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2019 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. (f/k/a Westar Energy, Inc.) Topeka, Kansas



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Revision No.	Date	Notes
0	January 2020	Original
1	March 2021	Revised to include groundwater potentiometric contour maps for 2019



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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 (2019) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2019 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: Kansas License No.: Title: Company:

Mark Nicholls Professional Geologist No. 881 Technical Expert 2 Haley & Aldrich, Inc.





1. Introduction

This 2019 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; f/k/a Westar Energy, Inc.). 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 (2019) and documents compliance with the Rule. The specific requirements for the annual report listed in § 257.90(e) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.



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 2019.

2.2.1 Status of the Groundwater Monitoring Program

The 322 Landfill remained in the assessment monitoring program during 2019.

2.2.2 Key Actions Completed

The 2018 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2019. Statistical evaluation was completed in January 2019 on analytical data from the September 2018 assessment monitoring sampling event.



A semi-annual assessment monitoring sampling event was completed in March 2019 for detected Appendix IV constituents identified from the June 2018 annual assessment monitoring sampling event. Statistical evaluation was completed in July 2019 on analytical data from the March 2019 assessment monitoring sampling event.

An annual assessment monitoring sampling event was completed in June 2019 to identify detected Appendix IV constituents for subsequent semi-annual sampling events in September 2019 and planned for March 2020. Groundwater protection standards for detected Appendix IV constituents were established or updated at that time. Semi-annual assessment monitoring sampling was completed in September 2019 for detected Appendix IV constituents identified during the June 2019 annual monitoring event. Statistical evaluation of the results from the September 2019 semi-annual assessment monitoring sampling event are due to be completed in January 2020 and will be reported in the next annual report.

2.2.3 Problems Encountered

No noteworthy problems (i.e., problems could include damaged wells, issues with sample collection or lack of sampling, and problems with analytical analysis) were encountered for the 322 Landfill in 2019.

2.2.4 Actions to Resolve Problems

No problems were encountered at the 322 Landfill in 2019; therefore, no actions to resolve problems were required.

2.2.5 Project Key Activities for Upcoming Year

Key activities planned for 2020 include the completion of the 2019 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual assessment monitoring analytical data collected in September 2019, 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 2019.

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 2019. 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 2019 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 established in June 2018 to meet the requirements of 40 CFR § 257.95. The 322 Landfill remained in assessment monitoring during 2019.

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 2019.

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

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



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

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

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

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

2.3.5.3 40 CFR § 257.95(c)(3) – Demonstration for Alternative Assessment Monitoring Frequency

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

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

2.3.5.4 40 CFR § 257.95(d)(3) – Assessment Monitoring Concentrations and Groundwater Protection Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).



An assessment monitoring program has been implemented at the CCR unit since June 2018. Three rounds of assessment monitoring sampling were completed in 2019. Analytical results for both downgradient and upgradient wells are provided in Table I. The background concentrations (upper tolerance limits) and groundwater protection standards established for detected Appendix IV constituents for the 322 Landfill are included in Table II. The background concentrations and groundwater protection standards provided in Table II. The background assessment monitoring sampling events.

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

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval for 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 2019. The 322 Landfill remained in assessment monitoring during 2019.

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

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



the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring of corrective measures was required to be initiated in 2019; therefore, no demonstration or certification is applicable for this unit.



TABLES

TABLE ISUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORINGEVERGY KANSAS CENTRAL, INC.TECUMSEH ENERGY CENTER322 LANDFILLTECUMSEH, KANSAS

