10/20/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 OW-12
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-04
 Collect Time:
 03:44 PM

Metals by EPA 6020B: CCF	K Kule Appendix III-IV To	tal Metal	s Exp	Aliquot #: 23-0	931-04-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Arsenic	112		ug/L	1.0	10/10/2023	AB23-1010-09
Barium	130		ug/L	5.0	10/10/2023	AB23-1010-09
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	1040		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Calcium	89000		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	7750		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	34		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	30700		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	206		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	14		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	6210		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	53400		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 23-0	931-04-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aque	eous, NO2, NO3			Aliquot #: 23-0	931-04-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 23-0	931-04-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	56800		ug/L	1000.0	10/12/2023	AB23-1011-03





Report Date: 10/20/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

 Field Sample ID:
 OW-12
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0931-04
 Collect Time:
 03:44 PM

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqueous		Aliquot #: 23-0	Analyst: KDR			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	197000		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h), Groundwate	r HL		Aliquot #: 23-0	931-04-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	698		ug/L	25.0	10/11/2023	AB23-1011-04
Total Dissolved Solids by SM 25400				Aliquot #: 23-0	931-04-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	646		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-04-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	249000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	249000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-04-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B	, Aqueous			Aliquot #: 23-0	931-04-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	1600		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 53	310B, Aqueous			Aliquot #: 23-0	931-04-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	2800		ug/L	1000.0	10/10/2023	AB23-1015-02

Analytical Report

Report Date:

10/20/23

12/14/23R



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: KLI-SCS Collect Date: 10/04/2023
Lab Sample ID: 23-0931-05 Collect Time: 11:10 AM

Metals by EPA 6020B: CCR	R Rule Appendix III-IV To	tal Metals	s Exp	Aliquot #: 23-0	931-05-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Arsenic	1		ug/L	1.0	10/10/2023	AB23-1010-09	
Barium	58		ug/L	5.0	10/10/2023	AB23-1010-09	
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Boron	601		ug/L	20.0	10/10/2023	AB23-1010-09	
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09	
Calcium	106000		ug/L	1000.0	12/13/2023	AB23-1010-09	
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09	
Copper	2		ug/L	1.0	10/10/2023	AB23-1010-09	
Iron	107		ug/L	20.0	10/10/2023	AB23-1010-09	
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Lithium	ND		ug/L	10.0	10/10/2023	AB23-1010-09	
Magnesium	36300		ug/L	1000.0	12/13/2023	AB23-1010-09	
Manganese	10		ug/L	5.0	10/10/2023	AB23-1010-09	
Molybdenum	9		ug/L	5.0	10/10/2023	AB23-1010-09	
Nickel	3		ug/L	2.0	10/10/2023	AB23-1010-09	
Potassium	1860		ug/L	100.0	12/13/2023	AB23-1010-09	
Selenium	4		ug/L	1.0	10/10/2023	AB23-1010-09	
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09	
Sodium	381000		ug/L	1000.0	12/13/2023	AB23-1010-09	
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09	
Vanadium	4		ug/L	2.0	10/10/2023	AB23-1010-09	
Zinc	10		ug/L	10.0	10/10/2023	AB23-1010-09	
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 23-0	931-05-C01-A02	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01	
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	931-05-C02-A01	Analyst: TMR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	1680		ug/L	100.0	10/05/2023	AB23-1006-01	
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01	
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ieous	Aliquot #: 23-0	931-05-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	55700		ug/L	1000.0	10/12/2023	AB23-1011-03	





Report Date: 10/20/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: KLI-SCS Collect Date: 10/04/2023 Lab Sample ID: 23-0931-05 Collect Time: 11:10 AM

Anions by EPA 300.0 CCR Rule Analyte	List, CI, F, SO	4, Aqւ	ieous	Aliquot #: 23-0	931-05-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	489000		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h),	Aliquot #: 23-0	931-05-C03-A01	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	10/11/2023	AB23-1011-04
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	931-05-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	1390		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-05-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
. ,		гіау			•	J
Alkalinity Total	573000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	573000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-05-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B, Aq	ueous			Aliquot #: 23-0	931-05-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	2700		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5310	B, Aqueous			Aliquot #: 23-0	931-05-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	1800		ug/L	1000.0	10/10/2023	AB23-1015-02

Analytical Report

Report Date:

10/20/23

12/14/23R



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: KLI-PCS Collect Date: 10/04/2023
Lab Sample ID: 23-0931-06 Collect Time: 10:55 AM

Matrix: Surface Water

Metals by EPA 6020B: CCR	Rule Appendix III-IV To	tal Metals	s Exp	Aliquot #: 23-0	931-06-C01-A01	Analyst: EB	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Arsenic	3		ug/L	1.0	10/10/2023	AB23-1010-09	
Barium	106		ug/L	5.0	10/10/2023	AB23-1010-09	
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Boron	2230		ug/L	20.0	10/10/2023	AB23-1010-09	
Cadmium	0.3		ug/L	0.2	10/10/2023	AB23-1010-09	
Calcium	544000		ug/L	1000.0	12/13/2023	AB23-1010-09	
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09	
Copper	3		ug/L	1.0	10/10/2023	AB23-1010-09	
Iron	191		ug/L	20.0	10/10/2023	AB23-1010-09	
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09	
Lithium	13		ug/L	10.0	10/10/2023	AB23-1010-09	
Magnesium	19100		ug/L	1000.0	12/13/2023	AB23-1010-09	
Manganese	7		ug/L	5.0	10/10/2023	AB23-1010-09	
Molybdenum	203		ug/L	5.0	10/10/2023	AB23-1010-09	
Nickel	5		ug/L	2.0	10/10/2023	AB23-1010-09	
Potassium	25800		ug/L	100.0	12/13/2023	AB23-1010-09	
Selenium	5		ug/L	1.0	10/10/2023	AB23-1010-09	
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09	
Sodium	117000		ug/L	1000.0	12/13/2023	AB23-1010-09	
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09	
Vanadium	6		ug/L	2.0	10/10/2023	AB23-1010-09	
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09	
Mercury by EPA 7470A, To	tal, Aqueous			Aliquot #: 23-0	931-06-C01-A02	Analyst: CLE	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01	
Anions by EPA 300.0 Aque	ous, NO2, NO3			Aliquot #: 23-0	931-06-C02-A01	Analyst: TMR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-01	
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01	
Anions by EPA 300.0 CCR	Rule Analyte List, Cl, F,	SO4, Aqı	ueous	Aliquot #: 23-0	931-06-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking	
Chloride	50800		ug/L	1000.0	10/12/2023	AB23-1011-03	





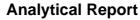
Report Date: 10/20/23

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: KLI-PCS Collect Date: 10/04/2023 Lab Sample ID: 23-0931-06 Collect Time: 10:55 AM

Matrix: Surface Water

nions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous		ieous	Aliquot #: 23-0	931-06-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	6150		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	1550000		ug/L	1000.0	10/14/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h), Groundwateı	r HL		Aliquot #: 23-0	931-06-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	ND		ug/L	25.0	10/12/2023	AB23-1012-05
Total Dissolved Solids by SM 25400				Aliquot #: 23-0	931-06-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	2450		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-06-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	54600		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	54600		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-06-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B	, Aqueous			Aliquot #: 23-0	931-06-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	4800		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 53	310B, Aqueous			Aliquot #: 23-0	931-06-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	5900		ug/L	1000.0	10/10/2023	AB23-1015-02





A CENTURY OF EXCELLENCE

Report Date: 10/20/23

Sample Site: Laboratory Project: **DEK Lined Impoundment** 23-0931

Collect Date: Field Sample ID: SW-DITCH 10/04/2023 Lab Sample ID: 23-0931-07 Collect Time: 10:34 AM

Matrix: Surface Water

Parameter(s)ResultAntimonyNDArsenic3Barium58BerylliumNDBoron83CadmiumNDCalcium49400	ug/ ug/ ug/ ug/ ug/ ug/	/L 1.0 /L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0	Analysis Date 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	Tracking AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Arsenic 3 Barium 58 Beryllium ND Boron 83 Cadmium ND	ug/ ug/ ug/ ug/ ug/	/L 1.0 /L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Barium 58 Beryllium ND Boron 83 Cadmium ND	ug/ ug/ ug/ ug/ ug/	/L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09
Beryllium ND Boron 83 Cadmium ND	ug/ ug/ ug/ ug/	/L 1.0 /L 20.0 /L 0.2 /L 1000.0	10/10/2023 10/10/2023 10/10/2023	AB23-1010-09 AB23-1010-09
Boron 83 Cadmium ND	ug/ ug/ ug/	/L 20.0 /L 0.2 /L 1000.0	10/10/2023 10/10/2023	AB23-1010-09
Cadmium ND	ug/ ug/ ug/	/L 0.2 /L 1000.0	10/10/2023	
	ug/	/L 1000.0		AB23-1010-09
Calcium 49400	ug/		10/11/2023	
			10/11/2023	AB23-1010-09
Chromium ND		/L 1.0	10/10/2023	AB23-1010-09
Cobalt ND	ug/	/L 6.0	10/10/2023	AB23-1010-09
Copper 2	ug/	/L 1.0	10/10/2023	AB23-1010-09
Iron 104	ug/	/L 20.0	10/10/2023	AB23-1010-09
Lead ND	ug/	/L 1.0	10/10/2023	AB23-1010-09
Lithium ND	ug/	/L 10.0	10/10/2023	AB23-1010-09
Magnesium 17800	ug/	/L 1000.0	10/11/2023	AB23-1010-09
Manganese 186	ug/	/L 5.0	10/10/2023	AB23-1010-09
Molybdenum ND	ug/	/L 5.0	10/10/2023	AB23-1010-09
Nickel 2	ug/	/L 2.0	10/10/2023	AB23-1010-09
Potassium 2760	ug/	/L 100.0	10/11/2023	AB23-1010-09
Selenium ND	ug/	/L 1.0	10/10/2023	AB23-1010-09
Silver ND	ug/	/L 0.2	10/10/2023	AB23-1010-09
Sodium 38200	ug/	/L 1000.0	10/11/2023	AB23-1010-09
Thallium ND	ug/	/L 2.0	10/10/2023	AB23-1010-09
Vanadium ND	ug/	/L 2.0	10/10/2023	AB23-1010-09
Zinc ND	ug/	/L 10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueous		Aliquot #: 23-	0931-07-C01-A02	Analyst: CLE
Parameter(s) Result	Flag U	Inits RL	Analysis Date	Tracking
Mercury ND	ug/	/L 0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2, NO3		Aliquot #: 23-	0931-07-C02-A01	Analyst: TMR
Parameter(s) Result	Flag U	Inits RL	Analysis Date	Tracking
Nitrate 399	ug/	/L 100.0	10/05/2023	AB23-1006-01
Nitrite ND	ug/	/L 100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO	4, Aqueoı	us Aliquot #: 23-	0931-07-C02-A02	Analyst: KDR
Parameter(s) Result	Flag U	Inits RL	Analysis Date	Tracking
Chloride 71200	ug/	/L 1000.0	10/12/2023	AB23-1011-03



10/20/23



Count on Us®

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: SW-DITCH
Lab Sample ID: 23-0931-07

Collect Date: 10/04/2023
Collect Time: 10:34 AM

Matrix: Surface Water

Anions by EPA 300.0 CCR Rule Analyt	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	931-07-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	32100		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h),	Groundwate	r HL		Aliquot #: 23-0	931-07-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	475		ug/L	25.0	10/12/2023	AB23-1012-05
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	931-07-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	442		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-07-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	209000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	209000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-07-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B, A	queous			Aliquot #: 23-0	931-07-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	6200		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5310	B, Aqueous			Aliquot #: 23-0	931-07-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	7200		ug/L	1000.0	10/10/2023	AB23-1015-02

10/20/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: DUP-KLI Collect Date: 10/04/2023
Lab Sample ID: 23-0931-08 Collect Time: 12:00 AM

Parameter(s) Result Antimony ND Arsenic 116 Barium 130 Beryllium ND Boron 991 Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33	Flag	Units ug/L RL 1.0 1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 100.0 10.0 1000.0 5.0	Analysis Date 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/11/2023	AB23-1010-09	
Arsenic 116 Barium 130 Beryllium ND Boron 991 Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.0 5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023	AB23-1010-09
Barium 130 Beryllium ND Boron 991 Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	5.0 1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023	AB23-1010-09
Beryllium ND Boron 991 Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.0 20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023	AB23-1010-09
Boron 991 Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	20.0 0.2 1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09
Cadmium ND Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	0.2 1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Calcium 87400 Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1000.0 1.0 6.0 1.0 20.0 1.0 10.0	10/11/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Chromium ND Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L ug/L	1.0 6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Cobalt ND Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L ug/L	6.0 1.0 20.0 1.0 10.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Copper ND Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L	1.0 20.0 1.0 10.0 1000.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Iron 7630 Lead ND Lithium 33		ug/L ug/L ug/L ug/L ug/L	20.0 1.0 10.0 1000.0	10/10/2023 10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09
Lead ND Lithium 33		ug/L ug/L ug/L ug/L	1.0 10.0 1000.0	10/10/2023 10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09
Lithium 33		ug/L ug/L ug/L	10.0 1000.0	10/10/2023 10/11/2023	AB23-1010-09 AB23-1010-09
		ug/L ug/L	1000.0	10/11/2023	AB23-1010-09
		ug/L			
Magnesium 31200		-	5.0	10/10/2023	1000 1010 00
Manganese 185		ua/l			AB23-1010-09
Molybdenum 14		~g/ =	5.0	10/10/2023	AB23-1010-09
Nickel 2		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium 5250		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium ND		ug/L	1.0	10/10/2023	AB23-1010-09
Silver ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium 53800		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium ND		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueous			Aliquot #: 23-0	931-08-C01-A02	Analyst: CLE
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Mercury ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2, NO3			Aliquot #: 23-0	931-08-C02-A01	Analyst: TMF
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite ND		ug/L	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, S	04, Aqı	ieous	Aliquot #: 23-0	931-08-C02-A02	Analyst: KDF
Parameter(s) Result	Flag	Units	RL	Analysis Date	Tracking
Chloride 57000		ug/L	1000.0	10/12/2023	AB23-1011-03



10/20/23



Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: DUP-KLI Collect Date: 10/04/2023
Lab Sample ID: 23-0931-08 Collect Time: 12:00 AM

Anions by EPA 300.0 CCR Rule Analyt)4, Αqι	ieous	Aliquot #: 23-0	931-08-C02-A02	Analyst: KDR	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/12/2023	AB23-1011-03
Sulfate	198000		ug/L	1000.0	10/12/2023	AB23-1011-03
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	931-08-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	637		ug/L	25.0	10/12/2023	AB23-1012-05
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	931-08-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	674		mg/L	10.0	10/05/2023	AB23-1006-05
Alkalinity by SM 2320B				Aliquot #: 23-0	931-08-C05-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	253000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Bicarbonate	253000		ug/L	10000.0	10/10/2023	AB23-1010-08
Alkalinity Carbonate	ND		ug/L	10000.0	10/10/2023	AB23-1010-08
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-08-C07-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B, Ac	_l ueous			Aliquot #: 23-0	931-08-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	1600		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5310	B, Aqueous			Aliquot #: 23-0	931-08-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	1800		ug/L	1000.0	10/10/2023	AB23-1015-02



10/20/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: EB-KLI Collect Date: 10/04/2023
Lab Sample ID: 23-0931-09 Collect Time: 04:08 PM

Matrix: Water

Metals by EPA 6020B: CCR Rule App	endix III-IV To	otal Metals	s Exp	Aliquot #: 23-0	931-09-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Arsenic	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Barium	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	ND		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Calcium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	ND		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	ND		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueo	us			Aliquot #: 23-0	931-09-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2,	Anions by EPA 300.0 Aqueous, NO2, NO3			Aliquot #: 23-0	931-09-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrogen-Ammonia by SM4500NH3(h)), Groundwate	er HL		Aliquot #: 23-0	931-09-C03-A01	Analyst: CLE
	Desuit	Floor	11	DI	Analysis Data	Tracking
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



Analytical Report

Report Date: 10/20/23

Collect Time:

12/14/23R

04:08 PM

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

23-0931-09

Laboratory Project: 23-0931 Collect Date: Field Sample ID: EB-KLI 10/04/2023

Matrix: Water

Lab Sample ID:

Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-09-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310	OB, Aqueous			Aliquot #: 23-0	931-09-C05-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	ND		ug/L	1000.0	10/11/2023	AB23-1015-01R
Dissolved Organic Carbon by SM	l 5310B, Aqueous			Aliquot #: 23-0	931-09-C06-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	ND		ug/L	1000.0	10/11/2023	AB23-1015-02R



10/20/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment** Laboratory Project: **23-0931**

Field Sample ID: FB-KLI Collect Date: 10/04/2023
Lab Sample ID: 23-0931-10 Collect Time: 02:57 PM

Matrix: Water

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	otal Metals	s Exp	Aliquot #: 23-0	931-10-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Arsenic	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Barium	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Beryllium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Boron	ND		ug/L	20.0	10/10/2023	AB23-1010-09
Cadmium	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Calcium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Chromium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Cobalt	ND		ug/L	6.0	10/10/2023	AB23-1010-09
Copper	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Iron	ND		ug/L	20.0	10/10/2023	AB23-1010-09
Lead	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Lithium	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Magnesium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Manganese	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Molybdenum	ND		ug/L	5.0	10/10/2023	AB23-1010-09
Nickel	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Potassium	ND		ug/L	100.0	10/11/2023	AB23-1010-09
Selenium	ND		ug/L	1.0	10/10/2023	AB23-1010-09
Silver	ND		ug/L	0.2	10/10/2023	AB23-1010-09
Sodium	ND		ug/L	1000.0	10/11/2023	AB23-1010-09
Thallium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Vanadium	ND		ug/L	2.0	10/10/2023	AB23-1010-09
Zinc	ND		ug/L	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	931-10-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	ND		ug/L	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2, I	NO3			Aliquot #: 23-0	931-10-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrite	ND		ug/L	100.0	10/05/2023	AB23-1006-01
Nitrogen-Ammonia by SM4500NH3(h),	Groundwate	er HL		Aliquot #: 23-0	931-10-C03-A01	Analyst: CLE
				ъ.	Analysis Data	To a state of
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking



Analytical Report

Report Date: 10/20/23

12/14/23R

Laboratory Services A CENTURY OF EXCELLENCE

Sample Site: **DEK Lined Impoundment**

Laboratory Project: 23-0931 Collect Date: Field Sample ID: FB-KLI 10/04/2023 Lab Sample ID: 23-0931-10 Collect Time: 02:57 PM

Matrix: Water

Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	931-10-C04-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 531		Aliquot #: 23-0	931-10-C05-A01	Analyst: BAL		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	ND		ug/L	1000.0	10/11/2023	AB23-1015-01R
Dissolved Organic Carbon by SM 5310B, Aqueous				Aliquot #: 23-0	931-10-C06-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	ND		ug/L	1000.0	10/11/2023	AB23-1015-02R



Analytical Report

Report Date: 10/20/23

Data Qualifiers	Exception Summary
	No exceptions occurred.

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

General Standard Operating Procedure

TITLE: SAMPLE LOG-IN - SHIPMENT INSPECTION FORM

Project Log-In Number:	23-043	1				
Inspection Date: 10.00	5.23	_ '	Inspection By	: LMO		×
Sample Origin/Project Na	me: Q4-2	023 DE	k Lined	Impor	ondmen	+
Shipment Delivered By: E	Inter the type of	shipment car	rier.			
PonyOther/Hand Carry (orne
Tracking Number:	and the same of th				ned: Yes	
Shipping Containers: Ente	er the type and	number of shi	pping containers	received.		
Cooler *		ox		se	Envelope	/Mailer
Loose/Unpackaged						
Condition of Shipment: B	nter the as-rece	ived condition	n of the shipment	container.		
Damaged Shipmen	t Observed: No	one ×	Dente	ed	Leak	ting
Other						
Enclosed Documents: Ent					Other	
Temperature of Container						
As-Received Temp					e: Yes X N	o
M&TÉ # and Expi				- 40-44-01-00-0		
				. 45	2.4	
Number and Type of Cont						
Container Type	Water	Soil	Other	-	Broken	Leaking
TUO A CHO T CO.	IL) IL					-
VOA (40mL or 60n						
Quart/Liter (g/p)	iar)					
			-		_	
Quart/Liter (g/p) 9-oz (amber glass j						
Quart/Liter (g/p) 9-oz (amber glass j 2-oz (amber glass) 125 mL (plastic) 24 mL vial (glass)	<u> 41 </u>				\equiv	
Quart/Liter (g/p) 9-oz (amber glass j 2-oz (amber glass) 125 mL (plastic)						

pH strip Lof #: 205522 exp. 2.15.25

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

135 WEST TRAIL ST., JACKSON, MI 49201 . (517) 788-125

Page ____ of ___

SAMPLING SITE CUSTOMER			PROJECT NUMBER: SAP CC or WO#:					1	NA	~~											
Q4-2023 DEK Lined Impoundment SAMPLING TEAM:		23-0931	REQUESTE	REQUESTER: Harold Register									st if A	QA REQUIREMENT:							
		TURNAROUND TIME REQUIRED.														□ NPDES					
			□ 24 HR □ 48 HR □ 3 DAYS □ STANDARD Ø OTHER													5	SINI				
SEND REPORT TO:	Joseph Firlit			email:	phone:												=	arbor	Metals	☐ ISO 17025	
COPY TO Harold Register TRC LAB SAMPLE COLLECTION Z		MATRIX CODES GW = Groundwater OX = Other WW = Wastewater SL = Sludge W = Water / Aqueous Liquid A = Air		CONTAINERS											Total Organic Carbon	Dissolved Organic Carbon	-	☐ 10 CFR 50 APP. B☐ INTERNAL INFO			
				PRESERVATIVE					stals								المحار				
		KIN	S = Soil / General Solid WP = Wipe O = Oil WT = General Waste					= _	Total Metals	Anions	Ammonia		Alkalinity	ide	Org	olved	Sohed	□ OTHER			
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	OCATION	TOTAL	None HINO, H-SO,	NaO N	E	MeOH	Tota	Ani	Ann	TDS	Alka	Sulfide	Tota	Diss	ä	REMARKS	
23-0931-01	10-4-23	1347	GW	DEK-MW-15003		9	4	1 1	1	2		x	X	x	X	x	X	x	X		
-02	10-4-23	1457	GW	OW-10		12	4	7	1	2		x	X	X	X	x	X	x	x	X	
-03	10-4-23	1229	GW	OW-11		9	4	1 1	1	2		x	x	x	x	x	x	x	x		
-04	10-4-23	1544	GW	OW-12		9	4	1 1	1	2		X	x	x	X	X	X	X	X		
-05	10-4-23	mo	W	KLI-SCS		9	4	1 1	1	2		x	x	X	x	X	X	x	X		
-06	10-4-23	1055	SW	KLI-PCS		9	4	1 1	1	2		x	x	X	x	N.	x	X	X		
-07	N-4-23	1034	sw	SW-DITCH		9	4	1 1	1	2		X	X	x	x	X	X	X	x		
-08	10-4-23	-	GW	DUP-KLI		9	4	1 1	1	2		x	x	X	X	x	x	X.	x		
-09	10-4-23	1608	W	EB-KLI		6	1	1 1	1	2		x	x	x			x	x	X		
-10	10-4-23	1457	W	FB-KLI		6	1	1 1	1	2		x	X	X			x	x	x		
							Ш														
ELINQUISHED BY	2		O-5	-27/0730 T	ECEIVED BY:							CO	MMI	NIS							
PLINGLISHED BY	7	1	DATE	TME	ECEIVED BY												5 · C				LS 0 28757



2105 Pless Drive Brighton, Michigan 48114 Phone (810)229-7575 Fax (810)229-8650 E-mail bai-brighton@sbcglobal.net

December 07, 2023

Consumers Energy Company 135 W. Trail St. Jackson, MI 49201

Subject: Q4-2023 DEK Lined Impoundment

23-0931

Dear: Mr. Blaj

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 10/06/2023 for the above mentioned project. NELAP/TNI Accredited Analysis and EGLE Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 92713 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely, Brighton Analytical, L.L.C.







2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number: 927

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03410

Project Number: 23-0931

Sample ID: 23-0931-01 DEK-MW-15003 Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 3500 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 3000 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date:

12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03411

Project Number: 23-0931

23-0931-02 OW-10

Sample ID: Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 8200 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 7900 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023

12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

Report Date:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03412

Project Number: 23-0931

Sample ID: 23-0931-03 OW-11

Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 7600 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 6200 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03413

Project Number: 23-0931

Sample ID: 23-0931-04 OW-12 Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 2800 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 1600 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number: 92

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03414

Project Number: 23-0931

Sample ID: 23-0931-05 KLI-SCS Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 1800 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 2700 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date 12/7/2023



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03415

Project Number: 23-0931

Sample ID: 23-0931-06 KLI-PCS Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 5900 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 4800 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03416

Project Number: 23-0931

Sample ID: 23-0931-07 SW-DITCH Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 7200 1000 SM5310B RG 10/10/2023 ug/L Total Organic Carbon 6200 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number:

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03417

Project Number: 23-0931

Sample ID: 23-0931-08 DUP-KLI

Analysis DL Date Result Units **Method Reference** Analyst 1000 10/10/2023

Organic Analysis

Dissolved Organic Carbon Total Organic Carbon

Parameters

1800 1600 ug/L ug/L 1000

SM5310B SM5310B

RG RG

10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date



2105 Pless Drive
Brighton, Michigan 48114
Phone: (810)229-7575 (810)229-8650
e-mail:bai-brighton@sbcglobal.net
EGLE Certified #9404
NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number: 92713

713 Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID: **CU03418**

Project Number: 23-0931

Sample ID: 23-0931-09 EB-KLI Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 1000 SM5310B RG 10/11/2023 Not detected ug/L ug/L Total Organic Carbon Not detected 1000 SM5310B RG 10/11/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

•

Date



2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 12/07/2023

To:

Consumers Energy Company

135 W. Trail St. Jackson, MI 49201

BA Report Number: 92

92713

Project Name:

Q4-2023 DEK Lined Impoundment

BA Sample ID:

CU03419

Project Number: 23-0931

Sample ID: 23-0931-10 FB-KLI Analysis DL Date **Parameters** Result Units **Method Reference** Analyst **Organic Analysis** Dissolved Organic Carbon 1000 SM5310B RG 10/11/2023 Not detected ug/L ug/L Total Organic Carbon Not detected 1000 SM5310B RG 10/11/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

|

Date

CHAIN OF CUSTODY

Consumers Energy

Count on Us*

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES
135 WEST TRAIL ST., JACKSON, MI 49201 · (517) 788-1251

of Page

SAMPLING SITE / CUSTOMER:	USTOMER			PROJECT NUMBER:	SAP CC or WO#:	:#:			AN	ANAL YSIS REQUESTED	OA BEOURBEMENT.
Q4-2023 DEK Lined Impoundment	d Impoundment			23-0931	REQUESTER: Emil Blaj	Emil Bla	15		(Attach	(Attach List if More Space is Needed)	QA KEQUINEMENT.
SAMPLING TEAM:				UND TIME		-					□ NPDES
				☐ 24 HR ☐ 48 HR ☐ 3 DAYS	S SI ANDARD U OI HER	IEK			u		INI 🗆
SEND REPORT TO:	Emil Blaj			email: Emil.Blaj@cmsenergy.com	n phone:						□ ISO 17025
COPY TO:				MATRIX CODES: GW = Groundwater OX	= Other	00	CONTAINERS	odae,			☐ 10 CFR 50 APP. B
					= Sludge		PRESERVATIVE				☐ INTERNAL INFO
LAB	SAMPLE COLLECTION	ECTION		S = Soil / General Solid WP O = Oil WT	WP = Wipe WT = General Waste		H	-	olved		□ отнек
SAMPLE ID	DATE	TIME	TAM	FIELD SAMPLE ID.	ID / LOCATION	Mone	HCI M ⁹ O H ³ 2C HMC	OsM sdrO stoT		2	REMARKS
23-0931-01	10/04/2023	1347	GW	DEK-MW-15003		2	2	×	×	83410	
3-093	10/04/2023	1457	GW	OW-10		2	2	×	×	11148	
1R Pa	10/04/2023	1224	GW	OW-11		2	2	×	×	3412	
**************************************	10/04/2023	1544	GW	OW-12		2	7	×	×	3413	
50 of 63	10/04/2023	1110	3	KLI-SCS		2	2	×	×	3414	
90-	10/04/2023	1055	SW	KLI-PCS		2	2	×	×	3415	
-07	10/04/2023	1034	SW	SW-DITCH		2	2	×	×	3416	
80-	10/04/2023	÷	GW	DUP-KLI		2	2	×	×	3417	
60-	10/04/2023	1608	W	EB-KLI		2	2	×	×	3418	
-10	10/04/2023	1457	×	FB-KLI		2	2	×	×	3419	
RELINQUISHED BY:			DATE/TIME:	TIME	RECEIVED BY:				COMMENTS:	TS:	
Lecond	Ores	. 4	91	16.00.73 1544	CIN Man	(Д	PR #23101291	1291	
RELINQUISHED BY:			DATE/TIME:	TIME:	RECEIVED BY:			R	eceived o	Received on Ice Yes No M&TE#:	#:

Cal, Due Date:

Received on Ice May I No
Temperature: 6 0 °C

DATE/TIME:

RELINQUISHED BY:



BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY CONTROL

Analyst:	RG		Parameter:	тос	
Analysis Date:	10/10/2023	Met	hod Reference:	EPA 415.1/SM5310B/9060	
		SPIKE - ACC	URACY		
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03405	TV=10000	ND	94/95	80 - 120	ND
	,				
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03405	9400	9500	1.10	<_20	
		MISCELLA	NEOUS		
		Standard ID#	%Recoveries		
ndependent Seconda	ary Reference Material:	WP-337	99		
Method Standard (La	ab. Control Spike):	#3046.8	90		
COMMENTS:					

23-0931R Page 42 of 63

Analyst: _	RG		Parameter:	DOC	-
Analysis Date:	10/10/2023	Met	hod Reference:	EPA 415.1/\$M5310B/9060	<u>)</u>
		SPIKE - ACC	URACY		
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03405	TV=10000	ND	95/95	80 - 120	ND
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03405	13400	13400	0.00	≤ 20	
		MISCELLA	NEOUS		
		Standard ID#	%Recoveries		
dependent Seconda	ry Reference Material:	WP-337	99		
ethod Standard (La	ıb. Control Spike):	#3046.8	90		
COMMENTS:					

23-0931R Page 43 of 63

Analyst:	RG	Parameter:	DOC
Analysis Date:	10/11/2023	Method Reference:	EPA 415.1/SM5310B/9060

		SPIKE - ACC	URACY		
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03422	TV=10000	4400	93/95	80 - 120	ND
				41	
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03422	13700	13900	1.40	<u><</u> 20	
		MISCELLA	NEOUS		
		Standard ID #	%Recoveries		
Independent Second	ary Reference Material:	WP-337	101		
Method Standard (L	ab. Control Spike):	#3046.8	98		

COMMENTS:		
	The state of the s	

Analyst: _	RG	Parameter:	тос
Analysis Date:	10/11/2023	Method Reference:	EPA 415.1/SM5310B/9060

SPIKE - ACCURACY					
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03422	TV=10000	4000	92/89	80 - 120	ND
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03422	13200	12900	2.30	<u>< 2</u> 0	
MISCELLANEOUS					
		Standard ID#	%Recoveries		
Independent Seconda	ry Reference Material:	WP-337	101		
Method Standard (La	b. Control Spike):	#3046.8	98		

COMMENTS:	*	



Report ID: S54196.01(01) Generated on 10/09/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S54196.01-S54196.10

Project: 23-0931 PR#23101280 Collected Date(s): 10/04/2023

Submitted Date/Time: 10/06/2023 08:15

Sampled by: Unknown P.O. #: 44001140900

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Accreditations (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Accreditations

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
р	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
х	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0931 PR#23101280 2/3a@@34 RofPla5ge 49 of 63

Generated on 10/09/2023 Report ID: S54196.01(01)



Sample Summary (10 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S54196.01	23-0931-01 (DEK-MW-15003)	Groundwater	10/04/23 13:47
S54196.02	23-0931-02 (OW-10)	Groundwater	10/04/23 14:57
S54196.03	23-0931-03 (OW-11)	Groundwater	10/04/23 12:29
S54196.04	23-0931-04 (OW-12)	Groundwater	10/04/23 15:44
S54196.05	23-0931-05 (KLI-SCS)	Groundwater	10/04/23 11:10
S54196.06	23-0931-06 (KLI-PCS)	Groundwater	10/04/23 10:55
S54196.07	23-0931-07 (SW-DITCH)	Groundwater	10/04/23 10:34
S54196.08	23-0931-08 (DUP-KLI)	Groundwater	10/04/23 00:01
S54196.09	23-0931-09 (EB-KLI)	Groundwater	10/04/23 16:08
S54196.10	23-0931-10 (FB-KLI)	Groundwater	10/04/23 14:51



Lab Sample ID: S54196.01

Sample Tag: 23-0931-01 (DEK-MW-15003) Collected Date/Time: 10/04/2023 13:47

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:18, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.18	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.02

Sample Tag: 23-0931-02 (OW-10) Collected Date/Time: 10/04/2023 14:57

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:20, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.20	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.03

Sample Tag: 23-0931-03 (OW-11) Collected Date/Time: 10/04/2023 12:29

Matrix: Groundwater COC Reference:

Sample Containers

Type Preservative(s) Refrigerated? Arrival Temp. (C) Thermometer # 1 125ml Plastic NaOH/Zn Acetate Yes 6.3 IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:22, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.04

