

2020 ANNUAL GROUNDWATER MONITORING  
AND CORRECTIVE ACTION REPORT  
322 LANDFILL  
TECUMSEH ENERGY CENTER  
TECUMSEH, KANSAS

by Haley & Aldrich, Inc.  
Cleveland, Ohio

for Evergy Kansas Central, Inc.  
Topeka, Kansas

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Revision No.	Date	Notes
0	2/1/2021	Original
1	3/3/2021	Revised to include groundwater potentiometric contour maps for 2020

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**2020 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 (2020) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2020 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 2020 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, 2020), 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, 2020), 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 2020.

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 2020.

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 2020 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 2020 for this unit. The 322 Landfill remained in assessment monitoring during 2020.

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 2020; 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 2020 for this unit. The 322 Landfill remained in assessment monitoring during 2020.

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 2020.

## 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 2020.

#### 2.2.1 Status of the Groundwater Monitoring Program

The 322 Landfill remained in the assessment monitoring program during 2020.

#### 2.2.2 Key Actions Completed

The 2019 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2020. Statistical evaluation was completed in January 2020 on analytical data from the September 2019 semi-annual assessment monitoring sampling event.

## 2020 Annual Groundwater Monitoring and Corrective Action Report

A semi-annual assessment monitoring sampling event was completed in March 2020 for detected appendix IV constituents identified from the June 2019 annual assessment monitoring sampling event. Statistical evaluation was completed in July 2020 on analytical data from the March 2020 semi-annual assessment monitoring sampling event.

An annual assessment monitoring sampling event was completed in June 2020 to identify detected appendix IV constituents for subsequent semi-annual sampling events in September 2020 and planned for March 2021. Semi-annual assessment monitoring sampling was completed in September 2020 for detected appendix IV constituents identified during the June 2020 annual monitoring event. Statistical evaluation of the results from the September 2020 semi-annual assessment monitoring sampling event are due to be completed in January 2021 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. The calcium result was reanalyzed for MW-5 for the March 2020 semi-annual assessment monitoring sampling event due to a suspected erroneous analytical result. This was the only issue that needed to be addressed at the 322 Landfill in 2020.

### 2.2.4 Actions to Resolve Problems

The resolution to problems encountered in 2020 included additional laboratory analyses as described above. The analytical results were revised accordingly. No other problems were encountered at the 322 Landfill in 2020; therefore, no actions to resolve problems were required.

### 2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2021 include the completion of the 2020 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual assessment monitoring analytical data collected in September 2020, 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 2020.

**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 2020. 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 2020 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 FAL remained in assessment monitoring during 2020.

**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 2020.

**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).***

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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 2020. 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 Tables II and III. The background concentrations and groundwater protection standards provided in Tables II and III were utilized for the statistical evaluations completed in 2020 for September 2019 and March 2020 semi-annual assessment monitoring sampling events, respectively.

### 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 2020. The 322 Landfill remained in assessment monitoring during 2020.

### 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***

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***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 2020; therefore, no demonstration or certification is applicable for this unit.

## **TABLES**

**TABLE I**  
**SUMMARY OF ANALYTICAL RESULTS - 2020 ASSESSMENT MONITORING**

EVERGY KANSAS CENTRAL, INC.  
 TECUMSEH ENERGY CENTER  
 322 ASH LANDFILL  
 TECUMSEH, KANSAS

Location	Upgradient			Downgradient							Downgradient				
	MW-4			MW-1				MW-5			MW-6				
	936.48			904.65				916.18			911.28				
Measure Point (TOC)	MW-4-030820	MW-04-060820	MW-04-091620	MW-01-030920	MW-01-060820	MW-01-091620	DUP-TEC-091620	MW-5-030920	MW-05-060820	MW-05-091620	MW-6-030820	DUP-030820	MW-06-060820	DUP-322 LF-060820	MW-06-091620
Sample Name	MW-4-030820	MW-04-060820	MW-04-091620	MW-01-030920	MW-01-060820	MW-01-091620	DUP-TEC-091620	MW-5-030920	MW-05-060820	MW-05-091620	MW-6-030820	DUP-030820	MW-06-060820	DUP-322 LF-060820	MW-06-091620
Sample Date	03/08/2020	06/08/2020	9/16/2020	03/09/2020	06/08/2020	9/16/2020	9/16/2020	03/09/2020	06/08/2020	9/16/2020	03/08/2020	03/08/2020	06/08/2020	06/08/2020	9/16/2020
Final Lab Report Date	3/18/2020	6/18/2020	9/28/2020	3/18/2020	6/18/2020	9/28/2020	9/28/2020	3/18/2020	6/18/2020	9/28/2020	3/18/2020	3/18/2020	6/18/2020	6/18/2020	9/28/2020
Final Lab Report Revision Date	3/26/2020	N/A	N/A	3/26/2020	N/A	N/A	N/A	3/26/2020	N/A	N/A	3/26/2020	3/26/2020	3/26/2020	N/A	N/A
Final Radiation Lab Report Date	3/31/2020	6/30/2020	N/A	3/31/2020	6/30/2020	N/A	N/A	3/31/2020	6/30/2020	N/A	3/31/2020	3/31/2020	6/30/2020	6/30/2020	N/A
Final Radiation Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab Data Reviewed and Accepted	4/17/2020	7/15/2020	10/26/2020	4/17/2020	7/15/2020	10/26/2020	10/26/2020	4/17/2020	7/15/2020	10/26/2020	4/17/2020	4/17/2020	7/15/2020	7/15/2020	10/26/2020
Depth to Water (ft btoc)	3.92	2.40	4.27	3.86	4.12	4.18	-	5.46	5.45	5.68	8.25	8.25	8.32	-	8.39
Temperature (Deg C)	7.36	18.12	17.60	6.04	18.18	16.53	-	6.52	18.35	20.39	9.33	-	20.51	-	18.13
Conductivity, Field (µS/cm)	1304	1630	1640	907	1120	1260	-	1624	1880	2050	1544	-	1890	-	1890
Turbidity, Field (NTU)	3.66	0.0	0.0	7.96	4.8	0.0	-	0.82	0.0	0.0	7.07	-	0.0	-	0.0
Boron, Total (mg/L)	< 0.10	-	< 0.10	<b>0.59</b>	-	<b>0.14</b>	<b>0.15</b>	<b>0.92</b>	-	<b>1.7</b>	<b>0.65</b>	<b>0.67</b>	-	-	<b>0.75</b>
Calcium, Total (mg/L)	<b>186</b>	-	<b>172</b>	<b>141</b>	-	<b>155</b>	<b>157</b>	<b>322</b>	-	<b>355</b>	<b>296</b>	<b>296</b>	-	-	<b>280</b>
Chloride (mg/L)	<b>260</b>	-	<b>258</b>	<b>19.5</b>	-	<b>49.5</b>	<b>49.2</b>	<b>31.3</b>	-	<b>26.4</b>	<b>60.2</b>	<b>58.3</b>	-	-	<b>70.4</b>
Fluoride (mg/L)	< 0.20	<b>0.28</b>	<b>0.28</b>	<b>0.33</b>	<b>0.43</b>	<b>0.39</b>	<b>0.39</b>	< 0.20	<b>0.29</b>	<b>0.32</b>	<b>0.25</b>	<b>0.24</b>	<b>0.37</b>	<b>0.37</b>	<b>0.38</b>
Sulfate (mg/L)	<b>162</b>	-	<b>165</b>	<b>365</b>	-	<b>351</b>	<b>352</b>	<b>860</b>	-	<b>1000</b>	<b>828</b>	<b>848</b>	-	-	<b>735</b>
pH (lab) (su)	<b>7.4</b>	-	<b>7.0</b>	<b>7</b>	-	<b>6.9</b>	<b>6.9</b>	<b>6.9</b>	-	<b>6.8</b>	<b>7.3</b>	<b>7.6</b>	-	-	<b>6.9</b>
TDS (mg/L)	<b>1040</b>	-	<b>1110</b>	<b>871</b>	-	<b>901</b>	<b>873</b>	<b>1710</b>	-	<b>1810</b>	<b>1580</b>	<b>1570</b>	-	-	<b>1530</b>
Antimony, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Arsenic, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Barium, Total (mg/L)	<b>0.11</b>	<b>0.10</b>	<b>0.11</b>	<b>0.12</b>	<b>0.12</b>	<b>0.073</b>	<b>0.075</b>	<b>0.016</b>	<b>0.020</b>	<b>0.021</b>	<b>0.021</b>	<b>0.018</b>	<b>0.017</b>	<b>0.017</b>	<b>0.016</b>
Beryllium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Cadmium, Total (mg/L)	-	< 0.00050	-	-	< 0.00050	-	-	-	< 0.00050	-	-	-	< 0.00050	< 0.00050	-
Chromium, Total (mg/L)	-	< 0.0050	-	-	< 0.0050	-	-	-	< 0.0050	-	-	-	< 0.0050	<b>0.049</b>	-
Cobalt, Total (mg/L)	< 0.0010	< 0.0010	< 0.0010	<b>0.0011</b>	<b>0.0018</b>	<b>0.0014</b>	<b>0.0015</b>	<b>0.0013</b>	<b>0.0019</b>	<b>0.0019</b>	<b>0.0026</b>	<b>0.0028</b>	<b>0.0026</b>	<b>0.0026</b>	<b>0.0025</b>
Lead, Total (mg/L)	-	< 0.010	-	-	< 0.010	-	-	-	< 0.010	-	-	-	< 0.010	< 0.010	-
Lithium, Total (mg/L)	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	<b>0.013</b>	<b>0.011</b>	<b>0.013</b>	< 0.010	<b>0.011</b>	< 0.010	< 0.010	<b>0.014</b>
Molybdenum, Total (mg/L)	-	< 0.20	< 0.0010	-	< 0.20	< 0.010	< 0.010	-	< 0.20	< 0.0010	-	-	< 0.20	< 0.20	< 0.0010
Selenium, Total (mg/L)	-	< 0.0010	-	-	<b>0.0011</b>	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Thallium, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Mercury, Total (mg/L)	-	< 0.0010	-	-	< 0.0010	-	-	-	< 0.0010	-	-	-	< 0.0010	< 0.0010	-
Radium-226 & 228 (pCi/L)	<b>1.41 ± 0.544 (0.720)</b>	0.949 ± 0.832 (1.25)	-	0.375 ± 0.495 (0.791)	1.03 ± 0.772 (1.09)	-	-	<b>0.878 ± 0.481 (0.681)</b>	0.837 ± 0.842 (1.19)	-	<b>1.25 ± 0.549 (0.681)</b>	<b>1.09 ± 0.529 (0.823)</b>	0.385 ± 0.795 (1.37)	0.472 ± 0.588 (0.990)	-

**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 = picroCuries per liter  
 su = standard unit  
 TDS = total dissolved solids  
 TOC = top of casing

**TABLE II**  
**ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS**  
 SEPTEMBER 2019 SAMPLING EVENT  
 TECUMSEH ENERGY CENTER  
 322 LANDFILL  
 TECUMSEH, KANSAS

Well #	Background Value <sup>1</sup>	GWPS
<b>CCR Appendix-IV Barium, Total (mg/L)</b>		
MW-4 (upgradient)	0.140	NA
MW-1		2
MW-5		2
MW-6		2
<b>CCR Appendix-IV Cobalt, Total (mg/L)</b>		
MW-4 (upgradient)	0.001	NA
MW-1		0.006
MW-5		0.006
MW-6		0.006
<b>CCR Appendix-IV Fluoride, Total (mg/L)</b>		
MW-4 (upgradient)	0.350	NA
MW-1		4.0
MW-5		4.0
MW-6		4.0
<b>CCR Appendix-IV Lithium, Total (mg/L)</b>		
MW-4 (upgradient)	0.010	NA
MW-1		0.040
MW-5		0.040
MW-6		0.040
<b>CCR Appendix-IV Radium-226 &amp; 228 Combined (pCi/L)</b>		
MW-4 (upgradient)	3.1	NA
MW-1		5
MW-5		5
MW-6		5

**Notes and Abbreviations:**

<sup>1</sup> Based on background data collected through September 2018.