Location	Upgradient MW-4		Downgradient												
Location			MW-1			MW-5			MW-6						
Measure Point (TOC)		936.48		904.65			916.18			911.28					
Sample Name	MW-4-032019	MW-4-062619	MW-4	MW-1-032019	MW-1-062619	DUP-062619	MW-1	DUPLICATE	MW-5-032019	MW-5-062619	MW-5	MW-6-032019	DUP-032019	MW-6-062619	MW-6
Sample Date	3/20/2019	6/26/2019	9/7/2019	3/20/2019	6/26/2019	6/26/2019	9/6/2019	9/6/2019	3/20/2019	6/26/2019	9/7/2019	3/20/2019	3/20/2019	6/26/2019	9/7/2019
Final Lab Report Date	4/1/2019	7/9/2019	9/13/2019	4/1/2019	7/9/2019	7/9/2019	9/13/2019	9/13/2019	4/1/2019	7/9/2019	9/13/2019	4/1/2019	4/1/2019	7/9/2019	9/13/2019
Final 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
Final Radiation Lab Report Date	4/3/2019	7/17/2019	10/2/2019	4/3/2019	7/17/2019	7/17/2019	10/2/2019	10/2/2019	4/3/2019	7/17/2019	10/2/2019	4/3/2019	4/3/2019	7/17/2019	10/2/2019
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	4/15/2019	7/26/2019	10/22/2019	4/15/2019	7/26/2019	7/26/2019	10/22/2019	10/22/2019	4/15/2019	7/26/2019	10/22/2019	4/15/2019	4/15/2019	7/26/2019	10/22/2019
Depth to Water (ft btoc)	3.49	3.28	4.00	3.99	3.84		3.83		5.70	5.03	6.09	8.06	8.06	8.10	8.09
Temperature (Deg C)	7.78	17.23	19.32	10.35	15.31		15.75		9.43	15.00	19.63	11.43	11.43	14.34	17.61
Conductivity (µS/cm)	1530	1660	1628	1203	1257		992		2370	2270	2262	2080	2080	2110	1899
Turbidity (NTU)	4.13	3.00	1.33	9.01	1.75		1.61		1.46	0.39	0.49	12.1	12.1	8.31	2.19
Boron, Total (mg/L)	<0.10		<0.10	0.12			0.37	0.39	0.95		1.5	0.72	0.71		0.71
Calcium, Total (mg/L)	162		146	162			151	154	368		328	328	322		295
Chloride (mg/L)	280		266	43.6			29.3	30.5	47.5		41.9	64.9	66.4		66.5
Fluoride (mg/L)	0.24		0.21	0.38			0.30	0.30	0.25		0.25	0.30	0.28		0.28
Sulfate (mg/L)	150		140	394			364	331	1160		857	977	532		783
pH (su)	7.2		7.0	7.1			6.9	6.8	6.9		6.8	7.0	7.1		7.0
TDS (mg/L)	976		987	936			905	893	1980		1750	1750	1740		1600
Antimony, Total (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Arsenic (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Barium, Total (mg/L)	0.094	0.11	0.10	0.066	0.065	0.069	0.076	0.079	0.018	0.022	0.019	0.016	0.017	0.016	0.014
Beryllium, Total (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Cadmium, Total (mg/L)	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050			<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	
Chromium, Total (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050	<0.0050			<0.0050	<0.0050		<0.0050	<0.0050	<0.0050	
Cobalt, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	<0.0010	0.0017	0.0017	0.0014	0.0019	0.0020	0.0022	0.0021	0.0026	0.0024
Lead, Total (mg/L)	<0.010	<0.010		<0.010	<0.010	<0.010			<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	<0.010	<0.010	0.015	0.017	0.010	<0.010	0.012	0.015
Molybdenum, Total (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Selenium, Total (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0050	<0.0010		<0.0050	<0.0050	<0.0010	
Thallium, Total (mg/L)	<0.0010	<0.0010		<0.0010	<0.0010	<0.0010			<0.0010	<0.0010		<0.0010	<0.0010	<0.0010	
Mercury, Total (mg/L)	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020			<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Fluoride (mg/L)	0.24	0.24	0.21	0.38	0.34	0.35	0.30	0.30	0.25	<0.20	0.25	0.30	0.28	0.46	0.28
Radium-226 & 228 Combined (pCi/L)	1.85 +/- 1.11 (1.73)	1.84 +/- 1.01 (1.59)	1.80 +/- 0.970 (1.29)	0.253 +/- 0.818 (1.75)	0.725 +/- 0.817 (1.54)	1.67 +/- 1.10 (1.61)	1.72 +/- 1.09 (1.74)	0.808 +/- 0.806 (1.52)	1.36 +/- 1.01 (1.66)	1.04 +/- 0.936 (1.59)	1.01 +/- 0.845 (1.40)	0.931 +/- 0.876 (1.55)	1.43 +/- 0.873 (1.41)	2.60 +/- 1.23 (1.47)	0.0676 +/- 0.759 (1.54)

Notes:

The June 2019 sampling event was for Appendix IV constituents only. The September 2019 sampling event included Appendix IV constituents detected in the June 2019 sampling event, and all of the Appendix III constituents.

