

2021 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
322 LANDFILL
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

by
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Cleveland, Ohio

for
Evergy Kansas Central, Inc.
Topeka, Kansas

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**2021 Annual Groundwater Monitoring
and Corrective Action Report**

This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Tecumseh Energy Center (TEC) 322 Landfill consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2021) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2021 Annual Groundwater Monitoring and Corrective Action Report for the TEC 322 Landfill is, to the best of my knowledge, accurate and complete.

Signed: 
Professional Geologist

Print Name: Mark Nicholls
Kansas License No.: Professional Geologist No. 881
Title: Technical Expert 2
Company: Haley & Aldrich, Inc.



1. Introduction

This 2021 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the 322 Landfill at the Tecumseh Energy Center (TEC), operated by Evergy Kansas Central, Inc. (Evergy). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency Coal Combustion Residual (CCR) Rule (Rule) effective October 19, 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection 257.90(e). The Annual Report documents the groundwater monitoring system for the TEC 322 Landfill consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2020) and documents compliance with the Rule. The specific requirements for the annual report listed in § 257.90(e) of the Rule are provided in Sections 1 and 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

1.1 40 CFR § 257.90(E)(6) SUMMARY

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:

1.1.1 40 CFR § 257.90(e)(6)(i) – Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the start of the current annual reporting period (January 1, 2021), the 322 Landfill was operating under an assessment monitoring program in compliance with 40 CFR § 257.95.

1.1.2 40 CFR § 257.90(e)(6)(ii) – Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the end of the current annual reporting period (December 31, 2021), the 322 Landfill was operating under an assessment monitoring program in compliance with 40 CFR § 257.95.

1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):

1.1.3.1 40 CFR § 257.90(e)(6)(iii)(a)

Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and

The 322 Landfill is operating under an assessment monitoring program; therefore, no statistical evaluations were completed on appendix III constituents in 2021.

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1.1.3.2 40 CFR § 257.90(e)(6)(iii)(b)

Provide the date when the assessment monitoring program was initiated for the CCR unit.

An assessment monitoring program was initiated on July 17, 2018 for the 322 Landfill with a notification establishing assessment monitoring provided on August 15, 2018 to meet the requirements of 40 CFR § 257.95. The 322 Landfill remained in assessment monitoring in 2021.

1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels

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:

1.1.4.1 40 CFR § 257.90(e)(6)(iv)(A) – Statistically Significant Level Constituents

Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;

No statistically significant levels were identified above the groundwater protection standard for those constituents listed in appendix IV to this part in 2021 for the 322 Landfill.

1.1.4.2 40 CFR § 257.90(e)(6)(iv)(B) – Initiation of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was initiated for the CCR unit;

No assessment of corrective measures was required to be initiated in 2021 for this unit. The 322 Landfill remained in assessment monitoring during 2021.

1.1.4.3 40 CFR § 257.90(e)(6)(iv)(C) – Assessment of Corrective Measures Public Meeting

Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

An assessment of corrective measures was not required for the 322 Landfill in 2021; therefore, a public meeting was not held.

1.1.4.4 40 CFR § 257.90(e)(6)(iv)(D) – Completion of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was completed for the CCR unit.

No assessment of corrective measures was required to be initiated in 2021 for this unit. The 322 Landfill remained in assessment monitoring during 2021.

1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

The 322 Landfill remains in assessment monitoring, and no remedy was required to be selected.

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1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

No remedial activities were required in 2021.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §§ 257.90 through 257.99, except as provided in paragraph (g) [Suspension of groundwater monitoring requirements] of this section.

Evergy has installed and certified a groundwater monitoring system at the TEC 322 Landfill. The 322 Landfill is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. This document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e).

2.2 40 CFR § 257.90(e) – SUMMARY

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1).

This Annual Report describes monitoring completed and actions taken for the groundwater monitoring system at the 322 Landfill as required by the Rule. Groundwater sampling and analysis was conducted in accordance with requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2021.

2.2.1 Status of the Groundwater Monitoring Program

The 322 Landfill remained in the assessment monitoring program during 2021.

2.2.2 Key Actions Completed

The 2020 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2021. Statistical evaluation was completed in January 2021 on analytical data from the September 2020 semi-annual assessment monitoring sampling event.

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A semi-annual assessment monitoring sampling event was completed in March 2021 for detected appendix IV constituents identified from the June 2020 annual assessment monitoring sampling event. Statistical evaluation was completed in July 2021 on analytical data from the March 2021 semi-annual assessment monitoring sampling event.

An annual assessment monitoring sampling event was completed in June 2021 to identify detected appendix IV constituents for subsequent semi-annual sampling events in September 2021 and planned for March 2022. Semi-annual assessment monitoring sampling was completed in September 2021 for detected appendix IV constituents identified during the June 2021 annual monitoring event. Statistical evaluation of the results from the September 2021 semi-annual assessment monitoring sampling event are due to be completed in January 2022 and will be reported in the next annual report.

2.2.3 Problems Encountered

One problem encountered during groundwater monitoring activities in 2020 consisted of laboratory analytical errors that required the laboratory to reanalyze select analytical results. Mercury was reanalyzed for all monitoring wells in the June 2021 annual assessment monitoring sampling event due to suspected erroneous analytical results. This was the only issue that needed to be addressed at the 322 Landfill in 2021.

2.2.4 Actions to Resolve Problems

The resolution to problems encountered in 2021 included additional laboratory analyses as described above. The analytical results were revised accordingly. No other problems were encountered at the 322 Landfill in 2021; therefore, no actions to resolve problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2022 include the completion of the 2021 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual assessment monitoring analytical data collected in September 2021, semi-annual assessment monitoring and subsequent statistical evaluations, and annual assessment monitoring.

2.3 40 CFR § 257.90(e) – INFORMATION

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.3.1 40 CFR § 257.90(e)(1)

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

As required by § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the 322 Landfill is included in this report as Figure 1.

2.3.2 40 CFR § 257.90(e)(2) – Monitoring System Changes

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;

No monitoring wells were installed or decommissioned during 2021.

2.3.3 40 CFR § 257.90(e)(3) – Summary of Sampling Events

In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

In accordance with § 257.95(b) and § 257.95(d)(1), three independent assessment monitoring samples from each background and downgradient monitoring well were collected in 2021. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the 322 Landfill is presented in Table I of this report. Groundwater potentiometric elevation contour maps associated with each groundwater monitoring sampling event in 2021 are provided in Figures 2 through 4.

2.3.4 40 CFR § 257.90(e)(4) – Monitoring Transition Narrative

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

The assessment monitoring program was initiated on July 17, 2018 with a notification establishing assessment monitoring provided on August 15, 2018 to meet the requirements of 40 CFR § 257.95. The 322 Landfill remained in assessment monitoring during 2021.

2.3.5 40 CFR § 257.90(e)(5) – Other Requirements

Other information required to be included in the annual report as specified in § 257.90 through § 257.98.

This Annual Report documents activities conducted to comply with §§ 257.90 through 257.95 of the Rule. It is understood that there are supplemental references in §§ 257.90 through 257.98 that must be placed in the Annual Report. The following requirements include relevant and required information in the Annual Report for activities completed in calendar year 2021.

2.3.5.1 **40 CFR § 257.94(d)(3) – Demonstration for Alternative Detection Monitoring Frequency**

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater detection monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.2 **40 CFR § 257.94(e)(2) – Detection Monitoring Alternate Source Demonstration**

The owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels to include obtaining a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under this section. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

This unit is in assessment monitoring; therefore, no detection monitoring alternate source demonstration or certification is applicable.

2.3.5.3 40 CFR § 257.95(c)(3) – Demonstration for Alternative Assessment Monitoring Frequency
The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An alternative groundwater assessment monitoring sampling and analysis frequency has not been established for this CCR unit; therefore, no demonstration or certification is applicable.

2.3.5.4 40 CFR § 257.95(d)(3) – Assessment Monitoring Concentrations and Groundwater Protection Standards
Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

An assessment monitoring program has been implemented at the CCR unit since July 17, 2018. Three rounds of assessment monitoring sampling were completed in 2021. Analytical results for both downgradient and upgradient wells are provided in Table I. The background concentrations (upper tolerance limits) and groundwater protection standards established for detected appendix IV constituents for the 322 Landfill are included in Table II. The background concentrations and groundwater protection standards provided in Table II were utilized for the statistical evaluations completed in 2021 for September 2020 and March 2021 semi-annual assessment monitoring sampling events.

2.3.5.5 *40 CFR § 257.95(g)(3)(ii) – Assessment Monitoring Alternate Source Demonstration*

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring alternate source demonstration or certification was required in 2021. The 322 Landfill remained in assessment monitoring during 2021.

2.3.5.6 *40 CFR § 257.96(a) – Demonstration for Additional Time for Assessment of Corrective Measures*

Within 90 days of finding that any constituent listed in appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring of corrective measures was required to be initiated in 2021; therefore, no demonstration or certification is applicable for this unit.

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS - 2021 ASSESSMENT MONITORING
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
322 ASH LANDFILL
TECUMSEH, KANSAS

Location	Upgradient			Downgradient					Downgradient						
	MW-4 936.48			MW-1 904.65					MW-5 916.18			MW-6 911.28			
Measure Point (TOC)	MW-4-030821	MW-4-060721	MW-4-091321	MW-1-030821	DUP-322LF-030821	MW-1-060721	DUP-322LF-060721	MW-1-091321	MW-5-030821	MW-5-060721	MW-5-091321	TEC-322LF-DUP-091321	MW-6-030821	MW-6-060721	MW-6-091321
Sample Name	3/8/2021	06/07/2021	9/13/2021	3/8/2021	3/8/2021	06/07/2021	06/07/2021	9/13/2021	3/8/2021	06/07/2021	9/13/2021	9/13/2021	3/8/2021	06/07/2021	9/13/2021
Sample Date	3/17/2021	6/16/2021	10/29/2021	3/17/2021	3/17/2021	6/16/2021	6/16/2021	10/29/2021	3/17/2021	6/16/2021	10/29/2021	10/29/2021	3/17/2021	6/16/2021	10/29/2021
Final Lab Report Date	N/A	7/15/2021	NA	N/A	N/A	7/15/2021	7/15/2021	NA	N/A	7/15/2021	NA	NA	N/A	7/15/2021	NA
Final Lab Report Revision Date	N/A	7/6/2021	NA	N/A	N/A	7/6/2021	7/6/2021	NA	N/A	7/6/2021	NA	NA	N/A	7/6/2021	NA
Final Radiation Lab Report Date	N/A	NA	NA	N/A	N/A	NA	NA	NA	N/A	NA	NA	NA	N/A	NA	NA
Final Radiation Lab Report Revision Date	4/16/2021	8/2/2021	11/14/2021	4/16/2021	4/16/2021	8/2/2021	8/2/2021	11/14/2021	4/16/2021	8/2/2021	11/14/2021	11/14/2021	4/16/2021	8/2/2021	11/14/2021
Lab Data Reviewed and Validated	4.43	4.18	5.03	4.45	-	4.22	-	4.78	6.47	6.38	7.04	-	8.75	8.42	8.81
Depth to Water (ft btoc)	12.53	16.81	22.03	10.39	-	13.85	-	20.86	13.96	19.99	20.76	-	12.85	15.91	19.79
Temperature (Deg C)	1590	1622	1580	1400	-	1260	-	1220	2110	1930	1710	-	2080	1990	196
Conductivity, Field (µS/cm)	0.0	0.0	0.0	3.3	-	0.0	-	0.0	0.0	0.0	2.1	-	0.0	0.0	14
Turbidity, Field (NTU)	7.14	6.90	7.33	7.21	-	6.83	-	7.36	6.96	6.75	7.33	-	7.22	6.45	7.36
pH, Field (su)	< 0.10	-	< 0.10	0.46	0.49	-	-	< 0.10	1.0	-	0.64	0.61	0.67	-	0.62
Boron, Total (mg/L)	188	-	156	177	187	-	-	154	360	-	240	232	313	-	292
Calcium, Total (mg/L)	244	-	232	24.8	24.7	-	-	50.7	28.8	-	44.1	44.9	55.2	-	55.9
Chloride (mg/L)	< 0.20	< 0.20	0.25	< 0.20	0.33	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	0.39	0.39	< 0.20	< 0.20	0.56
Fluoride (mg/L)	171	-	157	404	408	-	-	353	1050	-	784	676	874	-	932
Sulfate (mg/L)	6.8	-	7.2	6.8	7.0	-	-	7.0	6.8	-	7.4	6.8	6.9	-	7.0
pH (lab) (su)	1110	-	1060	1030	1010	-	-	889	1890	-	1490	1410	1650	-	1590
TDS (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Antimony, Total (mg/L)	-	< 0.0010	< 0.0010	-	-	0.0013	0.0013	< 0.0020	-	< 0.0010	< 0.0010	< 0.0010	-	< 0.0010	< 0.0010
Arsenic, Total (mg/L)	0.095	0.098	0.10	0.091	0.095	0.087	0.083	0.062	0.017	0.019	0.026	0.024	0.018	0.018	0.017
Barium, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Beryllium, Total (mg/L)	-	< 0.00050	-	-	-	< 0.00050	< 0.00050	-	-	< 0.00050	-	-	-	< 0.00050	-
Cadmium, Total (mg/L)	-	< 0.0050	-	-	-	< 0.0050	< 0.0050	-	-	< 0.0050	-	-	-	< 0.0050	-
Chromium, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0014	0.0014	0.0032	0.0015	0.0018	0.0019	0.0019	0.0023	0.0022	0.0029
Cobalt, Total (mg/L)	-	< 0.010	-	-	-	< 0.010	< 0.010	-	-	< 0.010	-	-	-	< 0.010	-
Lead, Total (mg/L)	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	< 0.010	-	0.010	< 0.010	-	-	0.011	< 0.010	-
Lithium, Total (mg/L)	< 0.0010	< 0.0010	-	< 0.0010	< 0.0010	< 0.0010	< 0.0010	-	< 0.0010	< 0.0010	-	-	< 0.0010	< 0.0010	-
Molybdenum, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Selenium, Total (mg/L)	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-
Thallium, Total (mg/L)	-	< 0.00020	< 0.00020	-	-	< 0.00020	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020	< 0.00020	-	< 0.00020	< 0.00020
Mercury, Total (mg/L)	-	1.55 ± 0.744 (0.896)	1.70 ± 1.05 (1.85)	-	-	0.434 ± 0.463 (0.758)	0.631 ± 0.525 (0.818)	0.624 ± 0.732 (1.52)	-	0.252 ± 0.483 (0.738)	1.32 ± 0.887 (1.55)	1.15 ± 1.00 (1.94)	-	0.907 ± 0.555 (0.802)	0.206 ± 0.731 (1.75)
Radium-226 & 228 (pCi/L)															