CCR = Coal Combustion Residuals

GWPS = Groundwater Protection Standard

mg/L = milligrams per Liter

NA = Not Applicable

pCi/L = picoCuries per Liter

**TABLE III**

**ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS**

MARCH 2020 SAMPLING EVENT

TECUMSEH ENERGY CENTER

322 LANDFILL

TECUMSEH, KANSAS

Well Number	Background Value <sup>1</sup>	GWPS
<b>CCR Appendix-IV Barium, Total (mg/L)</b>		
MW-4 (upgradient)	0.137	NA
MW-1		2
MW-5		2
MW-6		2
<b>CCR Appendix-IV Cobalt, Total (mg/L)</b>		
MW-4 (upgradient)	0.001	NA
MW-1		0.006
MW-5		0.006
MW-6		0.006
<b>CCR Appendix-IV Fluoride, Total (mg/L)</b>		
MW-4 (upgradient)	0.350	NA
MW-1		4.0
MW-5		4.0
MW-6		4.0
<b>CCR Appendix-IV Lithium, Total (mg/L)</b>		
MW-4 (upgradient)	0.010	NA
MW-1		0.040
MW-5		0.040
MW-6		0.040
<b>CCR Appendix-IV Radium-226 &amp; 228 Combined (pCi/L)</b>		
MW-4 (upgradient)	2.825	NA
MW-1		5
MW-5		5
MW-6		5

**Notes and Abbreviations:**

<sup>1</sup> Based on background data collected through March 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**



MARCH 2021



**LEGEND**

- MW-1 900.47 WELL NAME AND GROUNDWATER ELEVATION (MARCH 8, 2020)
-  MONITORING WELL
-  PIEZOMETER OBSERVATION ONLY
-  GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
-  ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
-  GROUNDWATER FLOW DIRECTION
-  322 LANDFILL

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 08 MARCH 2020.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



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

322 LANDFILL  
GROUNDWATER POTENTIOMETRIC  
ELEVATION CONTOUR MAP  
MARCH 08, 2020



MARCH 2021

FIGURE 2



**LEGEND**

- MW-1  
900.47 WELL NAME AND GROUNDWATER ELEVATION (JUNE 8, 2020)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 322 LANDFILL

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 08 JUNE 2020.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



**HALEY  
ALDRICH**

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

**322 LANDFILL  
GROUNDWATER POTENTIOMETRIC  
ELEVATION CONTOUR MAP  
JUNE 08, 2020**

**evergy**

MARCH 2021

FIGURE 3



**LEGEND**

- MW-1 900.47** WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 16, 2020)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- 322 LANDFILL

**NOTES**

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 17 SEPTEMBER 2020.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, 7 NOVEMBER 2019



**HALEY ALDRICH**

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

**322 LANDFILL  
GROUNDWATER POTENTIOMETRIC  
ELEVATION CONTOUR MAP  
SEPTEMBER 16, 2020**

**evergy**

MARCH 2021

FIGURE 4



March 18, 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: 2020 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 Tecumseh Energy Center (TEC) is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) §257.90 through §257.98 (Rule). An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting the activities completed in 2020 for the 322 Landfill was completed and placed in the facility's operating record on January 31, 2021, as required by the Rule. The Annual GWMCA Report contained the specific information listed in 40 CFR §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 40 CFR §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 CFR 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 40 CFR §257.90(e) 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 applicable laboratory analysis reports for 2020 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2020 are included in Attachment 2 of this addendum. Revision 1 of the 2020 GWMCA Report does include a "Groundwater Potentiometric Elevation Contour Map" for each of the 2020 sampling events as

Figures 2, 3, and 4. In those figures, the measured groundwater elevations for each well are listed. Those maps have been duplicated in this addendum as Attachment 3 and were modified to include the calculated groundwater flow rate and direction.

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, June, and September 2020 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 2020. Statistical analyses completed in 2020 included:
  - January 2020 statistical analyses for data obtained in the September 2019 sampling event; and
  - July 2020 statistical analyses for data obtained in the March 2020 sampling event.
- Attachment 3 – Revised Groundwater Potentiometric Maps: Includes the measured groundwater elevations at each well and the generalized groundwater flow direction and calculated flow rate. Maps for the sampling events completed in March, June, and September 2020 are provided.

**ATTACHMENT 1**

**Laboratory Analytical Reports**

**ATTACHMENT 1-1**

**March 2020 Sampling Event Laboratory Analytical Report**

March 31, 2020

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

RE: Project: TEC 322 Landfill CCR  
Pace Project No.: 60331443

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on March 10, 2020. 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.  
Melanie Satanek, Haley & Aldrich, Inc.  
Danielle Zinmaster, Haley & Aldrich



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

---

### **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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60331443001	MW-4-030820	Water	03/08/20 14:30	03/10/20 09:20
60331443002	MW-6-030820	Water	03/08/20 16:10	03/10/20 09:20
60331443003	DUP-030820	Water	03/08/20 16:20	03/10/20 09:20
60331443004	MW-01-030920	Water	03/09/20 08:20	03/10/20 09:20
60331443005	MW-5-030920	Water	03/09/20 10:10	03/10/20 09:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60331443001	MW-4-030820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60331443002	MW-6-030820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60331443003	DUP-030820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60331443004	MW-01-030920	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60331443005	MW-5-030920	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	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.: 60331443

---

**Method:** EPA 903.1

**Description:** 903.1 Radium 226

**Client:** Evergy Kansas Central, Inc.

**Date:** March 31, 2020

**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.: 60331443

---

**Method:** EPA 904.0

**Description:** 904.0 Radium 228

**Client:** Evergy Kansas Central, Inc.

**Date:** March 31, 2020

**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:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

---

**Method:** Total Radium Calculation

**Description:** Total Radium 228+226

**Client:** Evergy Kansas Central, Inc.

**Date:** March 31, 2020

**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.: 60331443

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-4-030820</b> <b>Lab ID: 60331443001</b> Collected: 03/08/20 14:30      Received: 03/10/20 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	<b>0.260 ± 0.272 (0.383)</b> <b>C:NA T:95%</b>	pCi/L	03/27/20 13:35	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>1.15 ± 0.471 (0.720)</b> <b>C:77% T:79%</b>	pCi/L	03/27/20 14:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>1.41 ± 0.544 (0.720)</b>	pCi/L	03/30/20 14:40	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

**Sample: MW-6-030820**      **Lab ID: 60331443002**      Collected: 03/08/20 16:10      Received: 03/10/20 09:20      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	<b>0.528 ± 0.392 (0.490)</b> <b>C:NA T:94%</b>	pCi/L	03/27/20 13:35	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.719 ± 0.385 (0.681)</b> <b>C:76% T:92%</b>	pCi/L	03/27/20 14:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>1.25 ± 0.549 (0.681)</b>	pCi/L	03/30/20 14:40	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: DUP-030820</b> <b>Lab ID: 60331443003</b> Collected: 03/08/20 16:20      Received: 03/10/20 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	<b>0.157 ± 0.239 (0.142)</b> <b>C:NA T:102%</b>	pCi/L	03/27/20 13:50	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.935 ± 0.472 (0.823)</b> <b>C:73% T:82%</b>	pCi/L	03/27/20 14:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>1.09 ± 0.529 (0.823)</b>	pCi/L	03/30/20 14:40	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

**Sample: MW-01-030920**      **Lab ID: 60331443004**      Collected: 03/09/20 08:20      Received: 03/10/20 09:20      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	<b>0.000 ± 0.313 (0.702)</b> <b>C:NA T:84%</b>	pCi/L	03/27/20 13:50	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.375 ± 0.383 (0.791)</b> <b>C:75% T:84%</b>	pCi/L	03/27/20 14:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>0.375 ± 0.495 (0.791)</b>	pCi/L	03/30/20 14:40	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-5-030920</b> <b>Lab ID: 60331443005</b> Collected: 03/09/20 10:10      Received: 03/10/20 09:20      Matrix: Water PWS:      Site ID:      Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	<b>0.000 ± 0.245 (0.549)</b> <b>C:NA T:97%</b>	pCi/L	03/27/20 13:50	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.878 ± 0.414 (0.681)</b> <b>C:75% T:84%</b>	pCi/L	03/27/20 14:55	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>0.878 ± 0.481 (0.681)</b>	pCi/L	03/30/20 14:40	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

QC Batch: 388327

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: 60331443001, 60331443002, 60331443003, 60331443004, 60331443005

METHOD BLANK: 1881017

Matrix: Water

Associated Lab Samples: 60331443001, 60331443002, 60331443003, 60331443004, 60331443005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.150 ± 0.257 (0.561) C:80% T:88%	pCi/L	03/27/20 14:54	

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.

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

QC Batch: 388325

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: 60331443001, 60331443002, 60331443003, 60331443004, 60331443005

METHOD BLANK: 1881013

Matrix: Water

Associated Lab Samples: 60331443001, 60331443002, 60331443003, 60331443004, 60331443005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.198 ± 0.206 (0.557) C:NA T:99%	pCi/L	03/27/20 13:21	

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.

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## QUALIFIERS

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

---

### 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.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 Landfill CCR

Pace Project No.: 60331443

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60331443001	MW-4-030820	EPA 903.1	388325		
60331443002	MW-6-030820	EPA 903.1	388325		
60331443003	DUP-030820	EPA 903.1	388325		
60331443004	MW-01-030920	EPA 903.1	388325		
60331443005	MW-5-030920	EPA 903.1	388325		
60331443001	MW-4-030820	EPA 904.0	388327		
60331443002	MW-6-030820	EPA 904.0	388327		
60331443003	DUP-030820	EPA 904.0	388327		
60331443004	MW-01-030920	EPA 904.0	388327		
60331443005	MW-5-030920	EPA 904.0	388327		
60331443001	MW-4-030820	Total Radium Calculation	390340		
60331443002	MW-6-030820	Total Radium Calculation	390340		
60331443003	DUP-030820	Total Radium Calculation	390340		
60331443004	MW-01-030920	Total Radium Calculation	390340		
60331443005	MW-5-030920	Total Radium Calculation	390340		

### REPORT OF LABORATORY ANALYSIS

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Pittsburgh Lab Sample Condition Upon Receipt



Client Name: Pace KS- Energy Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1505 8760 5013

Label _____
LIMS Login _____

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

pH paper Lot# <u>1003191</u>	Date and Initial of person examining contents: <u>WJ 3/10/2000</u>
------------------------------	--

Comments:

	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/			4.
Sample Labels match COC: -Includes date/time/ID Matrix: <u>WT</u>	/			5.
Samples Arrived within Hold Time:	/			6.
Short Hold Time Analysis (<72hr remaining):	/			7.
Rush Turn Around Time Requested:	/			8.
Sufficient Volume:	/			9.
Correct Containers Used: -Pace Containers Used:	/			10.
Containers Intact:	/			11.
Orthophosphate field filtered			/	12.
Hex Cr Aqueous sample field filtered			/	13.
Organic Samples checked for dechlorination:			/	14.
Filtered volume received for Dissolved tests			/	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	/			16.
All containers meet method preservation requirements.	/			Initial when completed <u>WJ</u> Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):		/		17.
Trip Blank Present:		/		18.
Trip Blank Custody Seals Present			/	
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>WJ</u> Date: <u>3/10/2000</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

Comments/ Resolution: Need to send

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.

# Quality Control Sample Performance Assessment



Analyst: **Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-226  
Analyst: MK1  
Date: 3/18/2020  
Batch ID: 52927  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1881013
MB concentration:	-0.198
M/B Counting Uncertainty:	0.205
MB MDC:	0.557
MB Numerical Performance Indicator:	-1.89
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCS (Y or N)?	N
LCS52927	LCS52927
Count Date:	3/27/2020
Spike ID:	18-039
Spike Concentration (pCi/mL):	31.432
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.653
Target Conc. (pCi/L, g, F):	4.813
Uncertainty (Calculated):	0.226
Result (pCi/L, g, F):	5.990
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.018
Numerical Performance Indicator:	2.21
Percent Recovery:	124.47%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass
Upper % Recovery Limits:	135%
Lower % Recovery Limits:	73%

Duplicate Sample Assessment	
Sample ID:	30354838001
Duplicate Sample ID:	30354838001DUP
Sample Result (pCi/L, g, F):	1.062
Sample Duplicate Result (pCi/L, g, F):	0.510
Sample Duplicate Result (pCi/L, g, F):	0.997
Sample Duplicate Result (pCi/L, g, F):	0.458
Are sample and/or duplicate results below RL?	See Below #
Duplicate Numerical Performance Indicator:	0.786
Duplicate RPD:	6.30%
Duplicate Status vs Numerical Indicator:	N/A
Duplicate Status vs RPD:	Pass
% RPD Limit:	32%

Enter Duplicate sample IDs if other than LCS/LCSD in the space below:  
30354838001  
30354838001DUP

Comments:

3/27/20  
3/27/20  
3/27/20

Sample Matrix Spike Control Assessment	
Sample Collection Date:	2/25/2020
Sample I.D.:	30354838002
Sample MS I.D.:	30354838002MS
Spike I.D.:	18-039
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	31.433
Spike Volume Used in MS (mL):	0.20
Spike Volume Used in MSD (mL):	0.641
MS Aliquot (L, g, F):	9.800
MS Target Conc. (pCi/L, g, F):	0.461
MSD Aliquot (L, g, F):	3.547
MSD Target Conc. (pCi/L, g, F):	0.733
MSD Spike Uncertainty (calculated):	12.821
MSD Spike Uncertainty (calculated):	1.453
MS Numerical Performance Indicator:	-0.610
MS Percent Recovery:	94.53%
MSD Percent Recovery:	N/A
MS Status vs Numerical Indicator:	Pass
MSD Status vs Numerical Indicator:	136%
MS Status vs Recovery:	71%
MSD Status vs Recovery:	
MS/MSD Upper % Recovery Limits:	
MS/MSD Lower % Recovery Limits:	

Matrix Spike/Matrix Spike Duplicate Sample Assessment	
Sample I.D.:	Sample I.D.
Sample MS I.D.:	Sample MS I.D.
Sample MSD I.D.:	Sample MSD I.D.
Sample Matrix Spike Result:	Sample Matrix Spike Result
Sample Matrix Spike Duplicate Result:	Sample Matrix Spike Duplicate Result
Sample Matrix Spike Duplicate Result:	Sample Matrix Spike Duplicate Result
Duplicate Numerical Performance Indicator:	Duplicate Numerical Performance Indicator
(Based on the Percent Recoveries) MS/MSD Duplicate RPD:	(Based on the Percent Recoveries) MS/MSD Duplicate RPD
MS/MSD Duplicate Status vs Numerical Indicator:	MS/MSD Duplicate Status vs Numerical Indicator
MS/MSD Duplicate Status vs RPD:	MS/MSD Duplicate Status vs RPD
% RPD Limit:	% RPD Limit