Radiological results are presented as activity plus or minus uncertainty with minimum detectable concentration (MDC).

Bold value: Detection above laboratory reporting limit or MDC.

µS/cm = micro Siemens per centimeter

Deg C = degrees Celsius

ft btoc = feet below top of casing

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE IIANNUAL ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPSJUNE 2019 SAMPLING EVENTTECUMSEH ENERGY CENTER322 LANDFILL

Well #	Background Value*	GWPS						
CCR Appendix-IV Barium, Total (mg/L)								
MW-4 (upgradient)	0.14	NA						
MW-1		2						
MW-5		2						
MW-6		2						
C	CR Appendix-IV Cobalt, Total (mg/	L)						
MW-4 (upgradient)	0.001	NA						
MW-1		0.006						
MW-5		0.006						
MW-6		0.006						
C	CR Appendix-IV Fluoride, Total (mg	(L)						
MW-4 (upgradient)	0.35	NA						
MW-1		4.0						
MW-5		4.0						
MW-6		4.0						
C	CR Appendix-IV Lithium, Total (mg/	ľL)						
MW-4 (upgradient)	0.01	NA						
MW-1		0.040						
MW-5		0.040						
MW-6		0.040						
CCR Appe	endix-IV Radium-226 & 228 Combin	ed (pCi/L)						
MW-4 (upgradient)	3.1	NA						
MW-1		5						
MW-5		5						
MW-6		5						

Notes:

* Background value based on data collected through June 2018

CCR = Coal Combustion Residuals

GWPS = *Groundwater Protection Standard*

MCL = Maximum Contaminant Level

mg/L = milligrams per Liter

NA = Not Applicable

pCi/L = picoCuries per Liter

RSL = Regional Screening Level



FIGURES



LEGEND



MONITORING WELL

PIEZOMETRIC OBSERVATION ONLY

322 LANDFILL

NOTE

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. AERIAL IMAGERY SOURCE: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, 11 APRIL 2017.



600

300 SCALE IN FEET

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

322 LANDFILL MONITORING WELL LOCATION MAP

MARCH 2021 SCALE: AS SHOWN

FIGURE 1



LEGEND							
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION (MARCH 20, 2019)						
•	MONITORING WELL						
-	PIEZOMETER OBSERVATION ONLY						
	GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)						
	ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR						
-	GROUNDWATER FLOW DIRECTION						
	322 LANDFILL						



LEGEND							
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION (JUNE 26, 2019)						
•	MONITORING WELL						
	PIEZOMETER OBSERVATION ONLY						
	GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)						
	ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR						
-	GROUNDWATER FLOW DIRECTION						
	322 LANDFILL						



LEGEND							
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 06, 2019)						
•	MONITORING WELL						
-	PIEZOMETER OBSERVATION ONLY						
	GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION, 2-FT INTERVAL (AMSL)						
	ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR						
-	GROUNDWATER FLOW DIRECTION						
	322 LANDFILL						



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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:	2019 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 2019 for the 322 Landfill was completed and placed in the facility's operating record on January 31, 2020, 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 2019 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2019 are included in Attachment 2 of this addendum. Revision 1 of the 2019 GWMCA Report does include a "Groundwater Potentiometric Elevation Contour Map" for each of the 2019 sampling events as

Evergy Kansas Central, Inc. March 18, 2022 Page 2

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 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 2019 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 2019. Statistical analyses completed in 2019 included:
 - January 2019 statistical analyses for data obtained in the September 2018 sampling event; and
 - July 2019 statistical analyses for data obtained in the March 2019 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 2019 are provided.