Sample Tag: 23-0931-04 (OW-12) Collected Date/Time: 10/04/2023 15:44

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Retrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:24, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.05

Sample Tag: 23-0931-05 (KLI-SCS)
Collected Date/Time: 10/04/2023 11:10

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Retrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:26, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.06

Sample Tag: 23-0931-06 (KLI-PCS)
Collected Date/Time: 10/04/2023 10:55

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:28, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.07

Sample Tag: 23-0931-07 (SW-DITCH)
Collected Date/Time: 10/04/2023 10:34

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:30, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.08

Sample Tag: 23-0931-08 (DUP-KLI)
Collected Date/Time: 10/04/2023 00:01

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:34, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.09

Sample Tag: 23-0931-09 (EB-KLI) Collected Date/Time: 10/04/2023 16:08

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:36, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54196.10

Sample Tag: 23-0931-10 (FB-KLI) Collected Date/Time: 10/04/2023 14:51

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Retrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:38, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	

Merit Laboratories Login Checklist

Lab Set ID:S54196

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0931 PR#23101280

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	ction			Description	Note
Sam	ole Receiv	ving			
01.	Yes	X No	□ N/A	Samples are received at 4C +/- 2C Thermometer #	IR 6.3
02.	X Yes	No	□ N/A	Received on ice/ cooling process begun	
03.	Yes	X No	□ N/A	Samples shipped	
04.	Yes	X No	□ N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	No	□ N/A	COC adequately filled out	_
07.	X Yes	No	□ N/A	COC signed and relinquished to the lab	
08.	X Yes	No	□ N/A	Sample tag on bottles match COC	
09.	Yes	X No	□ N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	□ N/A	Do sample have correct chemical preservation	
11.	X Yes	No	□ N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditi	ons			
13.	X Yes	No	□ N/A	All bottles intact	
14.	X Yes	No	□ N/A	Appropriate analytical bottles are used	
15.	Yes	X No	□ N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	
Corre	ective acti	on for all	exceptions	is to call the client and to notify the project manager.	
				Date:	

Merit Laboratories Bottle Preservation Check

Lab Set ID: S54196 Submitted: 10/06/2023 08:15

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0931 PR#23101280

Initial Preservation Check: 10/06/2023 09:41 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S54196.01	125ml Plastic NaOH/Zn Acetate	>12			
S54196.02	125ml Plastic NaOH/Zn Acetate	>12			
S54196.03	125ml Plastic NaOH/Zn Acetate	>12			
S54196.04	125ml Plastic NaOH/Zn Acetate	>12			
S54196.05	125ml Plastic NaOH/Zn Acetate	>12			
S54196.06	125ml Plastic NaOH/Zn Acetate	>12			
S54196.07	125ml Plastic NaOH/Zn Acetate	>12			
S54196.08	125ml Plastic NaOH/Zn Acetate	>12			
S54196.09	125ml Plastic NaOH/Zn Acetate	>12			
S54196.10	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

		1		1
C.O.C. PAGE	#_	1	OF_	1

REPOR				CHAI	N OF	CL	JS	_			COF	RD							NVOI	CE TO
CONTACT NAME E	Emil Blaj							CON	TACT N	AME								X SAME		
COMPANY Con	sumers E	nergy						CON	IPANY											
ADDRESS 135 V	W. Trail S	treet						ADD	RESS											
Jackson				STATE MI ZIF			1	СПУ										STATE	ZIP CODE	
PHONE NO. 517-	788-5888		FAX NO. 517-788-2533	P.O. NO. 440011	40900)		PHONE NO. E-MAIL ADDRESS												
E-MAIL ADDRESS	emil.blaj@	a)cmsen	ergy.com	QUOTE NO.			ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)													
PROJECT NO./NAM				SAMPLER(S) - PLEASE	PRINT/SK	GN NA	ME	_		1	N/A			T				Certification	ons	
			□1 DAY □2 DAYS □3 DA	AYS STANDARD	Потн	HER												OHIO VA	P Drin	
			TD X LEVEL III LEVEL III				R.					0					D F	DoD	□NPD	DES
	GW=GROUN SL=SLUDG	IDWATER	WW=WASTEWATER S=SC		SD=SOLI W=WAS	D			Contai			Sulfide						Project Lo Detroit	cations New	v York
MERIT	YE	AR	SAMPLE 1		MATRIX	# OF	HNON	를 달	HNO, H,SO,	NaOH	를 를	Total						Other _		
LAB NO. FOR LAB USE ONLY	DATE	TIME	IDENTIFICATION-DE	SCHIPTION	MA	# DB	2	I	I H	2	OTHER	F	-	-	_	-	5	Special Ins	structions	
54196.01	10/04/23	1347	23-0931-01 (DEK-MW-1	15003)	GW	1	L	\sqcup		1	Ш	1					p	reserved w	ith NaOH/	ZnAceta
.62	10/04/23	1457	23-0931-02 (OW-10)		GW	1	L			1	Ш	√					"			
.03	10/04/23	1229	23-0931-03 (OW-11)		GW	1	L	П		1	Ш	1					"			
.04	10/04/23	1544	23-0931-04 (OW-12)		GW	1	L			1		1					"			
.05	10/04/23	1110	23-0931-05 (KLI-SCS)		GW	1	L			1		1					"			
.06	10/04/23	1055	23-0931-06 (KLI-PCS)		GW	1				1		1					"			
. 67	10/04/23	1034	23-0931-07 (SW-DITCH)	GW	1		П		1	П	1					"			
80.	10/04/23		23-0931-08 (DUP-KLI)		GW	1				1	П	1					"			
.09	10/04/23	1608	23-0931-09 (EB-KLI)		GW	1	I	\prod		1		1								
.10	10/04/23	1451	23-0931-10 (FB-KLI)		GW	1		П		1	П	1					"			
					+		1	H		+	\parallel		+				++			
RELINQUISHED B' SIGNATURE/ORG		Trio	onlymers energy	Sampler 10-05-23	TE T	IME 850			INQUIS			TION							DATE	TIME
RECEIVED BY: SIGNATURE/ORG		1	Mala lista	3 10/5/2		ME O	,		EIVED E		ANIZAI	TION							DATE	TIME
RELINQUISHED B' SIGNATURE/ORG	Y:	-	very transfer of the contract	DAT		IME		-	L NO.			SEAL IN			ITIALS	NOT	ES:	TEMP, ON A	RRIVAL	
RECEIVED BY: SIGNATURE/ORGA				DAT	E T	IME		SEA	L NO.			SEAL IN YEST		Th.	ITIALS				6.3	1



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

To: JJFirlit, Karn/Weadock

From: EBlaj, T-258

Date: October 20, 2023

Subject: RCRA GROUNDWATER MONITORING – KARN BAP & LINED IMP. WELLS – 2023 Q4

CC: HDRegister, P22-521 Darby Litz, Project Manager

BLSwanberg, P22-119 TRC Companies, Inc.

1540 Eisenhower Place Ann Arbor, MI 48108

Chemistry Project: 23-0930

TRC Environmental, Inc. conducted groundwater monitoring at the DEKarn Bottom Ash Pond and Lined Impoundment Wells area during the week of 10/02/2023, for the 4th Quarter requirement, as specified in the Sampling and Analysis Plan for the site. The samples were received for analysis by the Chemistry department of Laboratory Services on 10/05/2023.

Samples for Total Sulfide have been subcontracted to Merit Laboratories, Inc. and the results are listed under the analyst initials "Merit". Samples for Total & Dissolved Organic Carbon have been subcontracted to Brighton Analytical LLC and the results are listed under the analyst initials "BAL". The original reports from both labs are attached. Please note that the subcontracted work is not reported under the CE laboratory scope of accreditation.

With the exception noted above, 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, 22nd Edition, 2012.

III. Results/Quality Control

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

DEFINITIONS / QUALIFIERS

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

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

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: Q4-2023 DEK Bottom Ash Pond & Lined Impoundment

Date Received: 10/5/2023 **Chemistry Project:** 23-0930

Sample #	Field Sample ID	<u>Matrix</u>	Sample Date	<u>Site</u>
23-0930-01	DEK-MW-18001	Groundwater	10/04/2023 06:12	DEK Bottom Ash Pond & Lined Impoundment
23-0930-02	DEK-MW-18001 MS	Groundwater	10/04/2023 06:12	DEK Bottom Ash Pond & Lined Impoundment
23-0930-03	DEK-MW-18001 MSD	Groundwater	10/04/2023 06:12	DEK Bottom Ash Pond & Lined Impoundment



Report Date:

10/20/23



A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0930**

 Field Sample ID:
 DEK-MW-18001
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0930-01
 Collect Time:
 06:12 AM

Matrix: Groundwater

Antimony ND ug/ Arsenic 398 ug/ Barium 155 ug/ Beryllium ND ug/ Boron 987 ug/ Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0 /L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0 /L 1.0 /L 1.0 /L 1.0	Analysis Date 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/11/2023 10/10/2023 10/10/2023	Tracking AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09	
Arsenic 398 ug/ Barium 155 ug/ Beryllium ND ug/ Boron 987 ug/ Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0 /L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0 /L 1.0 /L 1.0 /L 1.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09	
Barium 155 ug/ Beryllium ND ug/ Boron 987 ug/ Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 5.0 /L 1.0 /L 20.0 /L 0.2 /L 1000.0 /L 1.0 /L 6.0 /L 1.0	10/10/2023 10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09	
Beryllium ND ug/ Boron 987 ug/ Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0 /L 20.0 /L 0.2 /L 1000.0 /L 1.0 /L 6.0 /L 1.0	10/10/2023 10/10/2023 10/10/2023 10/11/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09 AB23-1010-09	
Boron 987 ug/ Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 20.0 /L 0.2 /L 1000.0 /L 1.0 /L 6.0 /L 1.0	10/10/2023 10/10/2023 10/11/2023 10/10/2023	AB23-1010-09 AB23-1010-09 AB23-1010-09	
Cadmium ND ug/ Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 0.2 /L 1000.0 /L 1.0 /L 6.0 /L 1.0	10/10/2023 10/11/2023 10/10/2023	AB23-1010-09 AB23-1010-09	
Calcium 52500 ug/ Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1000.0 /L 1.0 /L 6.0 /L 1.0	10/11/2023 10/10/2023	AB23-1010-09	
Chromium ND ug/ Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0 /L 6.0 /L 1.0	10/10/2023		
Cobalt ND ug/ Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 6.0 /L 1.0			
Copper ND ug/ Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0	10/10/2023	AB23-1010-09	
Iron 720 ug/ Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/		. 5, . 5, 2020	AB23-1010-09	
Lead ND ug/ Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/ 20.0	10/10/2023	AB23-1010-09	
Lithium 19 ug/ Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/		10/10/2023	AB23-1010-09	
Magnesium 9930 ug/ Manganese 133 ug/ Molybdenum 9 ug/	/L 1.0	10/10/2023	AB23-1010-09	
Manganese 133 ug/ Molybdenum 9 ug/	/L 10.0	10/10/2023	AB23-1010-09	
Molybdenum 9 ug/	/L 1000.0	10/11/2023	AB23-1010-09	
	/L 5.0	10/10/2023	AB23-1010-09	
N: 1 1	/L 5.0	10/10/2023	AB23-1010-09	
Nickel ND ug/	/L 2.0	10/10/2023	AB23-1010-09	
Potassium 5680 ug/	/L 100.0	10/11/2023	AB23-1010-09	
Selenium ND ug/	/L 1.0	10/10/2023	AB23-1010-09	
Silver ND ug/	/L 0.2	10/10/2023	AB23-1010-09	
Sodium 106000 ug/	/L 1000.0	10/11/2023	AB23-1010-09	
Thallium ND ug/	/L 2.0	10/10/2023	AB23-1010-09	
Vanadium ND ug/	/L 2.0	10/10/2023	AB23-1010-09	
Zinc ND ug/	/L 10.0	10/10/2023	AB23-1010-09	
Mercury by EPA 7470A, Total, Aqueous	Aliquot #: 23-0	0930-01-C01-A02	Analyst: CLE	
Parameter(s) Result Flag U	nits RL	Analysis Date	Tracking	
Mercury ND ug/	/L 0.2	10/11/2023	AB23-1011-01	
Anions by EPA 300.0 Aqueous, NO2, NO3	Aliquot #: 23-0	Aliquot #: 23-0930-01-C02-A01		
Parameter(s) Result Flag U	nits RL	Analysis Date	Tracking	
Nitrate ND ug/	/L 100.0	10/05/2023	AB23-1006-01	
Nitrite ND ug/	/L 100.0	10/05/2023	AB23-1006-01	
Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueou	us Aliquot #: 23-0	0930-01-C02-A02	Analyst: KDR	
Parameter(s) Result Flag U	nits RL	Analysis Date		
Chloride 69400 ug/		, c.o = a.o	Tracking	



Report Date:

10/20/23



Laboratory Services A CENTURY OF EXCELLENCE

DEK Bottom Ash Pond & Lined Impoundment Sample Site: Laboratory Project: 23-0930

Collect Date: Field Sample ID: DEK-MW-18001 10/04/2023 Lab Sample ID: 23-0930-01 Collect Time: 06:12 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule Analyte List, CI, F, SO4, Aqu			ueous	Aliquot #: 23-0	930-01-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	ND		ug/L	1000.0	10/11/2023	AB23-1010-02
Sulfate	158000		ug/L	1000.0	10/11/2023	AB23-1010-02
Nitrogen-Ammonia by SM4500NH3(h), Groundwater HL				Aliquot #: 23-0	930-01-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	1890		ug/L	25.0	10/11/2023	AB23-1011-04
Total Dissolved Solids by SM 2540C				Aliquot #: 23-0	930-01-C04-A01	Analyst: SLK
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Dissolved Solids	551		mg/L	10.0	10/05/2023	AB23-1006-03
Alkalinity by SM 2320B				Aliquot #: 23-0	Analyst: DLS	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	193000		ug/L	10000.0	10/09/2023	AB23-1009-09
Alkalinity Bicarbonate	193000		ug/L	10000.0	10/09/2023	AB23-1009-09
Alkalinity Carbonate	ND		ug/L	10000.0	10/09/2023	AB23-1009-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	Analyst: Merit	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	ND		ug/L	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310B, Aqueous				Aliquot #: 23-0	Analyst: BAL	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	4800		ug/L	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5310B, Aqueous				Aliquot #: 23-0	930-01-C09-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	5400		ug/L	1000.0	10/10/2023	AB23-1015-02



Report Date:

10/20/23



Laboratory Services
A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0930**

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0930-02
 Collect Time:
 06:12 AM

Matrix: Groundwater

Metals by EPA 6020B: CCR R	ule Appendix III-IV To	tai Metais E	хр	Aliquot #: 23-0	930-02-C01-A01	Analyst: El
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	105	%	,	1.0	10/10/2023	AB23-1010-0
Arsenic	103	%	,	1.0	10/10/2023	AB23-1010-09
Barium	105	%	,	5.0	10/10/2023	AB23-1010-09
Beryllium	104	%	,	1.0	10/10/2023	AB23-1010-09
Boron	106	%	•	20.0	10/10/2023	AB23-1010-09
Cadmium	99.1	%	•	0.2	10/10/2023	AB23-1010-09
Calcium	107	%	•	1000.0	10/11/2023	AB23-1010-09
Chromium	98	%	•	1.0	10/10/2023	AB23-1010-09
Cobalt	98	%	•	6.0	10/10/2023	AB23-1010-09
Copper	92	%	•	1.0	10/10/2023	AB23-1010-09
Iron	92	%	•	20.0	10/10/2023	AB23-1010-09
Lead	100	%	•	1.0	10/10/2023	AB23-1010-09
Lithium	97	%	•	10.0	10/10/2023	AB23-1010-09
Magnesium	109	%	•	1000.0	10/11/2023	AB23-1010-09
Manganese	101	%	•	5.0	10/10/2023	AB23-1010-09
Molybdenum	109	%	•	5.0	10/10/2023	AB23-1010-09
Nickel	93	%	•	2.0	10/10/2023	AB23-1010-09
Potassium	111	%	,	100.0	10/11/2023	AB23-1010-09
Selenium	101	%	,	1.0	10/10/2023	AB23-1010-09
Silver	94.4	%	•	0.2	10/10/2023	AB23-1010-09
Sodium	112	%	,	1000.0	10/11/2023	AB23-1010-09
Thallium	99	%	,	2.0	10/10/2023	AB23-1010-09
Vanadium	101	%	,	2.0	10/10/2023	AB23-1010-09
Zinc	95	%	•	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total	, Aqueous			Aliquot #: 23-0	930-02-C01-A02	Analyst: CLI
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	101	%)	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueou	s, NO2, NO3			Aliquot #: 23-0	Analyst: TMF	
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	92	%	•	100.0	10/05/2023	AB23-1006-0 ⁻
Nitrite	92	%	,	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR Ru	ıle Analyte List, Cl, F,	SO4, Aqued	ous	Aliquot #: 23-0	930-02-C02-A02	Analyst: KDF
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	104	%)	1000.0	10/11/2023	AB23-1010-02





A CENTURY OF EXCELLENCE

Report Date: 10/20/23

23-0930

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project:

 Field Sample ID:
 DEK-MW-18001 MS
 Collect Date:
 10/04/2023

 Lab Sample ID:
 23-0930-02
 Collect Time:
 06:12 AM

Matrix: Groundwater

Anions by EPA 300.0 CCR Rule An	alyte List, CI, F,	SO4, Aqւ	ieous	Aliquot #: 23-0	930-02-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	91		%	1000.0	10/11/2023	AB23-1010-02
Sulfate	101		%	1000.0	10/11/2023	AB23-1010-02
Nitrogen-Ammonia by SM4500NH3	Aliquot #: 23-0	930-02-C03-A01	Analyst: CLE			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	108		%	25.0	10/11/2023	AB23-1011-04
Alkalinity by SM 2320B				Aliquot #: 23-0	930-02-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	99.5		%	10000.0	10/09/2023	AB23-1009-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	930-02-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 5310E	3, Aqueous			Aliquot #: 23-0	930-02-C07-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	83		%	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by SM 5	Aliquot #: 23-0	930-02-C08-A01	Analyst: BAL			
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Dissolved Organic Carbon	80		%	1000.0	10/10/2023	AB23-1015-02



Report Date:

Collect Date:

Collect Time:

10/20/23

10/04/2023

06:12 AM



A CENTURY OF EXCELLENCE

Sample Site: **DEK Bottom Ash Pond & Lined Impoundment** Laboratory Project: **23-0930**

Field Sample ID: **DEK-MW-18001 MSD**

Lab Sample ID: 23-0930-03

Matrix: Groundwater

Metals by EPA 6020B: CCR Rule Appe	endix III-IV To	tal Metals	s Ехр	Aliquot #: 23-0	930-03-C01-A01	Analyst: EB
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Antimony	105		%	1.0	10/10/2023	AB23-1010-09
Arsenic	101		%	1.0	10/10/2023	AB23-1010-09
Barium	104		%	5.0	10/10/2023	AB23-1010-09
Beryllium	106		%	1.0	10/10/2023	AB23-1010-09
Boron	125		%	20.0	10/10/2023	AB23-1010-09
Cadmium	101		%	0.2	10/10/2023	AB23-1010-09
Calcium	103		%	1000.0	10/11/2023	AB23-1010-09
Chromium	95		%	1.0	10/10/2023	AB23-1010-09
Cobalt	98		%	6.0	10/10/2023	AB23-1010-09
Copper	92		%	1.0	10/10/2023	AB23-1010-09
Iron	102		%	20.0	10/10/2023	AB23-1010-09
Lead	98		%	1.0	10/10/2023	AB23-1010-09
Lithium	95		%	10.0	10/10/2023	AB23-1010-09
Magnesium	106		%	1000.0	10/11/2023	AB23-1010-09
Manganese	103		%	5.0	10/10/2023	AB23-1010-09
Molybdenum	108		%	5.0	10/10/2023	AB23-1010-09
Nickel	95		%	2.0	10/10/2023	AB23-1010-09
Potassium	108		%	100.0	10/11/2023	AB23-1010-09
Selenium	99		%	1.0	10/10/2023	AB23-1010-09
Silver	95.7		%	0.2	10/10/2023	AB23-1010-09
Sodium	108		%	1000.0	10/11/2023	AB23-1010-09
Thallium	98		%	2.0	10/10/2023	AB23-1010-09
Vanadium	101		%	2.0	10/10/2023	AB23-1010-09
Zinc	93		%	10.0	10/10/2023	AB23-1010-09
Mercury by EPA 7470A, Total, Aqueou	ıs			Aliquot #: 23-0	930-03-C01-A02	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Mercury	100.0		%	0.2	10/11/2023	AB23-1011-01
Anions by EPA 300.0 Aqueous, NO2,	NO3			Aliquot #: 23-0	930-03-C02-A01	Analyst: TMR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Nitrate	95		%	100.0	10/05/2023	AB23-1006-01
Nitrite	96		%	100.0	10/05/2023	AB23-1006-01
Anions by EPA 300.0 CCR Rule Analy	te List, CI, F,	SO4, Aqu	ieous	Aliquot #: 23-0	930-03-C02-A02	Analyst: KDR
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Chloride	106		%	1000.0	10/11/2023	AB23-1010-02





A CENTURY OF EXCELLENCE

Report Date: 10/20/23

DEK Bottom Ash Pond & Lined Impoundment Laboratory Project: Sample Site: 23-0930

Field Sample ID: DEK-MW-18001 MSD Collect Date: 10/04/2023 Lab Sample ID: 23-0930-03 Collect Time: 06:12 AM

Matrix: Groundwater

Dissolved Organic Carbon

Anions by EPA 300.0 CCR Rule Analyte List, Cl, F, SO4, Aqueous			Aliquot #: 23-0	Analyst: KDR		
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Fluoride	91		%	1000.0	10/11/2023	AB23-1010-02
Sulfate	104		%	1000.0	10/11/2023	AB23-1010-02
Nitrogen-Ammonia by SM4500N	IH3(h), Groundwater	·HL		Aliquot #: 23-0	930-03-C03-A01	Analyst: CLE
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Ammonia	99		%	25.0	10/11/2023	AB23-1011-04
Alkalinity by SM 2320B				Aliquot #: 23-0	930-03-C04-A01	Analyst: DLS
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Alkalinity Total	98.0		%	10000.0	10/09/2023	AB23-1009-09
Sulfide, Total by SM 4500 S2D				Aliquot #: 23-0	930-03-C06-A01	Analyst: Merit
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Sulfide	92		%	20.0	10/07/2023	AB23-1009-11
Total Organic Carbon by SM 53	10B, Aqueous			Aliquot #: 23-0	930-03-C07-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking
Total Organic Carbon	81		%	1000.0	10/10/2023	AB23-1015-01
Dissolved Organic Carbon by S	M 5310B, Aqueous			Aliquot #: 23-0	930-03-C08-A01	Analyst: BAL
Parameter(s)	Result	Flag	Units	RL	Analysis Date	Tracking

%

1000.0

10/10/2023

AB23-1015-02

81



A CENTURY OF EXCELLENCE

Analytical Report

Report Date: 10/20/23

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: 10.05.7	23	-	Inspection B	y: UMO		3
Sample Origin/Project Name:	147 04	N 20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Impoun
Shipment Delivered By: Ente						N. A. L. Control
				Hene	À that	Carl S
Pony F Other/Hand Carry (wh						orne
Tracking Number:	t t		Shippin	P Form Attack	ned: Yes	No
Shipping Containers: Enter the					110	- 117
Cooler_X C						
Loose/Unpackaged Co	ntainers		Other			
Condition of Shipment: Enter						
Damaged Shipment Ol	oserved: No	one ×	Dent	red	Leal	cing
Other				•)		
Shipment Security: Enter if a	ny of the shi	ipping contain	ers were opened	before receip	ot.	
Shipping Containers R						
Enclosed Documents: Enter the	ne type of do	ocuments encl	osed with the sh	ipment.		
CoC_X Wor	k Request_		Air Data Sh	neet	Other	
Гетрегаture of Containers: М	Measure the	temperature o	f several sample	containers.		
As-Received Temperat	ture Range	3.2-4.50	Samples R	eceived on Ic	e: Yes X	lo
					7785	
M&TÉ # and Expiration	on COO'Z	יוו יכו מ.	13.25			
Number and Type of Contain	ers: Enter t	the total numb	er of sample con	ntainers receiv	ved.	
Container Type	Water	Soil	Othe	ŕ	Broken	Leaking
VOA (40mL or fond.)	6	-				
Quart/Liter (g/p)	,	-				
9-oz (amber glass jar)						
2-oz (amber glass)						
125 mL (plastic)	12		-			-
24 mL vial (glass)						
24 mL vial (glass) 250 3	二					

CHAIN OF CUSTODY



CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

Page 1 of 1

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

SAMPLING SITE / CU				PROJECT NUMBER:	SAP CC or V	VO#:							ANALYSIS REQUESTED						OA BEOLUBEI (ENTE		
Q4-2023 DEK Botton	m Ash Pond &	Lined Imp	ound.	23-0930	REQUESTER: Harold Register						(Attach List if More Space is Needed)							QA REQUIREMENT:			
SAMPLING TEAM:				TURNAROUND TIME REQUIRED: 24 HR 48 HR 3 DAYS ST.	ANDARD ⊠ OTHER															□ NPDES □ TNI	
SEND REPORT TO:	Joseph Firlit			email:	phone:							1								rbon	☐ ISO 17025
COPY TO:	Harold Regi			MATRIX CODES: GW = Groundwater OX = Other	•		C	ONT	CAL	NEF	RS	1							rbon	c Ca	□ 10 CFR 50 APP. B
321744.81	TRC			GW = Groundwater	e	PRESERVATIVE			1	als						ic Ca	rgani	☐ INTERNAL INFO			
LAB	SAMPLE COL	LECTION	XIX	S = Soil / General Solid WP = Wipe O = Oil WT = Gene		TOTAL#						Other Total Metals		ns	onia		Alkalinity	de	Total Organic Carbon	Dissolved Organic Carbon	□ OTHER
SAMPLE ID	DATE	TIME	MATRIX	FIELD SAMPLE ID / LO	CATION	TOT	None	None HNO ₃		NaOl	HCI MeOH Other	Other	Lota	Anions	Ammonia	TDS	Alka	Sulfide	Total	Disso	REMARKS
23-0930-01	16/19/23	olar	GW	DEK-MW-18001		9	4	1	ī	1 2			X	x	x	x	x	x	x	x	
-02	11 11	deis	GW	DEK-MW-18001 MS		8	3	1	1	1 2		1	x	x	x		x	x	x	x	
-03	1111	000	GW	DEK-MW-18001 MSD		8	3	1	1	1 2			x	x	x		x	x	X	x	
																					1
											П										
										Ī	П	Ī		1							
									T			T				H					
										T		T									
RELINQUISHED BY:			ATE/I	TIME: R	ECEIVED BY:		4					(COM	IME	NTS:						
RELINQUISHED BY:			ATE/T	TME: R	EQEIVED BY:	. 1.00												: □ 1 -°C			TE#: LS028757 Due Date: 11-15-23



2105 Pless Drive Brighton, Michigan 48114 Phone (810)229-7575 Fax (810)229-8650 E-mail bai-brighton@sbcglobal.net

October 11, 2023

Consumers Energy Company 135 W. Trail St. Jackson, MI 49201

Subject: Q4-2023 DEK Bottom Ash Pond & Lined Impound

23-930

Dear: Mr. Blaj

Thank you for making Brighton Analytical, L.L.C. your laboratory of choice. Attached are the results for the samples submitted on 10/06/2023 for the above mentioned project. NELAP/TNI Accredited Analysis and EGLE Drinking Water Certified Analysis will be identified in their respective reporting formats. Hard copies can be supplied at your request for a fee of \$20.00 per copy.

The invoice for this project will be emailed separately. If you have any questions concerning the data or invoice, please don't hesitate to contact our office. We welcome your comments and suggestions to improve our quality systems. Please reference Brighton Analytical, L.L.C. Project ID 92712 when calling or emailing. We thank you for this opportunity to partner with you on this project and hope to work with you again in the future.

Sincerely, Brighton Analytical, L.L.C.







Brighton Analytical LLC

2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023

Report Date: 10/11/2023 To:

1000

Consumers Energy Company

SM5310B

135 W. Trail St. Jackson, MI 49201

BA Report Number: 92712

BA Sample ID:

Total Organic Carbon

Project Name:

Q4-2023 DEK Bottom Ash Pond & Lined Impound

Project Number: CU03407 23-930

> Sample ID: 23-930-01 DEK-MW-18001

> > ug/L

Analysis **Parameters** Result Units DL**Method Reference** Date Analyst **Organic Analysis** Dissolved Organic Carbon 5400 ug/L 1000 SM5310B RG 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

4800

Released by

Date

10/11/2023

RG

10/10/2023



Brighton Analytical LLC

2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023 Report Date: 10/11/2023

To:

Consumers Energy Company

Method Reference

135 W. Trail St. Jackson, MI 49201

BA Report Number:

Parameters

92712

Project Name:

Q4-2023 DEK Bottom Ash Pond & Lined Impound

BA Sample ID: CU03408 Project

Project Number: 23-930

Sample ID: 23-930-02

23-930-02 DEK-MW-18001 MS

Analysis Date

Organic Analysis

Dissolved Organic Carbon Total Organic Carbon 80% 83%

Result

ug/L ug/L

Units

SM SM

DL

SM5310B SM5310B RG RG

Analyst

10/10/2023 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date

10/11/2023



Brighton Analytical LLC

2105 Pless Drive Brighton, Michigan 48114 Phone: (810)229-7575 (810)229-8650 e-mail:bai-brighton@sbcglobal.net EGLE Certified #9404 NELAC Accredited #176507

Sample Date: 10/04/2023 Submit Date: 10/06/2023

Report Date: 10/11/2023 To:

Consumers Energy Company

Method Reference

135 W. Trail St. Jackson, MI 49201

BA Report Number: 92712

Parameters

CU03409

Project Name:

Q4-2023 DEK Bottom Ash Pond & Lined Impound

Project Number: 23-930

Sample ID: 23-930-03 DEK-MW-18001 MSD Units

Analysis Date Analyst

Organic Analysis

BA Sample ID:

Dissolved Organic Carbon Total Organic Carbon

81% 81%

Result

ug/L ug/L

DL

SM5310B SM5310B RG RG

10/10/2023 10/10/2023

DL=Reported detection limit for analytical method requested. Some compounds require special analytical methods to achieve EGLE designated target detection limits (TDL).

Released by

Date

10/11/2023

CHAIN OF CUSTODY

Consumers Energy
Count on Us*

CONSUMERS ENERGY COMPANY – LABORATORY SERVICES

of

Page_

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

QA REQUIREMENT: □ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS ☐ ISO 17025 □ OTHER □ NPDES INI 🛭 Cal. Due Date: M&TE#: (Attach List if More Space is Needed) ANALYSIS REQUESTED Received on Ice? X Yes \(\text{No. 13} \)

When \(\text{Vo. 13} \)

Temperature: \(\text{Co. 13} \) 498 PR #23101291 COMMENTS: Dissolved Organic Carbon Total Organic Carbon × × × Other MeOH CONTAINERS HCI HOBN ^bOS^zH HNO3 REQUESTER: Emil Blaj None # JATOT 2 □ STANDARD ☒ OTHER SAP CC or WO#: RECEIVED BY: DI II FIELD SAMPLE ID / LOCATION phone: OX = Other SL = Sludge A = Air WP = Wipe WT = General Waste email:Emil.Blaj@cmsenergy.com TURNAROUND TIME REQUIRED: □ 24 HR □ 48 HR □ 3 DAYS GW = Groundwater
WW = Wastewater
W = Water / Aqueous Liquid
S = Soil / General Solid
O = Oil 23-0930 DEK-MW-18001 MSD **DEK-MW-18001 MS** DEK-MW-18001 PROJECT NUMBER: MATRIX CODES: 10.00.23 DATE/TIME: DATE/TIME: GW GW G₩ Q4-2023 DEK Bottom Ash Pond & Lined Impound. **MATRIX** SAMPLE COLLECTION TIME 0612 0612 0612 10/04/2023 10/04/2023 10/04/2023 DATE Emil Blaj SAMPLING SITE / CUSTOMER: SEND REPORT TO: RELINQUISHED BY: RELINQUISHED BY: SAMPLING TEAM: SAMPLE ID -02 -03 23-0930-01 COPY TO

23-0930 Page 18 of 32



BRIGHTON ANALYTICAL, LLC

QUALITY ASSURANCE/QUALITY CONTROL

REPRESENTATIVE BATCH QUALITY CONTROL Accuracy & Precision

Analyst: _	RG		Parameter: _	тос	<u></u>
Analysis Date:	10/10/2023	Met	hod Reference:	EPA 415.1/SM5310B/9060	-
		SPIKE - ACC	URACY		
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03407	TV=10000	4800	83/80	80 - 120	ND
					<u>. </u>
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03407	13100	12800	2.30	<u><</u> 20	
		MISCELLAI	VEOUS		
		Standard ID#	%Recoveries		
dependent Secondar	ry Reference Material:	WP-337	99		
ethod Standard (Lal	o. Control Spike):	#3046.8	90		

COMMENTS:

REPRESENTATIVE BATCH QUALITY CONTROL Accuracy & Precision

Analyst:	RG	Parameter: DOC
Analysis Date:	10/10/2023	Method Reference: EPA 415.1/SM5310B/9060

		SPIKE - ACC	CURACY		
Laboratory ID	Spike level PPB	Background PPB	Recoveries (%)	Acceptable Range (%)	Method Blank Concentration
CU03407	TV=10000	5400	81/81	80 - 120	ND
Laboratory ID	Observed A PPB	Observed B PPB	RPD (%)	Acceptable Range(%)	
CU03407	13400	13400	0.00	<u>< 20</u>	
		MISCELLAI	NEOUS		
		Standard ID#	%Recoveries		
Independent Secondar	ry Reference Material:	WP-337	99		
Method Standard (Lal	o. Control Spike):	#3046.8	90		

COMMENTS:			
			_



Report ID: S54195.01(01) Generated on 10/09/2023

Report to

Attention: Emil Blaj

Consumers Energy Company

135 West Trail Street Jackson, MI 49201

Phone: D:517-788-5888 C:517-684-9467 FAX:

Email: emil.blaj@cmsenergy.com

Report produced by

Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Phone: (517) 332-0167 FAX: (517) 332-6333

Contacts for report questions: John Laverty (johnlaverty@meritlabs.com) Barbara Ball (bball@meritlabs.com)

Report Summary

Lab Sample ID(s): S54195.01-S54195.03

Project: 23-0930 PR#23101280 Collected Date(s): 10/04/2023

Submitted Date/Time: 10/06/2023 08:15

Sampled by: Unknown P.O. #: 4400114090

Table of Contents

Cover Page (Page 1)

General Report Notes (Page 2)

Report Narrative (Page 2)

Laboratory Accreditations (Page 3)

Qualifier Descriptions (Page 3)

Glossary of Abbreviations (Page 3)

Method Summary (Page 4)

Sample Summary (Page 5)

Maya Murshak Technical Director

Naya Mushah



General Report Notes

Analytical results relate only to the samples tested, in the condition received by the laboratory.