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-228  
Analyst: VAL  
Date: 3/19/2020  
Worklist: 52928  
Matrix: WT

Method Blank Assessment	
MB Sample ID	1881017
MB concentration:	0.150
M/B 2 Sigma CSU:	0.257
MB MDC:	0.561
MB Numerical Performance Indicator:	1.15
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCSID (Y or N)?	N
LCSID52928	LCSID52928
Count Date:	3/27/2020
Spike I.D.:	19-057
Decay Corrected Spike Concentration (pCi/mL):	34.697
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.819
Target Conc. (pCi/L, g, F):	4.238
Uncertainty (Calculated):	0.305
Result (pCi/L, g, F):	3.189
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.763
Numerical Performance Indicator:	-2.50
Percent Recovery:	75.24%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass
Upper % Recovery Limits:	135%
Lower % Recovery Limits:	60%

Duplicate Sample Assessment	
Sample I.D.:	30354838003
Duplicate Sample I.D.:	30354838003DUP
Sample Result (pCi/L, g, F):	2.316
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.617
Sample Duplicate Result (pCi/L, g, F):	2.286
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.632
Are sample and/or duplicate results below RL?	See Below ##
Duplicate Numerical Performance Indicator:	0.068
Duplicate RPD:	1.33%
Duplicate Status vs Numerical Indicator:	Pass
Duplicate Status vs RPD:	Pass
% RPD Limit:	36%

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

Comments:

*DU 3/29/20*

Sample Matrix Spike Control Assessment	
Sample Collection Date:	2/18/2020
Sample I.D.:	30354838004
Sample MS I.D.:	30354838004MS
Sample MSD I.D.:	19-057
Spike I.D.:	35.137
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	0.20
Spike Volume Used in MS (mL):	0.822
Spike Volume Used in MSD (mL):	8.553
MS Aliquot (L, g, F):	0.616
MS Target Conc. (pCi/L, g, F):	0.936
MSD Aliquot (L, g, F):	0.416
MSD Target Conc. (pCi/L, g, F):	8.295
MS Spike Uncertainty (calculated):	1.677
MSD Spike Uncertainty (calculated):	-1.275
MS Numerical Performance Indicator:	86.05%
MS Percent Recovery:	Pass
MSD Percent Recovery:	Pass
MS Status vs Numerical Indicator:	135%
MSD Status vs Numerical Indicator:	60%
MS Status vs Recovery:	
MSD Status vs Recovery:	
MS/MSD Upper % Recovery Limits:	
MS/MSD Lower % Recovery Limits:	

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

March 26, 2020

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

RE: Project: TEC 322 LANDFILL CCR  
Pace Project No.: 60331257

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2020. 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.  
Melanie Satanek, Haley & Aldrich, Inc.  
Danielle Zinmaster, Haley & Aldrich



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

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### **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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60331257001	MW-4-030820	Water	03/08/20 14:30	03/09/20 15:55
60331257002	MW-6-030820	Water	03/08/20 16:10	03/09/20 15:55
60331257003	DUP-030820	Water	03/08/20 16:20	03/09/20 15:55
60331257004	MW-01-030920	Water	03/09/20 08:20	03/09/20 15:55
60331257005	MW-5-030920	Water	03/09/20 10:10	03/09/20 15:55

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60331257001	MW-4-030820	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	JGP	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331257002	MW-6-030820	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	JGP	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331257003	DUP-030820	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	JGP	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331257004	MW-01-030920	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	JGP	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	3	PASI-K
60331257005	MW-5-030920	EPA 200.7	JDE, LRS	4	PASI-K
		EPA 200.8	JGP	1	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	MGS	1	PASI-K
		EPA 300.0	BLA	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.: 60331257

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**Date:** March 26, 2020

Amended report revised to include re-run for calcium on sample MW-5-030920 and to reflect reporting units of mg/L.

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

---

**Method:** EPA 200.7

**Description:** 200.7 Metals, Total

**Client:** Evergy Kansas Central, Inc.

**Date:** March 26, 2020

**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: 643489

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60331200001,60331202002

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

- MS (Lab ID: 2614744)
- Calcium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** Evergy Kansas Central, Inc.

**Date:** March 26, 2020

**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.: 60331257

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**Method:** SM 2540C

**Description:** 2540C Total Dissolved Solids

**Client:** Evergy Kansas Central, Inc.

**Date:** March 26, 2020

**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.: 60331257

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**Method:** SM 4500-H+B

**Description:** 4500H+ pH, Electrometric

**Client:** Evergy Kansas Central, Inc.

**Date:** March 26, 2020

### 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-030820 (Lab ID: 60331257003)
- MW-01-030920 (Lab ID: 60331257004)
- MW-4-030820 (Lab ID: 60331257001)
- MW-5-030920 (Lab ID: 60331257005)
- MW-6-030820 (Lab ID: 60331257002)

### 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.: 60331257

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**Method:** EPA 300.0

**Description:** 300.0 IC Anions 28 Days

**Client:** Evergy Kansas Central, Inc.

**Date:** March 26, 2020

**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.

**Additional Comments:**

Analyte Comments:

QC Batch: 643013

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2613021)
  - Sulfate
- MSD (Lab ID: 2613022)
  - Sulfate

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.: 60331257

Sample: MW-4-030820	Lab ID: 60331257001	Collected: 03/08/20 14:30		Received: 03/09/20 15:55		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.11</b>	mg/L	0.0050	1	03/12/20 13:27	03/13/20 16:29	7440-39-3	
Boron, Total Recoverable	<b>&lt;0.10</b>	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:29	7440-42-8	
Calcium, Total Recoverable	<b>186</b>	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:29	7440-70-2	
Lithium	<b>&lt;0.010</b>	mg/L	0.010	1	03/12/20 13:27	03/13/20 16:29	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	03/12/20 16:17	03/25/20 10:00	7440-48-4	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>1040</b>	mg/L	13.3	1		03/12/20 08:45		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>7.4</b>	Std. Units	0.10	1		03/16/20 16:05		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>260</b>	mg/L	50.0	50		03/11/20 18:17	16887-00-6	
Fluoride	<b>&lt;0.20</b>	mg/L	0.20	1		03/11/20 17:48	16984-48-8	
Sulfate	<b>162</b>	mg/L	10.0	10		03/11/20 18:02	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Sample: MW-6-030820	Lab ID: 60331257002	Collected: 03/08/20 16:10		Received: 03/09/20 15:55		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.021</b>	mg/L	0.0050	1	03/12/20 13:27	03/13/20 16:43	7440-39-3	
Boron, Total Recoverable	<b>0.65</b>	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:43	7440-42-8	
Calcium, Total Recoverable	<b>296</b>	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:43	7440-70-2	
Lithium	<b>&lt;0.010</b>	mg/L	0.010	1	03/12/20 13:27	03/13/20 16:43	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0026</b>	mg/L	0.0010	1	03/12/20 16:17	03/25/20 10:02	7440-48-4	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>1580</b>	mg/L	13.3	1		03/12/20 08:45		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>7.3</b>	Std. Units	0.10	1		03/16/20 16:07		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>60.2</b>	mg/L	10.0	10		03/11/20 18:46	16887-00-6	
Fluoride	<b>0.25</b>	mg/L	0.20	1		03/11/20 18:31	16984-48-8	
Sulfate	<b>828</b>	mg/L	50.0	50		03/11/20 19:30	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: DUP-030820      Lab ID: 60331257003      Collected: 03/08/20 16:20      Received: 03/09/20 15:55      Matrix: Water</b>								
<b>200.7 Metals, Total</b> Analytical Method: EPA 200.7      Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.018</b>	mg/L	0.0050	1	03/12/20 13:27	03/13/20 16:38	7440-39-3	
Boron, Total Recoverable	<b>0.67</b>	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:38	7440-42-8	
Calcium, Total Recoverable	<b>296</b>	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:38	7440-70-2	
Lithium	<b>0.011</b>	mg/L	0.010	1	03/12/20 13:27	03/13/20 16:38	7439-93-2	
<b>200.8 MET ICPMS</b> Analytical Method: EPA 200.8      Preparation Method: EPA 200.8 Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0028</b>	mg/L	0.0010	1	03/12/20 16:17	03/25/20 10:03	7440-48-4	
<b>2540C Total Dissolved Solids</b> Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>1570</b>	mg/L	13.3	1		03/12/20 08:45		
<b>4500H+ pH, Electrometric</b> Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>7.6</b>	Std. Units	0.10	1		03/16/20 16:10		H6
<b>300.0 IC Anions 28 Days</b> Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	<b>58.3</b>	mg/L	10.0	10		03/11/20 19:59	16887-00-6	
Fluoride	<b>0.24</b>	mg/L	0.20	1		03/11/20 19:44	16984-48-8	
Sulfate	<b>848</b>	mg/L	50.0	50		03/11/20 20:14	14808-79-8	

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Sample: MW-01-030920	Lab ID: 60331257004	Collected: 03/09/20 08:20	Received: 03/09/20 15:55	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.12</b>	mg/L	0.0050	1	03/12/20 13:27	03/13/20 16:41	7440-39-3	
Boron, Total Recoverable	<b>0.59</b>	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:41	7440-42-8	
Calcium, Total Recoverable	<b>141</b>	mg/L	0.20	1	03/12/20 13:27	03/13/20 16:41	7440-70-2	
Lithium	<b>&lt;0.010</b>	mg/L	0.010	1	03/12/20 13:27	03/13/20 16:41	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0011</b>	mg/L	0.0010	1	03/12/20 16:17	03/25/20 10:05	7440-48-4	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>871</b>	mg/L	10.0	1		03/12/20 08:46		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>7.0</b>	Std. Units	0.10	1		03/16/20 16:27		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>19.5</b>	mg/L	5.0	5		03/12/20 12:09	16887-00-6	
Fluoride	<b>0.33</b>	mg/L	0.20	1		03/11/20 20:28	16984-48-8	
Sulfate	<b>365</b>	mg/L	50.0	50		03/11/20 20:58	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

Sample: MW-5-030920	Lab ID: 60331257005	Collected: 03/09/20 10:10		Received: 03/09/20 15:55		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Barium, Total Recoverable	<b>0.016</b>	mg/L	0.0050	1	03/12/20 13:27	03/13/20 16:45	7440-39-3	
Boron, Total Recoverable	<b>0.92</b>	mg/L	0.10	1	03/12/20 13:27	03/13/20 16:45	7440-42-8	
Calcium, Total Recoverable	<b>1610</b>	mg/L	1.0	5	03/12/20 13:27	03/16/20 13:57	7440-70-2	
Calcium, Total Recoverable	<b>322</b>	mg/L	0.20	1	03/23/20 11:50	03/24/20 15:52	7440-70-2	
Lithium	<b>0.013</b>	mg/L	0.010	1	03/12/20 13:27	03/13/20 16:45	7439-93-2	
<b>200.8 MET ICPMS</b>		Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Pace Analytical Services - Kansas City						
Cobalt, Total Recoverable	<b>0.0013</b>	mg/L	0.0010	1	03/12/20 16:17	03/25/20 10:07	7440-48-4	
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	<b>1710</b>	mg/L	20.0	1		03/12/20 08:46		
<b>4500H+ pH, Electrometric</b>		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	<b>6.9</b>	Std. Units	0.10	1		03/17/20 15:45		H6
<b>300.0 IC Anions 28 Days</b>		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	<b>31.3</b>	mg/L	10.0	10		03/11/20 21:27	16887-00-6	
Fluoride	<b>&lt;0.20</b>	mg/L	0.20	1		03/11/20 21:12	16984-48-8	
Sulfate	<b>860</b>	mg/L	100	100		03/12/20 12:25	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR  
Pace Project No.: 60331257

QC Batch: 643489	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: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

METHOD BLANK: 2614740 Matrix: Water  
Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	03/13/20 14:44	
Boron	mg/L	<0.10	0.10	03/13/20 14:44	
Calcium	mg/L	<0.20	0.20	03/13/20 14:44	
Lithium	mg/L	<0.010	0.010	03/13/20 14:44	

LABORATORY CONTROL SAMPLE: 2614741

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	1.0	100	85-115	
Calcium	mg/L	10	10.6	106	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2614742 2614743

Parameter	Units	60331200001		MS		MSD		% Rec	% Rec	% Rec Limits	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result					
Barium	mg/L	0.032	1	1	1.0	1.0	100	100	70-130	0	20	
Boron	mg/L	0.40	1	1	1.4	1.4	103	103	70-130	0	20	
Calcium	mg/L	170	10	10	177	180	74	98	70-130	1	20	
Lithium	mg/L	0.012	1	1	0.99	0.99	98	98	70-130	0	20	

MATRIX SPIKE SAMPLE: 2614744

Parameter	Units	60331202002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.062	1	1.1	100	70-130	
Boron	mg/L	10	1	11.2	126	70-130	
Calcium	mg/L	2470	10	2580	1100	70-130 M1	
Lithium	mg/L	2.7	1	3.5	88	70-130	