Notes and Abbreviations:
Bold value: Detection above laboratory reporting limit or minimum detectable concentration (MDC).
Radiological results are presented as activity plus or minus uncertainty with MDC.
Data presented in this table were verified against the laboratory and validation reports.
µS/cm = micro Siemens per centimeter
Deg C = degrees Celsius
ft btoc = feet below top of casing
mg/L = milligrams per liter
N/A = Not Applicable
NTU = Nephelometric Turbidity Unit
pCi/L = picoCuries per liter
su = standard unit
TDS = total dissolved solids
TOC = top of casing

TABLE II
ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS
 SEPTEMBER 2020 AND MARCH 2021 SAMPLING EVENTS
 TECUMSEH ENERGY CENTER
 322 LANDFILL
 TECUMSEH, KANSAS

Well #	Background Value ¹	GWPS
CCR Appendix-IV Barium, Total (mg/L)		
MW-4 (upgradient)	0.137	NA
MW-1		2
MW-5		2
MW-6		2
CCR Appendix-IV Cobalt, Total (mg/L)		
MW-4 (upgradient)	0.001	NA
MW-1		0.006
MW-5		0.006
MW-6		0.006
CCR Appendix-IV Fluoride, Total (mg/L)		
MW-4 (upgradient)	0.350	NA
MW-1		4.0
MW-5		4.0
MW-6		4.0
CCR Appendix-IV Lithium, Total (mg/L)		
MW-4 (upgradient)	0.010	NA
MW-1		0.040
MW-5		0.040
MW-6		0.040
CCR Appendix-IV: Molybdenum, Total (mg/L)		
MW-4 (upgradient)	0.001 ²	NA
MW-1		0.100
MW-5		0.100
MW-6		0.100

Notes and Abbreviations:

¹ Based on background data collected from 08/17/2016 through 03/08/2020, unless otherwise noted.

² Based on background data collected from 08/17/2016 through 09/16/2020.

CCR = Coal Combustion Residuals

GWPS = Groundwater Protection Standard

mg/L = milligrams per Liter

NA = Not Applicable

pCi/L = picoCuries per Liter

FIGURES



LEGEND

-  MONITORING WELL
-  PIEZOMETER OBSERVATION ONLY
-  322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
4. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2019



EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

**322 LANDFILL MONITORING
WELL LOCATION MAP**



JANUARY 2022

FIGURE 1



LEGEND

- MW-1 900.47 WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) MARCH 2021
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 08 MARCH 2021.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
MARCH 8, 2021



JANUARY 2022

FIGURE 2



LEGEND

- MW-1** WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL)
900.47 JUNE 2021
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 07 JUNE 2021.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
JUNE 07, 2021



JANUARY 2022



LEGEND

- MW-1** WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL)
900.47 SEPTEMBER 2021
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
- INFERRED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- 322 LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 13 SEPTEMBER 2021.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

322 LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
SEPTEMBER 13, 2021



JANUARY 2022

FIGURE 4



March 1, 2022
Project No. 0204993-000

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: 2021 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc. (Evergy)
322 Landfill
Tecumseh Energy Center – Tecumseh, Kansas

The 322 Landfill at the Evergy’s Tecumseh Energy Center (TEC) is subject to the groundwater monitoring and corrective action requirements described under Title 40 Code of Federal Regulations (40 CFR) § 257.90 through § 257.98 (Rule). An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting the activities completed in 2021 for the 322 Landfill was completed and placed in the facilities operating record on January 31, 2022, as required by the Rule. The Annual Groundwater Monitoring and Corrective Action Report (annual groundwater report) contained the specific information listed in § 257.90(e).

This report addendum has been prepared to supplement the operating record in recognition of comments received by Evergy from the U.S. Environmental Protection Agency (USEPA) on January 11, 2022. In addition to the information listed in § 257.90(e), the USEPA indicated in their comments that the GWMCA Report should contain:

- Results of laboratory analysis of groundwater or other environmental media samples for the presence of constituents of Appendices III and IV to 40 C.F.R. part 257 (or of other constituents, such as those supporting characterization of site conditions that may ultimately affect a remedy);
- Required statistical analyses performed on those [laboratory analysis] results;
- Measured groundwater elevations; and,
- Calculated groundwater flow rate and direction.

While this information is not specifically referred to in the in 257.90(e) of the Rule for inclusion in the GWMCA Reports, it has been routinely collected and maintained in Evergy’s files, and is being provided in the attachments to this addendum. The 2021 GWMCA Report does include a “Groundwater Potentiometric Elevation Contour Map” for each of the 2021 sampling events as Figures 2, 3, and 4. In those figures, the measured groundwater elevations for each well are listed along with the calculated

groundwater flow rate and direction. Those maps have not been duplicated in this addendum and can be referenced in the original GWMCA Report dated January 31, 2022.

The attachments to this addendum are as follows providing the additional information:

Attachment 1 – Laboratory Analytical Reports

- Includes laboratory data packages with supporting information, such as, case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation. The laboratory data packages for the sampling events completed in March 2021, June 2021, and September 2021 are provided.

Attachment 2 – Statistical Analyses

- Includes a discussion of the statistical analyses utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against Groundwater Protection Standards), and supporting backup for statistical analyses completed in 2021. Statistical analyses completed in 2021 included:
 - January 2021 statistical analyses for data obtained in the September 2020 sampling event; and,
 - July 2021 statistical analyses for data obtained in the March 2021 sampling event.

ATTACHMENT 1

Laboratory Analytical Reports

ATTACHMENT 1-1

March 2021 Sampling Event Laboratory Analytical Report

March 17, 2021

Andrew Hare
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: TEC 322 LANDFILL CCR
Pace Project No.: 60363071

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on March 08, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Laura Hines, Evergy, Inc.
Heath Horyna, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Melissa Michels, Evergy, Inc.
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Satanek, Haley & Aldrich, Inc.



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
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CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60363071001	MW-1-030821	Water	03/08/21 10:55	03/08/21 16:45
60363071002	MW-4-030821	Water	03/08/21 13:50	03/08/21 16:45
60363071003	MW-5-030821	Water	03/08/21 12:50	03/08/21 16:45
60363071004	MW-6-030821	Water	03/08/21 11:50	03/08/21 16:45
60363071005	DUP-322LF-030821	Water	03/08/21 10:55	03/08/21 16:45

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60363071001	MW-1-030821	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60363071002	MW-4-030821	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60363071003	MW-5-030821	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60363071004	MW-6-030821	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60363071005	DUP-322LF-030821	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for EPA 200.7 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 707888

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60362592001,60362965003

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2850769)
- Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: EPA 6010

Description: 6010 MET ICP

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for EPA 200.8 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for SM 2540C by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for SM 4500-H+B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- DUP-322LF-030821 (Lab ID: 60363071005)
- MW-1-030821 (Lab ID: 60363071001)
- MW-4-030821 (Lab ID: 60363071002)
- MW-5-030821 (Lab ID: 60363071003)
- MW-6-030821 (Lab ID: 60363071004)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: Evergy Kansas Central, Inc.

Date: March 17, 2021

General Information:

5 samples were analyzed for EPA 300.0 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 707847

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60360745002,60362783002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2850670)
 - Fluoride
- MSD (Lab ID: 2850671)
 - Chloride
 - Fluoride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Sample: MW-1-030821	Lab ID: 60363071001	Collected: 03/08/21 10:55	Received: 03/08/21 16:45	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Barium, Total Recoverable	0.091	mg/L	0.0050	1	03/10/21 16:37	03/16/21 14:56	7440-39-3	
Boron, Total Recoverable	0.46	mg/L	0.10	1	03/10/21 16:37	03/16/21 14:56	7440-42-8	
Calcium, Total Recoverable	177	mg/L	0.20	1	03/10/21 16:37	03/16/21 14:56	7440-70-2	
6010 MET ICP		Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City						
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	03/12/21 09:44	03/15/21 18:03	7439-93-2	
200.8 MET ICPMS		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Pace Analytical Services - Kansas City						
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:07	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:07	7439-98-7	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	1030	mg/L	10.0	1		03/12/21 15:23		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/15/21 07:55		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	24.8	mg/L	5.0	5		03/11/21 18:07	16887-00-6	
Fluoride	<0.20	mg/L	0.20	1		03/12/21 18:00	16984-48-8	
Sulfate	404	mg/L	50.0	50		03/11/21 18:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Sample: MW-4-030821	Lab ID: 60363071002	Collected: 03/08/21 13:50	Received: 03/08/21 16:45	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.095	mg/L	0.0050	1	03/10/21 16:37	03/16/21 14:58	7440-39-3	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	03/10/21 16:37	03/16/21 14:58	7440-42-8	
Calcium, Total Recoverable	188	mg/L	0.20	1	03/10/21 16:37	03/16/21 14:58	7440-70-2	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	03/12/21 09:44	03/15/21 18:06	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:17	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:17	7439-98-7	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1110	mg/L	13.3	1		03/12/21 15:23		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/15/21 07:57		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	244	mg/L	20.0	20		03/10/21 18:39	16887-00-6	
Fluoride	<0.20	mg/L	0.20	1		03/11/21 19:05	16984-48-8	
Sulfate	171	mg/L	20.0	20		03/10/21 18:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Sample: MW-5-030821	Lab ID: 60363071003	Collected: 03/08/21 12:50	Received: 03/08/21 16:45	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.017	mg/L	0.0050	1	03/10/21 16:37	03/16/21 15:01	7440-39-3	
Boron, Total Recoverable	1.0	mg/L	0.10	1	03/10/21 16:37	03/16/21 15:01	7440-42-8	
Calcium, Total Recoverable	360	mg/L	0.20	1	03/10/21 16:37	03/16/21 15:01	7440-70-2	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	0.010	mg/L	0.010	1	03/12/21 09:44	03/15/21 18:22	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	0.0015	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:20	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:20	7439-98-7	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1890	mg/L	20.0	1		03/12/21 15:23		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/15/21 07:58		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	28.8	mg/L	5.0	5		03/11/21 19:33	16887-00-6	
Fluoride	<0.20	mg/L	0.20	1		03/11/21 19:19	16984-48-8	
Sulfate	1050	mg/L	100	100		03/11/21 19:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Sample: MW-6-030821	Lab ID: 60363071004	Collected: 03/08/21 11:50	Received: 03/08/21 16:45	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.018	mg/L	0.0050	1	03/10/21 16:37	03/16/21 15:03	7440-39-3	
Boron, Total Recoverable	0.67	mg/L	0.10	1	03/10/21 16:37	03/16/21 15:03	7440-42-8	
Calcium, Total Recoverable	313	mg/L	0.20	1	03/10/21 16:37	03/16/21 15:03	7440-70-2	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	0.011	mg/L	0.010	1	03/12/21 09:44	03/15/21 18:25	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	0.0023	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:22	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:22	7439-98-7	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1650	mg/L	20.0	1		03/12/21 15:24		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.9	Std. Units	0.10	1		03/15/21 07:59		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	55.2	mg/L	5.0	5		03/11/21 20:16	16887-00-6	
Fluoride	<0.20	mg/L	0.20	1		03/11/21 20:02	16984-48-8	
Sulfate	874	mg/L	100	100		03/11/21 20:31	14808-79-8	