Methods may be modified for improved performance.

Results reported on a dry weight basis where applicable.

'Not detected' indicates that parameter was not found at a level equal to or greater than the reporting limit (RL).

When MDL results are provided, then 'Not detected' indicates that parameter was not found at a level equal to or greater than the MDL.

40 CFR Part 136 Table II Required Containers, Preservation Techniques and Holding Times for the Clean Water Act specify that samples

for acrolein and acrylonitrile, and 2-chloroethylvinyl ether need to be preserved at a pH in the range of 4 to 5 or if not preserved, analyzed within 3 days of sampling.

QA/QC corresponding to this analytical report is a separate document with the same Merit ID reference and is available upon request.

Full accreditation certificates are available upon request. Starred (*) analytes are not NELAP accredited.

Samples are held by the lab for 30 days from the final report date unless a written request to hold longer is provided by the client.

Report shall not be reproduced except in full, without the written approval of Merit Laboratories, Inc.

Limits for drinking water samples, are listed as the MCL Limits (Maximum Contaminant Level Concentrations)

PFAS requirement: Section 9.3.8 of U.S. EPA Method 537.1 states "If the method analyte(s) found in the Field Sample is present in the

FRB at a concentration greater than 1/3 the MRL, then all samples collected with that FRB are invalid and must be recollected and reanalyzed."

Samples submitted without an accompanying FRB may not be acceptable for compliance purposes.

Wisconsin PFAs analysis: MDL = LOD; RL = LOQ. LOD and LOQ are adjusted for dilution.

All accreditations/certifications held by this laboratory are listed on page 3. Not all accreditations/certifications are applicable to this report.

Report Narrative

There is no additional narrative for this analytical report



Laboratory Accreditations

Authority	Accreditation ID
Michigan DEQ	#9956
DOD ELAP & ISO/IEC 17025:2017	#69699
WBENC	#2005110032
Ohio VAP	#CL0002
Indiana DOH	#C-MI-07
New York NELAC	#11814
North Carolina DENR	#680
North Carolina DOH	#26702
Pennsylvania DEP	#68-05884
Wisconsin DNR	FID# 399147320

Qualifier Descriptions

Qualifier	Description
!	Result is outside of stated limit criteria
В	Compound also found in associated method blank
E	Concentration exceeds calibration range
F	Analysis run outside of holding time
G	Estimated result due to extraction run outside of holding time
Н	Sample submitted and run outside of holding time
1	Matrix interference with internal standard
J	Estimated value less than reporting limit, but greater than MDL
L	Elevated reporting limit due to low sample amount
M	Result reported to MDL not RDL
0	Analysis performed by outside laboratory. See attached report.
R	Preliminary result
S	Surrogate recovery outside of control limits
Т	No correction for total solids
X	Elevated reporting limit due to matrix interference
Υ	Elevated reporting limit due to high target concentration
b	Value detected less than reporting limit, but greater than MDL
е	Reported value estimated due to interference
j	Analyte also found in associated method blank
р	Benzo(b)Fluoranthene and Benzo(k)Fluoranthene integrated as one peak.
х	Preserved from bulk sample

Glossary of Abbreviations

Abbreviation	Description
RL/RDL	Reporting Limit
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
SW	EPA SW 846 (Soil and Wastewater) Methods
E	EPA Methods
SM	Standard Methods
LN	Linear
BR	Branched



Method Summary

Method Version

SM4500-S2 D

Standard Method 4450 S2 D 2011

Report to Consumers Energy Company Project: 23-0930 PR#23101280 **Page 25** of 32



Sample Summary (3 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S54195.01	23-0930-01 (DEK-MW-18001)	Groundwater	10/04/23 06:12
S54195.02	23-0930-02 (DEK-MW-18001 Field MS)	Groundwater	10/04/23 06:12
S54195.03	23-0930-03 (DEK-MW-18001 Field MSD)	Groundwater	10/04/23 06:12



Lab Sample ID: S54195.01

Sample Tag: 23-0930-01 (DEK-MW-18001) Collected Date/Time: 10/04/2023 06:12

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	I hermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:06, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	Not detected	0.02	0.0005	mg/L	1	18496-25-8	



Lab Sample ID: S54195.02

Sample Tag: 23-0930-02 (DEK-MW-18001 Field MS)

Collected Date/Time: 10/04/2023 06:12

Matrix: Groundwater COC Reference:

Sample Containers

#	Туре	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:10, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.184	0.02	0.0005	ma/L	1	18496-25-8	1

1-* Sample spiked @ 0.20ppm level



Lab Sample ID: S54195.03

Sample Tag: 23-0930-03 (DEK-MW-18001 Field MSD)

Collected Date/Time: 10/04/2023 06:12

Matrix: Groundwater COC Reference:

Sample Containers

#	туре	Preservative(s)	Retrigerated?	Arrival Temp. (C)	i nermometer #
1	125ml Plastic	NaOH/Zn Acetate	Yes	6.3	IR

Inorganics

Method: SM4500-S2 D, Run Date: 10/07/23 11:12, Analyst: JDP

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Sulfide	0.184	0.02	0.0005	ma/L	1	18496-25-8	1

1-* Sample spiked @ 0.20ppm level

Merit Laboratories Login Checklist

Lab Set ID:S54195

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0930 PR#23101280

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Selec	ction			Description	Note
	ple Receiv	ving			
01.	Yes	X No	N/A	Samples are received at 4C +/- 2C Thermometer #	IR 6.3
02.	X Yes	☐ No	N/A	Received on ice/ cooling process begun	
03.	Yes	X No	N/A	Samples shipped	
04.	Yes	X No	N/A	Samples left in 24 hr. drop box	
05.	Yes	No	X N/A	Are there custody seals/tape or is the drop box locked	
Chai	n of Custo	ody			
06.	X Yes	No	N/A	COC adequately filled out	
07.	X Yes	No	N/A	COC signed and relinquished to the lab	
08.	X Yes	No	N/A	Sample tag on bottles match COC	
09.	Yes	X No	N/A	Subcontracting needed? Subcontacted to:	
Pres	ervation				
10.	X Yes	No	N/A	Do sample have correct chemical preservation	
11.	X Yes	No	N/A	Completed pH checks on preserved samples? (no VOAs)	
12.	Yes	X No	N/A	Did any samples need to be preserved in the lab?	
Bottl	e Conditi	ons			
13.	X Yes	No	N/A	All bottles intact	
14.	X Yes	☐ No	N/A	Appropriate analytical bottles are used	
15.	Yes	X No	N/A	Merit bottles used	
16.	X Yes	No	□ N/A	Sufficient sample volume received	
17.	Yes	X No	□ N/A	Samples require laboratory filtration	
18.	X Yes	No	□ N/A	Samples submitted within holding time	
19.	Yes	No	X N/A	Do water VOC or TOX bottles contain headspace	

Corrective action for all exceptions is to call the client and to notify the project manager.

Client Review By: ____

_____ Date:_

Merit Laboratories Bottle Preservation Check

Lab Set ID: S54195 Submitted: 10/06/2023 08:15

Client: CONSUMERS (Consumers Energy Company)

Project: 23-0930 PR#23101280

Initial Preservation Check: 10/06/2023 09:38 MMC

Preservation Recheck (E200.8): N/A

Attention: Emil Blaj

Address: Consumers Energy Company 135 West Trail Street

Jackson, MI 49201

Phone: D:517-788-5888 FAX: Email: emil.blaj@cmsenergy.com

Sample ID	Bottle / Preservation	pH (Orig)	Add ml	pH (New)	Notes
S54195.01	125ml Plastic NaOH/Zn Acetate	>12			
S54195.02	125ml Plastic NaOH/Zn Acetate	>12			
S54195.03	125ml Plastic NaOH/Zn Acetate	>12			



2680 East Lansing Dr., East Lansing, MI 48823 Phone (517) 332-0167 Fax (517) 332-4034 www.meritlabs.com

	1 1	
C.O.C. PAGE #	1 OF 1	

REPOR		,	Laboratories, Inc.	CHAIN	OF	CU	S	TOD	YR	EC	OF	RD							INVOI	ETC
CONTACT NAME E	mil Blaj							CONTACT NAME XSAME												
COMPANY Cons	sumers E	nergy					1	COMPANY												
ADDRESS 135 V	V. Trail S	Street						ADDRESS												
Jackson				STATE MI ZIP C	ODE 4	9201	1	CITY STATE ZIP CODE												
PHONE NO. 517-	788-5888		FAX NO. 517-788-2533	P.O. NO. 4400114	090			PHONE	E NO.					E-MAIL	ADDRESS				-	
E-MAIL ADDRESS	emil.blaj(a)cmsen		QUOTE NO.								ANAL	YSIS	(ATTA	CH LIST	IF MORE	E SPAC	E IS REQUI	RED)	
PROJECT NO./NAM				SAMPLER(S) - PLEASE PR	RINT/SIG	IN NAM	ME			N	/A		T	T	H	H		Certifica		
TURNAROUNE	TIME RE	QUIRED	□1 DAY □2 DAYS □3 DA	AYS STANDARD [ОТН	IER .												□оню /	AP Drini	
DELIVERABLE	ELIVERABLES REQUIRED STD Stevel II LEVEL III LEVEL IV EDD OTHER						٦_					<u>o</u>						□D ₀ D	□NPD	ES
								ntain			Sulfide				Project L		ocations.	York		
MERIT	YE	AR	SAMPLE		MATRIX	DF TLES	NONE	I HO	00	MeOH	ĘR	Total						Other		
LAB NO. FOR LAB USE ONLY	DATE	TIME	IDENTIFICATION-DE	SCHIPTION	MA	# OF BOTTL	Š	E E	H,50,	Z Z	ō	F	-	-	++	++	-	Special I	nstructions	
54195.01	10/04/23	0612	23-0930-01 (DEK-MW-	18001)	GW	1	L	Ш			Ц	/						preserved	with NaOH/	ZnAcetate
.02	10/04/23	0612	23-0930-02 (DEK-MW-1	8001 Field MS)	GW	1				1		1						"		
.03	10/04/23	0612	23-0930-03 (DEK-MW-1	8001 Field MSD)	GW	1				l)		/						0		
																		Please spil	ke MS/MSD a	and report
							L											spike conc	entration and/o	or recovery
					\vdash		L	H	H	-	H	-	+	+	1	++	-	-		
					\vdash		H	H	$^{+}$	+	H	+	+	+	++	++	+			
							H		H	+	+			+	+	1				
									\dagger		1									
																	10			
RELINQUISHED BY SIGNATURE/ORGA		Vica.	NSUMERS ENERGY	Sampler DATE 10-05-23	18	IME	7		QUISH TURE/		MZAT	ION							DATE	TIME
RECEIVED BY: SIGNATURE/ORGA		1/1	Who Mitt	- 10/5/23		150			VED BY		NZAT	ION							DATE	TIME
RELINQUISHED BY SIGNATURE/ORGA	r:	7		DATE	_	IME	1	SEAL 1				SEAL INT			INITIALS	N	OTES:	TEMP, Of	ARRIVAL	
RECEIVED BY: SIGNATURE/ORGA				DATE	Т	IME .	1	SEAL NO. SEAL INTACT INITIALS YESD NOD 6.3												

ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 11/10/2023 1:35:53 PM

JOB DESCRIPTION

Karn/Weadock CCR Groundwater Monitoring

JOB NUMBER

240-193317-1

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 11/10/2023 1:35:53 PM

Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com (330)966-9790

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	7
Sample Summary	8
Client Sample Results	9
Tracer Carrier Summary	15
QC Sample Results	16
QC Association Summary	19
Lab Chronicle	20
Certification Summary	22
Chain of Custody	23
Receint Checklists	28

6

4

6

8

10

11

13

14

Definitions/Glossary

Client: TRC Environmental Corporation. Job ID: 240-193317-1

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Qualifiers

R	а	d
	ч	ч

Qualifier	Qualifier Description						
*	LCS or LCSD is outside acceptance limits.						
F	Duplicate RPD exceeds the control limit						
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)
220	Bediever Earth Concentration (Tadiosnominal)

	•
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

Page 4 of 28 11/10/2023

Case Narrative

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193317-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-193317-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The samples were received on 10/11/2023 8:00 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 1.7°C

Gas Flow Proportional Counter

Method 903.0: Radium-226 batch 631942

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Based upon client request, Ra-226 is reported without a 21-day waiting period to ensure 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. The results are reported with this narrative.

DEK-MW-15003 (240-193317-1), OW-10 (240-193317-2), OW-11 (240-193317-3), OW-12 (240-193317-4), DUP-KLI (240-193317-5), EB-KLI (240-193317-6), (LCS 160-631942/2-A), (MB 160-631942/1-A) and (240-193317-B-6-A DU)

Method 904.0: Radium-228 Prep Batch 160-632941

Insufficient sample volume was available to perform a sample duplicate for the following samples: DEK-MW-15003 (240-193317-1), OW-11 (240-193317-3), OW-12 (240-193317-4) and DUP-KLI (240-193317-5). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method 904.0: Radium-228 Prep Batch 160-632941

The following sample was prepared at a reduced aliquot due to Matrix: OW-10 (240-193317-2). A laboratory control sample / laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method 904.0: Radium-228 batch 631946

The precision was outside the acceptable control limits. The original sample and batch duplicate were recounted but yielded inconsistent results. A re-extract was initiated however there is insufficient sample volume to perform it, therefore the original results have been reported. The client should take this into consideration when evaluating the data

(240-193317-B-6-B DU)

Method 904.0: Radium-228 batch 631946

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

EB-KLI (240-193317-6), (LCS 160-631946/2-A), (MB 160-631946/1-A) and (240-193317-B-6-B DU)

Job ID: 240-193317-1

3

_

_

8

9

11

. .

14

Case Narrative

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193317-1 (Continued)

Laboratory: Eurofins Cleveland (Continued)

Method 904.0: Radium-228 prep batch 160-632941:

The LCSD recovered at 131% which is outside the 75-125 limits. The LCS recovery was within the 75-125 QC limits. Additionally the primary purpose of the LCSD is to demonstrate method precision. The RER/RPD/DER between the LCS/LCSD passed. In addition all associated samples have activity below the MDC and RL. Original results will be qualified and reported. (LCSD 160-632941/3-A)

Method 904.0: Radium-228 prep batch 160-632941:

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. DEK-MW-15003 (240-193317-1), OW-10 (240-193317-2), OW-11 (240-193317-3), OW-12 (240-193317-4), DUP-KLI (240-193317-5), (LCS 160-632941/2-A), (LCSD 160-632941/3-A) and (MB 160-632941/1-A)

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.

Job ID: 240-193317-1

__

3

4

6

8

9

1 1

12

13

11/

Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

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

2

Job ID: 240-193317-1

3

4

-

6

9

10

14

4 /

Sample Summary

Client: TRC Environmental Corporation.
Project/Site: Karn/Weadock CCR Groundwater Monitoring

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-193317-1	DEK-MW-15003	Water	10/04/23 13:47	10/11/23 08:00
240-193317-2	OW-10	Water	10/04/23 14:57	10/11/23 08:00
240-193317-3	OW-11	Water	10/04/23 12:29	10/11/23 08:00
240-193317-4	OW-12	Water	10/04/23 15:44	10/11/23 08:00
240-193317-5	DUP-KLI	Water	10/04/23 00:00	10/11/23 08:00
240-193317-6	FR-KI I	Water	10/04/23 16:08	10/11/23 08:00

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: DEK-MW-15003

Date Collected: 10/04/23 13:47 Date Received: 10/11/23 08:00

Lab Sample ID: 240-193317-1

Matrix: Water

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	0.0354	U	0.0715	0.0716	1.00	0.129	pCi/L	10/13/23 10:40	10/24/23 11:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	93.2		30 - 110					10/13/23 10:40	10/24/23 11:33	1

		-228 (GFP	•							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.491	U *	0.351	0.354	1.00	0.522	pCi/L	10/23/23 11:14	10/30/23 11:48	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.4		30 - 110					10/23/23 11:14	10/30/23 11:48	1
Y Carrier	75.1		30 - 110					10/23/23 11:14	10/30/23 11:48	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	0.526		0.358	0.361	5.00	0.522	pCi/L	_ ·	11/09/23 23:21	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: OW-10 Lab Sample ID: 240-193317-2

Date Collected: 10/04/23 14:57 **Matrix: Water** Date Received: 10/11/23 08:00

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0931	U	0.116	0.116	1.00	0.192	pCi/L	10/13/23 10:40	10/24/23 11:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	88.5		30 - 110					10/13/23 10:40	10/24/23 11:33	1

	4.0 - Radium		•,							
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.634	U *	0.489	0.493	1.00	0.745	pCi/L	10/23/23 11:14	10/30/23 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	84.1		30 - 110					10/23/23 11:14	10/30/23 11:51	1
Y Carrier	77.8		30 - 110					10/23/23 11:14	10/30/23 11:51	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	0.727	U	0.503	0.506	5.00	0.745	pCi/L		11/09/23 23:21	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: OW-11 Lab Sample ID: 240-193317-3 Date Collected: 10/04/23 12:29

Matrix: Water

Job ID: 240-193317-1

Date Received: 10/11/23 08:00

Method: EPA 903.0) - Radium	-226 (GFP	C)							
			Count Uncert.	Total Uncert.						
Analyte		Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC		Prepared	Analyzed	Dil Fac
Radium-226	0.0306	U	0.0748	0.0749	1.00	0.137	pCi/L	10/13/23 10:40	10/24/23 11:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	94.6		30 - 110					10/13/23 10:40	10/24/23 11:34	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	0.234	U *	0.298	0.299	1.00	0.496	pCi/L	10/23/23 11:14	10/30/23 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	89.2		30 - 110					10/23/23 11:14	10/30/23 11:51	1
Y Carrier	81.5		30 - 110					10/23/23 11:14	10/30/23 11:51	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	0.265	U	0.307	0.308	5.00	0.496	pCi/L		11/09/23 23:21	1

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Lab Sample ID: 240-193317-4 **Client Sample ID: OW-12**

Date Collected: 10/04/23 15:44 **Matrix: Water** Date Received: 10/11/23 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	0.259		0.110	0.112	1.00	0.124	pCi/L	10/13/23 10:40	10/24/23 11:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	95.1		30 - 110					10/13/23 10:40	10/24/23 11:34	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	0.341	U *	0.310	0.312	1.00	0.488	pCi/L	10/23/23 11:14	10/30/23 11:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	92.2		30 - 110					10/23/23 11:14	10/30/23 11:51	1
Y Carrier	80.0		30 - 110					10/23/23 11:14	10/30/23 11:51	1

Method: TAL-STL F	Ra226_Ra	228 - Com	bined Radi	um-226 ar	nd Radiur	n-228				
	_		Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.600	·	0.329	0.331	5.00	0.488	pCi/L		11/09/23 23:21	1

Client Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: DUP-KLI

Date Collected: 10/04/23 00:00 Date Received: 10/11/23 08:00 Lab Sample ID: 240-193317-5

Matrix: Water

Job ID: 240-193317-1

Method:	EPA	903.0	- Radium-226	(GFPC)

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.281		0.123	0.126	1.00	0.143	pCi/L	10/13/23 10:40	10/24/23 11:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	91.9		30 - 110					10/13/23 10:40	10/24/23 11:34	1

Method: EPA 904.0 - Radium-228 (GFPC

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	0.208	U *	0.371	0.371	1.00	0.638	pCi/L	10/23/23 11:14	10/30/23 11:52	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	83.6		30 - 110					10/23/23 11:14	10/30/23 11:52	1
Y Carrier	79.6		30 - 110					10/23/23 11:14	10/30/23 11:52	1

Method: TAL-STL Ra226_Ra228 - Combined Radium-226 and Radium-228

	_		Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Radium 226 + 228	0.489	U	0.391	0.392	5.00	0.638	pCi/L		11/09/23 23:21	1

Eurofins Cleveland

Client Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: EB-KLI Lab Sample ID: 240-193317-6 Date Collected: 10/04/23 16:08 **Matrix: Water**

Date Received: 10/11/23 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	0.143		0.100	0.101	1.00	0.142	pCi/L	10/13/23 10:40	10/24/23 11:34	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		30 - 110					10/13/23 10:40	10/24/23 11:34	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	0.321	U	0.314	0.315	1.00	0.503	pCi/L	10/13/23 10:49	10/19/23 11:19	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	96.8		30 - 110					10/13/23 10:49	10/19/23 11:19	1
Y Carrier	81.9		30 - 110					10/13/23 10:49	10/19/23 11:19	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	0.464	U	0.330	0.331	5.00	0.503	pCi/L		11/09/23 23:21	1

Job ID: 240-193317-1

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193317-1

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)	
240-193317-1	DEK-MW-15003	93.2	
240-193317-2	OW-10	88.5	
240-193317-3	OW-11	94.6	
240-193317-4	OW-12	95.1	
240-193317-5	DUP-KLI	91.9	
240-193317-6	EB-KLI	96.8	
240-193317-6 DU	EB-KLI	95.4	
LCS 160-631942/2-A	Lab Control Sample	96.8	
MB 160-631942/1-A	Method Blank	96.8	
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)	
240-193317-1	DEK-MW-15003	90.4	75.1	
240-193317-2	OW-10	84.1	77.8	
240-193317-3	OW-11	89.2	81.5	
240-193317-4	OW-12	92.2	80.0	
240-193317-5	DUP-KLI	83.6	79.6	
240-193317-6	EB-KLI	96.8	81.9	
240-193317-6 DU	EB-KLI	95.4	70.3	
LCS 160-631946/2-A	Lab Control Sample	96.8	83.0	
LCS 160-632941/2-A	Lab Control Sample	96.0	78.9	
LCSD 160-632941/3-A	Lab Control Sample Dup	96.2	76.3	
MB 160-631946/1-A	Method Blank	96.8	75.9	
MB 160-632941/1-A	Method Blank	92.7	77.0	

Ba = Ba Carrier

Y = Y Carrier

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-631942/1-A

Matrix: Water

Analysis Batch: 633301

Client Sample ID: Method Blank

Prep Type: Total/NA

Job ID: 240-193317-1

Prep Batch: 631942

MB MB Uncert. Uncert. **MDC** Unit Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL Prepared Analyzed Dil Fac Radium-226 0.09547 U 0.0895 0.0899 1.00 0.139 pCi/L 10/13/23 10:40 10/24/23 11:33

Total

Count

LCS LCS

Result Qual

11.73

Spike

Added

30 - 110

11.3

MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 96.8 30 - 110 10/13/23 10:40 10/24/23 11:33

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 631942

Lab Sample ID: LCS 160-631942/2-A **Matrix: Water**

Analysis Batch: 633301

Total Uncert.

0.145 pCi/L

RL

1.00

%Rec **MDC** Unit %Rec Limits

103 75 - 125

LCS LCS Carrier %Yield Qualifier Limits 96.8

Lab Sample ID: 240-193317-6 DU

Matrix: Water

Analyte

Radium-226

Ba Carrier

Analysis Batch: 633301

Client Sample ID: EB-KLI

Prep Type: Total/NA Prep Batch: 631942

Total

 $(2\sigma + / -)$

1.23

DU DU **RER** Sample Sample Uncert. Result Qual $(2\sigma + / -)$ RL **MDC** Unit Analyte Result Qual RER Limit 0.02905 U Radium-226 0.143 0.0708 1.00 0.130 pCi/L 0.66

DU DU

Carrier %Yield Qualifier Limits Ba Carrier 95.4 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-631946/1-A

Matrix: Water

Analysis Batch: 632573

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

Prep Batch: 631946

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 0.355 1.00 0.506 10/13/23 10:49 10/19/23 11:18 0.6152 0.359 pCi/L

> MB MB

Carrier %Yield Qualifier Limits Dil Fac Prepared Analyzed Ba Carrier 96.8 30 - 110 10/13/23 10:49 10/19/23 11:18 30 - 110 Y Carrier 75.9 10/13/23 10:49 10/19/23 11:18

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193317-1

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

Lab Sample ID: LCS 160-631946/2-A

Matrix: Water

Analysis Batch: 632573

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 631946

Total

Spike LCS LCS Uncert. %Rec **MDC** Unit Analyte Added Result Qual $(2\sigma + / -)$ RL%Rec Limits Radium-228 7.79 8.402 1.16 1.00 0.490 pCi/L 108 75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 96.8 30 - 110 Y Carrier 83.0 30 - 110

Lab Sample ID: 240-193317-6 DU

Matrix: Water

Analysis Batch: 632573

Client Sample ID: EB-KLI

Prep Type: Total/NA

Prep Batch: 631946

Sample Sample DU DU

Total

Uncert. **RER** Analyte Result Qual RL **MDC** Unit Result Qual $(2\sigma + / -)$ RER Limit 0.552 pCi/L 0.321 U 2.45 Radium-228 2.645 F 0.633 1.00

DU DU

%Yield Qualifier Carrier Limits 30 - 110 Ba Carrier 95 4 Y Carrier 70.3 30 - 110

Lab Sample ID: MB 160-632941/1-A Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 634308

Prep Type: Total/NA

Prep Batch: 632941

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-228 0.03289 U 0.307 0.307 1.00 0.568 pCi/L 10/23/23 11:14 10/30/23 11:48

MB MΒ %Yield

Carrier Qualifier Limits Prepared Ba Carrier 92.7 30 - 110 10/23/23 11:14 Y Carrier 30 - 110 10/23/23 11:14 10/30/23 11:48 77.0

Lab Sample ID: LCS 160-632941/2-A **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 634308

Total

Prep Type: Total/NA

Prep Batch: 632941

Spike LCS LCS Uncert. %Rec Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-228 1.20 7.76 8.365 1.00 0.507 pCi/L 108 75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 96.0 30 - 110 Y Carrier 78.9 30 - 110

Eurofins Cleveland

Analyzed Dil Fac

10/30/23 11:48

QC Sample Results

Client: TRC Environmental Corporation. Job ID: 240-193317-1

Project/Site: Karn/Weadock CCR Groundwater Monitoring

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

Lab Sample ID: LCSD 160-632941/3-A **Client Sample ID: Lab Control Sample Dup**

Matrix: Water

Analysis Batch: 634308

Prep Type: Total/NA Prep Batch: 632941

Total LCSD LCSD %Rec RER Spike Uncert. Analyte Added Result Qual (2σ+/-) RLMDC Unit %Rec Limits RER Limit Radium-228 7.76 10.18 1.38 1.00 0.519 pCi/L 131 75 - 125 0.70

LCSD LCSD

Carrier %Yield Qualifier Limits Ba Carrier 96.2 30 - 110 Y Carrier 76.3 30 - 110

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Prep Batch: 631942

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-193317-1	DEK-MW-15003	Total/NA	Water	PrecSep STD	
240-193317-2	OW-10	Total/NA	Water	PrecSep STD	
240-193317-3	OW-11	Total/NA	Water	PrecSep STD	
240-193317-4	OW-12	Total/NA	Water	PrecSep STD	
240-193317-5	DUP-KLI	Total/NA	Water	PrecSep STD	
240-193317-6	EB-KLI	Total/NA	Water	PrecSep STD	
MB 160-631942/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-631942/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	
240-193317-6 DU	EB-KLI	Total/NA	Water	PrecSep STD	

Prep Batch: 631946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-193317-6	EB-KLI	Total/NA	Water	PrecSep_0	
MB 160-631946/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-631946/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
240-193317-6 DU	EB-KLI	Total/NA	Water	PrecSep_0	

Prep Batch: 632941

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-193317-1	DEK-MW-15003	Total/NA	Water	PrecSep_0	
240-193317-2	OW-10	Total/NA	Water	PrecSep_0	
240-193317-3	OW-11	Total/NA	Water	PrecSep_0	
240-193317-4	OW-12	Total/NA	Water	PrecSep_0	
240-193317-5	DUP-KLI	Total/NA	Water	PrecSep_0	
MB 160-632941/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-632941/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-632941/3-A	Lab Control Sample Dup	Total/NA	Water	PrecSep 0	

Job ID: 240-193317-1

Eurofins Cleveland

Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: DEK-MW-15003

Date Collected: 10/04/23 13:47 Date Received: 10/11/23 08:00

Lab Sample ID: 240-193317-1

Matrix: Water

Job ID: 240-193317-1

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:33
Total/NA	Prep	PrecSep_0			632941	KAC	EET SL	10/23/23 11:14
Total/NA	Analysis	904.0		1	634308	SCB	EET SL	10/30/23 11:48
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Client Sample ID: OW-10 Lab Sample ID: 240-193317-2 Date Collected: 10/04/23 14:57 **Matrix: Water**

Date Received: 10/11/23 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:33
Total/NA	Prep	PrecSep_0			632941	KAC	EET SL	10/23/23 11:14
Total/NA	Analysis	904.0		1	634362	MLK	EET SL	10/30/23 11:51
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Client Sample ID: OW-11 Lab Sample ID: 240-193317-3

Date Collected: 10/04/23 12:29 **Matrix: Water** Date Received: 10/11/23 08:00

_	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:34
Total/NA	Prep	PrecSep_0			632941	KAC	EET SL	10/23/23 11:14
Total/NA	Analysis	904.0		1	634362	MLK	EET SL	10/30/23 11:51
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Lab Sample ID: 240-193317-4 **Client Sample ID: OW-12** Date Collected: 10/04/23 15:44 **Matrix: Water**

Date Received: 10/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:34
Total/NA	Prep	PrecSep_0			632941	KAC	EET SL	10/23/23 11:14
Total/NA	Analysis	904.0		1	634362	MLK	EET SL	10/30/23 11:51
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Page 20 of 28

Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Lab Sample ID: 240-193317-5

Matrix: Water

Job ID: 240-193317-1

Client Sample ID: DUP-KLI Date Collected: 10/04/23 00:00 Date Received: 10/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:34
Total/NA	Prep	PrecSep_0			632941	KAC	EET SL	10/23/23 11:14
Total/NA	Analysis	904.0		1	634362	MLK	EET SL	10/30/23 11:52
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Client Sample ID: EB-KLI Lab Sample ID: 240-193317-6

Date Collected: 10/04/23 16:08 Matrix: Water Date Received: 10/11/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631942	BMW	EET SL	10/13/23 10:40
Total/NA	Analysis	903.0		1	633301	FLC	EET SL	10/24/23 11:34
Total/NA	Prep	PrecSep_0			631946	BMW	EET SL	10/13/23 10:49
Total/NA	Analysis	904.0		1	632573	FLC	EET SL	10/19/23 11:19
Total/NA	Analysis	Ra226_Ra228		1	636194	EMH	EET SL	11/09/23 23:21

Laboratory References:

EET SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

9

А

5

7

9

11

12

_ _ _ _

Accreditation/Certification Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Laboratory: Eurofins St. Louis

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-23
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	11-30-23
lowa	State	373	12-01-24
Kentucky (DW)	State	KY90125	12-31-23
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-23
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-23
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	MO000542020-1	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-24
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	02-28-24
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	MO000542021-14	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	12-31-23