ATTACHMENT 1

Laboratory Analytical Reports

ATTACHMENT 1-1

March 2019 Sampling Event Laboratory Analytical Report



Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

April 01, 2019

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: TEC LF CCR Pace Project No.: 60297582

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Autor m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY





CERTIFICATIONS

Project: TEC LF CCR Pace Project No.: 60297582

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 Missouri Certification Number: 10090 Arkansas Drinking Water WY STR Certification #: 2456.01 Arkansas Certification #: 18-016-0 Arkansas Drinking Water Illinois Certification #: 004455 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 / E10426 Louisiana Certification #: 03055 Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Texas Certification #: T104704407-18-11 Utah Certification #: KS000212018-8 Kansas Field Laboratory Accreditation: # E-92587 Missouri Certification: 10070 Missouri Certification Number: 10090



SAMPLE SUMMARY

Project: TEC LF CCR Pace Project No.: 60297582

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297582001	MW-4-032019	Water	03/20/19 09:32	03/21/19 17:00
60297582002	MW-5-032019	Water	03/20/19 10:42	03/21/19 17:00
60297582003	MW-6-032019	Water	03/20/19 13:07	03/21/19 17:00
60297582004	MW-1-032019	Water	03/20/19 14:40	03/21/19 17:00
60297582005	DUP-032019	Water	03/20/19 06:00	03/21/19 17:00



SAMPLE ANALYTE COUNT

Project: TEC LF CCR Pace Project No.: 60297582

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297582001	MW-4-032019	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582002	MW-5-032019	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582003	MW-6-032019	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582004	MW-1-032019	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60297582005	DUP-032019	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	CTR	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	ZMH	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K



Project: TEC LF CCR

Pace Project No.: 60297582

Sample: MW-4-032019	Lab ID: 602	297582001	Collected: 03/20/1	9 09:3	2 Received: 03	8/21/19 17:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: E	PA 200.7			
Barium, Total Recoverable	0.094	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:17	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:17	7440-41-7	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:17	7440-42-8	
Calcium, Total Recoverable	162	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:17	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:17	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:17	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:17	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Met	hod: E	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:50	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:50	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 24	5.1 Preparation Met	hod: E	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	976	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	7.2	Std. Units	0.10	1		03/25/19 11:12		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	280	mg/L	20.0	20		03/28/19 22:58	16887-00-6	
Fluoride	0.24	mg/L	0.20	1		03/28/19 22:46	16984-48-8	
Sulfate	150	mg/L	20.0	20		03/28/19 22:58	14808-79-8	



Project: TEC LF CCR

Pace Project No.: 60297582

Sample: MW-5-032019	Lab ID: 602	297582002	Collected: 03/20/1	9 10:42	2 Received: 03	8/21/19 17:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: El	PA 200.7			
Barium, Total Recoverable	0.018	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:20	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:20	7440-41-7	
Boron, Total Recoverable	0.95	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:20	7440-42-8	
Calcium, Total Recoverable	368	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:20	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:20	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:20	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:20	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	0.8 Preparation Met	hod: El	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:53	7440-43-9	
Cobalt, Total Recoverable	0.0014	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7439-98-7	
Selenium, Total Recoverable	<0.0050	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:36	7782-49-2	D3
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:53	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 24	5.1 Preparation Met	hod: El	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	1980	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	6.9	Std. Units	0.10	1		03/25/19 11:15		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	0.0					
Chloride	47.5	mg/L	10.0	10		03/29/19 16:57	16887-00-6	
Fluoride	0.25	mg/L	0.20	1		03/28/19 23:24	16984-48-8	
Sulfate	1160	mg/L	100	100		03/28/19 23:50	14808-79-8	



Project: TEC LF CCR

Pace Project No.: 60297582

Sample: MW-6-032019	Lab ID: 602	297582003	Collected: 03/20/1	9 13:07	7 Received: 03	8/21/19 17:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: El	PA 200.7			
Barium, Total Recoverable	0.016	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:22	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:22	7440-41-7	
Boron, Total Recoverable	0.72	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:22	7440-42-8	
Calcium, Total Recoverable	328	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:22	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:22	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:22	7439-92-1	
Lithium	0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:22	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Met	hod: El	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:56	7440-43-9	
Cobalt, Total Recoverable	0.0022	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7439-98-7	
Selenium, Total Recoverable	<0.0050	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:38	7782-49-2	D3
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:56	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 24	5.1 Preparation Met	hod: El	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	1750	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		03/25/19 11:18		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	64.9	mg/L	20.0	20		03/29/19 00:16	16887-00-6	
Fluoride	0.30	mg/L	0.20	1		03/29/19 00:03	16984-48-8	
Sulfate	977	mg/L	100	100		03/29/19 00:54	14808-79-8	