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Sample: DUP-322LF-030821	Lab ID: 60363071005	Collected: 03/08/21 10:55		Received: 03/08/21 16:45		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.095	mg/L	0.0050	1	03/10/21 16:37	03/16/21 15:06	7440-39-3	
Boron, Total Recoverable	0.49	mg/L	0.10	1	03/10/21 16:37	03/16/21 15:06	7440-42-8	
Calcium, Total Recoverable	187	mg/L	0.20	1	03/10/21 16:37	03/16/21 15:06	7440-70-2	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	03/12/21 09:44	03/15/21 18:28	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:25	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/11/21 16:30	03/17/21 12:25	7439-98-7	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1010	mg/L	13.3	1		03/12/21 15:24		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.0	Std. Units	0.10	1		03/15/21 08:00		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	24.7	mg/L	5.0	5		03/11/21 20:59	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		03/11/21 20:45	16984-48-8	
Sulfate	408	mg/L	50.0	50		03/11/21 21:14	14808-79-8	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch:	707888	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

METHOD BLANK: 2850767 Matrix: Water
Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	03/16/21 13:53	
Boron	mg/L	<0.10	0.10	03/16/21 13:53	
Calcium	mg/L	<0.20	0.20	03/16/21 13:53	

LABORATORY CONTROL SAMPLE: 2850768

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	1.0	100	85-115	
Calcium	mg/L	10	9.8	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2850769 2850770

Parameter	Units	60362592001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	21.1 ug/L	1	1	1.0	0.98	97	96	70-130	1	20	
Boron	mg/L	3980 ug/L	1	1	5.1	5.0	115	98	70-130	3	20	
Calcium	mg/L	283000 ug/L	10	10	300	293	163	101	70-130	2	20 M1	

MATRIX SPIKE SAMPLE: 2850771

Parameter	Units	60362965003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.063	1	1.0	98	70-130	
Boron	mg/L	0.44	1	1.5	101	70-130	
Calcium	mg/L	200	10	208	80	70-130	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch:	708124	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

METHOD BLANK: 2851833 Matrix: Water
Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/L	<0.0010	0.0010	03/17/21 12:04	
Molybdenum	mg/L	<0.0010	0.0010	03/17/21 12:04	

LABORATORY CONTROL SAMPLE: 2851834

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.04	0.038	96	85-115	
Molybdenum	mg/L	0.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2851835 2851836

Parameter	Units	60363071001		2851836		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Cobalt	mg/L	<0.0010	0.04	0.04	0.041	0.042	99	101	70-130	2	20
Molybdenum	mg/L	<0.0010	0.04	0.04	0.040	0.041	99	100	70-130	1	20

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch: 708275

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

METHOD BLANK: 2852318

Matrix: Water

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium	mg/L	<0.010	0.010	03/15/21 17:58	

LABORATORY CONTROL SAMPLE: 2852319

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium	mg/L	1	0.94	94	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2852320 2852321

Parameter	Units	60363071002		2852320		2852321		% Rec Limits	RPD	Max RPD	Qual
		MS Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Lithium	mg/L	<0.010	1	1	0.95	0.99	95	98	75-125	3	20

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch:	708388	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

METHOD BLANK: 2852879 Matrix: Water
Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/12/21 15:23	

LABORATORY CONTROL SAMPLE: 2852880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2852881

Parameter	Units	60363029002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	550	564	3	10	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch: 708498

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

SAMPLE DUPLICATE: 2853769

Parameter	Units	60363030003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	5	H6

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

QC Batch: 707847 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Laboratory: Pace Analytical Services - Kansas City
 Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

METHOD BLANK: 2850668 Matrix: Water
 Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/10/21 09:38	
Fluoride	mg/L	<0.20	0.20	03/10/21 09:38	
Sulfate	mg/L	<1.0	1.0	03/10/21 09:38	

METHOD BLANK: 2854934 Matrix: Water
 Associated Lab Samples: 60363071001, 60363071002, 60363071003, 60363071004, 60363071005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/11/21 10:44	
Fluoride	mg/L	<0.20	0.20	03/11/21 10:44	
Sulfate	mg/L	<1.0	1.0	03/11/21 10:44	

LABORATORY CONTROL SAMPLE: 2850669

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

LABORATORY CONTROL SAMPLE: 2854935

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2850670 2850671

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60360745002 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	1890	1000	1000	3040	3260	115	138	80-120	7	15	M1	
Fluoride	mg/L	0.25	2.5	2.5	6.1	5.8	234	224	80-120	4	15	M1	
Sulfate	mg/L	47.5	25	25	74.7	74.2	109	107	80-120	1	15		

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

MATRIX SPIKE SAMPLE:		2850672					
Parameter	Units	60362783002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	269	100	385	116	80-120	
Fluoride	mg/L	ND	50	51.4	99	80-120	
Sulfate	mg/L	1930	1000	2950	102	80-120	

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QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60363071

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60363071001	MW-1-030821	EPA 200.7	707888	EPA 200.7	708029
60363071002	MW-4-030821	EPA 200.7	707888	EPA 200.7	708029
60363071003	MW-5-030821	EPA 200.7	707888	EPA 200.7	708029
60363071004	MW-6-030821	EPA 200.7	707888	EPA 200.7	708029
60363071005	DUP-322LF-030821	EPA 200.7	707888	EPA 200.7	708029
60363071001	MW-1-030821	EPA 3010	708275	EPA 6010	708413
60363071002	MW-4-030821	EPA 3010	708275	EPA 6010	708413
60363071003	MW-5-030821	EPA 3010	708275	EPA 6010	708413
60363071004	MW-6-030821	EPA 3010	708275	EPA 6010	708413
60363071005	DUP-322LF-030821	EPA 3010	708275	EPA 6010	708413
60363071001	MW-1-030821	EPA 200.8	708124	EPA 200.8	708211
60363071002	MW-4-030821	EPA 200.8	708124	EPA 200.8	708211
60363071003	MW-5-030821	EPA 200.8	708124	EPA 200.8	708211
60363071004	MW-6-030821	EPA 200.8	708124	EPA 200.8	708211
60363071005	DUP-322LF-030821	EPA 200.8	708124	EPA 200.8	708211
60363071001	MW-1-030821	SM 2540C	708388		
60363071002	MW-4-030821	SM 2540C	708388		
60363071003	MW-5-030821	SM 2540C	708388		
60363071004	MW-6-030821	SM 2540C	708388		
60363071005	DUP-322LF-030821	SM 2540C	708388		
60363071001	MW-1-030821	SM 4500-H+B	708498		
60363071002	MW-4-030821	SM 4500-H+B	708498		
60363071003	MW-5-030821	SM 4500-H+B	708498		
60363071004	MW-6-030821	SM 4500-H+B	708498		
60363071005	DUP-322LF-030821	SM 4500-H+B	708498		
60363071001	MW-1-030821	EPA 300.0	707847		
60363071002	MW-4-030821	EPA 300.0	707847		
60363071003	MW-5-030821	EPA 300.0	707847		
60363071004	MW-6-030821	EPA 300.0	707847		
60363071005	DUP-322LF-030821	EPA 300.0	707847		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60363071



Client Name: Energy Kansas Central Inc

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other PLC

Thermometer Used: T-295 Type of Ice: Wg Blue None

Cooler Temperature (°C): As-read 7.0 Corr. Factor +0.2 Corrected 7.2 °C

Date and initials of person examining contents:
3-8-21/10

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# <u>603173</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

ATTACHMENT 1-2

June 2021 Sampling Event Laboratory Analytical Report

July 15, 2021

Andrew Hare
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: TEC 322 LANDFILL CCR
Pace Project No.: 60371392

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

Revised Report REV_1

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Laura Hines, Evergy, Inc.
Heath Horyna, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Melissa Michels, Evergy, Inc.
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Sataneck, Haley & Aldrich, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60371392001	MW-1-060721	Water	06/07/21 10:30	06/07/21 15:50
60371392002	MW-4-060721	Water	06/07/21 11:45	06/07/21 15:50
60371392003	MW-5-060721	Water	06/07/21 13:10	06/07/21 15:50
60371392004	MW-6-060721	Water	06/07/21 11:35	06/07/21 15:50
60371392005	DUP-322LF-060721	Water	06/07/21 10:30	06/07/21 15:50

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60371392001	MW-1-060721	EPA 200.7	JDE	4	PASI-K
		EPA 6010	JDE	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	MRV	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60371392002	MW-4-060721	EPA 200.7	JDE	4	PASI-K
		EPA 6010	JDE	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	MRV	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60371392003	MW-5-060721	EPA 200.7	JDE	4	PASI-K
		EPA 6010	JDE	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	MRV	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60371392004	MW-6-060721	EPA 200.7	JDE	4	PASI-K
		EPA 6010	JDE	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	MRV	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K
60371392005	DUP-322LF-060721	EPA 200.7	JDE	4	PASI-K
		EPA 6010	JDE	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	MRV	1	PASI-K
		EPA 300.0	CRN2	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Date: July 15, 2021

Amended report revised to include redigested and reanalyzed mercury sample results.

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: Evergy Kansas Central, Inc.

Date: July 15, 2021

General Information:

5 samples were analyzed for EPA 200.7 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Method: EPA 6010

Description: 6010 MET ICP

Client: Evergy Kansas Central, Inc.

Date: July 15, 2021

General Information:

5 samples were analyzed for EPA 6010 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: Evergy Kansas Central, Inc.

Date: July 15, 2021

General Information:

5 samples were analyzed for EPA 200.8 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Method: EPA 245.1

Description: 245.1 Mercury

Client: Evergy Kansas Central, Inc.

Date: July 15, 2021

General Information:

5 samples were analyzed for EPA 245.1 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H1: Analysis conducted outside the EPA method holding time.

- DUP-322LF-060721 (Lab ID: 60371392005)
- MW-1-060721 (Lab ID: 60371392001)
- MW-4-060721 (Lab ID: 60371392002)
- MW-5-060721 (Lab ID: 60371392003)
- MW-6-060721 (Lab ID: 60371392004)

H2: Extraction or preparation conducted outside EPA method holding time.

- DUP-322LF-060721 (Lab ID: 60371392005)
- MW-1-060721 (Lab ID: 60371392001)
- MW-4-060721 (Lab ID: 60371392002)
- MW-5-060721 (Lab ID: 60371392003)
- MW-6-060721 (Lab ID: 60371392004)

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: Evergy Kansas Central, Inc.

Date: July 15, 2021

General Information:

5 samples were analyzed for EPA 300.0 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Sample: MW-1-060721	Lab ID: 60371392001	Collected: 06/07/21 10:30	Received: 06/07/21 15:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.087	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:05	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/08/21 16:57	06/10/21 16:05	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:05	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	06/08/21 16:57	06/10/21 16:05	7439-92-1	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	06/09/21 10:07	06/10/21 16:25	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7440-36-0	
Arsenic, Total Recoverable	0.0013	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/09/21 10:07	06/14/21 14:51	7440-43-9	
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 14:51	7440-28-0	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.20	ug/L	0.20	1	07/12/21 15:36	07/13/21 13:03	7439-97-6	H1,H2
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<0.20	mg/L	0.20	1		06/15/21 12:51	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Sample: MW-4-060721	Lab ID: 60371392002	Collected: 06/07/21 11:45	Received: 06/07/21 15:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.098	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:07	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/08/21 16:57	06/10/21 16:07	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:07	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	06/08/21 16:57	06/10/21 16:07	7439-92-1	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	06/09/21 10:07	06/10/21 16:27	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/09/21 10:07	06/14/21 15:06	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:06	7440-28-0	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.20	ug/L	0.20	1	07/12/21 15:36	07/13/21 13:05	7439-97-6	H1,H2
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<0.20	mg/L	0.20	1		06/15/21 13:03	16984-48-8	