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### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

QC Batch: 645293

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: 60331257005

METHOD BLANK: 2621719

Matrix: Water

Associated Lab Samples: 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	mg/L	<0.20	0.20	03/24/20 15:50	

LABORATORY CONTROL SAMPLE: 2621720

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	10	9.7	97	85-115	

MATRIX SPIKE SAMPLE: 2621721

Parameter	Units	60331549001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	91800 ug/L	10	101	88	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2621722 2621723

Parameter	Units	60332042002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	78.6	10	10	88.4	88.2	98	96	70-130	0	20	

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**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

QC Batch:	643354	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: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

METHOD BLANK: 2614168 Matrix: Water  
Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/L	<0.0010	0.0010	03/16/20 14:24	

LABORATORY CONTROL SAMPLE: 2614169

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2614170 2614171

Parameter	Units	60331200001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cobalt	mg/L	<0.0020	0.04	0.04	0.037	0.037	92	90	70-130	2	20	

MATRIX SPIKE SAMPLE: 2614172

Parameter	Units	60331202001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0045	0.04	<0.050	84	70-130	

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

QC Batch:	643322	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

METHOD BLANK: 2614071 Matrix: Water  
Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/12/20 08:43	

LABORATORY CONTROL SAMPLE: 2614072

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

SAMPLE DUPLICATE: 2614073

Parameter	Units	60331204001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	975	954	2	10	

SAMPLE DUPLICATE: 2614074

Parameter	Units	60331202001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	118000	122000	3	10	

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

QC Batch: 644033

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: 60331257001, 60331257002, 60331257003, 60331257004

SAMPLE DUPLICATE: 2617247

Parameter	Units	60331764001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.6	6.9	4	5	H6

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60331257

QC Batch: 644231

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: 60331257005

SAMPLE DUPLICATE: 2617910

Parameter	Units	60331147001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	7.1	4	5	H6

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.: 60331257

QC Batch: 643013 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: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

METHOD BLANK: 2613019 Matrix: Water  
Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/11/20 12:03	
Fluoride	mg/L	<0.20	0.20	03/11/20 12:03	
Sulfate	mg/L	<1.0	1.0	03/11/20 12:03	

METHOD BLANK: 2614190 Matrix: Water  
Associated Lab Samples: 60331257001, 60331257002, 60331257003, 60331257004, 60331257005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/12/20 07:31	
Fluoride	mg/L	<0.20	0.20	03/12/20 07:31	
Sulfate	mg/L	<1.0	1.0	03/12/20 07:31	

LABORATORY CONTROL SAMPLE: 2613020

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

LABORATORY CONTROL SAMPLE: 2614191

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2613021 2613022

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60331204003 Result	Spike Conc.	Spike Conc.	Result						
Chloride	mg/L	202	250	250	441	95	97	80-120	1	15	
Fluoride	mg/L	0.60	2.5	2.5	3.4	112	115	80-120	2	15	
Sulfate	mg/L	973	250	250	1200	91	95	80-120	1	15 E	

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.: 60331257

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### 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

E Analyte concentration exceeded the calibration range. The reported result is estimated.

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.: 60331257

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60331257001	MW-4-030820	EPA 200.7	643489	EPA 200.7	643583
60331257002	MW-6-030820	EPA 200.7	643489	EPA 200.7	643583
60331257003	DUP-030820	EPA 200.7	643489	EPA 200.7	643583
60331257004	MW-01-030920	EPA 200.7	643489	EPA 200.7	643583
60331257005	MW-5-030920	EPA 200.7	643489	EPA 200.7	643583
60331257005	MW-5-030920	EPA 200.7	645293	EPA 200.7	645420
60331257001	MW-4-030820	EPA 200.8	643354	EPA 200.8	643590
60331257002	MW-6-030820	EPA 200.8	643354	EPA 200.8	643590
60331257003	DUP-030820	EPA 200.8	643354	EPA 200.8	643590
60331257004	MW-01-030920	EPA 200.8	643354	EPA 200.8	643590
60331257005	MW-5-030920	EPA 200.8	643354	EPA 200.8	643590
60331257001	MW-4-030820	SM 2540C	643322		
60331257002	MW-6-030820	SM 2540C	643322		
60331257003	DUP-030820	SM 2540C	643322		
60331257004	MW-01-030920	SM 2540C	643322		
60331257005	MW-5-030920	SM 2540C	643322		
60331257001	MW-4-030820	SM 4500-H+B	644033		
60331257002	MW-6-030820	SM 4500-H+B	644033		
60331257003	DUP-030820	SM 4500-H+B	644033		
60331257004	MW-01-030920	SM 4500-H+B	644033		
60331257005	MW-5-030920	SM 4500-H+B	644231		
60331257001	MW-4-030820	EPA 300.0	643013		
60331257002	MW-6-030820	EPA 300.0	643013		
60331257003	DUP-030820	EPA 300.0	643013		
60331257004	MW-01-030920	EPA 300.0	643013		
60331257005	MW-5-030920	EPA 300.0	643013		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60331257
Barcode
60331257

Client Name: Energy
Courier: FedEx [ ] UPS [ ] VIA [ ] Clay [ ] PEX [ ] ECI [ ] Pace [ ] Xroads [ ] Client [ ] Other [ ]
Tracking #:
Custody Seal on Cooler/Box Present: Yes [ ] No [ ]
Seals intact: Yes [ ] No [ ]
Packing Material: Bubble Wrap [ ] Bubble Bags [ ] Foam [ ] None [ ] Other [ ]
Thermometer Used: R-292 Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 3.5 Corr. Factor 0.7 Corrected 3.2

Date and initials of person examining contents: 8/16/26

Temperature should be above freezing to 6°C

Table with 2 columns: Question and Answer (Yes/No/N/A). Rows include Chain of Custody, Samples arrived, Short Hold Time, Rush Turn Around Time, Sufficient volume, Containers used, Containers intact, Unpreserved soils, Filtered volume, Sample labels, Samples contain multiple phases, Containers requiring pH preservation, Cyanide water sample checks, Trip Blank, Headspace, Samples from USDA, Additional labels.

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 2020 Sampling Event Laboratory Analytical Report**

June 30, 2020

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

RE: Project: TEC 322 Landfill CCR  
Pace Project No.: 60339581

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on June 10, 2020. 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.  
Melanie Satanek, Haley & Aldrich, Inc.  
Danielle Zinmaster, Haley & Aldrich



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

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### **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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60339581001	MW-01-060820	Water	06/08/20 12:25	06/10/20 09:15
60339581002	MW-04-060820	Water	06/08/20 13:35	06/10/20 09:15
60339581003	MW-05-060820	Water	06/08/20 15:20	06/10/20 09:15
60339581004	MW-06-060820	Water	06/08/20 16:30	06/10/20 09:15
60339581005	DUP-322 LF-060820	Water	06/08/20 18:00	06/10/20 09:15

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60339581001	MW-01-060820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60339581002	MW-04-060820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60339581003	MW-05-060820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60339581004	MW-06-060820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60339581005	DUP-322 LF-060820	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	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.: 60339581

---

**Method:** EPA 903.1

**Description:** 903.1 Radium 226

**Client:** Evergy Kansas Central, Inc.

**Date:** June 30, 2020

**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.: 60339581

---

**Method:** EPA 904.0

**Description:** 904.0 Radium 228

**Client:** Evergy Kansas Central, Inc.

**Date:** June 30, 2020

**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:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

---

**Method:** Total Radium Calculation

**Description:** Total Radium 228+226

**Client:** Evergy Kansas Central, Inc.

**Date:** June 30, 2020

**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.: 60339581

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-01-060820</b> <b>Lab ID: 60339581001</b> Collected: 06/08/20 12:25      Received: 06/10/20 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	<b>0.278 ± 0.540 (0.943)</b> <b>C:NA T:89%</b>	pCi/L	06/26/20 12:09	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.756 ± 0.552 (1.09)</b> <b>C:58% T:91%</b>	pCi/L	06/25/20 12:34	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>1.03 ± 0.772 (1.09)</b>	pCi/L	06/26/20 13:39	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

**Sample: MW-04-060820**      **Lab ID: 60339581002**      Collected: 06/08/20 13:35      Received: 06/10/20 09:15      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	<b>-0.186 ± 0.609 (1.25)</b> <b>C:NA T:84%</b>	pCi/L	06/26/20 12:09	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	<b>0.949 ± 0.567 (1.06)</b> <b>C:58% T:86%</b>	pCi/L	06/25/20 12:34	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	<b>0.949 ± 0.832 (1.25)</b>	pCi/L	06/26/20 13:39	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
<b>Sample: MW-05-060820</b> <b>Lab ID: 60339581003</b> Collected: 06/08/20 15:20      Received: 06/10/20 09:15      Matrix: Water PWS:      Site ID:      Sample Type:						
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	<b>-0.0293 ± 0.611 (1.19)</b> <b>C:NA T:91%</b>	pCi/L	06/26/20 12:09	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.837 ± 0.579 (1.13)</b> <b>C:60% T:88%</b>	pCi/L	06/25/20 12:35	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>0.837 ± 0.842 (1.19)</b>	pCi/L	06/26/20 13:39	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

**Sample: MW-06-060820**      **Lab ID: 60339581004**      Collected: 06/08/20 16:30      Received: 06/10/20 09:15      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	<b>-0.380 ± 0.606 (1.37)</b> <b>C:NA T:74%</b>	pCi/L	06/26/20 12:09	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.385 ± 0.515 (1.10)</b> <b>C:60% T:89%</b>	pCi/L	06/25/20 12:35	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>0.385 ± 0.795 (1.37)</b>	pCi/L	06/26/20 13:39	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

**Sample: DUP-322 LF-060820**      **Lab ID: 60339581005**      Collected: 06/08/20 18:00      Received: 06/10/20 09:15      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	<b>-0.292 ± 0.392 (0.990)</b> <b>C:NA T:86%</b>	pCi/L	06/26/20 12:26	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	<b>0.472 ± 0.438 (0.890)</b> <b>C:60% T:93%</b>	pCi/L	06/25/20 12:35	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	<b>0.472 ± 0.588 (0.990)</b>	pCi/L	06/26/20 13:39	7440-14-4	

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

QC Batch: 400701

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: 60339581001, 60339581002, 60339581003, 60339581004, 60339581005

METHOD BLANK: 1940034

Matrix: Water

Associated Lab Samples: 60339581001, 60339581002, 60339581003, 60339581004, 60339581005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0803 ± 0.450 (0.863) C:NA T:83%	pCi/L	06/26/20 11:53	

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.: 60339581

---

### 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.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 Landfill CCR

Pace Project No.: 60339581

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60339581001	MW-01-060820	EPA 903.1	400701		
60339581002	MW-04-060820	EPA 903.1	400701		
60339581003	MW-05-060820	EPA 903.1	400701		
60339581004	MW-06-060820	EPA 903.1	400701		
60339581005	DUP-322 LF-060820	EPA 903.1	400701		
60339581001	MW-01-060820	EPA 904.0	400700		
60339581002	MW-04-060820	EPA 904.0	400700		
60339581003	MW-05-060820	EPA 904.0	400700		
60339581004	MW-06-060820	EPA 904.0	400700		
60339581005	DUP-322 LF-060820	EPA 904.0	400700		
60339581001	MW-01-060820	Total Radium Calculation	402774		
60339581002	MW-04-060820	Total Radium Calculation	402774		
60339581003	MW-05-060820	Total Radium Calculation	402774		
60339581004	MW-06-060820	Total Radium Calculation	402774		
60339581005	DUP-322 LF-060820	Total Radium Calculation	402774		

### REPORT OF LABORATORY ANALYSIS

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Pittsburgh Lab Sample Condition Upon Receipt



Client Name: EVERETT KANDEL Project # \_\_\_\_\_

Courier:  Fed Ex  UPS  USPS  Client  Commercial  Pace Other \_\_\_\_\_

Tracking #: 1505 8767 3726

Label <u>NG</u>
LIMS Login

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

Thermometer Used #10 Type of Ice:  Wet  Blue  None

Cooler Temperature Observed Temp 10.3 °C Correction Factor: -0.3 °C Final Temp: 10.0 °C

Temp should be above freezing to 6°C

pH paper Lot# <u>1082192</u>	Date and Initials of person examining contents: <u>NG 6/16/2026</u>
---------------------------------	--

Comments:

	Yes	No	N/A	
Chain of Custody Present:	/			1.
Chain of Custody Filled Out:	/			2.
Chain of Custody Relinquished:	/			3.
Sampler Name & Signature on COC:	/			4.
Sample Labels match COC:	/			5.
-Includes date/time/ID Matrix: <u>WT</u>				
Samples Arrived within Hold Time:	/	/		6.
Short Hold Time Analysis (<72hr remaining):	/	/		7.
Rush Turn Around Time Requested:	/	/		8.
Sufficient Volume:	/	/		9.
Correct Containers Used:	/	/		10.
-Pace Containers Used:	/	/		
Containers Intact:	/			11.
Orthophosphate field filtered		/	/	12.
Hex Cr Aqueous sample field filtered		/	/	13.
Organic Samples checked for dechlorination:		/	/	14.
Filtered volume received for Dissolved tests		/	/	15.
All containers have been checked for preservation.	/			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix				<u>PH(2)</u>
All containers meet method preservation requirements.	/			Initial when completed: <u>NG</u> Date/time of preservation: _____
				Lot # of added preservative: _____
Headspace in VOA Vials (>6mm):		/	/	17.
Trip Blank Present:		/	/	18.
Trip Blank Custody Seals Present		/	/	
Rad Samples Screened < 0.5 mrem/hr	/			Initial when completed: <u>NG</u> Date: <u>6/16/2026</u>

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Contacted By: \_\_\_\_\_

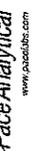
Comments/ Resolution: \_\_\_\_\_

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.