Job ID: 240-193317-1

3

4

5

7

9

10

12

13

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

Шβ	Eurofins Cleveland 180 S Van Buren Avenue	CHIGAN		والق	by of Cheetan Day aic	0	8	18/17		ås eurofins	
ĕ ±	c. 330-497-0772	2		Sno	rouy r	ploca	2	1-1		-	Environment Testing
Ū	Client Information	Sampler Jake	Knenz	2	Lab PM Brooks	Lab PM Brooks, Kris M		Carrier Tracking No(s)	ing No(s)	COC No. 240-112532-29054	
ij s	Client Contact. Jacob Krenz	Phone 734-	795-9	204	E-Mail Kris	E-Mail Kris Brooks@et.eurofinsus.com	urofinsus.cc	State of Ongin	·u	Page Page 1 of 1	
ő F	Company: TRC Environmental Corporation.			PWSID			•	Analysis Requested		Job #	
Ad 15	Address 1540 Eisenhower Place	Due Date Requested:	÷							10	Hexane
Ann	City Ann Arbor	TAT Requested (days):	/s):								- None
Str	State, Zip: MI, 48108-7080	Compliance Project:	: A Yes A	No						D - Nithic Acid	P - Na2O4S Q - Na2SO3 R - Na2SO3
Ph 73	Phone 734-971-7080(Tel) 734-971-9022(Fax)	PO# 199812				(0					H2SO4
파 수	Email JKrenz@trccompanies.com	# OM								I - Ice J - DI Water	U - Acetone V - MCAA
Ka Pr	Project Name. Karn/Weadock CCR DEK Lined Impoundment	Project #: 24024154				EU SE	15!T 1			K · EDTA L - EDA	- Trizma other (specify)
Site	6	\$SOW#				AUS	agnsT l	24		Other:	
	o de constitue de la constitue		d)		Matrix (Wewater, Smsolid, Onwastefoll,	ield Filtered	onsbns12 - 0.40	0-193317 (redmul/ lsid	
	ampre identification	Sample Date		Preservar	Preservation Code:)6 C	06 C	Chair			Special Instructions/Note:
	DEK-MW-15003	10-4-23	1347	9	Water	V	×	n of (
	OW-10	1	LSH)	0	Water	×	×	Custo			
∫ 6	OW-11	10-4-23		0	Water	+	×	ody			
	OW-12	10-4-23	1544	S	Water	-	*				
<u> </u>	DUP-KLI	10-4-23	1	3	Water	×	*				
固	EB-KLI	10-4-23	1600	3	Water	×	×				
					Mater	* *	*		-	TIOUS	ZVC
										51	0
[₹ □	Possible Hazard Identification Non-Hazard Flammable Skin Irritant Poi	Poison B (Inknown		Radiological		Sample	le Disposal (A I	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	samples are retai	tained longer than 1 m	onth)
<u> </u>	V, Other (specify)					Special Ir	structions/C	Requirem	-		Months
ш	Empty Kit Relinquished by:		Date	, ,		Time.		Method	Method of Shipment:		
æ æ	Relinquished y	Date/Time.	は	11/570	Sommany The	Received by	SHA	THE PERSON NAMED IN COLUMN TO A COLUMN TO	Date/Time	3 13.00	Company
	Relinquished by Relinquished by	Date/Time 16/10/83 Date/Time	13:0	9	Company	Received by	Bived by	fore		3 8m	Company
0/202	Custody Seals Intact: Custody Seal No.					Cooler	Temperature(s	Cooler Temperature(s) °C and Other Remarks.			
1	A Tes a wo					$\frac{1}{1}$				74 74	

MICHIGAN 190 Chain of Custody Record (8//.7

100017
Eurofins – Cleveland Sample Receipt Form/Narrative Login #: \(\frac{35}{} \)
Client Tre environmental Site Name Cooler unpacked by:
Cooler Received on 10/11/23 Opened on 10/11/23 L Osborne
FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time Storage Location
Eurofins Cooler # Foam Box Client Cooler Box Other
Packing material used: Bubble Wrap Foam Plastic Bag (None Other COOLANT: Wet Ice Blue Ice Dry Ice Water None Cooler temperature upon receipt
IR GUN # 22 (CF °C) Observed Cooler Temp. 1-0°C Corrected Cooler Temp. 1-0°C
Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity -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)? -Were tamper/custody seals intact and uncompromised? Shippers' packing slip attached to the cooler(s)? Did systedy representative completes? Ves No Yes No VOAs Oil and Grease
Toc
5. Were the custody papers relinquished & signed in the appropriate place? 6. Was/were the person(s) who collected the samples clearly identified on the COC? 7
7. Did all bottles arrive in good condition (Unbroken)? 8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N) and sample type of grab/comp(Y/N)?
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? (Yes) No
12. Are these work share samples and all listed on the COC? Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC316719
14. Were VOAs on the COC?
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 Wes
17. Was a LL Hg or Me Hg trip blank present? Yes No
Contacted PM by via Verbal Voice Mail Other
Concerning
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
19. SAMPLE CONDITION Sample(s) were received after the recommended holding time had expired.
Sample(s) were received in a broken container.
Sample(s) were received with bubble >6 mm in diameter. (Notify PM)
20. SAMPLE PRESERVATION
Sample(s) were further preserved in the laboratory.
Sample(s) were further preserved in the laboratory. Time preserved: Preservative(s) added/Lot number(s):

VOA Sample Preservation - Date/Time VOAs Frozen: ___

EB-KLI

Login Container Summary Report

240-193317

Temperature readings: _ Container **Preservative** Client Sample ID Container Type Temp Added (mls) Lot # Lab ID pН DEK-MW-15003 240-193317-A-1 Plastic 1 liter - Nitric Acid <2 DEK-MW-15003 240-193317-B-1 Plastic 1 liter - Nitric Acid <2 OW-10 240-193317-A-2 Plastic 1 liter - Nitric Acid <2 OW-10 240-193317-B-2 Plastic 1 liter - Nitric Acid <2 OW-11 240-193317-A-3 Plastic 1 liter - Nitric Acid <2 OW-11 240-193317-B-3 Plastic 1 liter - Nitric Acid <2 OW-12 Plastic 1 liter - Nitric Acid 240-193317-A-4 <2 OW-12 240-193317-B-4 Plastic 1 liter - Nitric Acid <2 **DUP-KLI** 240-193317-A-5 Plastic 1 liter - Nitric Acid <2 **DUP-KLI** 240-193317-B-5 Plastic 1 liter - Nitric Acid <2 EB-KLI 240-193317-A-6 Plastic 1 liter - Nitric Acid <2

Plastic 1 liter - Nitric Acid

<2

240-193317-B-6

Page 1 of 1

Phone: 330-497-9396 Fax: 330-497-0772 180 S. Van Buren Avenue Barberton, OH 44203

Chain of Custody Record



💸 eurofins

Simple Identification - Client ID (Lab ID) Cardon Material Cardon Material Mater		1.780c71-042
11/9/2023 TAT Requested (days): TAT Requested (days):		
TAT Requested (days): TAT	Kris.Brooks@et.eurofinsus.com	Michigan
11/9/2023 TAT Requested (fays): TAT Requested (fays):		
1/9/2023 1/4/2023 1/9/2023 1/9/2023 1/9/2023 1/9/2023 1/9/2023 1/9/2023 1/9/2023 1/9/2024	crociations required (386 flots):	300 # OAC
11/9/2023 TAT Requested (days): 298-8757(Fax) WO #: WO #: Sample Date Sample Date Time Caromp, Protect #: Sample Date Time Caromp, Protect #: Type Caromp Protect #: Type Caromp, Protect #: Type Caromp Protect #: Type Protec		7-11-13-11-1
TAT Requested (days): 298-8757(Fax) WO #: 24024154 Sample Cleonp, Britaus, Little	Analysis Requested	
298-8757(Fax) WO #: WO #: WO #: WO #: A		A - HCL B - NaOH
WO #: NO #		C - Zn Acetale Nazova D - Nitric Acid P - Nazova E - Na-NSO4 Q - NazSO3
WO #: Project #: Sample	t List	F - MeOH S - N2S2203 G - Amchlor T - T - T - T - T - T - T - T - T - T
Client ID (Lab ID) Sample Cacomp Avater	lo) Targe	H - Ascorbic Acid
SSOW#: Sample Date Sample C=Comp, Sample Sample C=Comp, Sample Sample C=Comp, Sample Sample C=Comp, Sample Sample Sample C=Comp, Sample Sampl	es of N andard	J - DI Water K - EDTA L - EDA
Sample Date Type Sample (W-water, IType Sample Sample Sample Sample Sample Sample Sample Sample Sample Date Time G=Grab Sample Sample Sample G=Grab Sample Samp	Stano	Coner (Specify)
Sample Date Time G=grab AANI Code:	MSM miol	o redmuM i
3317-1) 10/4/23 Eastern Water 10/4/23 Eastern	903.	Special Instructions/Note
3317-1) 10/4/23	X	×
10/4/23 14:57 Water 10/4/23 Eastern 10/4/23 Eastern 10/4/23 Eastern 10/4/23 Eastern 10/4/23 Eastern 10/4/23 Eastern Water	× × ×	TVA protocol - Ra-226+228 action limit at
10/4/23 12:29 Water 10/4/23 Eastern Water 10/4/23 Eastern Water 10/4/23 Eastern Water	×	
10/4/23	×	_
10/4/23 Eastern Water 10/4/23 Eastern Water	× × ×	
10/4/23 16:08 Water Eastern	×	
	×	
		9.0 pc/r.

laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/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 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. Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Possible Hazard Identification

Unconfirmed		<u> </u>		saiduies ii nas	are retained ic	nger than 1	month)	
			Return To Client Dispo	Disposal By Lab	Archive For	į	Months	
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2		3	ı		3	MOURIS	
			receipt and account of the properties.					
Franch Kit Relinquished by:	.otol							
Religion of the last		I me:		Method of Shipment:				
	1	Company	Docement by					
There were		100 E	received by:	Date/Time:			Company	
Relinquished by:	Date/Time		4					
/1		Company	Received by:	Date/Time:	ii o		Company	
Relinquished by:	DataTime							
	Carer ane.	Company	Received by:	Date/Time:	::		Company	
Cuchada Cools Interest								
Constant seals intact: Custody Seal No.:			Co. Co.					
Δ Yes Δ No			Cooler Temperature(s) 'C and Other Remarks:					
			1 (1 : 1 :	8		<i>4 5</i>		
			1 2 4					

Eurofins Cleveland 180 S. Van Buren Avenue

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

7
2
0
Ö
9
Q
0
2
ä
Ü
_
0
_
ä
<u>a</u>
六
J

Environment Testing

💸 eurofins

	Sampler:			II ab PM	×				ľ	Teas.	A PACE				
Client Information (Sub Contract Lab)				Broo	Brooks, Kris M	_				Camer Iracking No(s):	ing No(s):		240-175097 1	7.1	
Client Contact: Shipping/Receiving	Phone:			E-Mail:	000				0,	State of Origin:	ë		Page:	1.7	
Company				NIIS	Aris. Brooks@et.eurofinsus.com	er euro	IIIISUS.C	Ē		lichigan			Page 1 of 1	_	
TestAmerica Laboratories, Inc.					Accreditations Required (See note)	ons Requ	ired (See	note):					Job #:	7 7	
Address: 13715 Rider Trail North,	Due Date Requested: 11/9/2023	ğ						Analysis Doginated		2000			Preservation Codes:	n Codes:	T
City: Earth City	TAT Requested (days):	ays):								Caren	F	F	A - HCL B - NaOH		
State, Zip: MO, 63045	T												C - Zn Acetate D - Nitric Acid		
Phone: 314-298-8566(Tel) 314-298-8757(Fax)	PO #:				15 (M)								F - MeOH G - Amchlor	R - Na2S2O3 S - H2SO4 T - TSD Dodocobudges	
Email:	WO #:				(0)								H - Ascorbic Acid		anyorate
Project Name: Kam/Weadock CCR Groundwater Monitoring	Project #: 24024154				10 86									W - pH 4-5 Y - Trizma	
Site	SSOW#:				SD (X		Эе						offer.	2 - other (specify)	(À
			Sample	Matrix (Westerler	IVSV		40_8!						per c		
		Sample	Type		d Filte form A orPrec	on 4/0	SS6,735						muM I		
Sample Identification - Client ID (Lab ID)	Sample Date	Time	G=grab)		Per	-	Ra22							Special Instructions/Note:	
	\langle	X	Preservation Code:	on Code:	X						76 P		X		ė
DEK-MW-15003 (240-193317-1)	10/4/23	13:47 Eastern		Water	×	×	×						2 TVA protocc	TVA protocol - Ra-226+228 action limit at	limit at
OW-10 (240-193317-2)	10/4/23	14:57 Eastern		Water	×	×	×						2 TVA protoco	TVA protocol - Ra-226+228 action limit at	limit at
OW-11 (240-193317-3)	10/4/23	12:29 Fastern		Water	×	×	×				1			5.0 pCi/L. TVA protocol - Ra-226+228 action limit at	limit at
OW-12 (240-193317-4)	10/4/23	15:44 Eastern		Water	×	×	×					-		5.0 pcvl TVA protocol - Ra-226+228 action limit at	limit at
DUP-KLI (240-193317-5)	10/4/23	Eastern		Water	×	×	×	-					-	TVA protocol - Ra-226+228 action limit at	limit at
EB-KLI (240-193317-6)	10/4/23	16:08 Eastern		Water	×	×	×	-				-		5.0 pCi/L. TVA protocol - Ra-226+228 action limit at	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 chirament is formered and according to the chirament is according to the ch	t Testing North Centr	al, LLC places	the ownership	of method, anal	yte & accre	ditation	compliance	upon our s	ubcontra	t laboratori	This s	mole shir	ment is forwarded		
The plant of the p	Ove for analysis/lests	a constant boing	nahend the sec	the same of the last								time order	CHIEF OF WALLIEU	Judge chain-of-custody	444

laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC above for analysis/lests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC alterition 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. Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont Possible Hazard Identification Note: Sinc

Primary Deliverable Rank: 2

Deliverable Requested: I, II, III, IV, Other (specify)

Unconfirmed

Months

	Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	Special Instructions/QC Requirements:			MORRITIS	П
	Franty Kit Religenished by:						
•	The industrial by	Date:	Time:	Method of Shipment:			1
_	ŀ	1					
1	The seal of the seal of	このことにいる。これに対していた。	Received by:	Date/Time:		Company	
l 1	Relinquisped by:	Date/Time:					
/1			Received by:	Delectime:	11 1000 0000 0	Company (ı
0/	Relinquished by:	Date/Time	DA. W. OTHER	alan me! 1	4 1023 DO22	これの	
20		Company	Received by:	Date/Time:		Company	П
)2	Custody Spale Intact. Custody Spal No.						
3	A Yes A No		Cooler Temperature(s) °C and Other Remarks:				
			1 1 1 1				
			1 2 3	3 3	4 5 6		

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-193317-1

Login Number: 193317
List Source: Eurofins St. Louis
List Number: 2
List Creation: 10/12/23 12:19 PM

Creator: Worthington, Sierra M

Creator: Worthington, Sierra M		
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

3

4

6

8

10

10

13

5

6 7

8

10

11 12

11

ANALYTICAL REPORT

PREPARED FOR

Attn: Darby Litz TRC Environmental Corporation. 1540 Eisenhower Place Ann Arbor, Michigan 48108-7080

Generated 11/7/2023 2:58:30 PM

JOB DESCRIPTION

Karn/Weadock CCR Groundwater Monitoring

JOB NUMBER

240-193136-1

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 11/7/2023 2:58:30 PM

Authorized for release by Kris Brooks, Project Manager II Kris.Brooks@et.eurofinsus.com

(330)966-9790

Table of Contents

Cover Page	1
Table of Contents	3
Definitions/Glossary	4
Case Narrative	5
Method Summary	6
Sample Summary	7
Client Sample Results	8
Tracer Carrier Summary	9
QC Sample Results	10
QC Association Summary	11
Lab Chronicle	12
Certification Summary	13
Chain of Custody	14
Receint Checklists	21

4

R

46

11

13

Definitions/Glossary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193136-1

Qualifiers

Qualifier Qualifier Description

U Result is less than the sample detection limit.

Glossary

DL, RA, RE, IN

Appreviation	These commonly used appreviations may or may not be present in this report.
п	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)

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)

Limit of Detection (DAD/DOE)

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

E

6

9

4 4

12

13

Case Narrative

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193136-1

Laboratory: Eurofins Cleveland

Narrative

Job Narrative 240-193136-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

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

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

Receipt

The sample was received on 10/9/2023 8:00 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.5°C

Gas Flow Proportional Counter

Method 903.0: Radium-226 batch 631370

Based upon client request, Ra-226 is reported without a 21-day waiting period to ensure 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. The results are reported with this narrative.

DEK-MW-18001 (240-193136-1), (LCS 160-631370/2-A), (MB 160-631370/1-A), (240-193059-A-6-A) and (240-193059-B-6-A DU)

Method 904.0: Radium-228 batch 631371

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

DEK-MW-18001 (240-193136-1), (LCS 160-631371/2-A), (MB 160-631371/1-A), (240-193059-A-6-B) and (240-193059-B-6-B 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.

Job ID: 240-193136-1

J

4

5

6

9

10

12

13

Method Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

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

2

Job ID: 240-193136-1

5

9

11

13

Sample Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-193136-1	DEK-MW-18001	Water	10/04/23 06:12	10/09/23 08:00

Job ID: 240-193136-1

3

6

8

9

10

12

13

Client Sample Results

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: DEK-MW-18001

Date Collected: 10/04/23 06:12 Date Received: 10/09/23 08:00

Lab Sample ID: 240-193136-1 **Matrix: Water**

Job ID: 240-193136-1

Method: EPA 903.0) - Radium-226	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.148		0.0808	0.0819	1.00	0.0936	pCi/L	10/10/23 12:33	10/24/23 09:22	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.7		30 - 110					10/10/23 12:33	10/24/23 09:22	1

Method: EPA 904.	o readiam 220	(31.5)	Count	Total						
				Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.286	U	0.351	0.352	1.00	0.581	pCi/L	10/10/23 12:35	10/16/23 12:04	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	90.7		30 - 110					10/10/23 12:35	10/16/23 12:04	1
Y Carrier	74.4		30 - 110					10/10/23 12:35	10/16/23 12:04	1

Method: TA	L-STL Ra	226_Ra228 -	- Combined	d Radium-226	and Radiui	m-228					
				Count	Total						
				Uncert.	Uncert.						
Analyte		Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Combined Rac	dium 226	0.434	U	0.360	0.361	5.00	0.581	pCi/L		11/07/23 15:48	1
	dium 226								Prepared		Dil

Tracer/Carrier Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193136-1

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)	
240-193136-1	DEK-MW-18001	90.7	
LCS 160-631370/2-A	Lab Control Sample	101	
MB 160-631370/1-A	Method Blank	101	
Tracer/Carrier Legend			
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Y = Y Carrier

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(30-110)	(30-110)	
240-193136-1	DEK-MW-18001	90.7	74.4	
LCS 160-631371/2-A	Lab Control Sample	101	84.9	
MB 160-631371/1-A	Method Blank	101	84.9	

Eurofins Cleveland

Page 9 of 21

2

3

6

_

9

4

1 2

13

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-631370/1-A

Lab Sample ID: LCS 160-631370/2-A

Matrix: Water

Analysis Batch: 633137

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 631370

MB MB Uncert. Uncert. Analyte Result Qualifier (2σ+/-) (2σ+/-) RL MDC Unit Prepared Analyzed Dil Fac Radium-226 -0.01000 U 0.0400 0.0400 1.00 0.0929 pCi/L 10/10/23 12:33 10/24/23 09:19

Total

Count

MВ

Qualifier Limits Prepared Dil Fac Carrier %Yield Analyzed Ba Carrier 101 30 - 110 10/10/23 12:33 10/24/23 09:19

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 631370

Total

LCS LCS %Rec Spike Uncert. Added Analyte Result Qual $(2\sigma + / -)$ RL MDC Unit %Rec Limits Radium-226 1.00 11.3 10.93 1.13 0.0948 pCi/L 97 75 - 125

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 101 30 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-631371/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 633137

Analysis Batch: 632123

Client Sample ID: Method Blank

Prep Type: Total/NA

Dil Fac

Prep Batch: 631371

			Count	Total						
	МВ	MB	Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2227	U	0.292	0.293	1.00	0.488	pCi/L	10/10/23 12:35	10/16/23 12:05	1

Carrier %Yield Qualifier Limits Ba Carrier 101 30 - 110 30 - 110 Y Carrier 84.9

10/10/23 12:35 10/16/23 12:05 10/10/23 12:35 10/16/23 12:05

Analyzed

Prepared

Lab Sample ID: LCS 160-631371/2-A

MB MB

Matrix: Water

Analysis Batch: 632123

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

Prep Batch: 631371

				Total						
	Spike	LCS	LCS	Uncert.					%Rec	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Radium-228	7.79	8.365		1.15	1.00	0.475	pCi/L	107	75 - 125	

	LCS	LCS	
Carrier	%Yield	Qualifier	Limits
Ba Carrier	101		30 - 110
Y Carrier	84.9		30 - 110

Eurofins Cleveland

QC Association Summary

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Job ID: 240-193136-1

Rad

Prep Batch: 631370

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-193136-1	DEK-MW-18001	Total/NA	Water	PrecSep STD	
MB 160-631370/1-A	Method Blank	Total/NA	Water	PrecSep STD	
LCS 160-631370/2-A	Lab Control Sample	Total/NA	Water	PrecSep STD	

Prep Batch: 631371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-193136-1	DEK-MW-18001	Total/NA	Water	PrecSep_0	
MB 160-631371/1-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-631371/2-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

3

4

7

Q

10

11

13

Lab Chronicle

Client: TRC Environmental Corporation.

Project/Site: Karn/Weadock CCR Groundwater Monitoring

Client Sample ID: DEK-MW-18001

Lab Sample ID: 240-193136-1 Date Collected: 10/04/23 06:12

Matrix: Water

Job ID: 240-193136-1

Date Received: 10/09/23 08:00

	Batch	Batch		Dilution	Batch			Prepared
Prep Type	Type	Method	Run	Factor	Number	Analyst	Lab	or Analyzed
Total/NA	Prep	PrecSep STD			631370	KAC	EET SL	10/10/23 12:33
Total/NA	Analysis	903.0		1	633137	FLC	EET SL	10/24/23 09:22
Total/NA	Prep	PrecSep_0			631371	KAC	EET SL	10/10/23 12:35
Total/NA	Analysis	904.0		1	632125	FLC	EET SL	10/16/23 12:04
Total/NA	Analysis	Ra226_Ra228		1	635692	CAH	EET SL	11/07/23 15:48

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 Groundwater Monitoring

Laboratory: Eurofins St. Louis

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

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-25
ANAB	Dept. of Defense ELAP	L2305	04-06-25
ANAB	Dept. of Energy	L2305.01	04-06-25
ANAB	ISO/IEC 17025	L2305	04-06-25
Arizona	State	AZ0813	12-08-23
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	11-30-23
lowa	State	373	12-01-24
Kentucky (DW)	State	KY90125	12-31-23
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-23
Louisiana	NELAP	04080	06-30-22 *
Louisiana (All)	NELAP	04080	06-30-24
Louisiana (DW)	State	LA011	12-31-23
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	MO000542020-1	07-31-24
New Jersey	NELAP	MO002	06-30-24
New Mexico	State	MO00054	06-30-24
New York	NELAP	11616	03-31-24
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	02-28-24
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	MO000542021-14	07-31-24
Virginia	NELAP	10310	06-15-25
Washington	State	C592	08-30-24
West Virginia DEP	State	381	12-31-23

Job ID: 240-193136-1

^{*} Accreditation/Certification renewal pending - accreditation/certification considered valid.

DEK-MW-18001

State, Zip: MI, 48108-7080

Ann Arbor

dinquished by linquished by

	1
	5
1	8
	9
	13
9	

Eurotins – Cleveland S Barberton Facility	Sample Receipt Forn	n/Narrative	L	ogin # :	
	Environmental	Site Name		Cooler	unpacked by:
	10-7-27		10-9-23	- //	
Cooler Received on	UPS FAS Waypo	Opened on		Cultura /	1911
FedEx: 1 st Grd Exp Receipt After-hours: Dr		Dir Cheni Drop Oi	f Eurofins Cour Storage Loca		/
Eurofins Cooler #		Client Cooler	Box Other		
Packing material use		Foam Plastic Ba		er	_
	Wet Ice Blue Ice				
1. Cooler temperature u		21) 100 "	See Multiple Co	ooler Form	
IR GUN#	(CF - 0./	C) Observed Coo	ler Temp	°C Corrected Co	ooler Temp. 0.5 °C
			7	- Corrected Co	oler remp.
	y seals on the outside o			Yes No	Tests that are not
	the outside of the cool			YES No NA	checked for pH by
	ody seals on the bottle(Hg/MeHg)?	Yes No	Receiving:
_	ody seals intact and un	•		Yes No (NA)	
3. Shippers' packing slip				Yes No	VOAs Oil and Grease
4. Did custody papers ac				YES No	TOC
5. Were the custody pap	-		•	No No	
6. Was/were the person(fied on the COC?	Ves No	
7. Did all bottles arrive				Xes No	
8. Could all bottle labels				Yes No	c 1/ Pana
9. For each sample, does			i containers (Y/N),		of grab/comp(Y/N)?
10. Were correct bottle(s)				No No	
11. Sufficient quantity red	-	•		Yes No	
12. Are these work share	•			Yes (No	
	17 have been checked		oratory.	Yes No NA	-H Carin I and HC214710
13. Were all preserved sa14. Were VOAs on the C		ori upon receipt?		Yes No NA	pH Strip Lot# HC316719
15. Were air bubbles >6		Larger	than this	Yes No NA	
16. Was a VOA trip blan	•			Yes No	
17. Was a LL Hg or Me	-			Yes No	
	-18 mp claim process				
Contacted PM	Date	by	via Ver	bal Voice Mail (Other
Concerning					
			7		
18. CHAIN OF CUSTO	DY & SAMPLE DIS	CREPANCIES U	additional next p	age Samples p	processed by:
<u> </u>					
10 CAMPLE CONDIT	ION				
19. SAMPLE CONDIT		were received cf.	ar the recommend :	l haldina sima kad	avnirad
Sample(s)		were received and	ine recommended	i holding time had ceived in a broken	
Sample(s)			were re		
Sample(s)		were recei	ved with bubble >6	mm in diameter.	(Notify PM)
20. SAMPLE PRESER	VATION				
Sample(s)				ere further present	ed in the laboratory.
Sample(s) Time preserved:	Preservative(s)	added/Lot number(s)·	ore further preserv	eu in the laboratory.
inio preserveu.	1 10301 vative(3)	acced Lot Humber(5	·		
VOA Sample Preservation	n - Date/Time VOAs J	Frozen:			

10/9/2023

Login Container Summary Report

240-193136

Temperature readings:			
Client Sample ID	<u>Lab ID</u>	Container Type	<u>Container</u> <u>Preservative</u> <u>pH Temp Added (mls) Lot #</u>
DEK-MW-18001	240-193136-A-1	Plastic 1 liter - Nitric Acid	<2
DEK-MW-18001	240-193136-B-1	Plastic 1 liter - Nitric Acid	<2

1

3

4

Q

10

111

💸 eurofins Environment Testung	COC No.	240-112531-29053.1 Page	Page 1 of 1 Job #	des:	A - HCL M - Hexane B - NaOH None C - Zn Acetate			I - Ice J - DI Water	K - EDTA W - PH 4-5 L - EDA Y - Trizma Z - other (specify)	Other:	ofal Number o	Special Instructions/Note:								etained longer than 1 month) Archive For			1420 Company	33 Sco Company	-q-X3 Company		Ver. 01/16/2019
5-0) a, Q	Carner Tracking No(s)	State of Ongin	alveis Reguested															240-193136 Chain of Custody		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	Special Instructions/QC Requirements:	Method of Shipment	Jate/Time 0/6/73	DateTyme 7	Date/Time M	Cooler Temperature(s) °C and Other Remarks:	
iain of Custody Record	Lab PM Brooks Kris M	E-Mail Kris Brooks@et eurofinsus com					(c		bc se ou p	SD (Ve		tion Code: XXD I	 	Water				- 2				Time:	RC	H	Company Received by	Cooler Temperature	
CHIGAN 190 ch	Sampler	705	PWSID	Due Date Requested:	TAT Requested (days):	ce Project:	PO# 199812	#OM	Eurofins Project # 24024154	#MOSS	Sample C=comp.	X	Cian Edwar							Poison B T Unknown	E DO	Date:	16 (2) 4/20	10/6/33 1438	ראופן וווופ		
Eurofins Cleveland 180 S. Van Buren Avenue Barberton, OH 44203 Phone (330) 497-9396 Phone (330) 497-0772	Client Information	Client Contact Jacob Krenz	Company TRC Environmental Corporation.	Address 1540 Eisenhower Place	City Ann Arbor State Zn State Zn	MI, 48108-7080	Phone 734-971-7080(Tel) 734-971-9022(Fax)	Ernal JKrenz@trccompanies.com	Project Name Karn/Weadock CCR DEK Bottom Ash Pond & lined Well	Site	Sample Identification		DEK-MW-18001))	7 of	21				Possible Hazard Identification Non-Hazard Flammable Skin Irritant	Deliverable Requested: I, II, III, IV, Other (specify) √ () √ ()	Empty Kit Relinquished by:	Reinquisted by Reinquisted by			Custody Seal No.: A Yes A No	23

Eurofins – Cleveland Sample Receipt Form/Narrative Login #	
Barberton Facility	
Client /AC Environmental Site Name	Cooler unpacked by:
Cooler Received on $10-7-33$ Opened on $10-9-33$	
FedEx: 1st Grd Exp UPS FAS Waypoint Client Drop Off Eurofins Courier C	Other
Receipt After-hours: Drop-off Date/Time Storage Location	
Eurofins Cooler # 6 Foam Box Client Cooler Box Other	
Packing material used: Bubble Wrap Foam Plastic Bag None Other COOLANT: Wet Ice Blue Ice Dry Ice Water None	
1. Cooler temperature upon receipt ☐ See Multiple Cooler For	m
IR GUN#(CF	
-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)? -Were tamper/custody seals intact and uncompromised? Yes	No No NA Checked for pH by Receiving:
	No VOAs
	No Oil and Grease TOC
	No
1 (/	No
•	No
	No O
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sa	
	No No
1 1 1	No
•	(No)
If yes, Questions 13-17 have been checked at the originating laboratory.	
13. Were all preserved sample(s) at the correct pH upon receipt?	Tie Till phi bank Dean Hebroits
	Mo
	NA NA
	S
17. Was a LL Hg or Me Hg trip blank present? Yes	N6°
Contacted PM Date by via Verbal Ver	oice Mail Other
Concerning	
18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES additional next page	Samples processed by:
9. SAMPLE CONDITION	
Sample(s) were received after the recommended holding	
	in a broken container.
Sample(s)were received with bubble >6 mm in	n diameter. (Notity PM)
0. SAMPLE PRESERVATION	
(ample(e)	ther preserved in the laboratory
Sample(s)were further with the preserved:Preservative(s) added/Lot number(s):	ther preserved in the laboratory.
OA Sample Preservation - Date/Time VOAs Frozen:	

10/9/2023

Login Container Summary Report

240-193136

Temperature readings: _____

2

Δ

E

0

8

46

11

12

180 S. Van Buren Avenue Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

💸 eurofins

Environment Testing

	Client Information (Sub Contract Lab)	Sampier			Brooks	Lab PM: Brooks, Kris M	>			Carrier Tracking No(s):	ing No(s):		COC No:		
	Client Contact:	Phone:			E-Mail:					State of Original			Page:		T
	Shipping/Receiving				Kris.	Kris.Brooks@et.eurofinsus.com	et.eurc	ofinsus.c	mo:	Michigan			Page 1 of 1		
	Company. TestAmerica Laboratories, Inc.					Accreditations Required (See note)	ons Req	uired (See	note):				Job #:		
	Address: 13715 Rider Trail North	Due Date Requested:											Preservation Codes	odes:	T
	City:	TAT Pourseful (days):				Ī	-		Analysis Requested	quested			A - HCL	M - Hexane	
	Earth City	sken) neseenkes (C)											B - NaOH C - Zn Acetate	N - None O - AsNaO2	
	State, zp: MO, 63045												D - Nitric Acid E - NaHSO4	P - Na204S Q - Na2SO3 D Na2SO3	
	Phone: 314-298-8566(Tel) 314-298-8757(Fax)	# Od				(40)							F - MeOH G - Amchlor	S - H2SO4 T - TSP Dodecahydrate	4
	Email:	, MO #:				(ON							H - Ascorbic Acid I - Ice J - DI Water		2
	Project Name: Karn/Weadock CCR Groundwater Monitoring	Project #: 24024154				10 pe						10nis)	K - EDTA L - EDA	W - pH 4-5 Y - Trizma 7 - other (enecifu)	
	Site:	SSOW#:				N) as		Эd				noo î	Other:	(aboots)	
P	Sample Identification - Client ID (Lab ID)	Sample Date	Sample (Sample Type (C=comp, G=grab)	Waveter. Seacild. Orwasterioli. BT=Tissue. A=Atr)	E benedii i biolis SM/SM mnohes	903.0/PrecSep_0_0.209_0.000	Ra226Ra228_GFI				otal Number o	, in the second	Cnorial Instructions (Notes	
ag			17	Preservation Code		X					100	X	Bood	man action shote.	I
e 2	DEK-MW-18001 (240-193136-1)	10/4/23	06:12		Water		\vdash	>				1	TVA protocol -	TVA protocol - Ra-226+228 action limit at	to
20 d		+	Eastern		water		×	×			1	2	5.0 pCi/L.	74-220+226 action lift	it at
of 2			1			#	-								
21															
												E 100			
	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 isled above for analysis/tests/matrix being analysis are current to date, returning Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting north Territory Analysis are current to date, returning the provided of the provided and the provided of the provi	nt Testing North Central, L bove for analysis/tests/ma intral, LLC attention imme	LC places th trix being ana diately. If all	e ownership calyzed, the sar	of method, anal mples must be reditations are	yte & accr shipped by current to	editation ack to the date, ret	compliance Eurofins um the sign	e upon our subco	ntract laboratoriing North Centr	es. This sam al, LLC labora said complia	tothe shipmer atory or othe	It is forwarded und if instructions will b	er chain-of-custody. If the provided. Any change facting Morth Costs 1.1	o to
	Possible Hazard Identification					Samp	le Disp	osal ()	fee may be	issessed if	samples a	re retain	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	1 month	
	Unconfirmed						Return	Return To Client		Disposal By Lab	Lab	Arch	Archive For	Months	
	Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2	Rank: 2			Speci	al Instr	rctions/	Special Instructions/QC Requirements:	nts:					T
1		Date:	.: •			Time:				Method	Method of Shipment:				T
7	Heinquisted by:	All Colors	3//4	1	Company	R.	Received by:		4	Xd	Date/Time			Company	T
11/7	Reinquished by:	Date/Time:		S	Сотралу	8	Received		2000	#	Date/Time:	0	20230841	Company	T
7/20	Relinquished by:	Date/Time:		8	Company	8	Received by:		8	1	Date/Time		000	Company	T
23	Custody Seals Intact: Custody Seal No.:					కి	oler Tem	perature(s	Cooler Temperature(s) °C and Other Remarks:	emarks:					T

Login Sample Receipt Checklist

Client: TRC Environmental Corporation.