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Sample: MW-5-060721	Lab ID: 60371392003	Collected: 06/07/21 13:10	Received: 06/07/21 15:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.019	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:10	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/08/21 16:57	06/10/21 16:10	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:10	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	06/08/21 16:57	06/10/21 16:10	7439-92-1	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	06/09/21 10:07	06/10/21 16:35	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/09/21 10:07	06/14/21 15:09	7440-43-9	
Cobalt, Total Recoverable	0.0018	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:09	7440-28-0	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.20	ug/L	0.20	1	07/12/21 15:36	07/13/21 13:12	7439-97-6	H1,H2
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<0.20	mg/L	0.20	1		06/15/21 13:15	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Sample: MW-6-060721	Lab ID: 60371392004	Collected: 06/07/21 11:35	Received: 06/07/21 15:50	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.018	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:12	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/08/21 16:57	06/10/21 16:12	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:12	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	06/08/21 16:57	06/10/21 16:12	7439-92-1	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	06/09/21 10:07	06/10/21 16:37	7439-93-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/09/21 10:07	06/14/21 15:13	7440-43-9	
Cobalt, Total Recoverable	0.0022	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:13	7440-28-0	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.20	ug/L	0.20	1	07/12/21 15:36	07/13/21 13:14	7439-97-6	H1,H2
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<0.20	mg/L	0.20	1		06/15/21 13:27	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: DUP-322LF-060721 Lab ID: 60371392005 Collected: 06/07/21 10:30 Received: 06/07/21 15:50 Matrix: Water								
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.083	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:15	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/08/21 16:57	06/10/21 16:15	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	06/08/21 16:57	06/10/21 16:15	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	06/08/21 16:57	06/10/21 16:15	7439-92-1	
6010 MET ICP Analytical Method: EPA 6010 Preparation Method: EPA 3010 Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	06/09/21 10:07	06/10/21 16:40	7439-93-2	
200.8 MET ICPMS Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7440-36-0	
Arsenic, Total Recoverable	0.0013	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	06/09/21 10:07	06/14/21 15:16	7440-43-9	
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	06/09/21 10:07	06/14/21 15:16	7440-28-0	
245.1 Mercury Analytical Method: EPA 245.1 Preparation Method: EPA 245.1 Pace Analytical Services - Kansas City								
Mercury	<0.20	ug/L	0.20	1	07/12/21 15:36	07/13/21 13:17	7439-97-6	H1,H2
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	<0.20	mg/L	0.20	1		06/15/21 13:39	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

QC Batch: 731490

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

METHOD BLANK: 2936642

Matrix: Water

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	07/13/21 12:58	

LABORATORY CONTROL SAMPLE: 2936643

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2936644 2936645

Parameter	Units	60371392002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.20	5	5	4.7	4.8	93	96	70-130	3	20	H1

MATRIX SPIKE SAMPLE: 2936646

Parameter	Units	60374059003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.8	97	70-130	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

QC Batch:	725170	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

METHOD BLANK: 2914197 Matrix: Water
Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	06/09/21 19:53	
Beryllium	mg/L	<0.0010	0.0010	06/09/21 19:53	
Chromium	mg/L	<0.0050	0.0050	06/09/21 19:53	
Lead	mg/L	<0.010	0.010	06/09/21 19:53	

LABORATORY CONTROL SAMPLE: 2914198

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	104	85-115	
Beryllium	mg/L	1	1.1	105	85-115	
Chromium	mg/L	1	1.1	105	85-115	
Lead	mg/L	1	1.1	107	85-115	

MATRIX SPIKE SAMPLE: 2914199

Parameter	Units	60371064003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	134 ug/L	1	1.3	113	70-130	
Beryllium	mg/L	ND	1	1.1	114	70-130	
Chromium	mg/L	ND	1	1.1	113	70-130	
Lead	mg/L	ND	1	1.1	113	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2914200 2914201

Parameter	Units	60371274003		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Barium	mg/L	97.6 ug/L	1	1	1.1	1.1	100	100	100	70-130	1	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	104	104	104	70-130	0	20	
Chromium	mg/L	13.2 ug/L	1	1	1.0	1.0	100	100	100	70-130	0	20	
Lead	mg/L	ND	1	1	1.0	1.0	100	99	99	70-130	1	20	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

QC Batch:	725230	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

METHOD BLANK: 2914312 Matrix: Water

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	06/14/21 14:13	
Arsenic	mg/L	<0.0010	0.0010	06/14/21 14:13	
Cadmium	mg/L	<0.00050	0.00050	06/14/21 14:13	
Cobalt	mg/L	<0.0010	0.0010	06/14/21 14:13	
Molybdenum	mg/L	<0.0010	0.0010	06/14/21 14:13	
Selenium	mg/L	<0.0010	0.0010	06/14/21 14:13	
Thallium	mg/L	<0.0010	0.0010	06/14/21 14:13	

LABORATORY CONTROL SAMPLE: 2914313

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.042	104	85-115	
Arsenic	mg/L	0.04	0.043	107	85-115	
Cadmium	mg/L	0.04	0.043	108	85-115	
Cobalt	mg/L	0.04	0.040	100	85-115	
Molybdenum	mg/L	0.04	0.043	107	85-115	
Selenium	mg/L	0.04	0.043	107	85-115	
Thallium	mg/L	0.04	0.042	104	85-115	

MATRIX SPIKE SAMPLE: 2914314

Parameter	Units	60371062001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	ND	0.04	0.040	99	70-130	
Arsenic	mg/L	2.1 ug/L	0.04	0.042	101	70-130	
Cadmium	mg/L	ND	0.04	0.039	96	70-130	
Cobalt	mg/L	ND	0.04	0.036	89	70-130	
Molybdenum	mg/L	5.5 ug/L	0.04	0.047	103	70-130	
Selenium	mg/L	ND	0.04	0.037	89	70-130	
Thallium	mg/L	ND	0.04	0.037	92	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2914315 2914316

Parameter	Units	60371392001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.039	0.040	96	99	70-130	3	20	
Arsenic	mg/L	0.0013	0.04	0.04	0.042	0.043	101	105	70-130	3	20	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Parameter	Units	2914315		2914316		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		60371392001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Cadmium	mg/L	<0.00050	0.04	0.04	0.038	0.039	95	97	70-130	2	20	
Cobalt	mg/L	0.0014	0.04	0.04	0.036	0.037	87	89	70-130	3	20	
Molybdenum	mg/L	<0.0010	0.04	0.04	0.042	0.043	103	106	70-130	3	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.035	0.036	87	89	70-130	2	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.037	0.038	91	94	70-130	3	20	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

QC Batch: 725232

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

METHOD BLANK: 2914322

Matrix: Water

Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium	mg/L	<0.010	0.010	06/10/21 16:22	

LABORATORY CONTROL SAMPLE: 2914323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium	mg/L	1	1.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2914324 2914325

Parameter	Units	60371402006		2914324		2914325		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
Lithium	mg/L	25.3 ug/L	1	1	1.0	1.0	101	100	75-125	2	20

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60371392

QC Batch: 726105 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

METHOD BLANK: 2917706 Matrix: Water
Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/14/21 17:08	

METHOD BLANK: 2919317 Matrix: Water
Associated Lab Samples: 60371392001, 60371392002, 60371392003, 60371392004, 60371392005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/15/21 08:03	

LABORATORY CONTROL SAMPLE: 2917707

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	94	90-110	

LABORATORY CONTROL SAMPLE: 2919318

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	96	90-110	

MATRIX SPIKE SAMPLE: 2917708

Parameter	Units	60371005001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	7.9	50	48.1	80	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2917709 2917710

Parameter	Units	60371297006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
Fluoride	mg/L	0.57	2.5	2.5	2.9	2.7	94	87	80-120	6 15	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

SAMPLE DUPLICATE: 2917711

Parameter	Units	60371297006 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.57	0.56	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H1 Analysis conducted outside the EPA method holding time.

H2 Extraction or preparation conducted outside EPA method holding time.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60371392

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60371392001	MW-1-060721	EPA 200.7	725170	EPA 200.7	725221
60371392002	MW-4-060721	EPA 200.7	725170	EPA 200.7	725221
60371392003	MW-5-060721	EPA 200.7	725170	EPA 200.7	725221
60371392004	MW-6-060721	EPA 200.7	725170	EPA 200.7	725221
60371392005	DUP-322LF-060721	EPA 200.7	725170	EPA 200.7	725221
60371392001	MW-1-060721	EPA 3010	725232	EPA 6010	725383
60371392002	MW-4-060721	EPA 3010	725232	EPA 6010	725383
60371392003	MW-5-060721	EPA 3010	725232	EPA 6010	725383
60371392004	MW-6-060721	EPA 3010	725232	EPA 6010	725383
60371392005	DUP-322LF-060721	EPA 3010	725232	EPA 6010	725383
60371392001	MW-1-060721	EPA 200.8	725230	EPA 200.8	725381
60371392002	MW-4-060721	EPA 200.8	725230	EPA 200.8	725381
60371392003	MW-5-060721	EPA 200.8	725230	EPA 200.8	725381
60371392004	MW-6-060721	EPA 200.8	725230	EPA 200.8	725381
60371392005	DUP-322LF-060721	EPA 200.8	725230	EPA 200.8	725381
60371392001	MW-1-060721	EPA 245.1	731490	EPA 245.1	731688
60371392002	MW-4-060721	EPA 245.1	731490	EPA 245.1	731688
60371392003	MW-5-060721	EPA 245.1	731490	EPA 245.1	731688
60371392004	MW-6-060721	EPA 245.1	731490	EPA 245.1	731688
60371392005	DUP-322LF-060721	EPA 245.1	731490	EPA 245.1	731688
60371392001	MW-1-060721	EPA 300.0	726105		
60371392002	MW-4-060721	EPA 300.0	726105		
60371392003	MW-5-060721	EPA 300.0	726105		
60371392004	MW-6-060721	EPA 300.0	726105		
60371392005	DUP-322LF-060721	EPA 300.0	726105		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60371392



Client Name: Energy Kansas

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other mpic

Thermometer Used: T-298 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 9.5 Corr. Factor 0.0 Corrected 9.5

Date and initials of person examining contents: 6-7-21 [initials]

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# <u>603173</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:		
Lead acetate strip turns dark? (Record only)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____



CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Company: EVERGY KANSAS CENTRAL, INC. Address: Tecumseh Energy Center (TEC) 818 Kansas Ave, Topeka, KS 66612 Email To: andrew.hare@evergy.com Phone: (785) 575-8428 Fax: Requested Due Date/TAT: 7 DAY		Section B Required Project Information: Report To: Andrew Hare, Melissa Michels, Samantha Kaney Copy To: Jared Morrison, Jake Humphrey, Laura Hines Purchase Order No.: Project Name: TEC 322 Landfill CCR Project Number:		Section C Invoice Information: Attention: Accounts Payable Company Name: EVERGY KANSAS CENTRAL, INC Address: SEE SECTION A Pace Quote Reference: Pace Project Manager: Jasmine Amerin, 913-563-1403 Pace Profile #: 9656, 2	
Section D Required Client Information SAMPLE ID (A-Z, 0-9 /, -) Sample IDs MUST BE UNIQUE		REGULATORY AGENCY <input type="checkbox"/> NPDES <input checked="" type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER Site Location: KS STATE:			

Page: 1 of 1

ITEM #	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives H ₂ SO ₄ HNO ₃ HCl NaOH Na ₂ S ₂ O ₃ Methanol Other	Requested Analysis Filtered (Y/N)	Pace Project No. / Lab I.D.
				DATE	TIME					
1		WT	G	6/7/21	1030		2			
2		WT	G	6/7/21	1145		2			
3		WT	G	6/7/21	1310		2			
4		WT	G	6/7/21	1135		2			
5		WT	G	6/7/21	1030		2			
6										
7										
8										
9										
10										
11										
12										
ADDITIONAL COMMENTS 200.7 Total Metals*: Ba, Be, Cr, Pb 200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl 6010 Total Metals***: Li										

RELINQUISHED BY / AFFILIATION [Signature] SCS	DATE 6/7/21 1550	ACCEPTED BY / AFFILIATION E Brackett Pace	DATE 6-7-21 1550	TIME 1550	TEMP IN °C 9.5	Received on Ice (Y/N) Y	Custody Sealed (Y/N) Y	Samples Intact (Y/N) Y
---	----------------------------	---	----------------------------	---------------------	--------------------------	-----------------------------------	----------------------------------	----------------------------------

Page 26 of 26

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

July 06, 2021

Andrew Hare
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: TEC 322 Landfill CCR
Pace Project No.: 60372053

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on June 08, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Laura Hines, Evergy, Inc.
Heath Horyna, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Melissa Michels, Evergy, Inc.
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Satanek, Haley & Aldrich, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60372053001	MW-1-060721	Water	06/07/21 10:30	06/08/21 10:15
60372053002	MW-4-060721	Water	06/07/21 11:15	06/08/21 10:15
60372053003	MW-5-060721	Water	06/07/21 13:10	06/08/21 10:15
60372053004	MW-6-060721	Water	06/07/21 11:35	06/08/21 10:15
60372053005	DUP-382LF-060721	Water	06/07/21 10:30	06/08/21 10:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60372053001	MW-1-060721	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60372053002	MW-4-060721	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60372053003	MW-5-060721	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60372053004	MW-6-060721	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
60372053005	DUP-382LF-060721	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Method: EPA 903.1

Description: 903.1 Radium 226

Client: Evergy Kansas Central, Inc.

Date: July 06, 2021

General Information:

5 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Method: EPA 904.0

Description: 904.0 Radium 228

Client: Evergy Kansas Central, Inc.

Date: July 06, 2021

General Information:

5 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: 452699

1e: Analyte detected in Method Blank above reporting limit of 1.0 pCi/L. Samples with activity results below their associated MDC or the client RDL are reportable without qualification.