# Quality Control Sample Performance Assessment



**Analyst Must Manually Enter All Fields Highlighted in Yellow.**

Test: Ra-226  
Analyst: MK1  
Date: 6/19/2020  
Batch ID: 54628  
Matrix: DW

Method Blank Assessment	
MB Sample ID	1940034
MB concentration:	0.080
MB Counting Uncertainty:	0.450
MB MDC:	0.863
MB Numerical Performance Indicator:	0.35
MB Status vs. Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCS (Y or N)?	N
LCS54628	LCS054628
Count Date:	6/26/2020
Spike I.D.:	18-039
Spike Concentration (pCi/mL):	31.428
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.658
Target Conc. (pCi/L, g, F):	4.776
Uncertainty (Calculated):	0.224
Result (pCi/L, g, F):	4.410
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.037
Numerical Performance Indicator:	-0.68
Percent Recovery:	92.33%
Status vs. Numerical Indicator:	N/A
Status vs. Recovery:	Pass
Upper % Recovery Limits:	135%
Lower % Recovery Limits:	73%

Duplicate Sample Assessment	
Sample I.D.:	30367225001
Duplicate Sample I.D.:	30367225001DUP
Sample Result Counting Uncertainty (pCi/L, g, F):	0.140
Sample Duplicate Result (pCi/L, g, F):	0.322
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.302
Are sample and/or duplicate results below RL?	0.404
Duplicate Numerical Performance Indicator:	See Below ##
Duplicate RPD:	-0.812
Duplicate Status vs. Numerical Indicator:	72.94%
Duplicate Status vs. RPD:	N/A
% RPD Limit:	Fail***
	92%

## 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.*

*6-26-20*  
*MLL*  
*Salon Capital*

Sample Matrix Spike Control Assessment		MS/MSD 1	MS/MSD 2
Sample Collection Date:	6/3/2020		
Sample I.D.:	30367227001		
Sample MS I.D.:	30367227001MS		
Sample MSD I.D.:			
Spike I.D.:	18-039		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	31.429		
Spike Volume Used in MS (mL):	0.20		
MS Aliquot (L, g, F):	0.655		
MS Target Conc. (pCi/L, g, F):	9.595		
MSD Aliquot (L, g, F):	0.451		
MSD Target Conc. (pCi/L, g, F):			
MS Spike Uncertainty (calculated):			
MSD Spike Uncertainty (calculated):			
Sample Result Counting Uncertainty (pCi/L, g, F):	0.465		
Sample Matrix Spike Result:	0.430		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	11.400		
Sample Matrix Spike Duplicate Result:	1.821		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):			
MS Numerical Performance Indicator:	1.365		
MSD Numerical Performance Indicator:			
MS Percent Recovery:	113.97%		
MS Status vs. Numerical Indicator:	N/A		
MSD Status vs. Numerical Indicator:			
MS Status vs. Recovery:	Pass		
MS/MSD Upper % Recovery Limits:	136%		
MS/MSD Lower % Recovery Limits:	71%		

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

# Quality Control Sample Performance Assessment



Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test: Ra-228  
Analyst: VAL  
Date: 6/22/2020  
Worklist: 54627  
Matrix: VVT

Method Blank Assessment	
MB Sample ID	1940033
MB concentration:	0.389
M/B 2 Sigma CSU:	0.388
MB MDC:	0.795
MB Numerical Performance Indicator:	1.97
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	
LCS#	N
LCS54627	LCSDS4627
Count Date:	6/25/2020
Spike I.D.:	19-057
Decay Corrected Spike Concentration (pCi/mL):	33.683
Volume Used (mL):	0.10
Aliquot Volume (L, g, F):	0.811
Target Conc. (pCi/L, g, F):	4.155
Uncertainty (Calculated):	0.299
Result (pCi/L, g, F):	4.455
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.109
Numerical Performance Indicator:	0.51
Percent Recovery:	107.22%
Status vs Numerical Indicator:	N/A
Status vs Recovery:	Pass
Upper % Recovery Limits:	135%
Lower % Recovery Limits:	60%

Duplicate Sample Assessment	
Sample I.D.:	30367239001
Duplicate Sample I.D.:	30367239001DUP
Sample Result (pCi/L, g, F):	0.162
Sample Duplicate Result (pCi/L, g, F):	0.426
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.731
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.481
Are sample and/or duplicate results below RL?	See Below ##
Duplicate Numerical Performance Indicator:	-1.735
Duplicate RPD:	127.41%
Duplicate Status vs Numerical Indicator:	Pass
Duplicate Status vs RPD:	Fail***
% RPD Limit:	36%

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

Comments:

Sample Matrix Spike Control Assessment	
Sample Collection Date:	6/4/2020
Sample I.D.:	30367240001
Sample MS I.D.:	30367240001MS
Sample MSD I.D.:	19-057
Sample I.D.:	33.918
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	0.20
Spike Volume Used in MSD (mL):	0.811
MS Aliquot (L, g, F):	8.364
MS Target Conc. (pCi/L, g, F):	0.602
MSD Aliquot (L, g, F):	0.376
MS Target Conc. (pCi/L, g, F):	0.477
MS Spike Uncertainty (calculated):	7.737
MS Spike Uncertainty (calculated):	1.673
Sample Result 2 Sigma CSU (pCi/L, g, F):	-1.068
Sample Matrix Spike Result:	88.00%
Sample Matrix Spike Duplicate Result:	Pass
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	Pass
MS Numerical Performance Indicator:	135%
MSD Numerical Performance Indicator:	60%
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:	

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

*DeWitt*

*JY  
6/26/20*

June 18, 2020

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

RE: Project: TEC 322 LANDFILL CCR  
Pace Project No.: 60339564

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on June 09, 2020. 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.  
Melanie Satanek, Haley & Aldrich, Inc.  
Danielle Zinmaster, Haley & Aldrich



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

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### **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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60339564001	MW-01-060820	Water	06/08/20 12:25	06/09/20 16:00
60339564002	MW-04-060820	Water	06/08/20 13:35	06/09/20 16:00
60339564003	MW-05-060820	Water	06/08/20 15:20	06/09/20 16:00
60339564004	MW-06-060820	Water	06/08/20 16:30	06/09/20 16:00
60339564005	DUP-322 LF-060820	Water	06/08/20 18:00	06/09/20 16:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60339564001	MW-01-060820	EPA 200.7	HKC	4	PASI-K
		EPA 6010	HKC	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		EPA 300.0	JWR	1	PASI-K
60339564002	MW-04-060820	EPA 200.7	HKC	4	PASI-K
		EPA 6010	HKC	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		EPA 300.0	JWR	1	PASI-K
60339564003	MW-05-060820	EPA 200.7	HKC	4	PASI-K
		EPA 6010	HKC	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		EPA 300.0	JWR	1	PASI-K
60339564004	MW-06-060820	EPA 200.7	HKC	4	PASI-K
		EPA 6010	HKC	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		EPA 300.0	JWR	1	PASI-K
60339564005	DUP-322 LF-060820	EPA 200.7	HKC	4	PASI-K
		EPA 6010	HKC	1	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		EPA 300.0	JWR	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.: 60339564

---

**Method:** EPA 200.7

**Description:** 200.7 Metals, Total

**Client:** Evergy Kansas Central, Inc.

**Date:** June 18, 2020

**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.: 60339564

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** Evergy Kansas Central, Inc.

**Date:** June 18, 2020

**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.: 60339564

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** Evergy Kansas Central, Inc.

**Date:** June 18, 2020

**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.: 60339564

---

**Method:** EPA 245.1

**Description:** 245.1 Mercury

**Client:** Evergy Kansas Central, Inc.

**Date:** June 18, 2020

**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:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

---

**Method:** EPA 300.0

**Description:** 300.0 IC Anions 28 Days

**Client:** Evergy Kansas Central, Inc.

**Date:** June 18, 2020

**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: 659569

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60339430010,60339564001

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

- MSD (Lab ID: 2674456)
  - Fluoride

R1: RPD value was outside control limits.

- MSD (Lab ID: 2674456)
  - 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.: 60339564

Sample: MW-01-060820	Lab ID: 60339564001	Collected: 06/08/20 12:25	Received: 06/09/20 16:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.12</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:20	7440-39-3	
Beryllium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/11/20 14:00	06/12/20 17:20	7440-41-7	
Chromium, Total Recoverable	<b>&lt;0.0050</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:20	7440-47-3	
Lead, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/11/20 14:00	06/12/20 17:20	7439-92-1	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/16/20 11:00	06/17/20 16:37	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7440-36-0	
Arsenic, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7440-38-2	
Cadmium, Total Recoverable	<b>&lt;0.00050</b>	mg/L	0.00050	1	06/15/20 15:00	06/16/20 18:07	7440-43-9	
Cobalt, Total Recoverable	<b>0.0018</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7440-48-4	
Molybdenum, Total Recoverable	<b>0.0011</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7439-98-7	
Selenium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7782-49-2	
Thallium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:07	7440-28-0	
<b>245.1 Mercury</b>								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<b>&lt;0.20</b>	ug/L	0.20	1	06/18/20 08:11	06/18/20 12:18	7439-97-6	
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<b>0.43</b>	mg/L	0.20	1		06/11/20 16:40	16984-48-8	M1,R1

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Sample: MW-04-060820	Lab ID: 60339564002	Collected: 06/08/20 13:35	Received: 06/09/20 16:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.10</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:24	7440-39-3	
Beryllium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/11/20 14:00	06/12/20 17:24	7440-41-7	
Chromium, Total Recoverable	<b>&lt;0.0050</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:24	7440-47-3	
Lead, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/11/20 14:00	06/12/20 17:24	7439-92-1	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/16/20 11:00	06/17/20 16:39	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7440-36-0	
Arsenic, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7440-38-2	
Cadmium, Total Recoverable	<b>&lt;0.00050</b>	mg/L	0.00050	1	06/15/20 15:00	06/16/20 18:22	7440-43-9	
Cobalt, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7439-98-7	
Selenium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7782-49-2	
Thallium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:22	7440-28-0	
<b>245.1 Mercury</b>								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<b>&lt;0.20</b>	ug/L	0.20	1	06/18/20 08:11	06/18/20 12:25	7439-97-6	
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<b>0.28</b>	mg/L	0.20	1		06/11/20 17:29	16984-48-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Sample: MW-05-060820	Lab ID: 60339564003	Collected: 06/08/20 15:20	Received: 06/09/20 16:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.020</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:27	7440-39-3	
Beryllium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/11/20 14:00	06/12/20 17:27	7440-41-7	
Chromium, Total Recoverable	<b>&lt;0.0050</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:27	7440-47-3	
Lead, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/11/20 14:00	06/12/20 17:27	7439-92-1	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>0.011</b>	mg/L	0.010	1	06/16/20 11:00	06/17/20 16:42	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7440-36-0	
Arsenic, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7440-38-2	
Cadmium, Total Recoverable	<b>&lt;0.00050</b>	mg/L	0.00050	1	06/15/20 15:00	06/16/20 18:24	7440-43-9	
Cobalt, Total Recoverable	<b>0.0019</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7439-98-7	
Selenium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7782-49-2	
Thallium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:24	7440-28-0	
<b>245.1 Mercury</b>								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<b>&lt;0.20</b>	ug/L	0.20	1	06/18/20 08:11	06/18/20 12:27	7439-97-6	
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<b>0.29</b>	mg/L	0.20	1		06/11/20 17:46	16984-48-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Sample: MW-06-060820	Lab ID: 60339564004	Collected: 06/08/20 16:30	Received: 06/09/20 16:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.017</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:40	7440-39-3	
Beryllium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/11/20 14:00	06/12/20 17:40	7440-41-7	
Chromium, Total Recoverable	<b>&lt;0.0050</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:40	7440-47-3	
Lead, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/11/20 14:00	06/12/20 17:40	7439-92-1	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/16/20 11:00	06/17/20 16:45	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7440-36-0	
Arsenic, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7440-38-2	
Cadmium, Total Recoverable	<b>&lt;0.00050</b>	mg/L	0.00050	1	06/15/20 15:00	06/16/20 18:27	7440-43-9	
Cobalt, Total Recoverable	<b>0.0026</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7439-98-7	
Selenium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7782-49-2	
Thallium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:27	7440-28-0	
<b>245.1 Mercury</b>								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<b>&lt;0.20</b>	ug/L	0.20	1	06/18/20 08:11	06/18/20 12:29	7439-97-6	
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<b>0.37</b>	mg/L	0.20	1		06/11/20 18:36	16984-48-8	