Job Number: 240-193136-1

Login Number: 193136
List Source: Eurofins St. Louis
List Number: 2
List Creation: 10/10/23 11:23 AM

Creator: Pinette, Meadow L

Creator: Pinette, Meadow L		
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?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

3

4

6

8

10

12

13

14



Appendix B Field Notes



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Compliance
PROJECT NUMBER:	514404.0001.0000
PROJECT MANAGER:	Darby Litz
SITE LOCATION:	2742 Weadock Hwy Essexville, MI 48732
DATES OF FIELDWORK:	10/2/2023 TO 10/5/2023
PURPOSE OF FIELDWORK:	Fourth Quarter 2023 Groundwater Sampling
WORK PERFORMED BY:	J. Jasso, J. Krenz, A. Whaley

SIGNED DATE

CHECKED BY DATE



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comp DATE:	10-2-2	3	TIME ARRIVI	=D: <i>0300</i>
PROJECT NUMBER:	514404.0001.	0000 AUTHO	DR: JJ (JK) AW		TIME LEFT:	1600
		WEATH	ER			
TEMPERATURE: 7	3 °F WIND:	O-5 MPH	•	VISIBILITY:	clear	
	We	ORK / SAMPLING	PERFORMED			
bown louded	data fr	om trans	ducers			
Sampled	Bin che ground	mont horning	nelis	nw.	-15008	
and MW-	15019	•			,,,,,	
	**					
		· .				
	•					
· · · · · · · · · · · · · · · · · · ·						
PROE	BLEMS ENCOUNTERE	:D	COR	RECTIVE	ACTION TAKE	N
			Samuel			
		COMMUNIC	ATION		-	
NAME	REPRESENTING		SUBJECT	/ COMMEN	NTS	
Darby Litz	TRC	PM - Updates				
P. Madzair	Consumers	Site Contact				
	INVESTI	GATION DERIVE	O WASTE SUMMA	RY		
WASTE MATRIX	QUANTITY			MMENTS		
Groundwater	NM	Purge to Grou	nd			
	1					



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comp DATE:	101367	TIME ARRIVED: U531
PROJECT NUMBER:	514404.0001.	0000 AUTHO	DR: JJ JK AW	TIME LEFT: 1300
		WEATH		A
TEMPERATURE:	<u>°</u> F WIND:	MPH MPH	VISIBILITY	ouscust
		ORK / SAMPLING		
wallsSA	Υ			
DEK.MW. 2	2-00C, Dup+1	03'DEKW	in-32002 DEK	EUSEC NM
DEKMW. DD	100 J / DEKI	Nm 3200	NECTON DER	3001
PROE	BLEMS ENCOUNTERE	D	CORRECTIVE	ACTION TAKEN
		COMMUNIC		
NAME	REPRESENTING	DM II I .	SUBJECT / COMME	ENIS
Darby Litz	TRC	PM - Updates Site Contact		n = n
	Consumers	Site Contact		
	<u> </u>			
WA OTE MATRIX		GATION DERIVE	D WASTE SUMMARY	
WASTE MATRIX	QUANTITY	D	COMMENTS	
Groundwater	NM	Purge to Grou	nu	
		-		
		<u> </u>		
	10/4/03		Cellan 1-	hul 10-27-
SIGNED	1 410		CHECKED BY	DATE

REVISED 04/2019



GENERAL NOTES

DDO JECT MANE:	OFO K BAD# 1: 8888	014.0	10/11/	TIME ADDIVED.
	CEC Karn BAP/LI: 2023			TIME ARRIVED: 3715
PROJECT NUMBER:	514404.0001.0	0000 AUTHO	DR: JJ JK	TIME LEFT: 1640
				+
		WEATH		<u> </u>
TEMPERATURE: 69-8	P WIND:	5-10 MPH	. VISIB	BILITY: Clear
		ORK / SAMPLING		
Calibrate	Insito			
Somple D	Eh-MW-150	202 with	Dop-Deh	BAP -01
PROB	LEMS ENCOUNTERE	D	CORREC	TIVE ACTION TAKEN
		•	<u> </u>	
		COMMUNIC	ATION	
NAME	REPRESENTING		SUBJECT / CC	DMMENTS
Darby Litz	TRC	PM - Updates		
Pete Medziar	Consumers	Site Contact		
	INVESTI	GATION DERIVE	D WASTE SUMMARY	
WASTE MATRIX	QUANTITY		COMME	NTS
Groundwater	NM	Purge to Grou	nd	
	1		10	<i>a.</i> .
Colon WM	10lu	123	He	10-30-23
SIGNED		DATE	CHECKED BY	1 DATE



GENERAL NOTES

PROJECT NAME:	CEC Karn BAP/LI: 2023	GW Comp	ATE:	10	-4-23	TIME ARRIV	ED: 0730
PROJECT NUMBER:	514404.0001.0	0000 A	UTHOR:	JJ	Ø AW	TIME LEFT:	1630
		Wi	EATHER	<u></u>			
TEMPERATURE: 75	°F WIND:	0-5	MPH		VISIBILITY	: Clear	······································
	wo	ORK / SAME	LING PE	RFO	RMED		-
collected R	emainder of	Bai	kgro	nd	Samples		
Collected	all KLI	Samp	les				
PPOF	BLEMS ENCOUNTERE	<u> </u>	<u> </u>		CORRECTIVE	ACTION TAKE	
PROE	SLEMS ENCOUNTERE	<u> </u>	-		CORRECTIVE	E ACTION TAKE	<u> </u>
		COMN	IUNICAT	ION			
NAME	REPRESENTING				SUBJECT / COMME	ENTS	
Darby Litz	TRC	PM - Upo	lates				
	Consumers	Site Cont	act				
	INVESTI	GATION DE	RIVED V	VAST	E SUMMARY		
WASTE MATRIX	QUANTITY				COMMENTS		
Groundwater	NM	Purge to	Ground		***		
						Α	
10 2		0-13-23			why L	/ /	10-3

DATE

CHECKED BY

REVISED 04/2019



GENERAL NOTES

1			 		
PROJECT NAME:	CEC Karn BAP/LI: 2023 (GW Comp DATE:	10/5/20	23	TIME ARRIVED:
PROJECT NUMBER:	514404.0001.0	000 AUTHO	DR: JJ JK 🎸	®	TIME LEFT: 1030
					-
		WEATH	ER		
TEMPERATURE: 61	<u>°F</u> WIND:	<u>0-5</u> mph		VISIBILITY:	Loy-Rain
	WO	RK / SAMPLING	PERFORMED		
Check in	w/ Securit	<u> </u>			
Calibrate	Insitu Ad	juatroll 60	×>		
Check in Calibrate Sample D	E1-1006	and	DEL-ML	115005	
		····	<u>;</u>		,
Drop Sample	s off to	Trail.	st. Labs		
		N			
Return Mu	keys to	rete M	ed zia		
PROBL	EMS ENCOUNTERED)	CC	PRECTIVE A	ACTION TAKEN
					· · · · · · · · · · · · · · · · · · ·
		COMMUNIC			
NAME	REPRESENTING		SUBJE	CT / COMMEN	NTS
Darby Litz		PM - Updates			
Dete Mudziar	Consumers	Site Contact			
		ATION DERIVE			
WASTE MATRIX	QUANTITY	D		COMMENTS	
Groundwater	NM	Purge to Ground			
	<u> </u>	<u> </u>			***
11/1.	luly 10	1112	1_	l / (1)	10-30-23
SIGNED SIGNED	10	DATE	CHECKED	BY	DATE
		· · · - '	V		=2.11.



EQUIPMENT SUMMARY

PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	
PROJECT NO.:	514404.0001.0000	SAMPLER NAME: J. Jasso, J. Krenz, A. Whaley
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	1 :
	NA	NA
NAME AND MODEL OF IN	STRUMENT	SERIAL NUMBER (IF APPLICABLE)
DEPTH TO BOTTOM O	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		
PERIS	STALTIC PUMP	TRC A2
NAME AND MODEL OF PL	IMP OR TYPE OF BAILER	SERIAL NUMBER (IF APPLICABLE)
GEOTECH I	DISPOSABLE FILTER	0.45 MICRON
NAME AND MODEL OF FIL	TERATION DEVICE	FILTER TYPE AND SIZE
DEDICAT	ED POLY TUBING	LOW-FLOW SAMPLING EVENT
TUBING TYPE	NT OF MAIN	· .
PURGE WATER DISPO	SAL METHOD	
☑ GROUND	DRUM POTW	POLYTANK OTHER
DECONTAMINATION A	ND FIELD BLANK WATER SOUR	CE
STC	PRE BOUGHT	LABORATORY PROVIDED
POTABLE WATER SOURCE	DE .	DI WATER SOURCE



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	/ Compliand		MODEL: YSI PRO	dss	SAMPLER:	AW, UK)	IJ
PROJECT NO.:	514404.0001.0000			SERIAL #: Ann Arbo		DATE: 10-	_	
PH (CALIBRATION CHECK					ICTIVITY CALIBR		HECK
PH 7 (LOT #): 36C914 (EXP. DATE): MAY / 25 POST-CAL. READING / STANDARD	pH 4 / 10 (LOT #): 3 G A 11 3 6 (EXP. DATE): 3 A / 2 5 POST-CAL READING / STANDARD	CAL. RANGE	TIME	CAL. RE (LOT #): 3 G £ 6 (EXP. DATE): 1/1/4 POST-CAL. READ	ADING 940 14/24	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME
7.01 /7.01	4.00 /4.00	WITHIN RANGE	1106	1362	1362	23.5	WITHIN RANGE	1102
1	1	WITHIN	•	,	1	•	WITHIN	
1	1	WITHIN RANGE		1 ,	•		WITHIN RANGE	
1	1	WITHIN		1 ,	,		WITHIN	
ORP	CALIBRATION CHECK	104102			D.O. CAL	IBRATION CHEC		
CAL. READING	TEMPERATURE			CAL. RE	ADING	TEMPERATURE		
(LOT #): 236100046 (EXP. DATE): 7-4-28	(°CELSIUS)	CAL. RANGE	TIME			(°CELSIUS)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD				POST-CAL. READING	3/SATURATED AIF			
218.4/218.4	21.9		1109	8.9	8.9	21.4	WITHIN RANGE	1)11
		WITHIN RANGE] ' '	1		WITHIN RANGE	
1		WITHIN RANGE			1		WITHIN RANGE	
1		WITHIN RANGE			1		WITHIN RANGE	
TURBID	TY CALIBRATION CHEC	K				COMMENTS		
CALIBRATION	READING (NTU)			AUTOCAL:	SOLUTION	✓ STANDARD	SOLUTION	(S)
(LOT#): A57120	(LOT #):	CAL. RANGE	TIME	(LOT #):		LIST LOT NUMBERS A	AND EXPIRATE	
POST-CAL, READING / STANDARD	(EXP. DATE): POST-CAL. READING / STANDARD	IVANGE		(EXP. DATE):	ADAMETERS		ON RANGES (1	
10.1 / 10.0	/	WITHIN	1112	CALIBRATED P	ARAMETERS	pH: +/- 0.2 S.		
/	,	WITHIN	1118	CON	n		- - Cal. Stan	DARD
	,	RANGE WITHIN		_		ORP: +/- 25 mV		27,11,12
	/ \	RANGE WITHIN]		D.O.: VARIES		
•	NOTES	RANGE	<u> </u>				F CAL. STAN	DARD
***************************************	NOTES			1 -				
						(1) CALIBRATION RAN THE MODEL OF THE		
						•		
Р	ROBLEMS ENCOUNTERED				CORRECT	IVE ACTIONS		
					1.4			
10.0	V . 10	-/3-2	7			. l. l		<u></u>

◆ TRC

PROJECT NAME:	CEC Karn LF: 2023 GW Co	mpliance		MODEL: YSI Pro DSS	SAMPLER:	AW, JJ, JK
PROJECT NO.:	514404.0000.0000			SERIAL #: Previled	DATE: (O)3	63
PH (CALIBRATION CHECK			SPECIFIC CONDU	CTIVITY CALIB	RATION CHECK
(LOT #): 36 5 35 (EXP. DATE): 2 15 15 15 15 15 15 15 15 15 15 15 15 15	pH 4 / 10 (LOT #): 3 CC CILY (EXP. DATE): 3 D	CAL. RANGE	TIME	CAL. READING (LOT #): 360 493 (EXP. DATE): 364 POST-CAL READING / STANDARD	TEMPERATURE	CAL. RANGE TIME
700 / 700	400 / 400	WITHIN RANGE	<u> ৩২</u> ৩	1300 / 1300	24.	WITHIN RANGE WITHIN RANGE
1	/	WITHIN RANGE		1		WITHIN
1	1	WITHIN RANGE		/		WITHIN RANGE
	CALIBRATION CHECK			D.O. CAL	IBRATION CHE	CK
CAL. READING (LOT #): 73 K O O O O (EXP. DATE): O O O O POST-CAL. READING / STANDARD	TEMPERATURE (°CELSIUS)	CAL. RANGE	TIME	CAL. READING POST-CAL READING /SATURATED AIR	TEMPERATURE	CAL. TIME
920 / 3X	23.	WITHIN RANGE	USCE	7.09 / 7.89	Zle.	WITHIN RANGE USOC
/		RANGE WITHIN		- / /		RANGE
,		RANGE WITHIN RANGE		- /		RANGE WITHIN RANGE
TURBID	ITY CALIBRATION CHEC	K	1		COMMENTS	
	READING (NTU)	1		AUTOCAL SOLUTION	✓ STANDAR	D SOLUTION (S)
(LOT #):43097 (EXP. DATE): 45 <	(LOT #): (EXP. DATE):	CAL. RANGE	TIME	(LOT #): (EXP. DATE):		AND EXPIRATION DATES
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	-		CALIBRATED PARAMETERS	CALIBRAT	TION RANGES (1)
C / O	/	WITHIN	ଠରେ	pH	pH: +/- 0.2 S	····
100/100	1	WITHIN	dere	COND	COND: +/- 1% C	OF CAL. STANDARD
/	1	WITHIN RANGE		ORP	ORP: +/- 25 m	V
/	/	WITHIN		☐ D.O.	D.O.: VARIES	OF CAL. STANDARD
	NOTES				(1) CALIBRATION RA	ANGES ARE SPECIFIC TO E WATER QUALITY METER
	PROBLEMS ENCOUNTERED			CORRECT	IVE ACTIONS	
SPANED	1016()	3 DATE		CHECKED BY	luly	/ /0-27-
SHENTED		DATE	_	CHECKED BY		DATE



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	/ Complian	ce	MODEL: 1	insitu	Aquatroll	SAMPLER	t:	₩JK,	IJ
PROJECT NO.:	514404.0001.0000					office	DATE:	1014	1/23	
PH (CALIBRATION CHECK					ECIEIC CONDU	CTIVITY	CALIBR	ATION C	HECK
pH 7	p H 10] [_	READING	TEMPER	ATURE		
(LOT #): 3661121 (EXP. DATE): 561/25 POST-CAL READING/STANDARD	(LOT #): SF 1005 (EXP. DATE): SG / 25 POST-CAL. READING / STANDARD	CAL. RANGE	TIME	(L (E	OT #): 3 (EXP. DATE): POST-CAL. F	SF084 Jun 124 Reading/standard	(°CELS	ilus)	CAL. RANGE	TIME
7.02 / 7.02	4.00 14.00	WITHIN RANGE	3730		21.10		1310		WITHIN RANGE	37 3 4
1	1	WITHIN RANGE				1			WITHIN RANGE	
1	1	WITHIN RANGE				1			WITHIN RANGE	
1	1	WITHIN RANGE				1			WITHIN RANGE	
	CALIBRATION CHECK					D.O. CAL			K	
CAL. READING	TEMPERATURE				CAL	READING	TEMPER	ATURE		
(LOT #): 2361000 96 (EXP. DATE): JUL 125	(°CELSIUS)	CAL. RANGE	TIME		•		(°CELS	sius)	CAL. RANGE	TIME
POST-CAL. READING / STANDARD		TV week		P		ADING /SATURATED AIR			No. MOTHIN	
2220 /2220	20.62		5757	.	J.80	y / & . & o	70	110	WITHIN RANGE	0475
/		WITHIN RANGE				1			RANGE	
1		WITHIN RANGE				1			WITHIN RANGE	
1		WITHIN RANGE				1			WITHIN	
TURBID	ITY CALIBRATION CHEC	K		. –			COMME			
	READING (NTU)				_	CAL SOLUTION	✓ ST	ANDARD	SOLUTION	(S)
(LOT #): A 3097 (EXP. DATE): SUI 124	(LOT #): (EXP. DATE):	CAL. RANGE	TIME	I I'	.OT #): EXP. DATE):	:			ND EXPIRAT RATION CHE	
POST-CAL. READING / STANDARD	POST-CAL, READING / STANDARD] [CALIBRAT	TED PARAMETERS	C.	ALIBRATIC	N RANGES	1)
100,0 /100.0		WITHIN RANGE	0747			рH	pH:	+/- 0.2 S.L	J.	
1		☐ WITHIN RANGE				COND	COND:	+/- 1% OF	CAL. STA	NDARD
1	1	WITHIN RANGE				ORP	ORP:	+/- 25 mV		
1	1	WITHIN RANGE				D.O.	D.O.: \	VARIES		
	NOTES	•	•	_		TURB	TURB:	+/- 5% OF	CAL. STA	NDARD
				-					GES ARE SF VATER QUAI	
							•			
P	ROBLEMS ENCOUNTERED					CORRECT	IVE ACTIONS			
	[/ [/					1 2	_		****	
SIGNED W	My 10	LUZ	-3		CHEC	XKBD BY	The	X	10-	30-23 DATE
J. J. 142.0		DAIE			31,2		(IJ		<i>5</i> ,



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	/ Compliand	се	MODEL: YSE PR	0 355	SAMPLER:	AW,(JK)	JJ
PROJECT NO.:	514404.0001.0000			SERIAL #: Ann	rbor	DATE: 10	-4-23	
PH (CALIBRATION CHECK				_	JCTIVITY CALIB	RATION C	HECK
pH 7	pH 4 / 10			CAL.	READING	TEMPERATURE		
(LOT #): 366914	(LOT#): 3 GA 1176	CAL.	TIME	(LOT #): 3 6			CAL.	TIME
(EXP. DATE): /1~/15	(EXP. DATE): JAN/25	RANGE	- THVIL	(EXP. DATE):		(°CELSIUS)	RANGE	''''
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	- wells			EADING / STANDARD	ļ	L AMETURA	
7.03 / 7.03	400 14,00		0750	142	L/ 1422	19.3		6748
/	1	☐ WITHIN RANGE			1		WITHIN RANGE	
1	1	☐ WITHIN RANGE			1		☐ WITHIN RANGE	
1	1	WITHIN RANGE			1		WITHIN RANGE	
ORP	CALIBRATION CHECK				D.O. CAL	IBRATION CHE	СК	<u> </u>
CAL. READING	TEMPERATURE			CAL.	READING	TEMPERATURE	≣ .	
(LOT #):26100016	(°CELSIUS)	CAL.	TIME				CAL.	TIME
(EXP. DATE): 7-4-28	(=======	RANGE				(°CELSIUS)	RANGE	
POST-CAL. READING / STANDARD	2.1	NOT WITHIN	0 to a mile		DING /SATURATED AII		WITHIN	6 1
213.1 / 213.1	18.4	WITHIN RANGE	<i>67</i> 52	8.7	18.7	17.5	RANGE	6/57
/		WITHIN RANGE			1		WITHIN RANGE	
1		WITHIN RANGE			1		☐ WITHIN RANGE	
1		WITHIN RANGE			1		WITHIN RANGE	
TURBID	ITY CALIBRATION CHEC	K	•	<u> </u>		COMMENTS	•	
	READING (NTU)			AUTOC.	AL SOLUTION	✓ STANDAR	D SOLUTION	(S)
(LOT #): AS3120	(LOT #):	CAL.	TIME	(LOT #):		LIST LOT NUMBERS		
(EXP. DATE): Sun/25	(EXP. DATE):	RANGE		(EXP. DATE):		ļ	IBRATION CHE	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	MZÍ WITHIN		 	D PARAMETERS		TION RANGES	11)
10.2 /10.0	/	WITHIN RANGE	075 3	1 1 1 1	Н	pH: +/- 0.2 \$		
/	1	☐ WITHIN RANGE			OND	COND: +/- 1% (OF CAL. STAI	NDARD
/	/	WITHIN RANGE			RP	ORP: +/- 25 m	ıV	
1	1	WITHIN RANGE			.0.	D.O.: VARIES		
	NOTES		•	т П П	URB	TURB: +/- 5% (OF CAL. STAN	NDARD
]		40		
						. (1) CALIBRATION RA		
						-		
]				
F	PROBLEMS ENCOUNTERED				CORRECT	TIVE ACTIONS		
L				<u> </u>		4		
					,			
Le Te	10-13	-23		N.		Sal.	10-11-	לכ



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW	/ Compliand	се	MODEL:	<i>Fnsil</i> u	AquaTroll	SAMPLER:	AWJK, JJ	\neg	
PROJECT NO.:	514404.0001.0000					office	DATE: 1015	123	\neg	
PH (CALIBRATION CHECK				SPECIFIC CONDUCTIVITY CALIBRATI					
pH 7	pH2 10			ł I		. READING	TEMPERATURE			
(LOT #): GGG UZ 1 (EXP. DATE): JU 125 POST-CAL. READING / STANDARD	(LOT #): 3GF 1035 (EXP. DATE): JUL 125	CAL. RANGE	TIME		(EXP. DATE):	5 Fd84 Jun 124	(°CELSIUS)	CAL. RANGE TIM	ΛE	
7.02 / 7.02								WITHIN 7		
1.02 1.02	4.00 / 4.00	WITHIN	2027			1	20,59	WITHIN	۷.	
<u> </u>	1	RANGE WITHIN				1		RANGE		
,	1	RANGE WITHIN RANGE				1		RANGE	_	
ORP	CALIBRATION CHECK	RANGE]		D.O. CAL	IBRATION CHE	RANGE CK		
CAL. READING	TEMPERATURE.] .	CAL	. READING	TEMPERATURE			
(LOT #): 2 36 1000 3 6 (EXP. DATE): JUI / Z 8	(°CELSIUS)	CAL. RANGE	TIME				(°CELSIUS)	CAL. TIM	ΛE	
POST-CAL. READING / STANDARD		WITHIN				ADING /SATURATED AIR		Text MITHIN		
223,4 /223,4	19.89	RANGE	2730	}	8.80	1 8 20 A	20.30	WITHIN RANGE	33	
		L_J RANGE		-		18,80		RANGE		
1		WITHIN RANGE				1		WITHIN		
/		WITHIN					<u> </u>	RANGE		
	ITY CALIBRATION CHEC READING (NTU)	K	I	1	AUTOC	AL SOLUTION	COMMENTS STANDARD	SOLUTION (S)		
(LOT #): A 3097	(LOT #):	CAL.			(LOT#):	AL SOLUTION	LIST LOT NUMBERS	······································	ATES	
(EXP. DATE): 54/24	(EXP. DATE):	RANGE	TIME		(EXP. DATE):	:		BRATION CHECK	.,,	
POST-CAL. READING / STANDARD	POST-CAL. READING / STANDARD	(100)			CALIBRAT	ED PARAMETERS	CALIBRATI	ON RANGES (1)		
100.0	//		0135			pH	pH: +/- 0.2 S	U.		
/	1	WITHIN RANGE	,			COND	COND: +/- 1% O	F CAL. STANDARD	כ	
1		WITHIN				ORP	ORP: +/- 25 m\	/		
1	1	WITHIN RANGE	İ			D.O.	D.O.: VARIES			
	NOTES			-		TURB	TURB: +/- 5% O	F CAL. STANDARI	כ	
							. (1) CALIBRATION RA THE MODEL OF THE			
P	PROBLEMS ENCOUNTERED					CORRECT	IVE ACTIONS			
				<u> </u>						
after 6	like 1	olul	29			De	The	10-70-23	ζ	
SIGNED		DATE	_		CHEC	KED BY	' } _	DATE	E	

♦ TRC

PROJECT	NAME:	CEC K	arn BAP/LI: 20	23 GW C	PR	EPARED			CHEC	KED		
PROJECT	NUMBER	R: 51440	4.0001.0000	BY:	AW, 🕡, .	JJ DATE:	H-23 BY:	AW		DATEIONIZZ		
SAMPLE	ID: M	w-150	02	WELL DIAM	IETER: 🗸	2" 4"	6" OT	HER				
WELL MAT	ERIAL:	✓ PVC	□ss □	IRON GAL	VANIZED S	STEEL	o1	HER _				
SAMPLE T	YPE:	☑ GW	□ww □	SW 🗌 DI		LEACHATE	01	HER				
PURC	SING	TIME: Ø	800 DA	TE: 10-4-23	ß	AMPLE	TIME: 0	<u> </u>		TE: 10-4-23		
PURGE METHOD	· =	PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP:	<u>6.65</u> s <u>-96.7</u> m	U CONDI	CTIVITY: _ <i>0</i> .2				
DEPTH TO	WATER:	7.67	T/ PVC		TURBI		NTU					
DEPTH TO			T/ PVC		□ ⊠ NO		— GHT ☐	MODE	RATE			
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 15.3 °C OTHER:												
VOLUME REMOVED: 14 LITERS GALLONS COLOR: Lew ODOR: None												
COLOR: Clear ODOR: home FILTRATE (0.45 um) YES X NO												
TURBIDITY FILTRATE COLOR: FILTRATE ODOR:												
NONE SLIGHT												
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:												
TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE LEVEL PURGE VOLUME												
0 2 00	(ML/MIN)											
0803	200	6.80		~60,3	0.9	25.8	15,3		7.90	INITIAL		
0308	200	6.94	3502	-94.6	0.5	7.4	1519		1.47			
0813	200	6.98	3442	~107. 3	0.4	5.3	15.		102	2		
0818	200	6.89	4354	- 106.7	0.3	5.1	15.		1,08	3		
0823	200	6,70	5734	-48.7	0.3	4.9	15.		10	4		
0828	200	6.64	6645	-95.4	O. ?	4.7	18.	2 8	112	5		
0333	200	6.64	6751	-95.5	0,3	4.5	15,	2	8.12	6		
0838	200	6.62	7103	-94.9	0,2	4.5	18	.2 8	2,12	7		
0843	200	6.62	7407	-94.4	0.2	4.5	12.		8,12	8		
0848	·····	6,63	7360	-9510	0.2	4.5	15.		8.12	9		
	TE: STABI	LIZATION	TEST IS COMPL		UCCESSIV		RE WITHIN	THE FOL	LOWIN	G LIMITS: TEMP.: +/-		
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - Na	OH	E - HC	L F		
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERE	D NUMB	ER SIZE	TYPE	PRES	ERVATI	VE FILTERED		
İ	125mL	plastic	A	□ Y 💢	N					□Y □N		
1	125mb	1	В	□ Y X	N				or an american desired processor of the second seco	□ Y □ N		
1	250mL		Ā	□ Y 👿	N	, digita, ar yilangii da a a da a da a da a da a a a a a a		W. P. S. S. S. S. S. S. S. S. S. S. S. S. S.	THE STATE OF THE PARTY OF THE STATE OF THE	□ Y □ N		
2	16	V	ß	□ Y X	N N					OY ON		
SHIPPING	METHOD:	lab b	no off DA	ATE SHIPPED:		<u> </u>	AIRBIL	L NUMBE	R:			
COC NUMI		[-0.5 /3/		GNATURE:	10	1-23 06		SIGNED:		10-13-23		
	J_1		Si	CIAN LOILE.	ge	7	DATE			10 17 -3		



PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Co		PREPARED	CHECKED			
PROJECT NUMBER:	514404.0001.0000	BY:	AW, (J) DATE: 10-4-23	BY: AW	DATE(0/51/23)		

SAMPLE ID: MW - 15002

		1 1	0014				·		
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)
0853	200	6.60	8012	-94.2	0.2	4.0	15.1	3.12	10
0888	200	6.63	דדדר	495.9	0,2	3.9	15.3	8.12	(1
0903	200	6.64	7441	-96.4	0.2	4.7	183 3	8.12	/2
0908	200	6.65	7486	~96,6	0,2	4.3	15.3	8,12	13
0913	200	6.65	7538	-96.7	0.2	3.7	15.3	8,12	14
to a company that the contract plant against the contract of t	ann a sin spirit sa propiation a companier a								and contained and contained and the strength of the State
dipado y - d normas. Não vida disser sins sido a ser	menhad depressed by the core is now that had no							Manager Science and Barbard Address on Toronto.	,
					<u> </u>				
									and the state of t
and the same of th	The second secon								
							meng dan palamining sa madamahan madamah kana kelija ke tauta 17 da madalih 18 da 18		
ana ang ang ang ang ang ang ang ang ang									<u> </u>
dduntust-u raedwydd maetherdadau, a yn									
L							ar de arror sucrebasidados consessos, e sucrebas e reference en estado e sucrebas de estado e en estado e en e		
WW N Brillade, News, modern accorder - Orbital accorder	Company and the parties of a life decision of								
	The second secon							. Carrier and record weeks at the second at the	
4 ************************************	A 14-70- 10-10-10-10-10-10-10-10-10-10-10-10-10-1								
				1	-				
Principal Region of the Virtual Principal									A 100 A 100
THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER.					-			1	

< >	Ti	RC
	-	

METHOD: DEBAILER ORP: - 37.4 mV DO: mg/L	-23											
WELL MATERIAL:												
SAMPLE TYPE: GW WW SW DI LEACHATE OTHER PURGING TIME: 1120 DATE: 10-2-27 SAMPLE TIME: 1151 DATE: 10-2 PURGE METHOD: PUMP PERISTALTIC PUMP PH: 6:48 SU CONDUCTIVITY: 1506 umb ORP: -37.4 mV DO: _0.1 mg/L												
PURGING TIME: 1120 DATE: 10-2-37 SAMPLE TIME: 1151 DATE: 10-2 PURGE METHOD: PUMP PERISTALTIC PUMP PH: 6.48 SU CONDUCTIVITY: 7506 umb ORP: -37.4 mV DO: _0.1 mg/L												
PURGE PUMP PERISTALTIC PUMP METHOD: Description: PH: 6.48 SU CONDUCTIVITY: 1506 umb ORP: -37.41 mV DO: _0.1 mg/L												
METHOD: DAILER ORP: -87.4 mV DO: _O.1 mg/L	os/cm											
METHOD: DBAILER ORP: -87.4 mV DO: _O.1 mg/L												
DEPTH TO WATER 6:4.67T/ PVC TURBIDITY: 2.7 NTU												
DEPTH TO BOTTOM: 17,44 T/ PVC NONE SLIGHT MODERATE VERY												
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 15.7 °C OTHER:												
VOLUME REMOVED: 6 K LITERS GALLONS COLOR: 4.67 ODOR:												
COLOR: COLOR: ODOR: None FILTRATE (0.45 um) YES NO												
TURBIDITY FILTRATE (0.45 um) YES X NO												
TURBIDITY FILTRATE COLOR: FILTRATE ODOR:												
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:												
TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE WATER CUMULATIVE												
TIME RATE PH CONDUCTIVITY ORP D.O. TORBIDITY TEMPERATURE LEVEL PURGE VOLUME (ML/MIN) (SU) (umhos/cm) (mV) (mg/L) (NTU) (°C) (FEET) (GAL OR L)												
1121 200 6.31 1802 -21.9 1.4 6.9 15.8 4.67 INITIA												
1126 200 6.34 1760 -52.1 0.5 3.4 16.1 4.67 1												
1131 200 6.39 1662 -66.3 0.3 3.3 15.8 4.67 2												
1136 200 6.43 1580 -74.2 0.2 3.3 15.8 4.67 3												
1141 200 6.45 1540 -79.8 0.1 3.3 15.7 4.67 4												
1146 200 6.47 1525 -84.3 0.1 2.8 15.7 4.67 5												
1151 200 6.48 1506 -87.4 6.1 2.7 15.7 4.67 6												

NOTE: OTABLI IZATION TEST IS COMPLETE MUITIN 2 CHOCCOCNUS DEADINGS ARE MUITINI THE FOLLOWING LIMITS:												
NOTE: STABILIŽATION 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												
BOTTLES FILLED PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F												
	RED											
2 250mL Plashi A DY XN	□N											
2 125mL A 🗆 Y 🗷 N	N											
2 (25mL B	□N											
4 1L & B 🗆 Y 😡 N	□и											
	□N											
SHIPPING METHOD: lab Drop off DATE SHIPPED: 10-5-23 AIRBILL NUMBER:												
COC NUMBER: —— SIGNATURE: Al My DATE SIGNED: 10-13-	23											