- DUP-382LF-060721 (Lab ID: 60372053005)
 - Radium-228
- MW-1-060721 (Lab ID: 60372053001)
 - Radium-228
- MW-4-060721 (Lab ID: 60372053002)
 - Radium-228
- MW-5-060721 (Lab ID: 60372053003)
 - Radium-228
- MW-6-060721 (Lab ID: 60372053004)
 - Radium-228

2e: Analyte detected in Method Blank above reporting limit of 1.0 pCi/L. Samples with activity results below their associated MDC or the client RDL are reportable without qualification.

Results for sample with activity greater than the client RDL may be qualified.

- BLANK (Lab ID: 2185412)
 - Radium-228

3e: Method Blank re-analyzed due to activity > MDC. Re-analysis results are satisfactory.

- BLANK (Lab ID: 2185412)
 - Radium-228

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Method: Total Radium Calculation

Description: Total Radium 228+226

Client: Evergy Kansas Central, Inc.

Date: July 06, 2021

General Information:

5 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-1-060721 Lab ID: 60372053001 Collected: 06/07/21 10:30 Received: 06/08/21 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.000 ± 0.268 (0.545) C:NA T:83%	pCi/L	06/30/21 13:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.434 ± 0.378 (0.758) C:71% T:81%	pCi/L	06/28/21 14:24	15262-20-1	1e
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.434 ± 0.463 (0.758)	pCi/L	07/02/21 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-4-060721 Lab ID: 60372053002 Collected: 06/07/21 11:15 Received: 06/08/21 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.656 ± 0.590 (0.896) C:NA T:91%	pCi/L	06/30/21 13:41	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.891 ± 0.454 (0.794) C:71% T:87%	pCi/L	06/28/21 14:24	15262-20-1	1e
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.55 ± 0.744 (0.896)	pCi/L	07/02/21 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-5-060721 Lab ID: 60372053003 Collected: 06/07/21 13:10 Received: 06/08/21 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.000 ± 0.338 (0.733) C:NA T:84%	pCi/L	06/30/21 13:53	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.252 ± 0.345 (0.738) C:74% T:91%	pCi/L	06/28/21 14:24	15262-20-1	1e
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.252 ± 0.483 (0.738)	pCi/L	07/02/21 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-6-060721 Lab ID: 60372053004 Collected: 06/07/21 11:35 Received: 06/08/21 10:15 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.179 ± 0.310 (0.782) C:NA T:94%	pCi/L	06/30/21 13:53	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.907 ± 0.460 (0.802) C:71% T:84%	pCi/L	06/28/21 14:24	15262-20-1	1e
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.907 ± 0.555 (0.802)	pCi/L	07/02/21 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Sample: DUP-382LF-060721 **Lab ID: 60372053005** Collected: 06/07/21 10:30 Received: 06/08/21 10:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	-0.0595 ± 0.308 (0.714) C:NA T:90%	pCi/L	06/30/21 13:53	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.631 ± 0.425 (0.818) C:72% T:89%	pCi/L	06/28/21 14:24	15262-20-1	1e
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.631 ± 0.525 (0.818)	pCi/L	07/02/21 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

QC Batch: 452699

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 60372053001, 60372053002, 60372053003, 60372053004, 60372053005

METHOD BLANK: 2185412

Matrix: Water

Associated Lab Samples: 60372053001, 60372053002, 60372053003, 60372053004, 60372053005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.440 ± 0.357 (0.714) C:76% T:88%	pCi/L	07/01/21 10:59	3e
Radium-228	1.42 ± 0.515 (0.758) C:71% T:88%	pCi/L	06/28/21 11:11	2e

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

QC Batch:	452696	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 60372053001, 60372053002, 60372053003, 60372053004, 60372053005

METHOD BLANK: 2185409 Matrix: Water

Associated Lab Samples: 60372053001, 60372053002, 60372053003, 60372053004, 60372053005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0999 ± 0.367 (0.704) C:NA T:87%	pCi/L	06/30/21 13:41	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1e Analyte detected in Method Blank above reporting limit of 1.0 pCi/L. Samples with activity results below their associated MDC or the client RDL are reportable without qualification.

2e Analyte detected in Method Blank above reporting limit of 1.0 pCi/L. Samples with activity results below their associated MDC or the client RDL are reportable without qualification.

Results for sample with activity greater than the client RDL may be qualified.

3e Method Blank re-analyzed due to activity > MDC. Re-analysis results are satisfactory.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 Landfill CCR

Pace Project No.: 60372053

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60372053001	MW-1-060721	EPA 903.1	452696		
60372053002	MW-4-060721	EPA 903.1	452696		
60372053003	MW-5-060721	EPA 903.1	452696		
60372053004	MW-6-060721	EPA 903.1	452696		
60372053005	DUP-382LF-060721	EPA 903.1	452696		
60372053001	MW-1-060721	EPA 904.0	452699		
60372053002	MW-4-060721	EPA 904.0	452699		
60372053003	MW-5-060721	EPA 904.0	452699		
60372053004	MW-6-060721	EPA 904.0	452699		
60372053005	DUP-382LF-060721	EPA 904.0	452699		
60372053001	MW-1-060721	Total Radium Calculation	455016		
60372053002	MW-4-060721	Total Radium Calculation	455016		
60372053003	MW-5-060721	Total Radium Calculation	455016		
60372053004	MW-6-060721	Total Radium Calculation	455016		
60372053005	DUP-382LF-060721	Total Radium Calculation	455016		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice information:	
Company: EVERGY KANSAS CENTRAL, INC.		Report To: Andrew Hare, Melissa Michels, Samantha Kaney		Attention: Accounts Payable	
Address: Tecumseh Energy Center (TEC)		Copy To: Jared Morrison, Jake Humphrey, Laura Hines		Company Name: EVERGY KANSAS CENTRAL, INC	
818 Kansas Ave, Topeka, KS 66612		Melanie Satanek, Danielle Oberbroeckling		Address: SEE SECTION A	
Email To: andrew.hare@evergy.com		Purchase Order No.:		Pace Quote Reference:	
Phone: (785) 575-8428 Fax:		Project Name: TEC 322 Landfill CCR		Pace Project Manager: Jasmine Amerin, 913-563-1403	
Requested Due Date/TAT: 15 DAY		Project Number:		Pace Profile #: 9656, 2	
				REGULATORY AGENCY	
				<input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input type="checkbox"/> OTHER _____	
				Site Location: KS	
				STATE: _____	

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Analysis Test ↓	Requested Analysis Filtered (Y/N)			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
					COMPOSITE START		COMPOSITE END/GRAB				Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₃	Methanol	Other	Radium-228	Radium-226		Total Radium				
					DATE	TIME	DATE	TIME																		
1	MW-1-060721	WT	G			6/7/21	1030		2																001	
2	MW-4-060721	WT	G			6/7/21	1115		2																	002
3	MW-5-060721	WT	G			6/7/21	1310		2																	003
4	MW-6-060721	WT	G			6/7/21	1135		2																	004
5	Dup-382 LF-060721	WT	G			6/7/21	1630		2																	005
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	A. Thompson	6/7/21	1530	[Signature]	6-8-21	1015	N/A	N	Y	Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:					
SIGNATURE of SAMPLER:					

Page 17 of 23

Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace WT

Project # _____

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: 5002 0648 3244

Label <u>JAG</u>
LIMS Login <u>JAG</u>

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Thermometer Used _____ Type of Ice: Wet Blue None

Cooler Temperature Observed Temp _____ °C Correction Factor: _____ °C Final Temp: _____ °C
Temp should be above freezing to 6°C

Comments:	pH paper Lot#			Date and initials of person examining contents:	
	Yes	No	N/A	_____	
Chain of Custody Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1003801	_____ 6-12-21
Chain of Custody Filled Out:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1.	
Chain of Custody Relinquished:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2.	
Sampler Name & Signature on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3.	
Sample Labels match COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4.	
-Includes date/time/ID Matrix: <u>WT</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5.	
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6.	
Short Hold Time Analysis (<72hr remaining):	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7.	
Rush Turn Around Time Requested:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8.	
Sufficient Volume:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9.	
Correct Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10.	
-Pace Containers Used:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Containers Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11.	
Orthophosphate field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	12.	
Hex Cr Aqueous sample field filtered	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	13.	
Organic Samples checked for dechlorination:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	14.	
Filtered volume received for Dissolved tests	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	15.	
All containers have been checked for preservation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16.	
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix					
All containers meet method preservation requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>MSM</u>	Date/time of preservation: _____
	Lot # of added preservative: _____				
Headspace in VOA Vials (>6mm):	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	17.	
Trip Blank Present:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	18.	
Trip Blank Custody Seals Present	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
Rad Samples Screened < 0.5 mrem/hr	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Initial when completed: <u>MJM</u>	Date: <u>6-10</u> Survey Meter SN: <u>1563</u>

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: _____

A check in this box indicates that additional information has been stored in ereports.

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

WO#: 30425777

PM: CAF Due Date: 06/23/21
CLIENT: PACE_60_LEKS



Quality Control Sample Performance Assessment

Test: Ra-226
Analyst: MK1
Date: 6/22/2021
Batch ID: 61205
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2185409
MB concentration:	0.100
M/B Counting Uncertainty:	0.366
MB MDC:	0.704
MB Numerical Performance Indicator:	0.53
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCSD61205	LCSD61205
Count Date:	6/30/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.173	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.652	
Target Conc. (pCi/L, g, F):	4.936	
Uncertainty (Calculated):	0.232	
Result (pCi/L, g, F):	4.329	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.904	
Numerical Performance Indicator:	-1.28	
Percent Recovery:	87.70%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	6/8/2021	
Sample I.D.	30425198001	
Sample MS I.D.	30425198001MS	
Sample MSD I.D.		
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.174	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.658	
MS Target Conc. (pCi/L, g, F):	9.783	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.460	
MSD Spike Uncertainty (calculated):		
Sample Result:	-0.095	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.186	
Sample Matrix Spike Result:	11.072	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.613	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	1.607	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	114.14%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment	LCSD (Y or N)?	N
Sample I.D.:	7374192021	
Duplicate Sample I.D.:	7374192021DUP	
Sample Result (pCi/L, g, F):	-0.118	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.231	
Sample Duplicate Result (pCi/L, g, F):	0.062	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.209	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	-1.129	
Duplicate RPD:	-638.16%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	MS/MSD 1	MS/MSD 2
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:		
MS/MSD Duplicate Status vs Numerical Indicator:		
MS/MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

Handwritten signature and date: MK1 6/30/21

Handwritten signature and date: MK1 6/30/21



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: VAL
Date: 6/23/2021
Worklist: 61206
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment		
MB Sample ID	2185412	
MB concentration:	1.420	
M/B 2 Sigma CSU:	0.515	
MB MDC:	0.758	
MB Numerical Performance Indicator:	5.41	
MB Status vs Numerical Indicator:	Fail*	
MB Status vs. MDC:	Fail*	

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS61206	LCS61206
Count Date:	6/28/2021	
Spike I.D.:	21-003	
Decay Corrected Spike Concentration (pCi/mL):	37.148	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.825	
Target Conc. (pCi/L, g, F):	4.502	
Uncertainty (Calculated):	0.221	
Result (pCi/L, g, F):	3.868	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.941	
Numerical Performance Indicator:	-1.29	
Percent Recovery:	85.91%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	6/3/2021	
Sample I.D.:	30425247001	
Sample MS I.D.:	30425247001MS	
Sample MSD I.D.:		
Spike I.D.:	21-003	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	37.457	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.794	
MS Target Conc. (pCi/L, g, F):	9.438	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.462	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.085	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.309	
Sample Matrix Spike Result:	8.030	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.651	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-1.680	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	84.18%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	30425242001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	30425242001DUP	
Sample Result (pCi/L, g, F):	0.651	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.381	
Sample Duplicate Result (pCi/L, g, F):	0.167	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.327	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.891	30425242001
Duplicate RPD:	118.34%	30425242001DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:		
MS/MSD Duplicate Status vs Numerical Indicator:		
MS/MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*If the lowest activity sample in this batch is greater than ten times the blank value, the blank is acceptable; otherwise this batch must be re-prepped.