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>Sample: DUP-322 LF-060820</b>								
<b>Lab ID: 60339564005</b>								
Collected: 06/08/20 18:00 Received: 06/09/20 16:00 Matrix: Water								
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.017</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:42	7440-39-3	
Beryllium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/11/20 14:00	06/12/20 17:42	7440-41-7	
Chromium, Total Recoverable	<b>0.049</b>	mg/L	0.0050	1	06/11/20 14:00	06/12/20 17:42	7440-47-3	
Lead, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/11/20 14:00	06/12/20 17:42	7439-92-1	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	06/16/20 11:00	06/17/20 16:47	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Antimony, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7440-36-0	
Arsenic, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7440-38-2	
Cadmium, Total Recoverable	<b>&lt;0.00050</b>	mg/L	0.00050	1	06/15/20 15:00	06/16/20 18:29	7440-43-9	
Cobalt, Total Recoverable	<b>0.0026</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7439-98-7	
Selenium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7782-49-2	
Thallium, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	06/15/20 15:00	06/16/20 18:29	7440-28-0	
<b>245.1 Mercury</b>								
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Pace Analytical Services - Kansas City								
Mercury	<b>&lt;0.20</b>	ug/L	0.20	1	06/18/20 08:11	06/18/20 12:32	7439-97-6	
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Fluoride	<b>0.37</b>	mg/L	0.20	1		06/11/20 18:52	16984-48-8	

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

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QC Batch:	660456	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: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

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METHOD BLANK: 2677729 Matrix: Water

Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	06/18/20 12:13	

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LABORATORY CONTROL SAMPLE: 2677730

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	85-115	

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MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2677731 2677732

Parameter	Units	60339564001 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	4.6	4.5	92	91	70-130	1	20	

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

QC Batch:	659645	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: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

METHOD BLANK: 2674806 Matrix: Water

Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	06/12/20 16:43	
Beryllium	mg/L	<0.0010	0.0010	06/12/20 16:43	
Chromium	mg/L	<0.0050	0.0050	06/12/20 16:43	
Lead	mg/L	<0.010	0.010	06/12/20 16:43	

LABORATORY CONTROL SAMPLE: 2674807

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.98	98	85-115	
Beryllium	mg/L	1	0.99	99	85-115	
Chromium	mg/L	1	0.99	99	85-115	
Lead	mg/L	1	1.1	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674808 2674809

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60339048001 Result	Spike Conc.	Spike Conc.	Result						
Barium	mg/L	48.5 ug/L	1	1	1.0	1.0	98	97	70-130	1	20
Beryllium	mg/L	ND	1	1	1.0	0.99	100	99	70-130	1	20
Chromium	mg/L	ND	1	1	0.98	0.98	98	98	70-130	0	20
Lead	mg/L	ND	1	1	1.0	1.0	101	101	70-130	0	20

MATRIX SPIKE SAMPLE: 2674810

Parameter	Units	60339564001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L		0.12	1	1.1	96	70-130
Beryllium	mg/L		<0.0010	1	0.98	98	70-130
Chromium	mg/L		<0.0050	1	0.96	96	70-130
Lead	mg/L		<0.010	1	0.99	99	70-130

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

QC Batch:	660122	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: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

METHOD BLANK: 2676866 Matrix: Water  
Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	06/16/20 17:59	
Arsenic	mg/L	<0.0010	0.0010	06/16/20 17:59	
Cadmium	mg/L	<0.00050	0.00050	06/16/20 17:59	
Cobalt	mg/L	<0.0010	0.0010	06/16/20 17:59	
Molybdenum	mg/L	<0.0010	0.0010	06/16/20 17:59	
Selenium	mg/L	<0.0010	0.0010	06/16/20 17:59	
Thallium	mg/L	<0.0010	0.0010	06/16/20 17:59	

LABORATORY CONTROL SAMPLE: 2676867

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.042	105	85-115	
Arsenic	mg/L	0.04	0.043	107	85-115	
Cadmium	mg/L	0.04	0.040	100	85-115	
Cobalt	mg/L	0.04	0.042	105	85-115	
Molybdenum	mg/L	0.04	0.041	102	85-115	
Selenium	mg/L	0.04	0.042	105	85-115	
Thallium	mg/L	0.04	0.037	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2676868 2676869

Parameter	Units	60339564001		60339564002		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result						
Antimony	mg/L	<0.0010	0.04	0.04	0.041	0.041	103	102	70-130	1	20
Arsenic	mg/L	<0.0010	0.04	0.04	0.044	0.044	108	107	70-130	0	20
Cadmium	mg/L	<0.00050	0.04	0.04	0.038	0.038	94	94	70-130	0	20
Cobalt	mg/L	0.0018	0.04	0.04	0.043	0.043	104	104	70-130	0	20
Molybdenum	mg/L	0.0011	0.04	0.04	0.044	0.043	106	106	70-130	1	20
Selenium	mg/L	<0.0010	0.04	0.04	0.041	0.040	101	100	70-130	1	20
Thallium	mg/L	<0.0010	0.04	0.04	0.034	0.034	86	86	70-130	0	20

MATRIX SPIKE SAMPLE: 2676870

Parameter	Units	60339522001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	2.4 ug/L	0.04	0.040	95	70-130	
Arsenic	mg/L	2.4 ug/L	0.04	0.045	106	70-130	

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

MATRIX SPIKE SAMPLE:		2676870					
Parameter	Units	60339522001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	mg/L	0.50J ug/L	0.04	0.038	95	70-130	
Cobalt	mg/L	3.0 ug/L	0.04	0.045	105	70-130	
Molybdenum	mg/L	2.0 ug/L	0.04	0.040	96	70-130	
Selenium	mg/L	1.2 ug/L	0.04	0.034	82	70-130	
Thallium	mg/L	<0.093 ug/L	0.04	0.034	86	70-130	

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**REPORT OF LABORATORY ANALYSIS**

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

QC Batch: 660336

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

METHOD BLANK: 2677405

Matrix: Water

Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium	mg/L	<0.010	0.010	06/17/20 15:53	

LABORATORY CONTROL SAMPLE: 2677406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium	mg/L	1	0.95	95	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2677407 2677408

Parameter	Units	60339024001		60339024002		60339024003		60339024004		% Rec Limits	RPD	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
Lithium	mg/L	101 ug/L	1	1	1.1	1.1	99	99	75-125	1	20		

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

QC Batch: 659569 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: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

METHOD BLANK: 2674453 Matrix: Water  
 Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/11/20 09:24	

METHOD BLANK: 2676668 Matrix: Water  
 Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/12/20 09:21	

METHOD BLANK: 2676715 Matrix: Water  
 Associated Lab Samples: 60339564001, 60339564002, 60339564003, 60339564004, 60339564005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/16/20 09:13	

LABORATORY CONTROL SAMPLE: 2674454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	102	90-110	

LABORATORY CONTROL SAMPLE: 2676669

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

LABORATORY CONTROL SAMPLE: 2676716

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

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2674455												2674456	
Parameter	Units	60339564001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Fluoride	mg/L	0.43	2.5	2.5	3.1	4.0	105	143	80-120	27	15	M1,R1	

MATRIX SPIKE SAMPLE: 2674457		60339430010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Fluoride	mg/L	0.72	2.5	3.4	107	80-120	

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## QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

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### 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

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

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60339564

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60339564001	MW-01-060820	EPA 200.7	659645	EPA 200.7	659738
60339564002	MW-04-060820	EPA 200.7	659645	EPA 200.7	659738
60339564003	MW-05-060820	EPA 200.7	659645	EPA 200.7	659738
60339564004	MW-06-060820	EPA 200.7	659645	EPA 200.7	659738
60339564005	DUP-322 LF-060820	EPA 200.7	659645	EPA 200.7	659738
60339564001	MW-01-060820	EPA 3010	660336	EPA 6010	660453
60339564002	MW-04-060820	EPA 3010	660336	EPA 6010	660453
60339564003	MW-05-060820	EPA 3010	660336	EPA 6010	660453
60339564004	MW-06-060820	EPA 3010	660336	EPA 6010	660453
60339564005	DUP-322 LF-060820	EPA 3010	660336	EPA 6010	660453
60339564001	MW-01-060820	EPA 200.8	660122	EPA 200.8	660209
60339564002	MW-04-060820	EPA 200.8	660122	EPA 200.8	660209
60339564003	MW-05-060820	EPA 200.8	660122	EPA 200.8	660209
60339564004	MW-06-060820	EPA 200.8	660122	EPA 200.8	660209
60339564005	DUP-322 LF-060820	EPA 200.8	660122	EPA 200.8	660209
60339564001	MW-01-060820	EPA 245.1	660456	EPA 245.1	660860
60339564002	MW-04-060820	EPA 245.1	660456	EPA 245.1	660860
60339564003	MW-05-060820	EPA 245.1	660456	EPA 245.1	660860
60339564004	MW-06-060820	EPA 245.1	660456	EPA 245.1	660860
60339564005	DUP-322 LF-060820	EPA 245.1	660456	EPA 245.1	660860
60339564001	MW-01-060820	EPA 300.0	659569		
60339564002	MW-04-060820	EPA 300.0	659569		
60339564003	MW-05-060820	EPA 300.0	659569		
60339564004	MW-06-060820	EPA 300.0	659569		
60339564005	DUP-322 LF-060820	EPA 300.0	659569		

### REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60339564



Client Name: Evergy Kansas Central

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  Ziploc

Thermometer Used: T-299 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 0.7 Corr. Factor +0.1 Corrected 0.8

Date and initials of person examining contents: 6.9.20 <sup>HTS</sup>

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	<u>MW-4 has the collection time @ 1630</u>
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>MW-6 has the collection time of 1335</u>
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	<u>on the containers</u>
Containers requiring pH preservation in compliance? (HNO <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , 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 checked="" type="checkbox"/> No <input 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.

<b>Section A</b> Required Client Information:	<b>Section B</b> Required Project Information:	<b>Section C</b> Invoice Information:
Company: <b>EVERGY KANSAS CENTRAL, INC.</b>	Report To: <b>Andrew Hare, Melissa Michels</b>	Attention: <b>Accounts Payable</b>
Address: <b>Tecumseh Energy Center (TEC)</b> 818 Kansas Ave, Topeka, KS 66612	Copy To: <b>Jared Morrison, Jake Humphrey, Laura Hines</b>	Company Name: <b>EVERGY KANSAS CENTRAL, INC</b>
Email To: <b>andrew.hare@evergy.com</b>	Purchase Order No.: <b>WSTR-10TEC07989</b>	Address: <b>See Section A</b>
Phone: <b>(785) 575-8428</b> Fax: _____	Project Name: <b>TEC 322 Landfill CCR</b>	Pace Quote Reference: _____
Requested Due Date/TAT: <b>7 day</b>	Project Number: _____	Pace Project Manager: <b>Jasmine Amernin, 913-563-1403</b>
		Pace Profile #: <b>9656, 2</b>
		Site Location: <b>KS</b>
		STATE: <b>KS</b>
		REGULATORY AGENCY: <b>NPDES</b> <input type="checkbox"/> <b>GROUND WATER</b> <input type="checkbox"/> <b>DRINKING WATER</b> <input type="checkbox"/> <b>UST</b> <input type="checkbox"/> <b>RCRA</b> <input type="checkbox"/> <b>OTHER</b> _____

Page: 1 of 1

ITEM #	Section D Required Client Information	Valid Matrix Codes MATRIX CODE DRINKING WATER DW WATER WT WASTE WATER WW PRODUCT P SOIL/SOLID SL OIL OL WIPE WP AIR AR OTHER OT TISSUE TS	COLLECTED		SAMPLE TYPE (G=GRAB C=COMP)	MATRIX CODE (see valid codes to left)	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives										Y/N	Requested Analysis Filtered (Y/N)								
			COMPOSITE START	COMPOSITE END/GRAB					DATE	TIME	DATE	TIME	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	NaOH	Na <sub>2</sub> O <sub>3</sub>	Methanol			Other							
1	MW-01-060820				WT	G	06/08/20	12:25	2	1	1								X	X	X	X	X	X	X	X	300. F	Residual Chlorine (Y/N)  Pace Project No./ Lab I.D. <b>U0339564</b>
2	MW-04-060820				WT	G	06/08/20	13:35	2	1	1								X	X	X	X	X	X	X	X		
3	MW-05-060820				WT	G	06/08/20	15:20	2	1	1								X	X	X	X	X	X	X	X		
4	MW-06-060820				WT	G	06/08/20	16:30	2	1	1								X	X	X	X	X	X	X	X		
5	DUP-322 LF-060820				WT	G	06/08/20	18:00	2	1	1								X	X	X	X	X	X	X	X		
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
200.7 Total Metals*: Ba, Be, Cr, Pb	<i>Jason R. Franks</i>	6/9/20	11:00	<i>H. D. ...</i>	6.9.20	16:00	Y N Y
200.8 Total Metals**: As, Co, Cd, Mo, Se, Sb, Tl	<i>Jason R. Franks</i>	6/9/20	11:00	<i>H. D. ...</i>	6.9.20	16:00	Y N Y
6010 Total Metals***: Li							

Temp in °C	Received on	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
<b>SAMPLER NAME AND SIGNATURE</b>			
PRINT Name of SAMPLER: <b>Jason R. Franks</b>		DATE Signed (MM/DD/YYYY):	
SIGNATURE of SAMPLER: <i>Jason R. Franks</i>		6/9/20	