<>	Tr	२ ८
_		

PROJECT	NAME:	CEC K	(arn BAP/LI: 20	023 GW C		PRE	PARED			CHEC	KED
PROJECT	NUMBER	R: 514404	4.0001.0000		BY: A	⁄M'∰' าา	DATE10	4-23	BY: AL		DATE: Ids/12)
SAMPLE	ID: 1M	w- 15e	016	WELL	DIAMET	ER: 🗸 2	2"	6"	OTHER		
VELL MAT	ERIAL:	✓ PVC	ss	IRON 🗌	GALVA	NIZED ST	EEL		OTHER		
SAMPLE T	YPE:	☑ GW	□ ww □	sw 🗌	DI.	L	EACHATE		OTHER		
PURC	GING	TIME: 01	32 DA	TE: 10~4	-23	<u> </u>	MPLE	TIME:			ATE: 10-4-23
PURGE METHOD	· _	PUMP BAILER	PERISTALTIC I	PUMP				SU CON	IDUCTIV		umhos/cm
DEPTH TC) WATER:	4.39	T/ PVC			TURBID	ITY: _ 5.δ	NTU	`		
DEPTH TO) ВОТТОМ:	7.15	T/ PVC			NON 🔀	E 🗌 SL	.IGHT	□ мо	DERATE	☐ VERY
VELL VOL	UME:	NA	LITERS	GALLC	NS	TEMPER	RATURE:	17.7 .	с отн	HER:	
VOLUME [REMOVED:	3	LITERS	GALLC	NS	COLOR	: <u>clear</u>		OD	OR: _	none
COLOR:	_cl	eur	OD	OR: 101	<u>e</u> _	FILTRAT	E (0.45 um)	YES	X	NO	
		TUR	BIDITY			FILTRAT	E COLOR:		FIL	TRATE OD	OR:
NONE	🛛 SLI	GHT 🗌	MODERATE	☐ VE	RY	QC SAN	MPLE: M	S/MSD		DUP-	·
DISPOSAL	_ METHOD:	: GROU	ND 🗌 DRUM	OTHE	र	СОММЕ	NTS: EQ -	Backgro	und (ollected	after this so
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. (mg/L)	TURBIDITY (NTU)		RATURE C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
0934	200	7.21	2010	-119,1		1.'3	33,2	18		4,69	INITIAL
9939	200	6.92	1853	- 121.		0,8	6.9	17		4.89	ì
0944	200	6.90	1846	-123.		2, 3	6.1	17.		4.94	2
0949	200	6.89	1844	- 122,		0,3	5.8	ן <u>יי</u> , ,		4.96	3
		0.0	1037			+		+ '''		1110	
			THE RESIDENCE OF THE PERSON OF								
NC pH: +/-		ILIZATION COND.: +/-	TEST IS COMPI 3 % ORP:	LETE WHEI : +/- 10		CESSIVE	EREADINGS TURB: +/		HIN THE		NG LIMITS: TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	В	- HNO3	C - H2SO	4 D-	NaOH	E - H	CL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILT	ERED	NUMBE	R SIZE	TYP	E PF	RESERVAT	IVE FILTERED
i	125mL	plastic	A	□Y	X N						□Y □N
(MSAL	1	В	ΠY	X N						□Y □N
	250mL		A	□ Y	X N						□Y □N
	IL	1	B		N X					may the market drafts, or the section is treet	□ Y □ N
a					+						— Inl., Inl.,
d					□ N		į				∐ Y ∐ N
	METHOD:	lab Dr	ab att D	ATE SHIPP	<u> </u>	<i>(0</i> ~\$	23	AIRI	BILL NUN	MBER:	
		las br	<u> </u>	ATE SHIPP	ED:	10-S	7-23		BILL NUM		

< >	T	7	C
		_	_

PROJECT	NAME:	CEC K	(arn BAP/Li: 20	23 GW C	Pf	REPARED			CHEC	KED	
PROJECT	NUMBER	R: 514404	4.0001.0000	BY:	AW, (K	JJ DATE:ال	2-23 BY:	AW		DATE: IOS 1/23	
SAMPLE I	D: M	v- 150) 9	WELL DIA	METER:	2"	6" O	THER _			
WELL MAT	ERIAL:	☑ PVC	ss 🗆	IRON 🗌 GA	LVANIZED	STEEL	O1	THER			
SAMPLE T	YPE:	☑ GW	□ ww □	SW 🗌 DI] LEACHATE	O1	THER			
PURC	SING	TIME: 1	218 DA	TE: /υ2-2	3	SAMPLE		236		TE: 10-2-23	
PURGE METHOD		PUMP BAILER	PERISTALTIC F	PUMP	PH: ORP:	<u>6.55</u> s	U COND	UCTIVITY 0.3		umhos/cm /L	
DEPTH TO	WATER:	5.95	T/ PVC			BIDITY: 2.4	NTU				
DEPTH TO	BOTTOM:	16.86	T/ PVC		IN√ No	ONE 🗌 SLI	днт □	MODE	RATE	☐ VERY	
WELL VOL			LITERS	GALLONS	TEMF	ERATURE: 1	ઽ.૧ ℃	OTHE	₹:'		
VOLUME F	REMOVED:	3	X LITERS	GALLONS	COL	DR: Clea		ODOR	:	none	
COLOR: Clear ODOR: NONE FILTRATE (0.45 um) YES X NO											
		TUR	BIDITY		FILTR	ATE COLOR:		FILTR/	ATE ODC	DR:	
MONE	☐ SLI	GНТ □	MODERATE	☐ VERY	QC S	AMPLE: MS	/MSD	DI DI	UP-		
DISPOSAL	METHOD:	☑ GROU	ND DRUM	OTHER	СОМ	MENTS: FB	- Backg	round	Coll	ected	
TIME	PURGE RATE (ML/MIN)	PH (SÚ)	CONDUCTIVITY (umhos/cm)	ORP (mV)	D.O.	TURBIDITY (NTU)	TEMPERA	TURE	NATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)	
1221	200	6.87	1656	-88.0	6.8	4.0	15:		7,95	INITIAL	
1226			1686	- 88.1	0.6	3,5			1.95		
	200	6.55	1	-91,0			15.8		5.95	2	
1231	200	6.58	1689		6.4	2.9	- 18,8			3	
1236	200	6.55	1691	-92.9	0.3	2.6	1519) 3	5.45	3	
	and the same of th										
CORNER OF ST. CARDON SET SEASON SECTION OF THE											
	AND THE PERSON OF THE PERSON O				<u> </u>		<u> </u>		rengam <u>h</u> r magaireoláiseotárch		
NC pH: +/-		ILIZATION COND.: +/-			SUCCESS D.O.: +/- 0	IVE READINGS A		N THE FO		G LIMITS: TEMP.: +/-	
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO:	3 C - H2SO4	D - Na	ОН	E - HC	L F	
NUMBER	SIZE	TYPE	PRESERVATI	VE FILTERI	ED NUM	IBER SIZE	TYPE	PRES	SERVATI	VE FILTERED	
1	125mL	Plastic	A	□ Y X	N I	125mL	Plastic		В	□Y X N	
i	125mL	İ	B	□ Y X		A				□Y □N	
	250mL		A		N	60 0 111				UY UN	
2	14	V	B		N	FB Bottle	 				
-	15	<u> </u>	<u> </u>		N						
SHIPPING	METHOD:	lab On	op off D	ATE SHIPPED:		- 23	AIRBII	L NUMBE	ER:		
ļ		ino Au		GNATURE:	10	2		SIGNED:		10-13-23	
COC NUM	DEN:		51	GIVATURE:	He	- Jany	DATE	JIGINED:		10-13 25	
					(/						

♦ TRC

PROJECT	PROJECT NAME: CEC Karn LF: 2023 GW Comp PREPARED CHECKED												
PROJECT	NUMBE	R: 514404	4.0000.0000	B	γ: A	W, JJ, JK	DATE:	U()BY	4W		DATE:10-27-23		
SAMPLE ID: DE KML 1000 (WELL DIAMETER: 2" 4" 6" OTHER													
WELL MATERIAL: ☑ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER													
SAMPLE TYPE: GW SW DI LEACHATE OTHER													
PURC	SING	TIME: 0		ATE: Whel	3		MPLE	TIME: O	S/9	DA	TEIUlyly		
PURGE PUMP PERISTALTIC PUMP METHOD: BAILER BAILER PH: 7.43 SU CONDUCTIVITY: 87 umhos/cm ORP: -94.0 mV DO: 038 mg/L													
DEPTH TO WATER: 970 T/ PVC TURBIDITY: 2.4 NTU													
DEPTH TO BOTTOM: 19 LG LG T/ PVC													
WELL VOLUME: NA ☐ LITERS ☐ GALLONS TEMPERATURE: 14.4 °C OTHER:													
VOLUME REMOVED: 3. GALLONS COLOR: COLOR: ODOR:ODOR:													
COLOR:		Jarla	OD	OR: NOIN		FILTRA	E (0.45 um)		J	NO			
TURBIDITY FILTRATE COLOR: CLUM FILTRATE ODOR: 101													
NONE	Z∱s∟		MODERATE	VERY			/IPLE: MS	/MSD		DUP-			
DISPOSAL	METHOD	: GROU	ND DRUM	OTHER		COMME	ENTS:				·		
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPERA1	URE	WATER LEVEL	CUMULATIVE PURGE VOLUME		
	(ML/MIN)	(SU)	(umhos/cm)	(mV)		mg/L)	(NTU)	(°C)		(FEET)	(GAL OR L)		
0547	104	400	413	330	.9	84	थ ०	18.3)	4.30	INITIAL		
0552	-	7.45	-	57, v		3	2.60	140)	935	7,		
0557		7.44	866	-82.3		le7	22	14.		931	1		
090)		7.43	5 . Ca	-45.3		248	2.3	14.0		475	7.7		
1 1		7.44		-97.5	_	35	٦.3	14,1	-1	9.71)		
(LO)		7.43	6.70	- 916°C		36	•	الإن	·"	C/27 L	2, 1		
culy	and the second s	\·					ユ.4			- (-1	2		
5417											3, 5		
								***************************************			5,		
					-				head out eventuaries		9		
NС pH: +/-		COND.: +/-	TEST IS COMPI 3 % ORP:	LETE WHEN 3 : +/- 10		+/- 0.3	TURB: +/-		THE F		G LIMITS: TEMP.: +/-		
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	В-	HNO3	C - H2SO4	D - Na	OH	E - HC	:L F		
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTER	RED	NUMBE	R SIZE	TYPE	PR	ESERVATI	VE FILTERED		
4	いて	9/45	А	□Y G	ДN	72	150	DI		B	□ Y □ N		
3	りんじ	Amh	E	T Y] N	3	7(1)	101		É			
2	40	Amb	 	□ Y [,	ŽΝ	え	105	D (0	□Y ÅN		
1	1 250 PI R DY DN 2 IL PI B DY DN												
3	126	DI	A		P N			\\ <u></u>			□ Y □ N		
SHIPPING		Fed		ATE SHIPPED): (C	-4-	23	AIRBIL	L NUM	BER:			
COC NUM	COC NUMBER: — SIGNATURE: DATE SIGNED:)// (^)												
							/				((

<u></u> → TRC

PROJECT	NAME:	CEC K	arn BAP/LI:	2023 GW C	l		EPARED			CHEC	CKED	
PROJECT	.	R: 51440	4.0001.0000)	BY: 💪	₩, JK, J	J DATE IOL	1/23 B	Y: Z	514	DATE: 10-30-23	
SAMPLE	SAMPLE ID: WW-15002 WELL DIAMETER: 2" 4" 6" OTHER											
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER												
SAMPLE T	YPE:	☑ GW	□ ww [□ sw □	DI		LEACHATE		OTHER			
PURC	SING	TIME: 14	52	DATE OL4	123	S/	AMPLE	TIME:			DATE: 104/23	
PURGE PUMP PERISTALTIC PUMP METHOD: BAILER PH: 7.3V SU CONDUCTIVITY: 875.16 umhos/cm ORP: -2.65.8 mV DO: 1.62 mg/L												
DEPTH TO WATER: 7.18 T/ PVC TURBIDITY: 8.91 NTU												
DEPTH TO BOTTOM: NA T/ PVC NONE SLIGHT MODERATE VERY												
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 17.11 °C OTHER:												
VOLUME REMOVED: S.O. ALITERS GALLONS COLOR: Lear ODOR: None												
COLOR:	C	lear		odor: <u>ያ</u> ෑ ්	n t	FILTRA	TE (0.45 um)	YES		NO		
COLOR: Clear ODOR: Shight FILTRATE (0.45 um) A YES NO TURBIDITY FILTRATE COLOR: Clear FILTRATE ODOR: NONE NONE SLIGHT MODERATE VERY QC SAMPLE: MS/MSD DUP-DEK-BP-01												
DISPOSAL	METHOD:	☑ GROU	ND DRL	IM OTHER	₹	сомм	ENTS: \	_			-	
TIME PURGE PH CONDUCTIVITY ORP D.O. TURBIDITY TEMPERATURE WATER CUMULATIVE LEVEL PURGE VOLUME												
1/100	(ML/MIN)	(SU)	(umhos/cm		1	mg/L)	(NTU)	(°((FEET)	(GAL OR(E)	
	200	7.46	775.72			,४।	0.09	19-		5/18	INITIAL	
1457		740	8883	9 -175	3 1.	.67	1.34	18.		7.32	1.0	
1502		7.35	919.33	-185.	41.	,54	9.26	18-	26		2.0	
1507	- 1	7.36	1.888	5 -19-	1.61.	.66	8.86	17.0	9	}	3.0	
1512	1.	7.35	892.64				9.42	17,	36		4.0	
1517	Ψ	7.34	1,288				8.97	17.2		V	5.0	
	***************************************						i, se an amazan de manas asserbien abarensari d					
			erie Ader / reni Sano Julius et beste har in the trace and a						agan gan pake arang pagan arang.			
NC	TE: STAB	ILIZATION '	FEST IS COM	IPLETE WHEI	N 3 SUC	CESSIV	E READINGS /	ARE WITH	IN THE I	FOLLOWI	NG LIMITS:	
pH: +/-	0.1	COND.: +/-	3 % OF	RP: +/- 10 💡	D.O.	+/- 0.3	TURB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +/-</td>	10	TEMP.: +/-	
BOTTLES	S FILLED	PRESERV	ATIVE CODE	S A-NONE	В.	- HNO3	C - H2SO4	D-N	laOH	E - H	ICL F	
NUMBER	SIZE	TYPE	PRESERV	ATIVE FILT	ERED	NUMBI	ER SIZE	TYPE	PR	RESERVA	TIVE FILTERED	
4	10%	Plastic	13	□ Y	N 🗶	1	125	Play	۲,	B	N K Y	
#	60	VOA	A	□ Y	X N	1	1			Č	☐ Y 🗷 N	
4	40	VOA	E	X Y	□ N	, I	1	*		7	N 🗷 Y	
1	250	Plastx		ΠY	X N						□Y □N	
1	125	1	A	Y	X N					ige in any designation and a second control of	□ Y □ N	
SHIPPING	METHOD:	Drop	OFE	DATE SHIPP	ED:	10/5	123	AIRB	ILL NUM	IBER:		
COC NUM			<u> </u>	SIGNATURE		Au			E SIGNE		iolulzr_	

<>	TRC

PROJECT	NAME:	CEC K	arn BAP/LI: 20)23 GW C		PREP	ARED			CHEC	KED
PROJECT	NUMBER	R: 514404	4.0001.0000	ВҮ	: 0) JK, JJ	DATEIOS	123	BY: 3	K	DATE: 10-30-23
SAMPLE I		K - MI 17 PVC	1500S □ss □			R: 🗸 2" ZED STE		6" [OTHER		
SAMPLE T		☑ FVC ☑ GW		SW DI			ACHATE		OTHER		
PURG		TIME:		TF: 1-1-1-	$\overline{}$	SAM	/IPLE	TIME:	09ZC	D	ATE: 10/5/23
PURGE METHOD			PERISTALTIC I	PUMP	F		.66 s	n cc	NDUCTIV	TY: 100	
DEPTH TO) WATER:	10,05	T/ PVC	-	Т	URBIDIT	Y: 8-79	NTI	U		
DEPTH TO	ВОТТОМ:	NA	T/ PVC		D	NONE	SLI	GHT	□ моі	DERATE	☐ VERY
WELL VOL		NA	LITERS	☐ GALLONS	Т	EMPERA	TURE: <u>/</u>	1,59	.°C OT⊦	IER:	
VOLUME F	REMOVED:	5.0	X LITERS	GALLONS		COLOR:	Llea	\mathbf{C}	ODO	DR:	None
COLOR:	Lle	ar	OD	OR: NONe	F	ILTRATE	(0.45 um)	YE	s 🗌	NO	
NONE	SLI		BIDITY MODERATE	☐ VERY	-	ILTRATE (QC SAMP	COLOR:	/MSD		DUP-	OR:
DISPOSAL	METHOD:	☑ GROUI	ND DRUM	OTHER	C	COMMEN	ITS: E	3-D	Eれず	BRAP	0945
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)	1	O. T	FURBIDITY (NTU)	TEMP	ERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR(2)
0855			902.00		2.0				86	10.05	INTERNAL
0900	200						ر مار	14.	•	10.15	
		7.71	935.15	-	i		.01			10.12	2.0
0905			458,44					14/.		ļ	•
0910			992.40		1.6		·45	14.6			3.0
0915			995.60	ł	1.6		. }5	14.6			4.0
0920		7.66	1002.9	-133.8	1.6	4 8	2,79	14.	59		5.0
N(pH: +/-		ILIZATION COND.: +/-	TEST IS COMPI		SUCCI D.O.: +		READINGS A		T HIN THE		NG LIMITS: TEMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - H	INO3	C - H2SO4	D -	NaOH	E - H	CL F
NUMBER	SIZE	TYPE	PRESERVAT	VE FILTER	ED I	NUMBER	SIZE	TY	PE PF	RESERVAT	TIVE FILTERED
2	1000	Plostic	B	□ Y [X	N	1	125	Plas	4:0	B	□ Y X N
7	60	voA	A	□ Y [)	(N)				<u></u>	□ Y X N
2	40	VOA	E	⊠ Y □] N	1	4/	6		7	□ Y 🗷 N
Ī	250	Plastic	A		Ŋ						□Y □N
	125	Hoshi	Δ	□ Y X						AND THE RESERVE THE PERSON NAMED IN COLUMN	□Y □N
SHIPPING	METHOD:		00	ATE SHIPPED:		1015	123	AIF	RBILL NUM	BER:	
COC NUM	DED.	104		GNATURE:	Ą	1.1		DA	ATE SIGNE	D:	10/11/25

♦ TRC

PROJECT NAME:	CEC K	arn BAP/LI: 2	023 GW C		PRI	EPARED		CH	IECKED			
PROJECT NUMBE	ER: 514404	1.0001.0000		BY:	® JK, J	J DATE:101	5/23 B	۸: 2K	DATE 10-30-23			
SAMPLE ID:) WELL MATERIAL:	EK M	∪ - 150 0			TER: 🗸			OTHER				
SAMPLE TYPE:	☑ FVC ☑ GW			DI		LEACHATE	·	OTHER				
PURGING	TIME:0	750 D	ATE: 10/5	123	S	AMPLE	TIME:	810	DATE: 10/5/23			
PURGE METHOD:	PUMP BAILER	PERISTALTIC	PUMP		PH: ORP:		SU CON	IDUCTIVITY: <u>1</u>				
DEPTH TO WATER	DEPTH TO WATER: 4.45 T/ PVC						TURBIDITY: ON NTU					
DEPTH TO BOTTO	4 1 1	T/ PVC			ION 🗶		IGHT		E VERY			
WELL VOLUME:	NA	LITERS	GALLO	NS	TEMPE	RATURE: 15	.06.	C OTHER:	Control of the Contro			
VOLUME REMOVE	D: 4/.0	LITERS	GALLO	NS	COLOF	e Llea	<u>; (</u>	ODOR:	None			
	leac	0	OOR: NOY	1e	FILTRA	TE (0.45 um)	YES	□ NO				
NN NONE ☐ S		BIDITY MODERATE	☐ VE	RY	FILTRA QC SA	TE COLOR:	Llea G/MSD	FILTRATE DUP-	ODOR: None			
DISPOSAL METHO	D: GROUN	ND DRUM	OTHER	₹	СОММ	ENTS:	R- D	EK BAP				
TIME PURGE	PH	CONDUCTIVITY	ORP		D.O.	TURBIDITY	TEMPER	LVVV				
RATE (ML/MIN) (SU)	(umhos/cm)	(mV)		(mg/L)	(NTU)	(°(C) (FEE				
0750 700		10617	-174.8	1	.74	4.13	15.5	1 ~				
755	7.47	1080.3	į.	١.	.69	1.00	15.	30 9.5	6 1.0			
800	7.74	1049-2	, -		حلاع	0,00	15.1	A	2.0			
805	7.75	1045.6	-141.3	5 1	.63	0.21	15.0	57	3.0			
810	7.74	1042.7	-145.	6 1.	61	40.0	15.0	06 V	4.0			
	eter had gave had mered productive videocreen, market	ent or a single floor and a floor instance and instance of reduce of reference of the section of				age agreement on the story and state of the second state of the second						
		ALEXANDA MARIONAN ATTIOTY IS BUTCHES				ant a file of an and a state of the state of			ala chamalanda ga aliga yagaga songa agaa y yaany songanoninksin an an nin kadhiis son an nin an nin			
							-					
						magnicipal statements again in 1911, in philosophic film, and the statement						
NOTE: STA	BILIZATION T		PLETE WHEI		CESSIV			IN THE FOLLO	WING LIMITS: TEMP.: +/-			
BOTTLES FILLED		ATIVE CODES			- HNO3	C - H2SO-			- HCL F			
NUMBER SIZE	TYPE	PRESERVAT		ERED	NUMB		TYPE	··· F				
2.0 1000	N 1 1 1		□ Y	N K	1	125	Plask		□ Y V N			
2 60	VOA	<u> </u>	□ Y	∑ N	7)	1	Ľ	Y N			
2 40	VOA	E	X	N	1	1		4	□ Y Q N			
1 250	Plastil	A	Y	✓ N	+	r tus halanda jumalasan haraka huri darakan erinduk	-					
1 125		A	□ Y	X N			1	Pita sama Pita da da da da da Administración de				
SHIPPING METHOD	1,100/10	off [ATE SHIPP	ED:	101	5/23	AIRF	BILL NUMBER:				
COC NUMBER:	<u> </u>		IGNATURE:			3123 AW		E SIGNED:	10/11/28			

<>	TR	C

PROJECT	NAME:	CEC K	arn BAP/LI: 2	2023 GV	v c		P	REPA	ARED	. ,		CH	ECKE	
			4.0001.0000			BY:			DATE: U~4	(₂ 2 7	BY: A			ATE: lotsllz]
														101 3112
SAMPLE		n - 12;+		·				V-7	<u>4"</u>				UA	
WELL MAT			ss [GAL\	/ANIZE[<u> </u>	OTHER		VA	
SAMPLE T	YPE: (ZK)	□ •₩	☐ WW [5	⊈sw		DI		LEA	CHATE		OTHER			
PUR	SING	TIME: 1	JA [ATE: /	0~1	1-2	3	SAM			1034			10-4-23
PURGE METHOD	. =		PERISTALTIC	PUMP			PH:				ONDUCTI	~~~		umhos/cm
		BAILER							<u>0.0</u> m			88	mg/L	
DEPTH TO	WATER:		T/ PVC						(: <u>7.9</u>	NT				
DEPTH TO	BOTTOM:	<u>NA</u>	T/ PVC					IONE	SLI			DERAT	E	☐ VERY
WELL VOL		NA	LITERS	GA	\LLO	NS	TEM	PERAT	TURE: <u>2</u>	0.9	_°C OT	HER:	1	rone
VOLUME I	REMOVED:		LITERS	GA	ALLO	NS	COL	OR:	clear			OR:		
COLOR:	<u>c</u>	hear		DOR:	no.	ve_			(0.45 um)			, мо .	2K.	
		TUR	BIDITY				FILTE	RATE	OLOR: C	lear	FII	TRATE	ODOR:	none
⊠ ,NONE	SLI	GHT 🔲	MODERATE] VEI	RY	QC:	SAMPI	E: MS	/MSD		DUP-		
DISPOSAL	METHOD:	✓ GROUI	ND DRUM	/ D	ГНЕР	₹	COV	MEN	rs:					
TIME	PURGE RATE	PH	CONDUCTIVIT	Y C	DRP		D.O.	TI	JRBIDITY	TEME	PERATURE	WAT		CUMULATIVE PURGE VOLUME
	(ML/MIN)	(SU)	(umhos/cm)		mV)	1	(mg/L)		(NTU)		(°C)	(FEE		(GAL OR L)
1034	NA	7.80	686	16	0.0	,	6.8		7.9	a	0.9	NI	4	INITIAL
			and a section of the ball of the section of the sec											na manda na delemanony aradin'ny fisi na farondronon' é a desentrable deleté
				_			alera de la comunicación de la c		***************************************					MAN AND RELEVE POPULATION AND SECURE AND SEC
	*************										ta escri establica de la canadan de cara de			TT pating, 10-1740 1980. Apparently bit all activative apparently 151 interface
		and the state of t												
									****		maner values maneral decrease and decre			OF THE ROOM POSSESS OF THE ROOM POSSESS OF THE POSS
											•			
A SERVICE DESCRIPTION OF THE PERSON	er nerenne en er er en er er en en er et en er et en er er en er er en er er en er er en er er en er er en er						a grange manager nasproof a de ber							THE RESERVE OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS A PARTY OF THE PERSON NAMED AS
				-					nder hand, not were disk and of an amount an electric discussion			-		
				_						ļ	******************			100 - 1,51, 199, 100 c. paletina 100 1,40 c. 100 - 100 p. 100 p. 100 p. 100 p. 100 p. 100 p. 100 p. 100 p. 100
				-						<u> </u>				
N	OTE: STAB	ILIZATION	TEST IS COM			1 3 SI	UCCESS	IVE R	EADINGS A	ARE W	THIN THE	FOLLO	WING	LIMITS:
pH: +/-	0.1	CO N D.: +/-	3 % OR	P: +/- 10)	D.	O.: +/- (0.3	TURB: +/-	10 %	or =</td <td>= 10</td> <td>TE</td> <td>EMP.: +/-</td>	= 10	TE	EMP.: +/-
BOTTLE	S FILLED	PRESERV	ATIVE CODES	<u> </u>	ONE		B - HNC	3	C - H2SO4	D	- NaOH	E.	- HCL	F
NUMBER	SIZE	TYPE	PRESERVA	TIVE	FILT	ERE	וטא כ	/BER	SIZE	TY	PE P	RESER	VATIVE	FILTERED
1	125mL	plestic	A] Y	X	N .	7	60mL	Vo	A	A		☐ Y M
1	1	1	B] Y	X	N	1	40mL	10	A	E		□ Y 🛛 N
ĺ			e] Y	X	N	1	YouL	NO/	+	E		ØY □ N
ì			8] Y	X)	N							□Y □N
1	250.nL	1	A] Y	X	N	-		1				□Y □N
SHIPPING	METHOD:	kih Non		DATE SI	- HPPI	ED:	10-	5-3	L3	Al	RBILL NU	MBER:		
	The state of the contract of the state of th			-		****	7	0	02		ATE SIGN	energy senses are on a market or		0-17-02
ICOC NUM	DCK.			SIGNATI	JKE.		#		103	- 10	-1 E 31GN	LD.	_/0	2-13-23

<>>	T	2	C
		_	

PROJECT	NAME:	CEC K	arn BAP/LI: 2	023 GW C		PRE	PREPARED			CHECKED		
PROJECT	NUMBER	k: 514404	1.0001.0000		BY: /	AW, 🚱 JJ	DATE: 10-0	1-23	BY: AL		DATE: 10/3/123	
SAMPLE I	D: K	(LĪ -PI	LS	WELL	DIAME	TER: 🗸 2	2"		OTHER			
WELL MAT	ERIAL:	√ PVC	ss 🗌	IRON 🔲	GALVA	ANIZED ST	EEL		OTHER			
SAMPLE T	/PE:	☑ GW	□ww □	sw 🗌	DI		EACHATE		OTHER			
PURC	SING	TIME: N	A D	ATE: 10-4-	23		MPLE		1055		TE: 10-4-23	
PURGE METHOD		PUMP BAILER	PERISTALTIC	PUMP		PH: 3.51 SU CONDUCTIVITY: 2525 umhos/cm ORP: 134.0 mV DO: 7.7 mg/L						
DEPTH TO	WATER:	NA	T/ PVC			TURBIDITY: 9.9 NTU						
DEPTH TO	DEPTH TO BOTTOM: NA T/ PVC					MON 🔀		GHT	MOE	DERATE	☐ VERY	
WELL VOL	JME:	NA	LITERS	GALLO			ATURE: 3		°C OTH	IER:	·	
VOLUME F	REMOVED:		LITERS	GALLO		COLOR			ODC		none	
COLOR:		clear	OE	OR:	ne_		E (0.45 um)			NO		
	-		BIDITY			-		elect		RATE ODO	or: none	
NONE	⊠ SLI		MODERATE	VE D OTHER		_	IPLE: MS	MSD		DUP-		
DISPOSAL		☑ GROUP	ND DRUM	OTHE	-	COMME	:N15:	<u></u>				
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	ŧ	D.O.	TURBIDITY	ТЕМР	ERATURE	WATER LEVEL	CUMULATIVE PURGE VOLUME	
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	-	(mg/L)	(NTU)		(°C)	(FEET)	(GAL OR L)	
1055	NA	8.51	2525	134,0) "	רי.ז	9.9	22	2.3	NA	INITIAL	
	1					,						
NC	TE: STABI	LIZATION T	TEST IS COMP	LETE WHE	N 3 SU	CCESSIVE	READINGS	ARE WI	THIN THE P	OLLOWIN	G 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	S FILLED	PRESERV	ATIVE CODES	A - NONE	В	- HNO3	C - H2SO4	1 D-	NaOH	E - HC	CL F	
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILT	ERED	NUMBE	R SIZE	TY	PE PR	RESERVATI	VE FILTERED	
	125mL	plasta	A	□ Y	N	2	60nL	V0.	4	A	□ Y M N	
			B	□ Y	⊠ N	1	Your	<u> </u>		E	□ Y 🗷 N	
l l			۷	ΠY	□ X I N	1	Yonk	$ \Psi $		£	p⊈Y □ N	
1	V	The second	<i>b</i>	□ Y	X N						□Y □N	
1	25001	V	A	□ Y	X N						□ Y □ N	
SHIPPING	METHOD:	inb 000	b ett	ATE SHIPP	ED:	10-5-	27	All	RBILL NUM	IBER:		
COC NUM	BER:		- s	IGNATURE		Ne	My	DA	TE SIGNE	D:	10-17-27	
			<u> </u>		7	7		1				

<>	Ti	2	C
		-	_

PROJECT	NAME:	CEC K	arn BAP/LI: 20				ARED			CHEC	KED
PROJECT	NUMBER	t: 514404	4.0001.0000	BY:	: A\	w, 🚱, ນາ	DATE: 10~4	1-23	BY: AW		DATE: 10/3/123
SAMPLE	D: K	LI - SC	LS	WELL DIA	METI	ER:	5 4"	6" 🗶	OTHER	NA	
WELL MATI	ERIAI(SI)	₩ PVG	ss 🗆	IRON GA	LVAI	NIZED STE	EL	K	OTHER	NA	
SAMPLE TY	PE:		□ ww □	SW 🗌 DI		LE	ACHATE	×	OTHER	Seconda	ry contribuent
PURG	SING	TIME:	NA DA	TE: 10-4-	33			TIME:	1110		TE: 10-4-23
PURGE METHOD	. –	PUMP BAILER	PERISTALTIC (PH: <u>7</u>	<u>.リン</u> si		NDUCTIVI		
DEPTH TO	WATER:	/UV}	T/ PVC			TURBIDIT	1 4	NT	U		
DEPTH TO	воттом:	NA	T/ PVC			⊠ NONE	SLIC	GHT	□ мог	DERATE	☐ VERY
WELL VOL	JME:	NA	LITERS	GALLONS		TEMPERA	ATURE:	8.8	.°C OT⊦	IER:	
VOLUME F	REMOVED:	NA	LITERS	GALLONS		COLOR:	Cheer		ODO)R:	rone
COLOR:		clear	OD	OR: none		FILTRATE	(0.45 um)	X YE	s 🔲	NO	
		TUR	BIDITY			FILTRATE	COLOR:	Leer	FILT	RATE ODG	DR: Nove
NONE	SLI	GНТ 🗌	MODERATE	☐ VERY		QC SAME	PLE: MS	MSD		DUP-	
DISPOSAL	METHOD:	✓ GROUI	ND 🗌 DRUM	OTHER		COMMEN	ITS:				
TIME	PURGE RATE (ML/MIN)	PH (SU)	CONDUCTIVITY (umhos/cm)	ORP (mV)		D.O. 1	FURBIDITY (NTU)		ERATURE	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
1110	NA	7.42	1999	57.8	-	1,6	6.6		3.8	NA	INITIAL
pH: +/-	0.1	COND.: +/-		+/- 10	D.O.:	+/- 0.3	TURB: +/-	10 %	or =</td <td>10</td> <td>TEMP.: +/-</td>	10	TEMP.: +/-
<u> </u>	S FILLED		ATIVE CODES			HNO3	C - H2SO4		- NaOH	E - HO	
NUMBER	SIZE	TYPE	PRESERVAT			NUMBER	+-,	 		ESERVAT	
<u> </u>	125mL	PleasHC	A] N	2	60mL	VO	14	A	N XX V
			B			1 1	York	<u> </u>		<u> </u>	□ Y X N
			L			<u> </u>	40mL	1	<u> </u>	E	X Y U N
	₩		7		N	-		ļ			□ Y □ N
1	250-1	V	A	□ × 1 x] N						□ Y □ N
SHIPPING	METHOD:	Jab Dr	op aft D	ATE SHIPPED:		10-5-	23	All	RBILL NUM	IBER:	
COC NUM	BER:		S	IGNATURE:	A	e:	Dez	DA	ATE SIGNE	D: <u>/</u>	0-13-23
					V						