Handwritten signature: CMZ



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: VAL
Date: 6/29/2021
Worklist: 61206
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment		
MB Sample ID	2185412	
MB concentration:	0.440	
M/B 2 Sigma CSU:	0.357	
MB MDC:	0.714	
MB Numerical Performance Indicator:	2.41	
MB Status vs Numerical Indicator:	Warning	
MB Status vs. MDC:	Pass	

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS61206	LCSD61206
Count Date:	#N/A	#N/A
Spike I.D.:	#N/A	#N/A
Decay Corrected Spike Concentration (pCi/mL):	#N/A	#N/A
Volume Used (mL):	#N/A	#N/A
Aliquot Volume (L, g, F):	#N/A	#N/A
Target Conc. (pCi/L, g, F):	#N/A	#N/A
Uncertainty (Calculated):	#N/A	#N/A
Result (pCi/L, g, F):	#N/A	#N/A
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	#N/A	#N/A
Numerical Performance Indicator:	#N/A	#N/A
Percent Recovery:	#N/A	#N/A
Status vs Numerical Indicator:	#N/A	#N/A
Status vs Recovery:	#N/A	#N/A
Upper % Recovery Limits:	#N/A	#N/A
Lower % Recovery Limits:	#N/A	#N/A

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc. (pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:		Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:		
Sample Result (pCi/L, g, F):		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Duplicate Result (pCi/L, g, F):		
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:		
Duplicate RPD:		
Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:		
% RPD Limit:		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.:		
Sample MS I.D.:		
Sample MSD I.D.:		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:		
MS/MSD Duplicate Status vs Numerical Indicator:		
MS/MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

#N/A

Handwritten signatures and initials:
 6/29/21
 VAL
 7/7/21

ATTACHMENT 1-3

September 2021 Sampling Event Laboratory Analytical Report

October 29, 2021

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: TEC 322 LANDFILL CCR
Pace Project No.: 60380371

Dear Melissa Michels:

Enclosed are the analytical results for sample(s) received by the laboratory on September 14, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Hank Kapka
hank.kapka@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Satanek, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.
Jacob Will, Evergy Kansas Central, Jeffrey Energy Center



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601

ANAB DOD-ELAP Rad Accreditation #: L2417

Alabama Certification #: 41590

Arizona Certification #: AZ0734

Arkansas Certification

California Certification #: 04222CA

Colorado Certification #: PA01547

Connecticut Certification #: PH-0694

Delaware Certification

EPA Region 4 DW Rad

Florida/TNI Certification #: E87683

Georgia Certification #: C040

Florida: Cert E871149 SEKS WET

Guam Certification

Hawaii Certification

Idaho Certification

Illinois Certification

Indiana Certification

Iowa Certification #: 391

Kansas/TNI Certification #: E-10358

Kentucky Certification #: KY90133

KY WW Permit #: KY0098221

KY WW Permit #: KY0000221

Louisiana DHH/TNI Certification #: LA180012

Louisiana DEQ/TNI Certification #: 4086

Maine Certification #: 2017020

Maryland Certification #: 308

Massachusetts Certification #: M-PA1457

Michigan/PADEP Certification #: 9991

Missouri Certification #: 235

Montana Certification #: Cert0082

Nebraska Certification #: NE-OS-29-14

Nevada Certification #: PA014572018-1

New Hampshire/TNI Certification #: 297617

New Jersey/TNI Certification #: PA051

New Mexico Certification #: PA01457

New York/TNI Certification #: 10888

North Carolina Certification #: 42706

North Dakota Certification #: R-190

Ohio EPA Rad Approval: #41249

Oregon/TNI Certification #: PA200002-010

Pennsylvania/TNI Certification #: 65-00282

Puerto Rico Certification #: PA01457

Rhode Island Certification #: 65-00282

South Dakota Certification

Tennessee Certification #: 02867

Texas/TNI Certification #: T104704188-17-3

Utah/TNI Certification #: PA014572017-9

USDA Soil Permit #: P330-17-00091

Vermont Dept. of Health: ID# VT-0282

Virgin Island/PADEP Certification

Virginia/VELAP Certification #: 9526

Washington Certification #: C868

West Virginia DEP Certification #: 143

West Virginia DHHR Certification #: 9964C

Wisconsin Approve List for Rad

Wyoming Certification #: 8TMS-L

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 2000302021-3

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60380371001	MW-1-091321	Water	09/13/21 14:45	09/14/21 16:30
60380371002	MW-4-091321	Water	09/13/21 12:25	09/14/21 16:30
60380371003	MW-5-091321	Water	09/13/21 16:05	09/14/21 16:30
60380371004	MW-6-091321	Water	09/13/21 14:35	09/14/21 16:30
60380371005	TEC-322LF-DUP-091321	Water	09/13/21 16:15	09/14/21 16:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60380371001	MW-1-091321	EPA 200.7	JLH	3	PASI-K
		EPA 200.8	JGP	2	PASI-K
		EPA 245.1	VRB	1	PASI-K
		EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
60380371002	MW-4-091321	EPA 300.0	LDB	3	PASI-K
		EPA 200.7	JLH	3	PASI-K
		EPA 200.8	JGP	2	PASI-K
		EPA 245.1	VRB	1	PASI-K
		EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
60380371003	MW-5-091321	SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
		EPA 200.7	JLH	3	PASI-K
		EPA 200.8	JGP	2	PASI-K
		EPA 245.1	VRB	1	PASI-K
		EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60380371004	MW-6-091321	SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
		EPA 200.7	JLH	3	PASI-K
		EPA 200.8	JGP	2	PASI-K
		EPA 245.1	VRB	1	PASI-K
		EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
60380371005	TEC-322LF-DUP-091321	Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
		EPA 200.7	JLH	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	2	PASI-K
		EPA 245.1	VRB	1	PASI-K
		EPA 903.1	SLC	1	PASI-PA
		EPA 904.0	JC2	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 200.7 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 744239

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60380371001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2981921)

- Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 200.8

Description: 200.8 MET ICPMS

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 200.8 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 245.1

Description: 245.1 Mercury

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 245.1 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 903.1

Description: 903.1 Radium 226

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 903.1 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 904.0

Description: 904.0 Radium 228

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 904.0 by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: Total Radium Calculation

Description: Total Radium 228+226

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for Total Radium Calculation by Pace Analytical Services Greensburg. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for SM 2540C by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for SM 4500-H+B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- MW-1-091321 (Lab ID: 60380371001)
- MW-4-091321 (Lab ID: 60380371002)
- MW-5-091321 (Lab ID: 60380371003)
- MW-6-091321 (Lab ID: 60380371004)
- TEC-322LF-DUP-091321 (Lab ID: 60380371005)

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: Evergy Kansas Central, Inc.

Date: October 29, 2021

General Information:

5 samples were analyzed for EPA 300.0 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 743926

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60380071001,60380191002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2980224)
- Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: MW-1-091321	Lab ID: 60380371001	Collected: 09/13/21 14:45	Received: 09/14/21 16:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.062	mg/L	0.0050	1	09/20/21 11:52	09/22/21 20:35	7440-39-3	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	09/20/21 11:52	09/22/21 20:35	7440-42-8	
Calcium, Total Recoverable	154	mg/L	0.20	1	09/20/21 11:52	09/22/21 20:35	7440-70-2	M1
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Arsenic, Total Recoverable	<0.0020	mg/L	0.0020	1	09/20/21 17:15	09/22/21 14:52	7440-38-2	
Cobalt, Total Recoverable	0.0032	mg/L	0.0020	1	09/20/21 17:15	09/22/21 14:52	7440-48-4	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.00020	mg/L	0.00020	1	09/16/21 16:23	09/20/21 10:13	7439-97-6	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	889	mg/L	13.3	1		09/17/21 10:58		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.0	Std. Units	0.10	1		09/17/21 11:07		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	50.7	mg/L	20.0	20		09/17/21 10:40	16887-00-6	
Fluoride	<0.20	mg/L	0.20	1		09/17/21 10:28	16984-48-8	
Sulfate	353	mg/L	20.0	20		09/17/21 10:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: MW-4-091321	Lab ID: 60380371002	Collected: 09/13/21 12:25	Received: 09/14/21 16:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.10	mg/L	0.0050	1	09/20/21 11:52	09/22/21 20:42	7440-39-3	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	09/20/21 11:52	09/22/21 20:42	7440-42-8	
Calcium, Total Recoverable	156	mg/L	0.20	1	09/20/21 11:52	09/22/21 20:42	7440-70-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/20/21 17:15	09/22/21 14:57	7440-38-2	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/20/21 17:15	09/22/21 14:57	7440-48-4	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.00020	mg/L	0.00020	1	09/16/21 16:23	09/20/21 10:24	7439-97-6	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1060	mg/L	13.3	1		09/17/21 10:58		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/17/21 11:04		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	232	mg/L	20.0	20		09/17/21 11:04	16887-00-6	
Fluoride	0.25	mg/L	0.20	1		09/17/21 10:52	16984-48-8	
Sulfate	157	mg/L	20.0	20		09/17/21 11:04	14808-79-8	

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: MW-5-091321	Lab ID: 60380371003	Collected: 09/13/21 16:05	Received: 09/14/21 16:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.026	mg/L	0.0050	1	09/20/21 11:52	09/22/21 20:45	7440-39-3	
Boron, Total Recoverable	0.64	mg/L	0.10	1	09/20/21 11:52	09/22/21 20:45	7440-42-8	
Calcium, Total Recoverable	240	mg/L	0.20	1	09/20/21 11:52	09/22/21 20:45	7440-70-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:18	7440-38-2	
Cobalt, Total Recoverable	0.0019	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:18	7440-48-4	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.00020	mg/L	0.00020	1	09/16/21 16:23	09/20/21 10:26	7439-97-6	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1490	mg/L	20.0	1		09/17/21 10:58		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.4	Std. Units	0.10	1		09/20/21 11:32		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	44.1	mg/L	20.0	20		09/17/21 11:51	16887-00-6	
Fluoride	0.39	mg/L	0.20	1		09/17/21 11:15	16984-48-8	
Sulfate	784	mg/L	100	100		09/18/21 12:46	14808-79-8	

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: MW-6-091321	Lab ID: 60380371004	Collected: 09/13/21 14:35	Received: 09/14/21 16:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.017	mg/L	0.0050	1	09/20/21 11:52	09/22/21 20:47	7440-39-3	
Boron, Total Recoverable	0.62	mg/L	0.10	1	09/20/21 11:52	09/22/21 20:47	7440-42-8	
Calcium, Total Recoverable	292	mg/L	0.20	1	09/20/21 11:52	09/22/21 20:47	7440-70-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:24	7440-38-2	
Cobalt, Total Recoverable	0.0029	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:24	7440-48-4	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.00020	mg/L	0.00020	1	09/16/21 16:23	09/20/21 10:29	7439-97-6	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1590	mg/L	20.0	1		09/17/21 10:58		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.0	Std. Units	0.10	1		09/17/21 11:05		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	55.9	mg/L	20.0	20		09/17/21 12:15	16887-00-6	
Fluoride	0.56	mg/L	0.20	1		09/17/21 12:03	16984-48-8	
Sulfate	932	mg/L	100	100		09/18/21 13:05	14808-79-8	

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ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: TEC-322LF-DUP-091321 Lab ID: 60380371005 Collected: 09/13/21 16:15 Received: 09/14/21 16:30 Matrix: Water								
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.024	mg/L	0.0050	1	09/20/21 11:52	09/22/21 20:50	7440-39-3	
Boron, Total Recoverable	0.61	mg/L	0.10	1	09/20/21 11:52	09/22/21 20:50	7440-42-8	
Calcium, Total Recoverable	232	mg/L	0.20	1	09/20/21 11:52	09/22/21 20:50	7440-70-2	
200.8 MET ICPMS								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:29	7440-38-2	
Cobalt, Total Recoverable	0.0019	mg/L	0.0010	1	09/20/21 17:15	09/22/21 15:29	7440-48-4	
245.1 Mercury								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<0.00020	mg/L	0.00020	1	09/16/21 16:23	09/20/21 10:31	7439-97-6	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1410	mg/L	13.3	1		09/17/21 10:59		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.8	Std. Units	0.10	1		09/17/21 11:09		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	44.9	mg/L	20.0	20		09/17/21 12:38	16887-00-6	
Fluoride	0.39	mg/L	0.20	1		09/17/21 12:27	16984-48-8	
Sulfate	676	mg/L	100	100		09/18/21 13:23	14808-79-8	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch: 743893	Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1	Analysis Description: 245.1 Mercury
	Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2980142 Matrix: Water

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/20/21 10:08	

LABORATORY CONTROL SAMPLE: 2980143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0046	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2980144 2980145

Parameter	Units	2980144		2980145		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60380371001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	mg/L	<0.00020	0.005	0.005	0.0041	0.0040	82	79	70-130	4	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch:	744239	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2981919 Matrix: Water
Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/22/21 20:30	
Boron	mg/L	<0.10	0.10	09/22/21 20:30	
Calcium	mg/L	<0.20	0.20	09/22/21 20:30	

LABORATORY CONTROL SAMPLE: 2981920

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.90	90	85-115	
Boron	mg/L	1	0.86	86	85-115	
Calcium	mg/L	10	9.2	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2981921 2981922

Parameter	Units	60380371001		2981921		2981922		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Barium	mg/L	0.062	1	1	0.98	0.99	91	93	70-130	1	20		
Boron	mg/L	<0.10	1	1	0.99	1.0	89	92	70-130	3	20		
Calcium	mg/L	154	10	10	160	164	68	102	70-130	2	20	M1	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch:	744247	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 200.8	Analysis Description:	200.8 MET
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2981932 Matrix: Water