**ATTACHMENT 1-3**

**September 2020 Sampling Event Laboratory Analytical Report**

September 28, 2020

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

RE: Project: TEC 322 LANDFILL CCR  
Pace Project No.: 60348776

Dear Andrew Hare:

Enclosed are the analytical results for sample(s) received by the laboratory on September 16, 2020. 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.  
Melanie Satanek, Haley & Aldrich, Inc.  
Danielle Zinmaster, Haley & Aldrich



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

---

### **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

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60348776001	MW-04-091620	Water	09/16/20 09:00	09/16/20 17:40
60348776002	MW-01-091620	Water	09/16/20 09:25	09/16/20 17:40
60348776003	MW-05-091620	Water	09/16/20 10:35	09/16/20 17:40
60348776004	MW-06-091620	Water	09/16/20 10:03	09/16/20 17:40
60348776005	DUP-TEC-091620	Water	09/16/20 12:00	09/16/20 17:40

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60348776001	MW-04-091620	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348776002	MW-01-091620	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348776003	MW-05-091620	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348776004	MW-06-091620	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	3	PASI-K
60348776005	DUP-TEC-091620	EPA 200.7	TDS	3	PASI-K
		EPA 6010	TDS	1	PASI-K
		EPA 200.8	JGP	2	PASI-K
		SM 2540C	MAP	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	LDB	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.: 60348776

---

**Method:** EPA 200.7

**Description:** 200.7 Metals, Total

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

**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: 678582

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60348653001,60348776003

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

- MS (Lab ID: 2743705)
  - Calcium
- MS (Lab ID: 2743707)
  - Calcium
- MSD (Lab ID: 2743706)
  - Boron
  - Calcium

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

**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.: 60348776

---

**Method:** EPA 200.8

**Description:** 200.8 MET ICPMS

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

**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.: 60348776

---

**Method:** SM 2540C

**Description:** 2540C Total Dissolved Solids

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

**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.: 60348776

---

**Method:** SM 4500-H+B

**Description:** 4500H+ pH, Electrometric

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

### 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-TEC-091620 (Lab ID: 60348776005)
- MW-01-091620 (Lab ID: 60348776002)
- MW-04-091620 (Lab ID: 60348776001)
- MW-05-091620 (Lab ID: 60348776003)
- MW-06-091620 (Lab ID: 60348776004)

### 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.: 60348776

---

**Method:** EPA 300.0

**Description:** 300.0 IC Anions 28 Days

**Client:** Evergy Kansas Central, Inc.

**Date:** September 28, 2020

**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: 678152

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60348528003,60348774001

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

- MS (Lab ID: 2742378)
- Sulfate

**Additional Comments:**

Analyte Comments:

QC Batch: 678152

E: Analyte concentration exceeded the calibration range. The reported result is estimated.

- MS (Lab ID: 2742377)
  - Chloride
- MS (Lab ID: 2742378)
  - Sulfate
- MSD (Lab ID: 2742379)
  - Sulfate

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.: 60348776

Sample: MW-04-091620	Lab ID: 60348776001	Collected: 09/16/20 09:00	Received: 09/16/20 17:40	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	0.11	mg/L	0.0050	1	09/24/20 08:10	09/25/20 18:55	7440-39-3	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	09/24/20 08:10	09/25/20 18:55	7440-42-8	
Calcium, Total Recoverable	172	mg/L	0.20	1	09/24/20 08:10	09/25/20 18:55	7440-70-2	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<0.010	mg/L	0.010	1	09/24/20 08:10	09/25/20 18:55	7439-93-2	
<b>200.8 MET ICPMS</b>								
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	09/23/20 15:59	09/25/20 16:10	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	09/23/20 15:59	09/26/20 14:00	7439-98-7	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	1110	mg/L	13.3	1		09/22/20 15:17		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.0	Std. Units	0.10	1		09/22/20 11:11		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	258	mg/L	50.0	50		09/22/20 21:45	16887-00-6	
Fluoride	0.28	mg/L	0.20	1		09/22/20 21:30	16984-48-8	
Sulfate	165	mg/L	50.0	50		09/22/20 21:45	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Sample: MW-01-091620	Lab ID: 60348776002	Collected: 09/16/20 09:25		Received: 09/16/20 17:40		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.073</b>	mg/L	0.0050	1	09/24/20 08:10	09/25/20 18:57	7440-39-3	
Boron, Total Recoverable	<b>0.14</b>	mg/L	0.10	1	09/24/20 08:10	09/25/20 18:57	7440-42-8	
Calcium, Total Recoverable	<b>155</b>	mg/L	0.20	1	09/24/20 08:10	09/25/20 18:57	7440-70-2	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	09/24/20 08:10	09/25/20 18:57	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0014</b>	mg/L	0.0010	1	09/23/20 15:59	09/25/20 16:14	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	09/23/20 15:59	09/26/20 14:01	7439-98-7	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>901</b>	mg/L	13.3	1		09/23/20 08:52		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>6.9</b>	Std. Units	0.10	1		09/22/20 11:12		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>49.5</b>	mg/L	5.0	5		09/23/20 17:29	16887-00-6	
Fluoride	<b>0.39</b>	mg/L	0.20	1		09/22/20 22:44	16984-48-8	
Sulfate	<b>351</b>	mg/L	50.0	50		09/22/20 22:00	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Sample: MW-05-091620	Lab ID: 60348776003	Collected: 09/16/20 10:35	Received: 09/16/20 17:40	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.021</b>	mg/L	0.0050	1	09/24/20 08:10	09/25/20 19:00	7440-39-3	
Boron, Total Recoverable	<b>1.7</b>	mg/L	0.10	1	09/24/20 08:10	09/25/20 19:00	7440-42-8	
Calcium, Total Recoverable	<b>355</b>	mg/L	0.20	1	09/24/20 08:10	09/25/20 19:00	7440-70-2	M1
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>0.013</b>	mg/L	0.010	1	09/24/20 08:10	09/25/20 19:00	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0019</b>	mg/L	0.0010	1	09/23/20 15:59	09/25/20 16:21	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	09/23/20 15:59	09/26/20 14:02	7439-98-7	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>1810</b>	mg/L	20.0	1		09/23/20 08:53		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>6.8</b>	Std. Units	0.10	1		09/22/20 11:15		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>26.4</b>	mg/L	5.0	5		09/23/20 17:44	16887-00-6	
Fluoride	<b>0.32</b>	mg/L	0.20	1		09/22/20 22:59	16984-48-8	
Sulfate	<b>1000</b>	mg/L	100	100		09/23/20 18:31	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Sample: MW-06-091620	Lab ID: 60348776004	Collected: 09/16/20 10:03	Received: 09/16/20 17:40	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.016</b>	mg/L	0.0050	1	09/24/20 08:10	09/25/20 19:05	7440-39-3	
Boron, Total Recoverable	<b>0.75</b>	mg/L	0.10	1	09/24/20 08:10	09/25/20 19:05	7440-42-8	
Calcium, Total Recoverable	<b>280</b>	mg/L	0.20	1	09/24/20 08:10	09/25/20 19:05	7440-70-2	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>0.014</b>	mg/L	0.010	1	09/24/20 08:10	09/25/20 19:05	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0025</b>	mg/L	0.0010	1	09/23/20 15:59	09/25/20 16:25	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	09/23/20 15:59	09/26/20 14:03	7439-98-7	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>1530</b>	mg/L	20.0	1		09/23/20 08:53		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>6.9</b>	Std. Units	0.10	1		09/22/20 11:14		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>70.4</b>	mg/L	50.0	50		09/22/20 23:43	16887-00-6	
Fluoride	<b>0.38</b>	mg/L	0.20	1		09/22/20 23:28	16984-48-8	
Sulfate	<b>735</b>	mg/L	50.0	50		09/22/20 23:43	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Sample: DUP-TEC-091620	Lab ID: 60348776005	Collected: 09/16/20 12:00	Received: 09/16/20 17:40	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
<b>200.7 Metals, Total</b>								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Barium, Total Recoverable	<b>0.075</b>	mg/L	0.0050	1	09/24/20 08:10	09/25/20 19:07	7440-39-3	
Boron, Total Recoverable	<b>0.15</b>	mg/L	0.10	1	09/24/20 08:10	09/25/20 19:07	7440-42-8	
Calcium, Total Recoverable	<b>157</b>	mg/L	0.20	1	09/24/20 08:10	09/25/20 19:07	7440-70-2	
<b>6010 MET ICP</b>								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Pace Analytical Services - Kansas City								
Lithium, Total Recoverable	<b>&lt;0.010</b>	mg/L	0.010	1	09/24/20 08:10	09/25/20 19:07	7439-93-2	
<b>200.8 MET ICPMS</b>								
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8								
Pace Analytical Services - Kansas City								
Cobalt, Total Recoverable	<b>0.0015</b>	mg/L	0.0010	1	09/23/20 15:59	09/25/20 16:29	7440-48-4	
Molybdenum, Total Recoverable	<b>&lt;0.0010</b>	mg/L	0.0010	1	09/23/20 15:59	09/26/20 14:04	7439-98-7	
<b>2540C Total Dissolved Solids</b>								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	<b>873</b>	mg/L	13.3	1		09/23/20 08:55		
<b>4500H+ pH, Electrometric</b>								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	<b>6.9</b>	Std. Units	0.10	1		09/22/20 11:18		H6
<b>300.0 IC Anions 28 Days</b>								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	<b>49.2</b>	mg/L	5.0	5		09/23/20 18:46	16887-00-6	
Fluoride	<b>0.39</b>	mg/L	0.20	1		09/22/20 23:58	16984-48-8	
Sulfate	<b>352</b>	mg/L	50.0	50		09/23/20 00:12	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch:	678582	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: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

METHOD BLANK: 2743703 Matrix: Water  
Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/25/20 18:03	
Boron	mg/L	<0.10	0.10	09/25/20 18:03	
Calcium	mg/L	<0.20	0.20	09/25/20 18:03	

LABORATORY CONTROL SAMPLE: 2743704

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	10.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743705 2743706

Parameter	Units	60348653001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	<0.073	1	1	1.0	1.1	101	111	70-130	9	20	
Boron	mg/L	10.5	1	1	11.2	12.1	72	162	70-130	8	20	M1
Calcium	mg/L	2360	10	10	2310	2530	-504	1620	70-130	9	20	M1

MATRIX SPIKE SAMPLE: 2743707

Parameter	Units	60348776003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.021	1	0.97	95	70-130	
Boron	mg/L	1.7	1	2.7	97	70-130	
Calcium	mg/L	355	10	357	25	70-130	M1

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.: 60348776

QC Batch: 678528

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: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

METHOD BLANK: 2743582

Matrix: Water

Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cobalt	mg/L	<0.0010	0.0010	09/25/20 15:03	
Molybdenum	mg/L	<0.0010	0.0010	09/26/20 13:40	

LABORATORY CONTROL SAMPLE: 2743583

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.04	0.037	93	85-115	
Molybdenum	mg/L	0.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743584 2743585

Parameter	Units	60348360002		MS		MSD		% Rec		Max		Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Cobalt	mg/L	ND	0.04	0.04	0.037	0.036	92	90	70-130	2	20	
Molybdenum	mg/L	1.5 ug/L	0.04	0.04	0.043	0.042	104	101	70-130	3	20	

MATRIX SPIKE SAMPLE: 2743586

Parameter	Units	60348653001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.00090	0.04	0.037	91	70-130	
Molybdenum	mg/L	0.0011J	0.04	0.037	90	70-130	

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.

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch: 678583

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

METHOD BLANK: 2743710

Matrix: Water

Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Lithium	mg/L	<0.010	0.010	09/25/20 18:03	

LABORATORY CONTROL SAMPLE: 2743711

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Lithium	mg/L	1	0.99	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743712 2743713

Parameter	Units	2743712		2743713		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60348653001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Lithium	mg/L	2.4	1	1	3.3	3.4	98	101	75-125	1	20

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**QUALITY CONTROL DATA**

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch: 678263

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60348776001

METHOD BLANK: 2742750

Matrix: Water

Associated Lab Samples: 60348776001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/22/20 15:14	

LABORATORY CONTROL SAMPLE: 2742751

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 2742752

Parameter	Units	60348460001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1850	1830	1	10	H1

SAMPLE DUPLICATE: 2742755

Parameter	Units	60348894001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	34600	32200	7	10	

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch: 678377

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60348776002, 60348776003, 60348776004, 60348776005

METHOD BLANK: 2743082

Matrix: Water

Associated Lab Samples: 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/23/20 08:52	

LABORATORY CONTROL SAMPLE: 2743083

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1000	100	80-120	

SAMPLE DUPLICATE: 2743084

Parameter	Units	60348776002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	901	860	5	10	

SAMPLE DUPLICATE: 2743085

Parameter	Units	60348892001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3510	3480	1	10	

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch: 678054

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: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

SAMPLE DUPLICATE: 2742052

Parameter	Units	60348774005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.1	2	5	H6

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

QC Batch:	678152	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: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

METHOD BLANK: 2742375 Matrix: Water  
Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/22/20 09:18	
Fluoride	mg/L	<0.20	0.20	09/22/20 09:18	
Sulfate	mg/L	<1.0	1.0	09/22/20 09:18	

METHOD BLANK: 2744721 Matrix: Water  
Associated Lab Samples: 60348776001, 60348776002, 60348776003, 60348776004, 60348776005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/23/20 09:35	
Fluoride	mg/L	<0.20	0.20	09/23/20 09:35	
Sulfate	mg/L	<1.0	1.0	09/23/20 09:35	

LABORATORY CONTROL SAMPLE: 2742376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	103	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

LABORATORY CONTROL SAMPLE: 2744722

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.3	105	90-110	
Fluoride	mg/L	2.5	2.6	104	90-110	
Sulfate	mg/L	5	5.4	107	90-110	

MATRIX SPIKE SAMPLE: 2742377

Parameter	Units	60348774001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	19.3	5	24.3	100	80-120	E
Fluoride	mg/L	0.58	2.5	2.7	86	80-120	
Sulfate	mg/L	173	250	430	103	80-120	

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### QUALITY CONTROL DATA

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

Parameter	Units	2742378		2742379		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60348528003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chloride	mg/L	10.5J	100	100	105	104	94	94	80-120	1	15		
Fluoride	mg/L	3.7J	50	50	55.0	54.9	103	102	80-120	0	15		
Sulfate	mg/L	636	100	100	757	753	121	118	80-120	0	15	E,M1	

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## QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60348776

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### 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

E Analyte concentration exceeded the calibration range. The reported result is estimated.