<>	TR	C
		_

PROJECT	NAME:	CEC K	arn BAP/LI: 20	123 GW C	PRI	EPARED		CHECK	(FD
							(12 DV)		
PROJECT	NOMBER	: 514404	1.0001.0000	BY:	AVV, QKX	DATE:(0-	1-23 BY: AL	<u>) </u>	DATEION
SAMPLE	D: ()w-10		WELL DIAM	IETER: 🗸	2"	6" OTHE	R	The second secon
WELL MATE	ERIAL: [√ PVC	ss 🗌	IRON GAL	VANIZED S	TEEL	OTHEI	R	
SAMPLE TY	/PE: [☑ GW	□ww □	SW DI		LEACHATE	OTHE	R	
PURG	SING	TIME: 14	15 DA	TE: 104-23	S	AMPLE	TIME: 145		TE: 10~4-23
PURGE		PUMP	PERISTALTIC I	PUMP		7,21 s	U CONDUCT	IVITY: 836	umhos/cm
METHOD		BAILER					V DO: _	6.2 mg/	L
DEPTH TO			T/ PVC		TURBI	DITY: <u>) ሽ</u> ና			
DEPTH TO	BOTTOM:	17.95	T/ PVC		□ №			ODERATE	☐ VERY
WELL VOL		NA _.	LITERS	GALLONS	TEMPE	RATURE: 1	<u>5,0</u> ℃ 0	THER:	
VOLUME F	REMOVED:	4.0	X LITERS	GALLONS	COLO	R: Chear		DOR:	rone
COLOR:		lear	OD	OR: None	_ FILTRA	TE (0.45 um)	YES [NO	
			BIDITY		FILTRA	TE COLOR:C	hear F	ILTRATE ODO	R: None
NONE	X SLIC	ЭНТ 🗌	MODERATE	☐ VERY	QC SA	MPLE: MS	/MSD	DUP-	
DISPOSAL	METHOD:	☑ GROUN	ID DRUM	OTHER	COMM	IENTS: FB	KLI coil	ected	
TIME	PURGE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	E WATER	CUMULATIVE PURGE VOLUME
'	RATE (ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	LEVEL (FEET)	(GAL OR L)
1417	100	7.36	861	-101.9	210	17.7	17.0	8.24	INITIAL
1422	100	7.17	835	-123.5	0.5	19.3	15.3	8.61	۵,۳
1427	100	7,17	829	-135,2	0,4	23.2	15,1	8.75	1,0
1432	100	7.19	829	- 144.5	0.3	26.4	15.1	8.84	1,5
1477	100	7.20	828	-152.6	0,3	25. 8	1511	8.89	2.0
1442	100	7,20	327	-157.8	0.3	22.4	15,0	8.94	2,5
1447	100	7,21	831	-154.3	0.3	19.3	15.0	9.00	3,0
1452	100	7.21	833	-153.7	0.2	19.2	15.0	9.02	3.5
1457	100	7,21	876	-157,6	0.2	18.9	15.0	9.06	4.0
								e trace across de comité describes describe describe describe describe describe de la comité des de la comité de la comité de la comité de la comité de la comité	
	TE: CTAD	LIZATION	TEST IS COMP	LETE WHEN 3 S	LICCESSIV	E DEADINGS /		IE EOLLOWIN	G LIMITS:
pH: +/-		COND.: +/-			.O.: +/- 0.3				TEMP.: +/-
BOTTLES	S FILLED	PRESERV	ATIVE CODES	A - NONE	B - HNO3	C - H2SO4	D - NaOH	E- HC	CL F
NUMBER	SIZE	TYPE	PRESERVAT	IVE FILTERE	D NUME	BER SIZE	TYPE	PRESERVATI	VE FILTERED
2	125mL	Plastic	A	□ Y X	N 2	14	Plastic	B	☐ Y 🐼 N
2			B	□ Y X	N 2	60mL	VOA	A	□ Y 📈 N
2			C	□ Y X		40mL		£	□ Y 🗷 N
2			D	□ Y 🗷	N 2	40mL		F.	№ Y □ N
~	250ml		A	V V		.	T - 1		□ Y □ N
SHIPPING	1 -	<u> </u>		ATE SHIPPED:		5-23	AIRBILL N	UMBER 4	
promise and consider a providence of the Constitution of the Const	aprinted force in the second second second second	14.5 17v			10-	<u> </u>	·	The state of the second st	1/0_/2 02
COC NUM	BEK:		s	IGNATURE:	110	12	DATE SIG	NED:	10-13-23

SAMPLE ID: 0 w-11 WELL DIAMETER: 2" 4" 6" OTHER WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER SAMPLE TYPE: GW WW SW DI LEACHATE OTHER PURGING TIME: 1131 DATE: 10-4-23 SAMPLE TIME: 1229 DATE: 1	0-1-2]
SAMPLE ID: O W - 1 \	0-4-23
WELL MATERIAL:	
SAMPLE TYPE: GW WW SW DI LEACHATE OTHER PURGING TIME: 1131 DATE: 10-4-23 SAMPLE TIME: 1229 DATE: 1	
PURGING TIME: 1131 DATE: 10-4-23 SAMPLE TIME: 1229 DATE: 1	
DIRECTOR DEPOSITOR DIVIDED IN A 16 OF CONDUCTIVITY 241.4	_ umhos/cm
METHOD: DAILER ORP: -23.2 mV DO: 1.1 mg/L	
DEPTH TO WATER: 22.58 T/ PVC TURBIDITY: 5.8 NTU	
BET III TO BOTTOM WE'T I I I I I	VERY
WELL VOLUME: NA LITERS GALLONS TEMPERATURE: 15.4 °C OTHER:	
VOLUME REMOVED: 5.5 1 LITERS GALLONS COLOR: Chew ODOR: NO	<u>ne</u>
COLOR: Cheer ODOR: 10re FILTRATE (0.45 um) X YES NO	madanhari dahkari dashari / Alam 1 - Shr
	none
NONE CSAIGHT MODERATE VERY QC SAMPLE: MS/MSD DUP-	
DISPOSAL METHOD: GROUND DRUM OTHER COMMENTS:	
I TIME I ' "'' - I DE ROMNHOTIVITAL NOD 1 IVA I HIBRINITA I IEMBERATURE I	MULATIVE GE VOLUME
	GAL OR L)
1174 100 9.34 456.0 100.4 3,3 20.1 15.6 23.39	INITIAL
1139 100 9.38 382.5 857 1.6 11.9 15.2 23.53	.5
1144 100 9.67 358,9 61.0 1.2 9.4 14.9 23,76	1.0
1149 100 9.75 349.6 44.0 1.1 7.9 14.8 27.91 1	. T
1154 100 9.81 342.3 28.0 1.0 6.2 14.8 24.06 2	.0
1159 100 9.77 346.8 16.3 1.1 7.1 15.6 24.06 2	.5
1204 100 4.78 346.8 4.1 1.1 6.8 15.5 24.06 3	·.o
1209 100 9:17 448345.9 -2.9 1,1 7.0 15.5 24.06 3	.5
	1,0
The state of the s	.5
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIM ph: +/- 0.1 COND.; +/- 3 % ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10 % or = 10 TEMP</td <td>1</td>	1
BOTTLES FILLED PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F	
NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE	FILTERED
1 125ml Plustic A DY XIN 2 16 Plustic B	Y 🔀 N
1 1 B DY XIN 2 GOML VOA A] Y 🗷 N
I L DY X N YONL E	YXN
1 J D DY WN 1 40mC & E	X Y DN
1 250mL J A] Y N
SHIPPING METHOD: Int Drop off DATE SHIPPED: 10-5-23 AIRBILL NUMBER:	
COC NUMBER: SIGNATURE: 10-1	3- 23

♦ TRC

WATER SAMPLE LOG

(CONTINUED FROM PREVIOUS PAGE)

				1	
PROJECT NAME:	CEC Karn BAP/LI: 2023 GW Co		PREPARED		CHECKED
PROJECT NUMBER:	514404.0001.0000	BY:	AW, (® JJ DATE:/ <i>0-4-2</i> 7	BY: AL	DATEIOGILZ

SAMPLE ID: 0w-11

	RATE		CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATURE (°C)	WATER LEVEL (FEET)	CUMULATIVE PURGE VOLUME (GAL OR L)
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	15.5	24.06	Sio
1224		976		-18.2					
1229	100	9.76	343,4	-23,2	1.1	5.8	15.4	24.06	2'6
							er palemente en en en en en en en en en en en en en	deligione en la trage en de alemande de de deserva	
		naga ay ang panggan ay panggan ay a a a a a a a a a a a a a a a a a				- 1 NO. 10. 1 Married At 1 Ave. 7, 40. 10. 10. 10. 10. 10. 10. 10. 10. 10. 1			A CONTRACTOR OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY AND ADDRESS OF THE PROPERTY ADDRESS OF TH
						n waare gal je sterenderen oor onen oord 2-100 blee (40 40 40 40 40 40 40 40 40 40 40 40 40 4			
								againte sonage a conjunto nacional trabasio	
						ayan, mengana sanan nerganan maken mengan terbahan Arbahan			A STATE OF THE STA
		**************************************					THE PROPERTY OF THE PARTY OF TH		
	ALAFA SANDON PATALA PLANE MARTINE			armone (capados) del may have been been a book as book as been been able to				***************************************	
THE PARTY NAMED AND POST OF THE PARTY NAMED IN							AND AND THE RESERVE OF THE PROPERTY OF THE PRO		
						aan ahaa sarah kuu waxa sarah ah waxay ku dhaa ah kada ah aada ah ah ah ah ah ah ah ah ah ah ah ah ah			
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						A CONTRACTOR OF THE CONTRACTOR		
					gray arabatan na akkinik tinadaanat yasansa				
						and the second s			
	magya qar sa sa mangun Anna Baston Angastas m							 	
	mayorish Karis, ribin, abi'a darbasi dabasi				armonin v mile (narmoninament mile	AND THE THE THE REST OF SECURITY AND ADMINISTRATION OF SECURITY OF SECURITY AND ADMINISTRATION OF SECURITY AND ADMINISTRATIO	a personal trata subsection a recent rate and structure in inter-		
Colonial Col	andre andresses a secondaria, man est seco				Name of Administration of Administration of Administration (Administration of Administration of Admini				
	e de Suspirio describir de su dos dostros directiones i		- Prompty personness was considered to the State of the S						
		-				SELECTION TOTAL CALLED SELECTION OF THE PROPERTY OF THE	enderson en a seu maio, a escalario de deserva y desenvarion entre a engelarir y arm	<u> </u>	
			TO THE PERSON OF PERSONS ASSESSED ASSESSED ASSESSED ASSESSED.				and analysis and the state of t		
					ļ				
		water make supplied by make court						ļ	

SIGNATURE

Je My

DATE SIGNED:

10-13-23

◆ TRC

PROJECT NAME: CEC Karn LF: 2023 GW Comp PREPARED CHECKED PROJECT NUMBER: 514404.0000.0000 BY: AW, JJ, K DATE: 10-4-27 BY: AU DATE: 10-4-2	oNIZI							
SAMPLE ID: OV -12 WELL DIAMETER: V 2" 4" 6" OTHER	0131125							
00-10								
WELL MATERIAL: ☑ PVC ☐ SS ☐ IRON ☐ GALVANIZED STEEL ☐ OTHER								
	Victor Mixture Control							
SAMPLE TYPE:								
PURGING TIME: 1527 DATE: 10-4-23 SAMPLE TIME: 1544 DATE: 1	0-4-23							
PURGE PUMP PERISTALTIC PUMP PH: 7.19 SU CONDUCTIVITY: 873 METHOD: PAHER ORD: 173.7 mV DO: 0.7 m/l								
BAILER ORF. 7793 IIIV DO. 979 IIIGE	ORP: -173:3 mV DO: mg/L							
<u> </u>								
DET INTO BOTTOM.	VLIVI							
	<u></u>							
	none							
TURBIDITY FILTRATE COLOR: Check FILTRATE ODOR: ONE SLIGHT MODERATE VERY QC SAMPLE: MS/MSD DUP- KLF	- wwe							
DISPOSAL METHOD: ☑ GROUND ☐ DRUM ☐ OTHER COMMENTS:								
I THE I STORE I BUT LOOMBUCTIVITY! AND I DO I TUDDINITY I TEMBERATURE!	MULATIVE E VOLUME							
(ML/MIN) (SU) (umhos/cm) (mV) (mg/L) (NTU) (°C) (FEET) (G	AL OR L)							
1529 200 7.32 855 -108.1 1.3 18.3 17.7 17.48 1	NITIAL							
1574 200 7.20 872 -125.4 0.5 10.2 17.7 17.50	<u> </u>							
1579 200 7.19 891 -131.9 0.3 6.6 17.5 17.50	2							
1544 200 7.19 893 -133.3 0.7 6.5 17.6 17.50	3							
1549 200 FK	appe my pay in propagate promoted the for							
	ang managpal na sindi mana and ministrona ah mila di didirik							
NOTE: STABILIZATION TEST IS COMPLETE WHEN 3 SUCCESSIVE READINGS ARE WITHIN THE FOLLOWING LIMI	TS:							
pH: +/- 0.1 COND.: +/- 3 % ORP: +/- 10 D.O.: +/- 0.3 TURB: +/- 10 % or = 10 TEMP.</td <td></td>								
BOTTLES FILLED PRESERVATIVE CODES A - NONE B - HNO3 C - H2SO4 D - NaOH E - HCL F								
NUMBER SIZE TYPE PRESERVATIVE FILTERED NUMBER SIZE TYPE PRESERVATIVE	FILTERED							
2 rasmi plustic A DY XIN 4 IL Pluste B	Y 🔀 N							
] Y 🔯 N							
2 1 1 B DY X N 4 60mL VOA A								
2 B DY N 4 60mL VOA A	N 🔀 Y							
2 B								
2 B Y N Y 60mL VOA A C C Y N 2 YOML E C C T T T T T T T T								
2 B	Y N							

PROJECT NAME: CEC Karn BAP/LI: 2023 GW C PREPARED CHECKED							CKED				
PROJECT NUMBER: 514404.0001.0000 BY: AW (JK) JJ DATE: 10-4-23 BY: AW DATE: 10/1							DATE: 10/1/23				
SAMPLE ID: DEK-MW - 15003 WELL DIAMETER: 2" 4" 6" OTHER											
WELL MATERIAL: PVC SS IRON GALVANIZED STEEL OTHER											
SAMPLE TYPE:											
PURGING TIME: 13 04 DATE: 10-4-23					3 3	SAMPLE	TIME: 134	7 DATE: 10-4-23			
						PH: 8,22 SU CONDUCTIVITY: 457.6 umhos/c					
METHOD: BAILER						ORP: -151.1 mV DO: 0.5 mg/L					
DEPTH TO	DEPTH TO WATER: 17,2-3 T/ PVC TURBIDITY: 5.2 NTU							a produce de la companya de la compa			
DEPTH TO	воттом:	27,27	T/ PVC		N _M			MODERATE	☐ VERY		
WELL VOL	UME:	NA	LITERS	☐ GALLONS	TEMP	TEMPERATURE:C OTHER:					
VOLUME F	REMOVED:	8	LITERS	☐ GALLONS	COLO	COLOR: Clear ODOR: none					
COLOR:	e	lear	OD	OR: <u>none</u>	_ FILTR	ATE (0.45 um)	▼ YES	□ NO			
<u> </u>	_		BIDITY	_				FILTRATE OF	OOR: None		
NONE			MODERATE	VERY		AMPLE: MS	/MSD	DUP-			
DISPOSAL	METHOD:	☑ GROUN	ND DRUM	OTHER	СОМ	MENTS:					
TIME	PURGE RATE	PH	CONDUCTIVITY	ORP	D.O.	TURBIDITY	TEMPERATUR	RE LEVEL	CUMULATIVE PURGE VOLUME		
	(ML/MIN)	(SU)	(umhos/cm)	(mV)	(mg/L)	(NTU)	(°C)	(FEET)	(GAL OR L)		
1307	200	8.77	450.1	-72.6	1.4	6.4	20.5	18.8	ار initial		
1312	200	8.71	448.9	-107.3	0.8	5,2	21.0	19.11	<u> </u>		
1317	200	8.52	445.5	-116.0	0.6	5,3	20,8	19.55	2		
1322	200	3.41	447,2	-122.5	7.0	5.3	20.8	19.83	3		
1327	200	8.28	447, 3	- 130.2	0.5	5.0	20,6	19.95	4		
1332	200	8,21	448.7	-131,7	0.5	5,3	20,3	19.99	5		
1337	200	8.24	449.0	-142.4	0.5	5.1	20,2	20.00	, 6		
1342	200	3.24	452.1	- 148.7	0.5	5.2	20.2	20,10			
1347	200	8.22	457.6	-152.1	۵.5	5.2	20,2	20,12	.0		
			AND THE PERSON NAMED OF THE PERSON OF THE PE				· · · · · · · · · · · · · · · · · · ·				
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 <td>NG LIMITS: TEMP.: +/-</td>									NG LIMITS: TEMP.: +/-		
,											
			ATIVE CODES		B - HNO3	1			··· · · · · · · · · · · · · · · · · ·		
NUMBER		TYPE	PRESERVAT				TYPE	PRESERVA			
	125mL	Plastic	A) N 2		Plastic		□ Y X N		
L			ß] N 2		VOA	<u>/</u>	□ Y Z		
						4026		Ē	☐ Y M N		
]	<u>u</u>	 	7			York	<u> </u>	b			
	250mL		<u> </u>		J N		1				
SHIPPING METHOD: Lat Story WF DATE SHIPPED: 10-5-23 AIRBILL NUMBER:											
COC NUMBER: SIGNATURE: DATE SIGNED: 10~13~23											

CHAIN OF CUSTODY

300+ 31 QA REQUIREMENT: ☐ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS oĘ ☐ ISO 17025 □ OTHER □ NPDES INI 🛭 Cal. Due Date: M&TE#: (Attach List if More Space is Needed) ANALYSIS REQUESTED Received on Ice? \square Yes \square No ပွ CONSUMERS ENERGY COMPANY – LABORATORY SERVICES COMMENTS: Temperature: LD2 × × × × × **snoinA** × × × × × Total Metals × × × × × × 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 Other PRESERVATIVE MeOH CONTAINERS HCI NgOH REQUESTER: Harold Register [†]OS[₹]H HMO³ None 7 7 ~ 7 7 # TATOT m m OTHER SAP CC or WO#: RECEIVED BY: RECEIVED BY: ☐ STANDARD phone: FIELD SAMPLE ID / LOCATION A = Air WP = Wipe WT = General Waste OX = Other
SL = Sludge TURNAROUND TIME REQUIRED ☐ 3 DAYS 23-0933 W = Water / Aqueous Liquid S = Soil / General Solid O = Oil DUP-Background FB- Background GW = Groundwater WW = Wastewater ☐ 48 HR PROJECT NUMBER: 10-5-23/6730 MW-15002 MW-15008 MW-15016 MW-15019 MATRIX CODES: □ 24 HR email: DATE/TIME: DATE/TIME: Ğ₩ GW Ğ₩ Ğ₩ G₩ MATRIX ≥ 1236 0913 9449 TIME 151 १३३६ SAMPLE COLLECTION Q4-2023 JCW-DEK Background Wells Harold Register 10-2-23 Joseph Firlit 10-4-01 10-2-23 10-2-23 10-4-23 10-2-23 DATE Count on Us[®] SAMPLING SITE / CUSTOMER: Consumers Energy TRC SEND REPORT TO: RELINDUISHED BY: SAMPLING TEAM: RELINQUISHED BY 90--02 -05 SAMPLE ID -03 -04 23-0933-01 COPY TO:

Barberton, OH 44203 Phone (330) 497-9396 Phone (330) 497-0772 **Eurofins Cleveland**

180 S. Van Buren Avenue

MICHIGAN Chain of Custody Record

💸 eurofins | Environment Testing

96 N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2SC03
S - H2SO4
T - TSP Dodecanydrate
U - Acetone
V - MCAA
W - PH 4-5
Y - Trizma Ver. 01/16/2019 Special Instructions/Note: Z - other (specify) Months Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon COC No: 240-112524-33282.1 reservation Code C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchior H - Ascorbic Acid 155 J Page: Page 1 of 1 Job#: J - DI Water K - EDTA L - EDA Date/Time: 0/5/33 reneniamos to hedmutinios i Date/Time: Method of Shipment: arrier Tracking No(s): State of Origin: **Analysis Requested** Cooler Temperature(s) "C and Other Remarks: Special Instructions/QC Requirements: Lab PM: Brooks, Kris M E-Mait: Kris. Brooks@et.eurofinsus.com Received by: Received by: o メ × × × Х. 友 Time: アア Water Matrix Water Water Water Water Water Water Company Company Radiological Sample Type (C=comp, G=grab) B 734-345-9804 Compliance Project: A Yes A No 7455 Jake Krent Sample Time 1007 8913 0948 9£ æl 131 Date: Unknown (AT Requested (days): Date/Time: [0-5-23] Due Date Requested: 10-4-23 Eurofins Project #: 24024154 SSOW#: Sample Date 10-4-23 10-2-23 10-4-33 10-2-23 10-7-73 Date/Time: PO#: 199813 WO#: Phone: Poison B Skin Imitant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seals Intact: Custody Seal No.: A Yes A No 734-971-7080(Tel) 734-971-9022(Fax) Kam/Weadock CCR Background Well Possible Hazard Identification TRC Environmental Corporation JKrenz@trccompanies.com Empty Kit Relinquished by: Address: 1540 Eisenhower Place Client Information Sample Identification DUP-Background State, Zip: MI, 48108-7080 EQ-Backgroud Relinquished by elinquished by: Jacob Krenz elinquished by MW-15008 MW-15016 MW-15019 MW-15002 Ann Arbor

Eurofins Cleveland

180 S. Van Buren Avenue

Barberton, OH 44203 Phone (330) 497-9396 Phone (330) 497-0772

MICHIGAN Chain of Custody Record

Environment Testing

eurofins :

N - None
O - AsNaO2
P - Na2O45
Q - Na2O3
R - Na2S2O3
S - H2SO4
I - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Y - Trizma
Z - other (specify) Special Instructions/Note: Ver. 01/16/2019 Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon
Special Instructions/QC Requirements: COC No: 240-112530-29052.1 H - Ascorbic Acid Page: Page 1 of 1 Job #: C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor J - DI Water K - EDTA L - EDA 720 Date/Time: 16/6/23 Date/Time: ate/Time: Method of Shipment: 7 Carrier Tracking No(s): State of Origin: **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: Lab PM:
Brooks, Kris M
E-Mail:
Kris. Brooks@et.eurofinsus.com Received by: メメ/ユラ VNX X メメメ Time: Water Water Water Water Water Water Company Stradord Radiological Sample
Type
(C=comp,
G=grab) K20 D D O 4524-017-18L :short Sample Time 1015/23 0945 10/4/23 SIN 015/2 0920 0180 545/01 mpler. A. whale 1 Poison B Unknown FAT Requested (days): Due Date Requested: Compliance Project: Sample Date Eurofins Project #: 24024154 SSOW#: 52/1/01 Date/Time: PO#: 199812 Deliverable Requested: I, II, III, IV, Other (specify) au Ω Skin Imitant Custody Seals Intact: Custody Seal No.:

A Yes A No JKrenz@trocompanies.com
Project Name:
Kam/Weadock CCR DEK Bottom Ash Pond 734-971-7080(Tel) 734-971-9022(Fax) Flammable **IRC Environmental Corporation.** Empty Kit Relinquished by: 1540 Eisenhower Place Client Information Sample Identification DUP-DEK-BAP-01 **DEK-MW-15002** DEK-MW-15005 DEK-MW-15006 State, Zip: MI, 48108-7080 EB-DEK-BAP elinquished by: Client Contact: Jacob Krenz elinquished by Relinquished by Ann Arbor

MICHIGAN 190 chai

Eurofins Cleveland

180 S. Van Buren Avenue

Chain of Custody Record

seurofins Environment Testing

N - None
O - Ashao2
P - Na2O45
Q - Na2S03
R - Na2S203
S - H2S904
T - TSP Dodecahydrate
U - Acetone Special Instructions/Note: Ver. 01/16/2019 W - pH 4-5 Y - Trizma Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Special Instructions/QC Requirements: COC No: 240-112531-29053.1 Preservation Code G - Amchlor H - Ascorbic Acid Page: Page 1 of 1 Job#: I - Ice J - DI Water K - EDTA L - EDA ereniamos to redmul lator Date/Time: Aethod of Shipment. ₹ -Carrier Tracking No(s): State of Origin: **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: Lab PM:
Brooks, Kris M
E-Mail:
Kris. Brooks@et.eurofinsus.com Received by: <u>5</u> Matrix Water Water Company Radiological Sample
Type
(C=comp,
G=grab) 336 PWSID: ق JANIA JASS 734 904 331 Sample Time () () () Poison B Unknown TAT Requested (days): Due Date Requested: Eurofins Project #: 24024154 SSOW#: Sample Date 10(4(3) Date/Time: Po#: 199812 Kam/Weadock CCR DEK Bottom Ash Pond & lined Well Barberton, OH 44203 Phone (330) 497-9396 Phone (330) 497-0772 Custody Seals Intact: Custody Seal No.: 734-971-7080(Tel) 734-971-9022(Fax) **FRC Environmental Corporation.** !Krenz@trccompanies.com Empty Kit Relinquished by: 1540 Eisenhower Place Client Information Sample Identification State, Zip: MI, 48108-7080 DEK-MW-18001 Jacob Krenz Relinquished by: elinquished by: Ann Arbor

Eurofins Cleveland

180 S. Van Buren Avenue

MICHIGAN 190 Chain of Custody Record

seurofins :

Environment Testing

N - None
O - Ash'aO2
P - Na2O4\$
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dotecathydrate
U - Acetone
V - MCAA
V - PH 4-5
Y - Trizma
Z - other (specify) Special Instructions/Note: Ver. 06/08/202 Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Special Instructions/QC Requirements: COC No: 240-112532-29054.1 reservation Codes: 13:00 C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid Page: Page 1 of 1 Job#: J - Dr Water K - EDTA L - EDA 10/10/23 Date/Time: reniatinos to redmulti ato T Date/Time: **Method of Shipment:** arrier Tracking No(s) State of Origin: **Analysis Requested** Cooler Temperature(s) °C and Other Remarks: E-Mail: Kris. Brooks@et.eurofinsus.com Received by: * X X 04.0 - Standard Target List × Lab PM: Brooks, Kris M <u>2</u> Eleid Fillered Sample (Yes or No) 7 Z Water Water Water Water Water Water Water LOTO 25 Company Company Radiological Type (C=comp, G=grab) Sample Phone: 734-795-9804 ٧ ٩ ೦ O S હ Sampler. Sake Korene Compliance Project: A Yes A No Sample Time 1229 1608 LS H 1544 1347 Unknown Date: (days): Due Date Requested: Sample Date 10-4-23 10-4-23 10-4-23 10-4-23 10-4-23 10-4-23 Project #: 24024154 SSOW#: te/Time: PO#: 199812 Poison B Skin Imitant Possible Hazard Identification

| Non-Hazard | Flammable | Skin Imit
| Deliverable Requested: I, II, III, IV, Other (specify) Project Name: Kam/Weadock CCR DEK Lined Impoundment Custody Seals Intact. | Custody Seal No: | A Yes A No Barberton, OH 44203 Phone: 330-497-9396 Fax: 330-497-0772 Phone: 734-971-7080(Tel) 734-971-9022(Fax) **TRC Environmental Corporation** JKrenz@trccompanies.com Empty Kit Relinquished by: 1540 Eisenhower Place Client Information Sample Identification State, Zip: MI, 48108-7080 DEK-MW-15003 Client Contact Jacob Krenz elinquished by: elinquished b elinquished Ann Arbor **DUP-KLI** OW-10 OW-11 OW-12 EB-KLI

op 34

37

CHAIN OF CUSTODY

-)		1									
Consumers Energy Count on	Energy Count on Us [®]		COI	CONSUMERS ENERGY COMPANY – LABORATORY SERVICES 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251	MPANY – JACKSON, MI 49	L.A . 9201	BORA	(517) 788-1251	X S	ER	VIC	ES			<u>а</u> ,	Page of	
SAMPLING SITE / CUSTOMER:	STOMER:			PROJECT NUMBER:	SAP CC or WO#:	#				Ā	ANALYSIS REOUESTED	IS R	OUE	STED			
Q4-2023 DEK Bottom Ash Pond Wells	m Ash Pond W	/ells		23-0929	REQUESTER: Harold Register	Harold	Register		_	(Attach List if More Space is Needed)	List if	More	Space	is Nec	led)	QA REQUIREMENT:	
SAMPLING TEAM: DINHALLI	1 1 hale	1		TURNAROUND TIME REQUIRED:												□ NPDES	
	}	,		□24HR □48HR □3DAYS □ST	STANDARD 🖾 OTHER	照									uoq.	INI 🛭	
SEND REPORT TO:	Joseph Firlit			email:	phone:					*****				uoq	Car	☐ ISO 17025	
COPY TO:	Harold Register	ster		MATRIX CODES: GW = Groundwater OX = Other)	CONTAINERS	ERS						Car'	oinsg	☐ 10 CFR 50 APP. B	
	TRC				43		PRESERVATIVE	/ATIVE	slai		t			១រុបខេ	giO I	☐ INTERNAL INFO	
LAB	SAMPLE COLLECTION	LECTION	хія	S = Soil / General Solid WP = Wipe O = Oil WT = General Waste	ral Waste	LAL#	ار ا	Н	al Me	suo	sinom S	tinils	əbil	grO la	Solvec	□ OTHER	
SAMPLE ID	DATE	TIME	TAM	FIELD SAMPLE ID / LOCATION	CATION		HACORONO HACONO HA HACONO HACO	HCI WeC			mA TD		ıluß	тоТ	Dis	REMARKS	T
23-0929-01	IOWhs	risi	GW	DEK-MW-15002		6	4 1 1 1	7	×	×	×	×	×	×	×		T
-02	1015/23 0920	03100	GW	DEK-MW-15005		6	4 1 1 1	2	×	×	×	×	×	×	×		
-03	०१८० ह्यं राज	Spic	GW GW	DEK-MW-15006		6	4 1 1 1	2	×	×	×	×	×	×	×		
-04	25/1/01	١	GW	DUP-DEK-BAP-01		6	4 1 1 1	7	×	×	×	×	×	×	×		7
-05	0180 (2/5/01	OPIC	M	FB-DEK-BAP		9	2 1 1 1	2	×	×	×		×	×	×		· · · · · · · · · · · · · · · · · · ·
90-	5145 5415101	3415	W	EB-DEK-BAP		9	2 1 1 1	2	×	×	×		×	×	×		
																	Ι
																	l
,																	
																	 7
RELINQUISHED PT:			DATE/TIME:		RECEIVED BY:	,	,		<u>5</u>	COMMENTS:	<u>:</u>						
Cullan RELINQUISHED BY:	1		DATE/TIME:	123 1240	REGENVED BY:					Received on Ice? 🗗 Yes 🗆 No	ı Ice?	Xe.			M&TE#:_	เรื่อมชิกรา	0, 0
·)				Теп	Temperature: 2.3-5.	5.5	.5.	ပွ		Cal. Due D	Cal. Due Date: 11-15-23	<u>. </u>
				23	23-0929 Page 19 of 44	4											٦

CHAIN OF CUSTODY

1		١
1	rerg)	١
	ers En	
	me	
	шпѕис	
1	ತ	

CONSUMERS ENERGY COMPANY - LABORATORY SERVICES

ğ Page

36 07 51 QA REQUIREMENT: ☐ 10 CFR 50 APP. B ☐ INTERNAL INFO REMARKS □ ISO 17025 O OTHER □ NPDES INI ⊠ ANALYSIS REQUESTED (Attach List if More Space is Needed) Dissolved Organic Carbon × × × Total Organic Carbon × × × Sulfide × × × Alkalinity × × × LDS × COMMENTS: sinommA × × × **enoinA** × × × Total Metals × × × 135 WEST TRAIL ST., JACKSON, MI 49201 • (517) 788-1251 Ollier PRESERVATIVE HO₉M CONTAINERS HCI Ġ 7 7 NaOH REQUESTER: Harold Register H₂SO₁ _ чолн -_ Н Мопе 4 'n 'n # JATOT 9 ☐ 3 DAYS ☐ STANDARD ☒ OTHER SAP CC or WO#: RECEIVED BY: ID / LOCATION phone: WP = Wipe WT = General Waste OX = Other_SL = Sludge A = AirTURNAROUND TIME REQUIRED: FIELD SAMPLE 23-0930 **DEK-MW-18001 MSD** W = Water / Aqueous Liquid S = Soil / General Solid O = Oil DEK-MW-18001 MS DEK-MW-18001 GW = Groundwater WW = Wastewater ☐ 48 HR PROJECT NUMBER: 10(st/>/0730 MATRIX CODES: □ 24 HR email: DATE/TIME: ĞΨ ĞΨ ₽ **XINTAM** Q4-2023 DEK Bottom Ash Pond & Lined Impound Clar 3 (2) TIME SAMPLE COLLECTION Harold Register Joseph Firlit ι rs ligh33 Sount on Us[®] DATE ン SAMPLING SITE / CUSTOMER TRC _ SEND REPORT TO: RELINQUISHED BY: SAMPLING TEAM: SAMPLE ID 9 23-0930-01 ဗု COPY TO:

Cal. Due Date: 11-15-25 M&TE#: LSO28757

Received on Ice? Yes No Temperature: 3.2-4.5 °C

23-0930 Page 13 of 32

RECONTRIBENCE BY:

DATE/TIME:

ANQUISHED BY:

SAMPLING SITE CUSTOMER	STOMER:			PROJECT NUMBER:	SAP CC or WO#:)#:		ANALY	ANALYSIS REQUESTED	UESTED		
Q4-2023 DEK Lined Impoundment	Impoundment			23-0931	REQUESTER	REQUESTER: Harold Register	3	tach List i	(Attach List if More Space is Needed)	ice is Nece	(pa)	ON KEQUIKENIEN I
SAMPLING TEAM:				TURNAROUND TIME REQUIRED:		,						□ NPDES
			ened	O 24 11R O 48 HR O 3 DAYS O ST	STANDARD SOTHER	IER					11 حراج	
SEND REPORT TO:	Joseph Firlit		-	cmail:	phone:						-	☐ ISO 17025
COPY TO	Harold Register	îcr			h-	CONTAINERS						1 10 CFR 50 APP. B
	TRC				əfi	PRESERVATIVE	T					☐ INTERNAL INFO
LAB	SAMPLE COLLECTION	ECTION	XISI	S = Soil / General Solid WP = Wip O = Oil WT + Gen	WP = Wipe WT = General Waste	110 10	M. In.	ninom	ziioila	obii al Org	OSS, paajos	☐ OTHER
SAMPLE ID	DATE	TIME	J.VIV	FIELD SAMPLE ID / LO	ID / LOCATION	11C1 11C1 11 ² 20 11 ² 20 110C			VIE	to l'		REMARKS
23-0931-01	10-4-23	1347	.MS	DEK-MW-15003		9 4 1 1 1 2	×	×	×	×	×	
-0.2	[6-4-0]	IMST	8	OW-10		රා ද - - - - - -	×	×	×	×	×	
-03	10-4-23	1229) NS	0W-11		9 4 1 1 1 2	×	×	×	×	ж	NI ANGENIA
70-	10-4-23	HhS)	8	OW-12		9 4 1 1 1 2	х х	×	×	×	× ×	<i>711.7</i> \(\frac{1}{2}\)
<u>-0-</u>	10-4-23	0111	≱	KLI-SCS		9 4 1 1 1 2	×	×	×	×	×	
90-	{ z-h-0!	550	AIS.	KLI-PCS		9 4 1 1 1 2	×	×	ж	х		
-0.	W-4-23	1034	ΝS	SW-DITCH		9 4 1 1 1 2	х	×	×	*	×	
80-	[t-h-0]		8	DUP-KLI		9 4 1 1 1 2	×	×	X	×		rekik waxaan w
60-	6-4-63	1608		EB-KLI		6 1 1 1 1 2	×	И		Х	×	
-10	[6-4-23	1451	*	FB-KLI		6 1 1 1 1 2	×				×.	· ·
												सर्गापन करान्य
RELINQUIŞIED BY:		ď	DATE/TIME:		RECEIVED BY:		COMMENTS	ENTS.				
3	N	<i>j.</i>	10-5-57	27/0730	J				•			
RELINÇCISHED BY	,,	D.	DATECTIME		ECEIVED BY:		Receive	d on lee?	Received on Ice? Oxes 🗆 No		Mæte	NINTE F. LSO 28757

CHAIN OF CUSTODY



Appendix C Data Quality Reviews

Laboratory Data Quality Review Groundwater Monitoring Event October 2023 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the October 2023 sampling event. The sample was analyzed for total metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The total organic carbon and dissolved organic carbon analyses were subcontracted to Brighton Analytical LLC (BAL) in Brighton, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0930, 92712, and S54195.01(01).