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0010	0.0010	09/22/21 14:47	
Cobalt	mg/L	<0.0010	0.0010	09/22/21 14:47	

LABORATORY CONTROL SAMPLE: 2981933

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.04	0.041	103	85-115	
Cobalt	mg/L	0.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2981934 2981935

Parameter	Units	60380371002		2981935		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Arsenic	mg/L	<0.0010	0.04	0.04	0.042	0.042	104	105	70-130	1	20
Cobalt	mg/L	<0.0010	0.04	0.04	0.038	0.038	95	95	70-130	1	20

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch:	743948	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2980283 Matrix: Water
Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/17/21 10:57	

LABORATORY CONTROL SAMPLE: 2980284

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1120	112	80-120	

SAMPLE DUPLICATE: 2980285

Parameter	Units	60380049002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	442	428	3	10	

SAMPLE DUPLICATE: 2980286

Parameter	Units	60380371004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1590	1550	3	10	

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch: 744237

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371003

SAMPLE DUPLICATE: 2981913

Parameter	Units	60379873001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	8.0	2	5	H6

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60380371

QC Batch: 743926 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2980220 Matrix: Water
Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/17/21 07:39	
Fluoride	mg/L	<0.20	0.20	09/17/21 07:39	
Sulfate	mg/L	<1.0	1.0	09/17/21 07:39	

METHOD BLANK: 2981687 Matrix: Water
Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/18/21 12:10	
Fluoride	mg/L	<0.20	0.20	09/18/21 12:10	
Sulfate	mg/L	<1.0	1.0	09/18/21 12:10	

LABORATORY CONTROL SAMPLE: 2980221

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.3	91	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 2981688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.2	104	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2980222 2980223

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60380071001 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	12.9	5	5	18.1	18.1	105	105	80-120	0	15		
Fluoride	mg/L	0.32	2.5	2.5	2.5	2.5	86	87	80-120	1	15		
Sulfate	mg/L	5.0	5	5	9.8	9.8	97	97	80-120	0	15		

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QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

MATRIX SPIKE SAMPLE:		2980224					
Parameter	Units	60380191002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	500	484	78	80-120	M1
Fluoride	mg/L	ND	250	218	87	80-120	
Sulfate	mg/L	1200	500	1680	96	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: MW-1-091321 **Lab ID: 60380371001** Collected: 09/13/21 14:45 Received: 09/14/21 16:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	-0.0692 ± 0.359 (0.831) C:NA T:93%	pCi/L	09/28/21 17:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.624 ± 0.373 (0.690) C:74% T:90%	pCi/L	09/27/21 11:12	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.624 ± 0.732 (1.52)	pCi/L	10/07/21 15:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-4-091321 Lab ID: 60380371002 Collected: 09/13/21 12:25 Received: 09/14/21 16:30 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.0863 ± 0.508 (1.13) C:NA T:76%	pCi/L	09/28/21 17:38	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	1.70 ± 0.545 (0.717) C:76% T:84%	pCi/L	09/27/21 11:12	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	1.70 ± 1.05 (1.85)	pCi/L	10/07/21 15:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-5-091321 Lab ID: 60380371003 Collected: 09/13/21 16:05 Received: 09/14/21 16:30 Matrix: Water PWS: Site ID: Sample Type:						
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	0.199 ± 0.391 (0.715) C:NA T:98%	pCi/L	09/28/21 17:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.12 ± 0.496 (0.833) C:77% T:82%	pCi/L	09/27/21 11:15	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.32 ± 0.887 (1.55)	pCi/L	10/07/21 15:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Sample: MW-6-091321 Lab ID: 60380371004 Collected: 09/13/21 14:35 Received: 09/14/21 16:30 Matrix: Water PWS: Site ID: Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.230 ± 0.351 (0.921) C:NA T:95%	pCi/L	09/28/21 17:38	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.206 ± 0.380 (0.833) C:77% T:83%	pCi/L	09/27/21 11:16	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.206 ± 0.731 (1.75)	pCi/L	10/07/21 15:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Sample: TEC-322LF-DUP-091321 **Lab ID:** 60380371005 Collected: 09/13/21 16:15 Received: 09/14/21 16:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	0.000 ± 0.440 (0.931) C:NA T:95%	pCi/L	09/28/21 17:38	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	1.15 ± 0.563 (1.01) C:76% T:77%	pCi/L	09/27/21 11:16	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	1.15 ± 1.00 (1.94)	pCi/L	10/07/21 15:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch: 465101

Analysis Method: EPA 904.0

QC Batch Method: EPA 904.0

Analysis Description: 904.0 Radium 228

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2245932

Matrix: Water

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.674 ± 0.351 (0.604) C:77% T:84%	pCi/L	09/27/21 11:12	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

QC Batch: 465100

Analysis Method: EPA 903.1

QC Batch Method: EPA 903.1

Analysis Description: 903.1 Radium-226

Laboratory: Pace Analytical Services - Greensburg

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

METHOD BLANK: 2245931

Matrix: Water

Associated Lab Samples: 60380371001, 60380371002, 60380371003, 60380371004, 60380371005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.107 ± 0.257 (0.642) C:NA T:94%	pCi/L	09/28/21 17:38	

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QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval).

Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60380371

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60380371001	MW-1-091321	EPA 200.7	744239	EPA 200.7	744443
60380371002	MW-4-091321	EPA 200.7	744239	EPA 200.7	744443
60380371003	MW-5-091321	EPA 200.7	744239	EPA 200.7	744443
60380371004	MW-6-091321	EPA 200.7	744239	EPA 200.7	744443
60380371005	TEC-322LF-DUP-091321	EPA 200.7	744239	EPA 200.7	744443
60380371001	MW-1-091321	EPA 200.8	744247	EPA 200.8	744527
60380371002	MW-4-091321	EPA 200.8	744247	EPA 200.8	744527
60380371003	MW-5-091321	EPA 200.8	744247	EPA 200.8	744527
60380371004	MW-6-091321	EPA 200.8	744247	EPA 200.8	744527
60380371005	TEC-322LF-DUP-091321	EPA 200.8	744247	EPA 200.8	744527
60380371001	MW-1-091321	EPA 245.1	743893	EPA 245.1	744035
60380371002	MW-4-091321	EPA 245.1	743893	EPA 245.1	744035
60380371003	MW-5-091321	EPA 245.1	743893	EPA 245.1	744035
60380371004	MW-6-091321	EPA 245.1	743893	EPA 245.1	744035
60380371005	TEC-322LF-DUP-091321	EPA 245.1	743893	EPA 245.1	744035
60380371001	MW-1-091321	EPA 903.1	465100		
60380371002	MW-4-091321	EPA 903.1	465100		
60380371003	MW-5-091321	EPA 903.1	465100		
60380371004	MW-6-091321	EPA 903.1	465100		
60380371005	TEC-322LF-DUP-091321	EPA 903.1	465100		
60380371001	MW-1-091321	EPA 904.0	465101		
60380371002	MW-4-091321	EPA 904.0	465101		
60380371003	MW-5-091321	EPA 904.0	465101		
60380371004	MW-6-091321	EPA 904.0	465101		
60380371005	TEC-322LF-DUP-091321	EPA 904.0	465101		
60380371001	MW-1-091321	Total Radium Calculation	467224		
60380371002	MW-4-091321	Total Radium Calculation	467224		
60380371003	MW-5-091321	Total Radium Calculation	467224		
60380371004	MW-6-091321	Total Radium Calculation	467224		
60380371005	TEC-322LF-DUP-091321	Total Radium Calculation	467224		
60380371001	MW-1-091321	SM 2540C	743948		
60380371002	MW-4-091321	SM 2540C	743948		
60380371003	MW-5-091321	SM 2540C	743948		
60380371004	MW-6-091321	SM 2540C	743948		
60380371005	TEC-322LF-DUP-091321	SM 2540C	743948		
60380371001	MW-1-091321	SM 4500-H+B	743958		
60380371002	MW-4-091321	SM 4500-H+B	743958		
60380371003	MW-5-091321	SM 4500-H+B	744237		
60380371004	MW-6-091321	SM 4500-H+B	743958		
60380371005	TEC-322LF-DUP-091321	SM 4500-H+B	743958		
60380371001	MW-1-091321	EPA 300.0	743926		
60380371002	MW-4-091321	EPA 300.0	743926		
60380371003	MW-5-091321	EPA 300.0	743926		
60380371004	MW-6-091321	EPA 300.0	743926		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR
Pace Project No.: 60380371

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60380371005	TEC-322LF-DUP-091321	EPA 300.0	743926		

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Sample Condition Upon Receipt

WO#: 60380371



M

Client Name: Energy KS Central Inc

Courier: FedEx UPS VIA Clay PEX ECI Pace Xroads Client Other

Tracking #: _____ Pace Shipping Label Used? Yes No

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No

Packing Material: Bubble Wrap Bubble Bags Foam None Other CPCL

Thermometer Used: T29V 3.5 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 4.4, 3.7 Corr. Factor -0.3 Corrected 4.1, 3.2

Date and initials of person examining contents: 4/1/17 MLK

Temperature should be above freezing to 6°C airmail

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WI</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions - VOA, Micro, O&G, KS TPH, OK-DRO) LOT# <u>W03173</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only) <input type="checkbox"/> Yes <input type="checkbox"/> No Potassium iodide test strip turns blue/purple? (Preserve) <input type="checkbox"/> Yes <input type="checkbox"/> No		
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Sample Container Count

SBS
DI
MeOH (only)
BK
Kit

Client: Energy VS Central
Site: _____

Profile # _____

Notes 20220128 = SI-38RAD + SI-38RAD02 = BP1N

COC Line Item	Matrix	R	VG9H	DG9H	DG9Q	VG9U	DG9U	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	JGFU	WGKU	ZPLC	DG9M	DG9B		
1																														
2																														
3																														
4																														
5																														
6																														
7																														
8																														
9																														
10																														
11																														
12																														

Container Codes

Glass			Plastic			Misc.	
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar	BP1C	1L NaOH plastic	J	Wipe/Swab
DG9H	40mL HCl amber vial	WGFU	4oz clear soil jar	BP1N	1L HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar	BP1S	1L H2SO4 plastic	ZPLC	Ziploc Bag
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide	BP1U	1L unpreserved plastic	AF	Air Filter
DG9S	40mL H2SO4 amber vial	AG0U	100mL unres amber glass	BP1Z	1L NaOH, Zn Acetate	C	Air Cassettes
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass	BP2C	500mL NaOH plastic	R	Terracore Kit
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass	BP2N	500mL HNO3 plastic	U	Summa Can
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass	BP2S	500mL H2SO4 plastic		
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass	BP2U	500mL unpreserved plastic		
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass	BP2Z	500mL NaOH, Zn Acetate		
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass	BP3C	250mL NaOH plastic		
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass	BP3F	250mL HNO3 plastic - field filtered	WT	Water
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass	BP3N	250mL HNO3 plastic	SL	Solid
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass	BP3U	250mL unpreserved plastic	NAL	Non-aqueous Liquid
		AG4U	125mL unpres amber glass	BP3S	250mL H2SO4 plastic	OL	OIL
		AG5U	100mL unpres amber glass	BP3Z	250mL NaOH, Zn Acetate	WP	Wipe
				BP4U	125mL unpreserved plastic	DW	Drinking Water
				BP4N	125mL HNO3 plastic		
				BP4S	125mL H2SO4 plastic		



Quality Control Sample Performance Assessment

Test: Ra-226
Analyst: SLC
Date: 9/23/2021
Batch ID: 62796
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	2245931
MB concentration:	-0.107
M/B Counting Uncertainty:	0.257
MB MDC:	0.642
MB Numerical Performance Indicator:	-0.82
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS62796	LCSD62796
Count Date:	9/28/2021	
Spike I.D.:	20-032	
Spike Concentration (pCi/mL):	32.170	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.661	
Target Conc. (pCi/L, g, F):	4.866	
Uncertainty (Calculated):	0.229	
Result (pCi/L, g, F):	4.970	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.127	
Numerical Performance Indicator:	0.18	
Percent Recovery:	102.15%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/13/2021	
Sample I.D.:	30441751001	
Sample MS I.D.:	30441751001MS	
Sample MSD I.D.:		
Spike I.D.:	20-032	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.170	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.655	
MS Target Conc. (pCi/L, g, F):	9.827	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.462	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.180	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.312	
Sample Matrix Spike Result:	9.201	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.425	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-1.032	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	91.80%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		LCSD (Y or N)?	N
Sample I.D.:	30440891002		
Duplicate Sample I.D.:	30440891002DUP		
Sample Result (pCi/L, g, F):	0.226		
Sample Result Counting Uncertainty (pCi/L, g, F):	0.391		
Sample Duplicate Result (pCi/L, g, F):	0.152		
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.421		
Are sample and/or duplicate results below RL?	See Below ##		
Duplicate Numerical Performance Indicator:	0.254		
Duplicate RPD:	39.43%		
Duplicate Status vs Numerical Indicator:	N/A		
Duplicate Status vs RPD:	Fail***		
% RPD Limit:	32%		