H1 Analysis conducted outside the EPA method holding time.

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.: 60348776

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60348776001	MW-04-091620	EPA 200.7	678582	EPA 200.7	678857
60348776002	MW-01-091620	EPA 200.7	678582	EPA 200.7	678857
60348776003	MW-05-091620	EPA 200.7	678582	EPA 200.7	678857
60348776004	MW-06-091620	EPA 200.7	678582	EPA 200.7	678857
60348776005	DUP-TEC-091620	EPA 200.7	678582	EPA 200.7	678857
60348776001	MW-04-091620	EPA 3010	678583	EPA 6010	678858
60348776002	MW-01-091620	EPA 3010	678583	EPA 6010	678858
60348776003	MW-05-091620	EPA 3010	678583	EPA 6010	678858
60348776004	MW-06-091620	EPA 3010	678583	EPA 6010	678858
60348776005	DUP-TEC-091620	EPA 3010	678583	EPA 6010	678858
60348776001	MW-04-091620	EPA 200.8	678528	EPA 200.8	678673
60348776002	MW-01-091620	EPA 200.8	678528	EPA 200.8	678673
60348776003	MW-05-091620	EPA 200.8	678528	EPA 200.8	678673
60348776004	MW-06-091620	EPA 200.8	678528	EPA 200.8	678673
60348776005	DUP-TEC-091620	EPA 200.8	678528	EPA 200.8	678673
60348776001	MW-04-091620	SM 2540C	678263		
60348776002	MW-01-091620	SM 2540C	678377		
60348776003	MW-05-091620	SM 2540C	678377		
60348776004	MW-06-091620	SM 2540C	678377		
60348776005	DUP-TEC-091620	SM 2540C	678377		
60348776001	MW-04-091620	SM 4500-H+B	678054		
60348776002	MW-01-091620	SM 4500-H+B	678054		
60348776003	MW-05-091620	SM 4500-H+B	678054		
60348776004	MW-06-091620	SM 4500-H+B	678054		
60348776005	DUP-TEC-091620	SM 4500-H+B	678054		
60348776001	MW-04-091620	EPA 300.0	678152		
60348776002	MW-01-091620	EPA 300.0	678152		
60348776003	MW-05-091620	EPA 300.0	678152		
60348776004	MW-06-091620	EPA 300.0	678152		
60348776005	DUP-TEC-091620	EPA 300.0	678152		

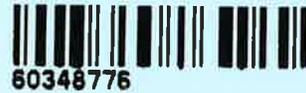
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Sample Condition Upon Receipt

WO#: 60348776



Client Name: Energy KS.

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-299 Type of Ice: Wet Blue  None

Cooler Temperature (°C): As-read 5.6, 1.2 Corr. Factor +0.2 Corrected 5.8, 1.4

Date and initials of person examining contents: 9.18.20 [Signature]

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 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 <sub>3</sub> , H <sub>2</sub> SO <sub>4</sub> , 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 2**

**Statistical Analyses**

**ATTACHMENT 2-1**

**September 2019 Semi-Annual Sampling Event Statistical Analyses**



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

## TECHNICAL MEMORANDUM

March 18, 2022  
File No. 0204993-000

TO: Energy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)  
Jared Morrison – Director, Water and Waste Programs

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

SUBJECT: September 2019 Semi-annual Groundwater Assessment Monitoring Data  
Statistical Evaluation  
**Completed January 20, 2020**  
Tecumseh Energy Center  
322 Landfill

Pursuant to Code of Federal Regulations Title 40 (40 CFR) §257.93 and §257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the September 2019 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 6 and 7, 2019, with laboratory results received and accepted on October 22, 2019.

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, regional screening level, or background concentration.

### 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 method was 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 TL 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 in June 2019 using parametric TLs. If an Appendix IV constituent concentration from the September 2019 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 was 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 September 2018.

## 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 2019 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 discussed below and provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in September 2019, 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 2019 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 2019 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) <sup>1</sup>	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well	SSL
<b>CCR Appendix-IV: Barium, Total (mg/L)</b>																						
MW-4 (upgradient)	13/13	0%	0.14	0.0001617	0.01272	0.1107	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.10	Y	0.140		2.0		
MW-1	13/13	0%	0.2	0.003418	0.05846	0.4375	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.076	Y		No		N	No
MW-5	13/13	0%	0.04	0.00004056	0.006369	0.2421	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.019	Y		No		N	No
MW-6	13/13	0%	0.041	0.0000624	0.007899	0.3334	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.014	Y		No		N	No
<b>CCR Appendix-IV: Cobalt, Total (mg/L)</b>																						
MW-4 (upgradient)	0/13	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001		0.006		
MW-1	9/13	31%	0.0086	0.00000501	0.002238	0.9326	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0017	Y		Yes		N	No
MW-5	13/13	0%	0.0021	1.091E-07	0.0003303	0.1843	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0020	Y		Yes		N	No
MW-6	13/13	0%	0.0033	3.947E-07	0.0006283	0.2714	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0024	Y		Yes		N	No
<b>CCR Appendix-IV: Fluoride (mg/L)</b>																						
MW-4 (upgradient)	11/14	21%	0.35	0.001396	0.03737	0.159	4.0	mg/L	N	0	0	Yes	No	Stable	Normal	0.21	Y	0.350		4.0		
MW-1	14/14	0%	0.46	0.001809	0.04254	0.1161	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.30	Y		No		N	No
MW-5	12/14	14%	0.42	0.003869	0.0622	0.214	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.25	Y		No		N	No
MW-6	14/14	0%	0.5	0.005105	0.07145	0.2033	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.28	Y		No		N	No
<b>CCR Appendix-IV: Lithium, Total (mg/L)</b>																						
MW-4 (upgradient)	0/13	100%	-	7.228E-20	2.688E-10	2.688E-08	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/13	92%	0.01	7.228E-20	2.688E-10	2.688E-08	0.040	mg/L	N	0	0	NA	NA	NA	Non-parametric	0.010	N		No		N	No
MW-5	9/13	31%	0.024	0.00002608	0.005107	0.3207	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.017	Y		Yes		N	No
MW-6	10/13	23%	0.022	0.00002044	0.004521	0.3126	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.015	Y		Yes		N	No
<b>CCR Appendix-IV: Radium-226 &amp; 228 (pCi/L)</b>																						
MW-4 (upgradient)	12/12	0%	2.641	0.4219	0.6495	0.3759	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.80	Y	3.1		5.0		
MW-1	12/12	0%	1.78	0.3317	0.5759	0.6991	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.72	N		No		N	No
MW-5	12/12	0%	1.48	0.07234	0.269	0.247	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.01	N		No		N	No
MW-6	11/12	8%	1.95	0.2758	0.5252	0.684	5.0	pCi/L	N	0	0	No	No	Stable	Normal	0.0676	N		No		N	No

**Notes:**

<sup>1</sup> Based on baseline data collected from 08/17/2016 through 09/5/2018

\* 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 2020 Semi-Annual Sampling Event Statistical Analyses**



HALEY & ALDRICH, INC.  
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Cleveland, OH 44131  
216.739.0555

## TECHNICAL MEMORANDUM

March 18, 2022  
File No. 0204993-000

TO: Energy Kansas Central, Inc. (f/k/a Westar Energy, 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 2020 Semi-annual Groundwater Assessment Monitoring Data  
Statistical Evaluation  
**Completed July 14, 2020**  
Tecumseh Energy Center  
322 Landfill

Pursuant to Code of Federal Regulations Title 40 (40 CFR) §257.93 and §257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the March 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 March 8 and 9, 2020, with laboratory results received and accepted on April 17, 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, 40 CFR § 257.95(h)(2) levels (from regional screening levels), or background concentration.

### 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 method was 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 TL 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 in June 2019 using parametric TLs. If an Appendix IV constituent concentration from the March 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 was 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.

## 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 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 discussed below and provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in March 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**  
MARCH 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					March 2020 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) <sup>1</sup>	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well	SSL
<b>CCR Appendix-IV: Barium, Total (mg/L)</b>																						
MW-4 (upgradient)	14/14	0%	0.14	0.000151	0.01229	0.1073	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.11	Y	0.137		2.0		
MW-1	14/14	0%	0.2	0.003168	0.05629	0.4243	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.12	Y		No		N	No
MW-5	14/14	0%	0.04	0.00004503	0.006711	0.2624	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.016	Y		No		N	No
MW-6	14/14	0%	0.041	0.00005812	0.007623	0.3244	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.021	Y		No		N	No
<b>CCR Appendix-IV: Cobalt, Total (mg/L)</b>																						
MW-4 (upgradient)	0/14	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.001		0.006		
MW-1	10/14	29%	0.0086	4.745E-06	0.002178	0.9442	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0011	Y		Yes		N	No
MW-5	14/14	0%	0.0021	1.18E-07	0.0003435	0.1955	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0013	Y		Yes		N	No
MW-6	14/14	0%	0.0033	3.702E-07	0.0006084	0.2605	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0026	Y		Yes		N	No
<b>CCR Appendix-IV: Fluoride (mg/L)</b>																						
MW-4 (upgradient)	11/15	27%	0.35	0.001378	0.03712	0.1596	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.20	N	0.350		4.0		
MW-1	15/15	0%	0.46	0.001769	0.04205	0.1155	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.33	Y		No		N	No
MW-5	12/15	20%	0.42	0.004141	0.06435	0.2261	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.20	N		No		N	No
MW-6	15/15	0%	0.5	0.005427	0.07367	0.2137	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.25	Y		No		N	No
<b>CCR Appendix-IV: Lithium, Total (mg/L)</b>																						
MW-4 (upgradient)	0/14	100%		5.004E-20	2.237E-10	2.237E-08	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/14	93%	0.01	5.004E-20	2.237E-10	2.237E-08	0.040	mg/L	N	0	0	NA	NA	NA	Non-parametric	0.010	N		No		N	No
MW-5	10/14	29%	0.024	0.00002468	0.004968	0.3161	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.013	Y		Yes		N	No
MW-6	10/14	29%	0.022	0.00002029	0.004504	0.3185	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		N	No
<b>CCR Appendix-IV: Radium-226 &amp; 228 (pCi/L)</b>																						
MW-4 (upgradient)	14/14	0%	2.64	0.3755	0.6128	0.36	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.41		2.825		5.0		
MW-1	12/14	14%	1.78	0.2648	0.5146	0.6992	5.0	pCi/L	N	0	0	No	No	Stable	Normal	0.38	Y		No		N	No
MW-5	14/14	0%	1.6	0.08414	0.2901	0.2757	5.0	pCi/L	N	0	0	No	No	Stable	Normal	0.88	Y		No		N	No
MW-6	13/14	7%	2.6	0.4708	0.6861	0.7436	5.0	pCi/L	N	0	0	Yes	No	Stable	Normal	1.25	Y		No		N	No

**Notes:**

<sup>1</sup> Based on baseline data collected from 08/17/2016 through 03/08/2020.

\* 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 3**

**Revised Groundwater Potentiometric Maps**



**LEGEND**

- MW-1 WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL)  
900.79 MARCH 2020
- 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 2020.
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



**HALEY ALDRICH**

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

322 LANDFILL  
GROUNDWATER POTENTIOMETRIC  
ELEVATION CONTOUR MAP  
MARCH 8, 2020

**evergy**

MARCH 2022

FIGURE 2



**LEGEND**

- MW-1 900.47 WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) JUNE 2020
-  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 JUNE 2020.
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



**HALEY ALDRICH**

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

**322 LANDFILL  
GROUNDWATER POTENTIOMETRIC  
ELEVATION CONTOUR MAP  
JUNE 8, 2020**

**evergy**

MARCH 2022

FIGURE 3



**LEGEND**

- MW-1 900.47 WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) SEPTEMBER 2020
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 5-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 16 SEPTEMBER 2020.
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 16, 2020



MARCH 2022

FIGURE 4