During the October 2023 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The sample was analyzed for the following constituents:

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total Metals	SW-846 6020B/7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D
Total/Dissolved Organic Carbon (TOC/DOC)	SM 5310B

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, when collected. 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 and Merit. 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, ammonia, TDS, alkalinity, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of a detection or assessment monitoring program.
- Data are usable for the purposes of the detection or assessment monitoring program.
- When the data are evaluated through a detection or assessment monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- The samples submitted to Merit for sulfide analysis were received at 6.3°C; there is no adverse impact on the data usability due to this issue since the samples were received by Merit on the same day as shipment from CE Laboratory Services and since the samples were received by CE Laboratory Services at an acceptable temperature. Merit noted that the samples were on ice and that the cooling process had begun.
- A field blank was not collected with this data set.
- An equipment blank was not collected with this data set.

- MS and MSD analyses were performed on sample DEK-MW-18001 for total metals, anions, ammonia, total alkalinity, sulfide, TOC, and DOC. The recoveries were within the acceptance limits. Relative percent differences (RPDs) were not provided by the laboratory for all parameters except TOC and DOC and therefore were not evaluated; further, with the exception of sulfide, TOC, and DOC, 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.
- A field duplicate pair was not collected with this data set.
- Laboratory duplicate analyses were not performed on the sample in this data set.

Laboratory Data Quality Review Groundwater Monitoring Event October 2023 DE Karn Bottom Ash Pond and Lined Impoundment

A groundwater sample was collected by TRC for the October 2023 sampling event. The sample was analyzed for radium by Eurofins in St. Louis, Missouri. The laboratory analytical results were reported in laboratory sample delivery group (SDG) 240-193136-1.

During the October 2023 sampling event, a groundwater sample was collected from the following well:

DEK-MW-18001

The 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

- Results for radium-226 were reported without a 21-day waiting period to ensure short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. Positive radium-226 results reflect the total alpha radium and should be considered potentially high biased, as summarized in the attached table. The sample has activity below the RL (1.0 picocuries per liter) and are well below the MCL for combined Radium-226/228 (5 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks.
- No equipment or field blanks were collected.
- LCS recoveries for all target analytes were within laboratory control limits.
- MS/MSD and laboratory duplicate analyses were not performed on the sample from this data set.
- A field duplicate pair was not collected.
- Carrier recoveries were within 40-110%.

Attachment A

Summary of Data Non-Conformances for Impoundment Groundwater Analytical Data

DE Karn Bottom Ash Pond and Lined Impoundment

Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
DEK-MW-18001	10/4/2023	Radium-226	Result has a potential high bias 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

Laboratory Data Quality Review Groundwater/Surface Water Monitoring Event October 2023 DE Karn Lined Impoundment

Groundwater, water, and surface water samples were collected by TRC for the October 2023 sampling event. Samples were analyzed for total and/or dissolved metals, anions, total dissolved solids, ammonia, and alkalinity by Consumers Energy (CE) Laboratory Services in Jackson, Michigan. The sulfide analysis was subcontracted to Merit Laboratories, Inc. (Merit) in East Lansing, Michigan. The total organic carbon and dissolved organic carbon analyses were subcontracted to Brighton Analytical LLC (BAL) in Brighton, Michigan. The laboratory analytical results were reported in laboratory sample delivery groups (SDGs) 23-0931R, S54196.01(01), and 92713.

During the October 2023 sampling event, a groundwater sample was collected from each of the following wells:

OW-10

■ OW-11

OW-12

DEK-MW-15003

During the October 2023 sampling event, the following water/surface water samples were collected:

KLI-PCS

KLI-SCS

SW-DITCH

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

Analyte Group	Method
Anions (Fluoride, Chloride, Sulfate, Nitrate, Nitrite)	EPA 300.0
Total Dissolved Solids (TDS)	SM 2540C
Total and/or Dissolved Metals	SW-846 6020B
Total and/or Dissolved Mercury	SW-846 7470A
Alkalinity (Bicarbonate, Carbonate, and Total)	SM 2320B
Ammonia	SM 4500 NH3(h)
Sulfide	SM 4500 S2D
Total/Dissolved Organic Carbon (TOC/DOC)	SM 5310B

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 and Merit. 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 and dissolved metals, total and dissolved mercury, anions, alkalinity, TDS, ammonia, and sulfide 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, additional Part 115 constituents, and additional geochemistry parameters will be utilized for the purposes of the detection monitoring program.
- Data are usable for the purposes of the detection monitoring program.
- When the data are evaluated through a detection or monitoring statistical program, findings below may be used to support the removal of outliers.

QA/QC Sample Summary

- The samples submitted to Merit for sulfide analysis were received at 6.3°C; there is no adverse impact on the data usability due to this issue since the samples were received by Merit on the same day as shipment from CE Laboratory Services and since the samples were received by CE Laboratory Services at an acceptable temperature. Merit noted that the samples were on ice and that the cooling process had begun.
- One field blank (FB-KLI) and one equipment blank (EB-KLI) were collected with this data set. Target analytes were not detected in these blank samples.
- Samples DUP-KLI and OW-12 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.
- The DOC result was greater than the TOC result by more than 20% for samples OW-11 (22%) and KLI-SCS (23%) and the results were >5x the RL. The positive results for DOC and TOC in these samples are potentially uncertain as summarized in the attached table, Attachment A.

Attachment A

Summary of Data Non-Conformances for Impoundment Groundwater and Surface Water Analytical Data
DE Karn Lined Impoundment Wells
Essexville, Michigan

Samples	Collection Date	Analytes	Non-Conformance/Issue
OW-11	40/4/0000	Total Organic Carbon (TOC)	The DOC concentration was higher than the TOC concentration by >20% and TOC and DOC results > 5x the reporting
KLI-PCS	10/4/2023	and Dissolved Organic Carbon (DOC)	limit; potential uncertainty exists for the listed results.

Laboratory Data Quality Review Groundwater and Surface water Monitoring Event October 2023 DE Karn Lined Impoundment

Groundwater samples were collected by TRC for the October 2023 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) 240-193317-1.

During the October 2023 sampling event, a groundwater sample was collected from each of the following wells:

■ OW-10

OW-11

OW-12

DEK-MW-15003

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

- Results for radium-226 were reported without a 21-day waiting period to ensure short-lived alpha-emitting radium isotopes (e.g. Ra-224) have decayed out. Positive radium-226 results reflect the total alpha radium and should be considered potentially high biased, as summarized in the attached table. Samples have activity below the RL (1.0 picocuries per liter) and are well below the MCL for combined Radium-226/228 (5 picocuries per liter); therefore, the data are deemed usable as reported.
- Target analytes were not detected in the method blanks with the following exception.
 - Radium-228 was detected in MB 160-631946/1-A at 0.6152 +/- 0.359 pCi/L. There is
 no impact on the data usability due to this issue since radium-228 was nondetect in the
 associated sample.
- One equipment blank (EB-KLI) was collected. Target analytes were not detected in the equipment blank sample with the following exception.
 - Radium-226 was detected in sample EB-KLI at 0.143 +/- 0.101 pCi/L. Potential false positive exists for radium-226 results with normalized absolute differences (NADs) <1.96, as summarized in attachment A.
- LCS/LCSD recoveries and replicate error ratios (RERs), as applicable, for all target analytes were within laboratory control limits with the following exception.
 - The LCSD recovery for radium-228 (131%) was above laboratory control limits (75-125%) in LCSD 160-632941/3-A. There is no impact on the data usability due to this issue since radium-228 was nondetect in the associated samples.
- MS/MSD analyses were not performed on a sample from this data set.

- Laboratory duplicate analyses were performed on sample EB-KLI for radium-226 and radium-228; all criteria were met with the following exception.
 - The RER for radium-228 (2.45) was above the laboratory acceptance criteria (1.00).
 There is no impact on the data usability due to this issue since radium-228 was nondetect in the parent sample.
- Samples OW-12/DUP-DEK-BAP-01 were submitted as the field duplicate pair with this data set; all criteria were met.
- Carrier recoveries were within 40-110%.

Attachment A

Summary of Data Non-Conformances for Impoundment Groundwater Analytical Data
DE Karn Lined Impoundment Wells
Essexville, Michigan

Samples	Collection Date	Analyte	Non-Conformance/Issue
OW-12	10/4/2023		Deculte have notantial high high due to not undergoing 21 day waiting period prior to analysis. The regulte are well
DUP-KLI	10/4/2023		Results have potential high bias 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
EB-KLI	10/4/2023	Radium 226	below the applicable selecting enteria and are therefore deemed asable as reported
OW-12	10/4/2023		Equipment blank contamination; potential false positive.
DUP-KLI	10/4/2023		Equipment blank contamination, potential raise positive.



Appendix D Statistical Analysis

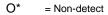
Appendix D

Statistical Summary for DE Karn Lined Impoundment Fourth Quarter 2023

Data from February 2022 to October 2023

		Karn Li	ned Impoundment We	lls		
PARAMETER	Range, Test, or Limit	DEK-MW-15003	DEK-MW-18001	OW-10	OW-11	OW-12
Boron	Trend	0	0	0	0	0
Calcium	Trend	0	\downarrow	0	0	0
Chloride	Trend	0	0	0	0	0
Fluoride	Trend	O*	O*	O*	0	O*
Iron	Trend	0	\downarrow	0	0	0
рН	Trend	0	0	0	0	0
Sulfate	Trend	^ *	0	0	\downarrow	0
Total Dissolved Solids	Trend	0	0	0	0	0

Notes:



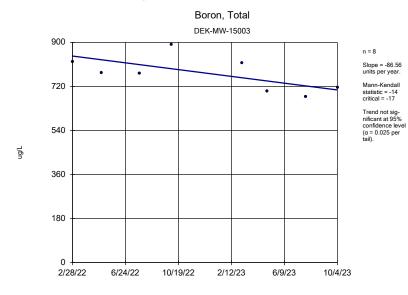
↑ = Upward trend, continuous

↑* = Upward trend, new

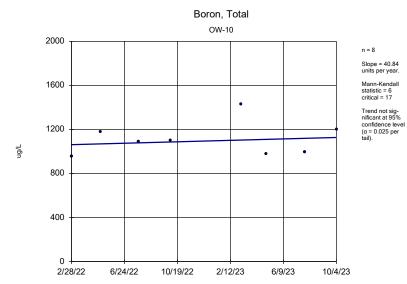
= Upward trend, confirmed

= Downward trend, continuous

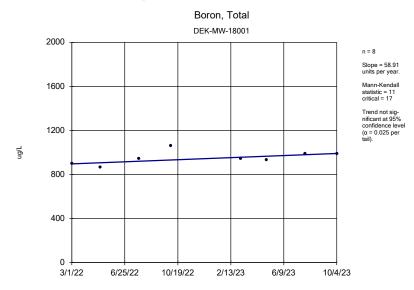
↓* = Downward trend, new



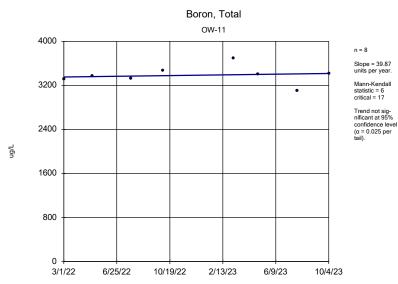
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



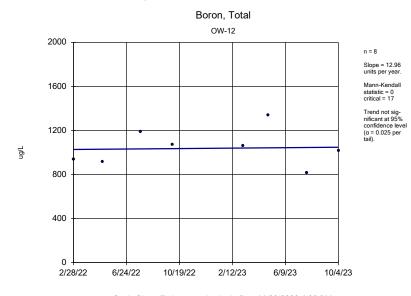
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



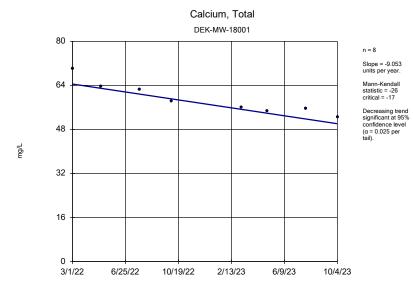
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



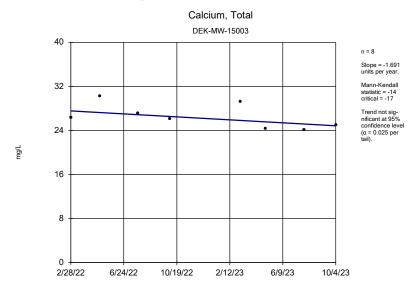
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK HMPCCR 23Q4



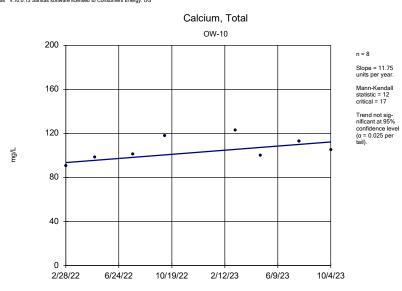
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



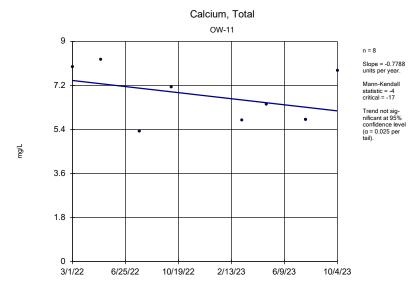
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM

Data: DEK_HMPCCR_23Q4

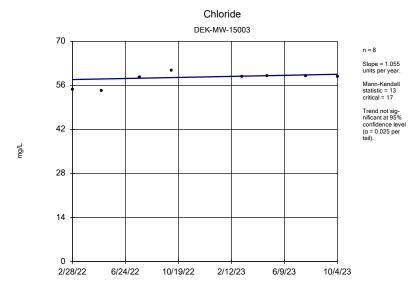
Sanitas™ v.10.0.13 Sanitas software licensed to Consumers Energy. UG



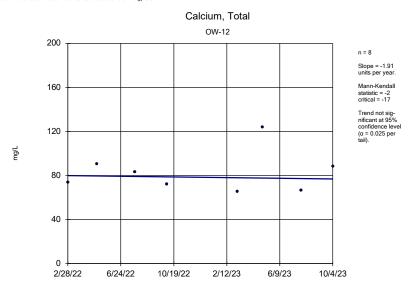
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



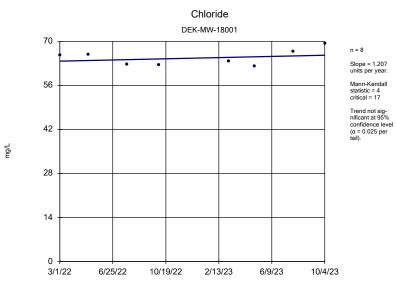
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



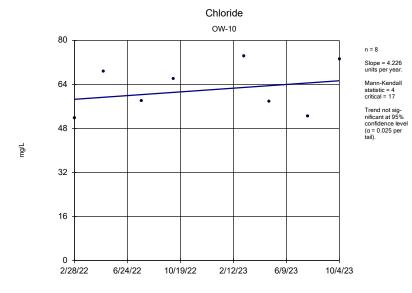
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

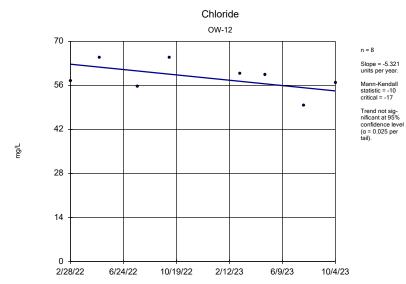


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

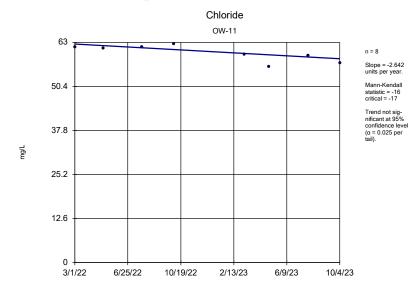


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



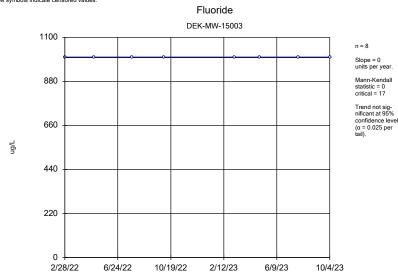


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

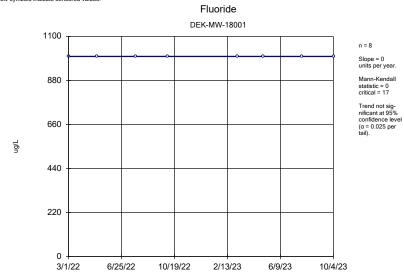
Sanitas™ v.10.0.13 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM

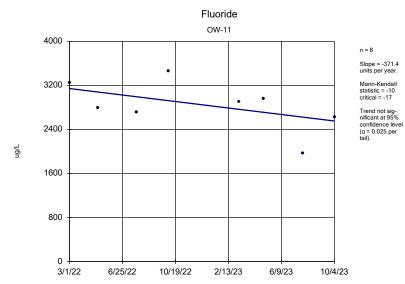
Data: DEK_HMPCCR_23Q4

Sanitas³¹ v.10.0.13 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



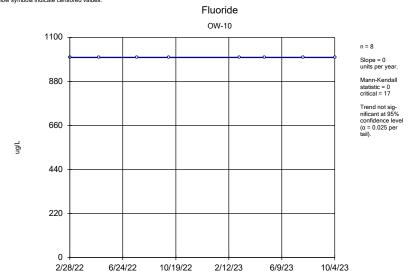
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

Sanitas™ v.10.0.13 Sanitas software licensed to Consumers Energy. UG



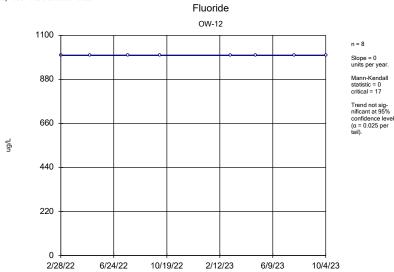
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

Sanitas™ v.10.0.13 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.



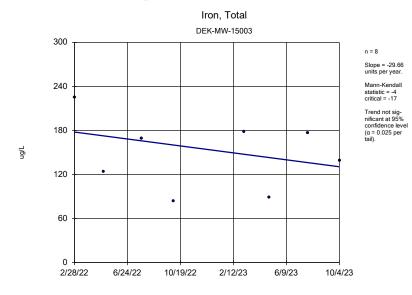
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

Sanitas™ v.10.0.13 Sanitas software licensed to Consumers Energy. UG Hollow symbols indicate censored values.

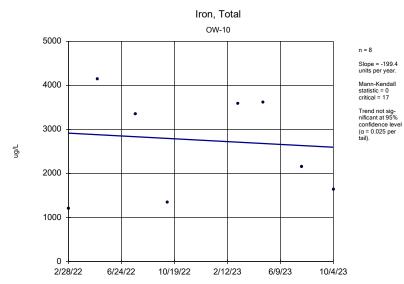


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM

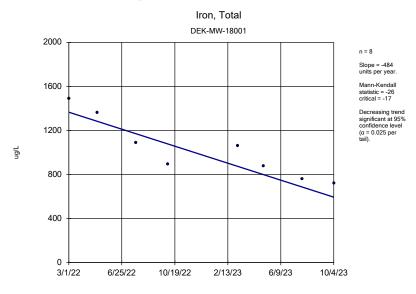
Data: DEK_HMPCCR_23Q4



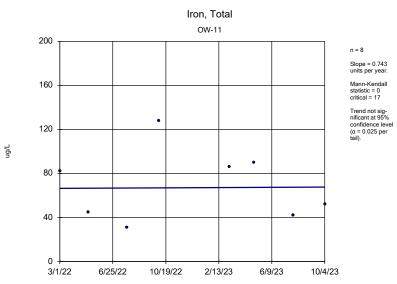
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



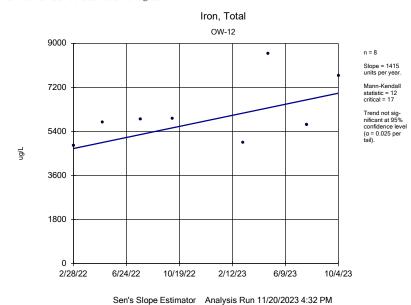
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



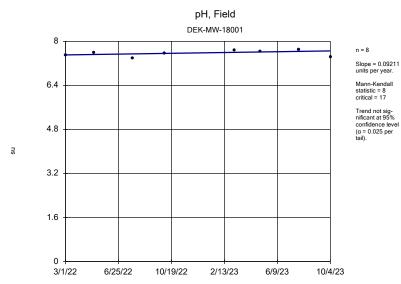
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



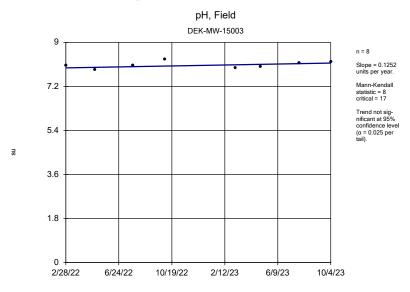
Data: DEK_HMPCCR_23Q4



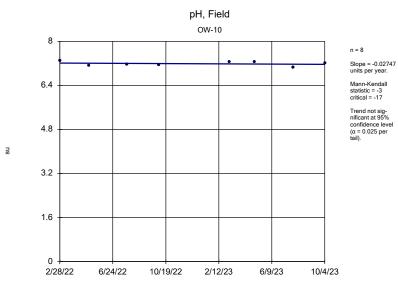




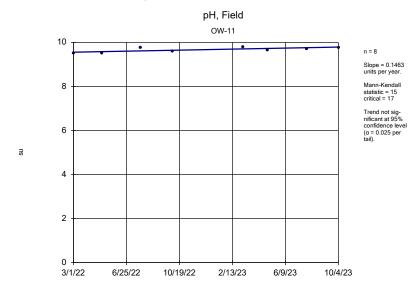
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

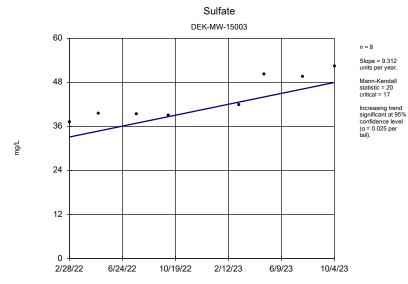


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

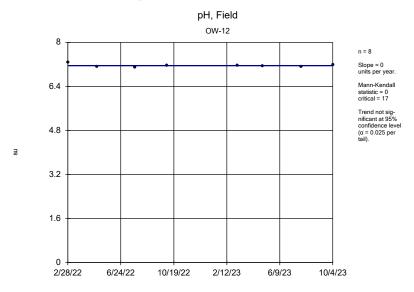


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

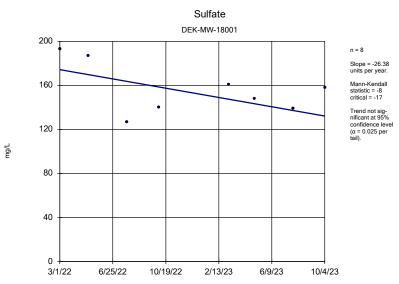
$\mathsf{Sanitas^{\text{\tiny{TM}}}}\,v.10.0.13\,\mathsf{Sanitas}$ software licensed to Consumers Energy. UG



Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

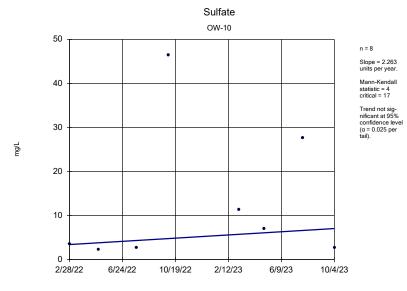


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



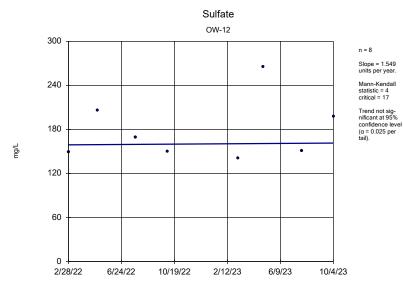
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM

Data: DEK_HMPCCR_23Q4

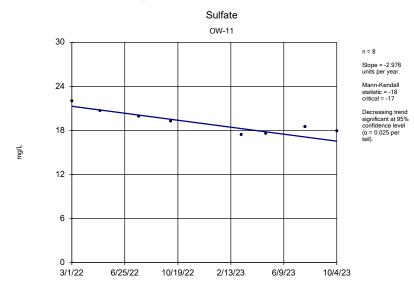


Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

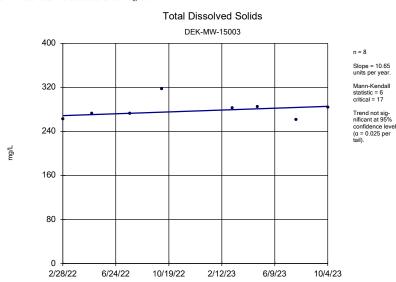




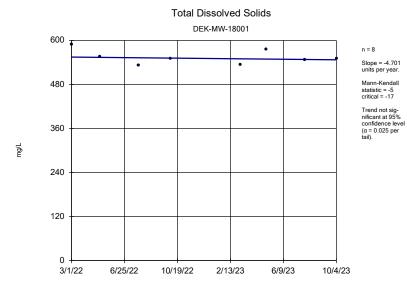
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4

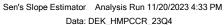


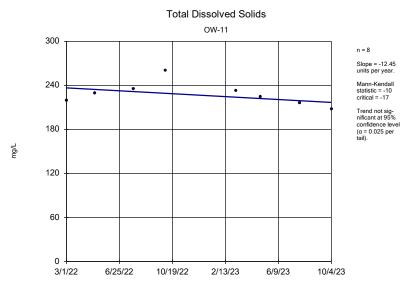
Sen's Slope Estimator Analysis Run 11/20/2023 4:32 PM
Data: DEK_HMPCCR_23Q4



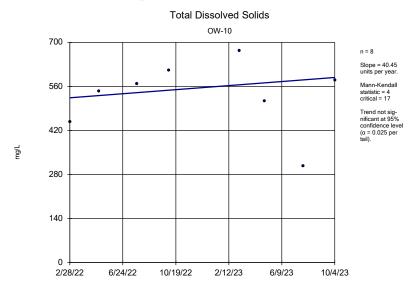
Sen's Slope Estimator Analysis Run 11/20/2023 4:33 PM
Data: DEK_HMPCCR_23Q4



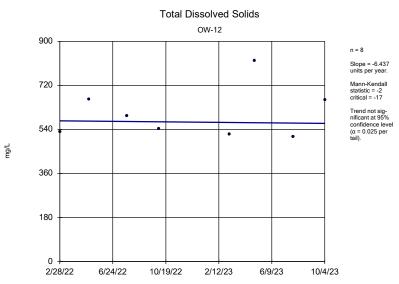




Sen's Slope Estimator Analysis Run 11/20/2023 4:33 PM
Data: DEK_HMPCCR_23Q4



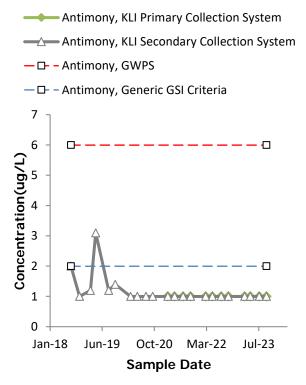
Sen's Slope Estimator Analysis Run 11/20/2023 4:33 PM
Data: DEK_HMPCCR_23Q4

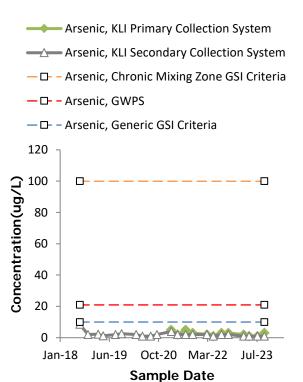


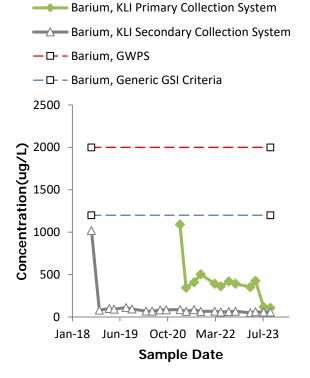
Sen's Slope Estimator Analysis Run 11/20/2023 4:33 PM
Data: DEK_HMPCCR_23Q4

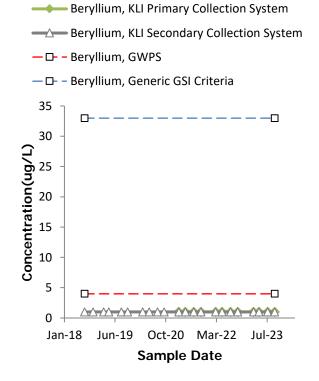


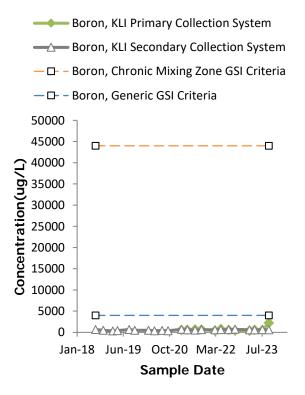
Appendix E Secondary Leachate Collection System Monitoring

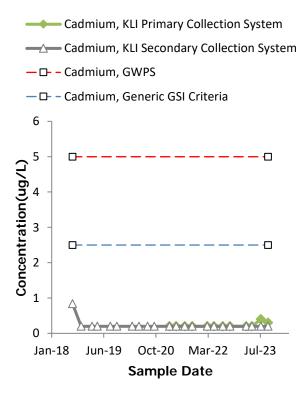


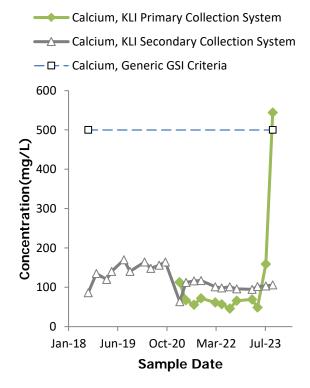


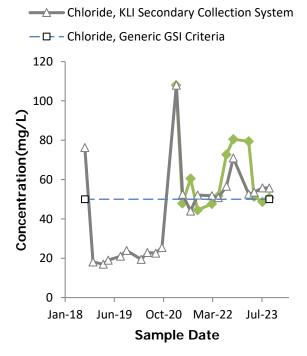












Chloride, KLI Primary Collection System