Matrix Spike/Matrix Spike Duplicate Sample Assessment		MS/MSD 1	MS/MSD 2
Sample I.D.:			
Sample MS I.D.:			
Sample MSD I.D.:			
Sample Matrix Spike Result:			
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):			
Sample Matrix Spike Duplicate Result:			
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):			
Duplicate Numerical Performance Indicator:			
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:			
MS/MSD Duplicate Status vs Numerical Indicator:			
MS/MSD Duplicate Status vs RPD:			
% RPD Limit:			

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

***Batch must be re-prepped due to unacceptable precision.

*results = MSC, N/A
Du 10/20/21*



Quality Control Sample Performance Assessment

Test: Ra-228
Analyst: JC2
Date: 9/24/2021
Worklist: 62797
Matrix: WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment		
MB Sample ID	2245932	
MB concentration:	0.674	
M/B 2 Sigma CSU:	0.351	
MB MDC:	0.604	
MB Numerical Performance Indicator:	3.76	
MB Status vs Numerical Indicator:	Fail*	
MB Status vs. MDC:	See Comment*	

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS62797	LCSD62797
Count Date:	9/27/2021	
Spike I.D.:	21-029	
Decay Corrected Spike Concentration (pCi/mL):	38.061	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.809	
Target Conc. (pCi/L, g, F):	4.706	
Uncertainty (Calculated):	0.231	
Result (pCi/L, g, F):	3.854	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.927	
Numerical Performance Indicator:	-1.75	
Percent Recovery:	81.89%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/14/2021	
Sample I.D.	92561269001	
Sample MS I.D.	92561269001MS	
Sample MSD I.D.		
Spike I.D.:	21-029	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	38.227	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.806	
MS Target Conc. (pCi/L, g, F):	9.486	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.465	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.308	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.351	
Sample Matrix Spike Result:	9.101	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.844	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.703	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	92.69%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	30440925001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.:	30440925001DUP	
Sample Result (pCi/L, g, F):	0.429	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.360	
Sample Duplicate Result (pCi/L, g, F):	0.124	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.305	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	1.266	30440925001
Duplicate RPD:	110.30%	30440925001DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:		
MS/MSD Duplicate Status vs Numerical Indicator:		
MS/MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

*The method blank result is below the reporting limit for this analysis and is acceptable.

9/24/2021

ATTACHMENT 2

Statistical Analyses

ATTACHMENT 2-1

September 2020 Semi-Annual Sampling Event Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

TECHNICAL MEMORANDUM

January 15, 2021
File No. 129778-039

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: September 2020 Semi-Annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Completed January 15, 2021
Tecumseh Energy Center
322 Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **September 2020** semi-annual assessment monitoring groundwater sampling event for the Tecumseh Energy Center (TEC) 322 Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on **September 16, 2020**, with laboratory results received and validated on **October 26, 2020**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant levels (SSL) above the Groundwater Protection Standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, levels provided in 40 CFR § 257.95(h)(2) (from regional screening levels), or background concentrations.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on January 14, 2019. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The

most recent groundwater sampling event from each compliance well was compared to the corresponding background UTL to determine if an SSI existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event using parametric TLs. If an Appendix IV constituent concentration from the **September 2020** sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if an SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (MW-4) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*,

March 2009, background concentrations were updated based on statistical evaluation of analytical results collected through **March 2020** for all constituents except molybdenum, which was updated through **September 2020**.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the **September 2020** semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent an SSI. A sample concentration greater than the GWPS is considered to represent an SSL. The results of the groundwater assessment monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in September 2020, no SSLs above GWPS occurred at the TEC 322 Landfill.**

Tables:

Table I – Summary of Semi-Annual Assessment Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2020 SAMPLING EVENT
TECUMSEH ENERGY CENTER
322 LANDFILL

Location Id	Frequency of Detection	Percent Non-Detects	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL § 257.95(h)(2)*	Report Result Unit	Detection Exceedances (Y/N)	MCL Comparison		Outlier Presence	Outlier Removed	Trend	Distribution Well*	Inter-well Analysis			Groundwater Protection Standard		
										Number of Detection Exceedances	Number of Non-Detection Exceedances					September 2020 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) ¹	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well
CCR Appendix-IV: Barium, Total (mg/L)																					
MW-4 (upgradient)	16/16	0%	0.14	0.0001449	0.01204	0.1062	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.11	Y	0.137		2.0	
MW-1	16/16	0%	0.2	0.002972	0.05451	0.4255	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.073	Y		N		N
MW-5	16/16	0%	0.04	0.00004206	0.006486	0.2601	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.021	Y		N		N
MW-6	16/16	0%	0.041	0.00005612	0.007491	0.3311	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.016	Y		N		N
CCR Appendix-IV: Cobalt, Total (mg/L)																					
MW-4 (upgradient)	0/16	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001		0.006	
MW-1	12/16	25%	0.0086	0.000004176	0.002044	0.9211	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0014	Y		Y		N
MW-5	16/16	0%	0.0021	1.047E-07	0.0003235	0.1823	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0019	Y		Y		N
MW-6	16/16	0%	0.0033	3.265E-07	0.0005714	0.2419	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0025	Y		Y		N
CCR Appendix-IV: Fluoride (mg/L)																					
MW-4 (upgradient)	13/17	24%	0.35	0.001453	0.03812	0.16	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.28	Y	0.350		4.0	
MW-1	17/17	0%	0.46	0.001831	0.04279	0.1158	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.39	Y		Y		N
MW-5	14/17	18%	0.42	0.003697	0.0608	0.2118	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.32	Y		N		N
MW-6	17/17	0%	0.5	0.004853	0.06966	0.2	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.38	Y		Y		N
CCR Appendix-IV: Lithium, Total (mg/L)																					
MW-4 (upgradient)	0/16	100%		2.891E-20	1.7E-10	0.000000017	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040	
MW-1	1/16	94%	0.01	2.891E-20	1.7E-10	0.000000017	0.040	mg/L	N	0	0	NA	NA	NA	Non-parametric	0.010	N		N		N
MW-5	12/16	25%	0.024	0.00002313	0.00481	0.3154	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.013	Y		Y		N
MW-6	11/16	31%	0.022	0.00001865	0.004319	0.3112	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.014	Y		Y		N
CCR Appendix-IV: Molybdenum, Total (mg/L)																					
MW-4 (upgradient)	0/13	100%		0	0	0	0.100	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001 ²		0.100	
MW-1	3/13	77%	0.0011	1.923E-09	0.00004385	0.04286	0.100	mg/L	N	0	0	No	No	NA	Non-parametric	0.0010	N		N		N
MW-5	1/13	92%	0.001	0	0	0	0.100	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N		N		N
MW-6	6/13	54%	0.0019	6.756E-08	0.0002599	0.2283	0.100	mg/L	N	0	0	No	No	Stable	Non-parametric	0.0010	N		N		N

Notes and Abbreviations:

¹ Based on background data collected from 08/17/2016 through 03/08/2020, unless otherwise noted.

² Based on background data collected from 08/17/2016 through 09/16/2020.

* Values obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) § 257.95(h)(2) on December 23, 2020.

CCR = coal combustion residuals

GWPS = Groundwater Protection Standard

MCL = maximum contaminant level

mg/L = milligrams per Liter

NA = not analyzed

pCi/L = picoCuries per Liter

SSI = statistically significant increase

SSL = statistically significant level

UTL = upper tolerance limits

ATTACHMENT 2-2

March 2021 Semi-Annual Sampling Event Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

TECHNICAL MEMORANDUM

July 15, 2021
File No. 129778-039

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: March 2021 Semi-Annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Completed July 15, 2021
Tecumseh Energy Center
322 Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **March 2021** semi-annual assessment monitoring groundwater sampling event for the Tecumseh Energy Center (TEC) 322 Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on **March 8, 2021**, with laboratory results received and validated on **April 16, 2021**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant levels (SSL) above the Groundwater Protection Standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level, levels provided in 40 CFR § 257.95(h)(2) (from regional screening levels), or background concentrations.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). The statistical method used for these evaluations, tolerance limit (TL), was certified by Haley & Aldrich, Inc. on January 14, 2019. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTL), and a minimum 95 percent confidence coefficient and 95 percent coverage. The

most recent groundwater sampling event from each compliance well was compared to the corresponding background UTL to determine if a SSI existed.

STATISTICAL EVALUATION

An interwell evaluation was used to determine SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using the background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event using parametric TLs. If an Appendix IV constituent concentration from the **March 2021** sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if a SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location (MW-4) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009*, background concentrations were updated based on statistical evaluation of analytical results collected through **March 2020** for all constituents except molybdenum, which was updated through **September 2020**.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the **March 2021** semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent a SSI. A sample concentration greater than the GWPS is considered to represent a SSL. The results of the groundwater assessment monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in March 2021, no SSLs above GWPS occurred at the TEC 322 Landfill.**

Tables:

Table I – Summary of Semi-Annual Assessment Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2021 SAMPLING EVENT
TECUMSEH ENERGY CENTER
322 LANDFILL

Location Id	Frequency of Detection	Percent Non-Detects	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL § 257.95(h)(2)*	Report Result Unit	Detection Exceedances (Y/N)	MCL Comparison		Outlier Presence	Outlier Removed	Trend	Distribution Well*	Inter-well Analysis			Groundwater Protection Standard		
										Number of Detection Exceedances	Number of Non-Detection Exceedances					March 2021 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) ¹	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well
CCR Appendix-IV: Barium, Total (mg/L)																					
MW-4 (upgradient)	17/17	0%	0.14	0.0001557	0.01248	0.1111	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.095	Y	0.137		2.0	
MW-1	17/17	0%	0.2	0.002867	0.05354	0.4252	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.091	Y		N		N
MW-5	17/17	0%	0.04	0.00004314	0.006568	0.2684	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.017	Y		N		N
MW-6	17/17	0%	0.041	0.00005387	0.007339	0.3283	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.018	Y		N		N
CCR Appendix-IV: Cobalt, Total (mg/L)																					
MW-4 (upgradient)	0/17	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001		0.006	
MW-1	12/17	29%	0.0086	0.000004003	0.002001	0.9318	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0010	N		N		N
MW-5	17/17	0%	0.0021	1.026E-07	0.0003203	0.1821	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0015	Y		Y		N
MW-6	17/17	0%	0.0033	3.063E-07	0.0005535	0.2346	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0023	Y		Y		N
CCR Appendix-IV: Fluoride (mg/L)																					
MW-4 (upgradient)	13/18	28%	0.35	0.001449	0.03806	0.1612	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.20	N	0.350		4.0	
MW-1	17/18	6%	0.46	0.003318	0.0576	0.16	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.20	N		N		N
MW-5	14/18	22%	0.42	0.003901	0.06246	0.2213	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.20	N		N		N
MW-6	17/18	6%	0.5	0.005788	0.07608	0.2238	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.20	N		N		N
CCR Appendix-IV: Lithium, Total (mg/L)																					
MW-4 (upgradient)	0/17	100%		1.355E-20	1.164E-10	1.164E-08	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040	
MW-1	1/17	94%	0.01	1.355E-20	1.164E-10	1.164E-08	0.040	mg/L	N	0	0	NA	NA	NA	Non-parametric	0.010	N		N		N
MW-5	13/17	24%	0.024	0.00002331	0.004828	0.3231	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	Y		N		N
MW-6	12/17	29%	0.022	0.00001797	0.004239	0.3093	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.011	Y		Y		N
CCR Appendix-IV: Molybdenum, Total (mg/L)																					
MW-4 (upgradient)	0/14	100%		0	0	0	0.100	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001 ²		0.100	
MW-1	3/14	79%	0.0011	1.813E-09	0.00004258	0.04169	0.100	mg/L	N	0	0	No	No	NA	Non-parametric	0.0010	N		N		N
MW-5	1/14	93%	0.001	0	0	0	0.100	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N		N		N
MW-6	6/14	57%	0.0019	6.374E-08	0.0002525	0.2237	0.100	mg/L	N	0	0	No	No	Stable	Non-parametric	0.0010	N		N		N

Notes and Abbreviations:

¹ Based on background data collected from 08/17/2016 through 03/08/2020, unless otherwise noted.

² Based on background data collected from 08/17/2016 through 09/16/2020.

* Values obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) § 257.95(h)(2).

CCR = coal combustion residuals

GWPS = Groundwater Protection Standard

MCL = maximum contaminant level

mg/L = milligrams per Liter

NA = not analyzed

pCi/L = picoCuries per Liter

SSI = statistically significant increase

SSL = statistically significant level

UTL = upper tolerance limits