Project: TEC LF CCR

Pace Project No.: 60297582

Sample: MW-1-032019	Lab ID: 60	297582004	Collected: 03/20/1	9 14:40	Received: 03	8/21/19 17:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	.7 Preparation Met	hod: El	PA 200.7			
Barium, Total Recoverable	0.066	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:24	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:24	7440-41-7	
Boron, Total Recoverable	0.12	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:24	7440-42-8	
Calcium, Total Recoverable	162	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:24	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:24	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:24	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:24	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 200	.8 Preparation Met	hod: El	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:59	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:59	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 245	.1 Preparation Met	hod: El	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 2540	C					
Total Dissolved Solids	936	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Me	thod: SM 4500)-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		03/25/19 11:20		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 300	.0					
Chloride	43.6	mg/L	10.0	10		03/29/19 17:10	16887-00-6	
Fluoride	0.38	mg/L	0.20	1		03/29/19 01:07	16984-48-8	
Sulfate	394	mg/L	100	100		03/29/19 01:33	14808-79-8	



Project: TEC LF CCR

Pace Project No.: 60297582

Sample: DUP-032019	Lab ID: 602	297582005	Collected: 03/20/1	9 06:00	Received: 03	8/21/19 17:00 N	latrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	thod: EF	PA 200.7			
Barium, Total Recoverable	0.017	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:27	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:27	7440-41-7	
Boron, Total Recoverable	0.71	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:27	7440-42-8	
Calcium, Total Recoverable	322	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:27	7440-70-2	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:27	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:27	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:27	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Met	thod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:19	7440-43-9	
Cobalt, Total Recoverable	0.0021	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7439-98-7	
Selenium, Total Recoverable	<0.0050	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:40	7782-49-2	D3
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:19	7440-28-0	
245.1 Mercury	Analytical Me	thod: EPA 24	5.1 Preparation Met	thod: EF	PA 245.1			
Mercury	<0.00020	mg/L	0.00020	1	03/26/19 11:57	03/28/19 13:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	1740	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	7.1	Std. Units	0.10	1		03/25/19 08:29		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	66.4	mg/L	20.0	20		03/29/19 08:12	16887-00-6	
Fluoride	0.28	mg/L	0.20	1		03/29/19 07:59	16984-48-8	
Sulfate	532	mg/L	100	100		03/29/19 08:25	14808-79-8	



Project:	TEC LF CCR												
Pace Project No.:	60297582												
QC Batch:	575586			Analys	sis Method	l: E	PA 245.1						
QC Batch Method:	EPA 245.1			Analys	sis Descrip	otion: 2	45.1 Mercur	у					
Associated Lab Sar	mples: 60297	7582001, 6	0297582002	, 60297582	2003, 6029	97582004, 6	60297582005	5					
METHOD BLANK:	2361248			Ν	Matrix: Wa	ater							
Associated Lab Sar	mples: 60297	7582001, 6	0297582002	, 60297582	2003, 6029	7582004, 6	60297582005	5					
				Blank	k F	Reporting							
Parar	neter		Units	Resul	lt	Limit	Analyz	ed	Qualifiers				
Mercury			mg/L	<0.0	00020	0.00020	03/28/19	10:59					
LABORATORY CO	NTROL SAMPL	.E: 2361	249										
Parar	neter		Units	Spike Conc.	LC: Res	S ult	LCS % Rec	% Re Limits	c S QI	ualifiers			
Mercury			mg/L	0.005	, ,	0.0045	90	8	5-115		-		
MATRIX SPIKE SA	MPLE:	2361	250										
Parar	neter		Units	602975 Res	81003 ult	Spike Conc.	MS Result	N %	1S Rec	% Rec Limits		Qualif	iers
Mercury			mg/L	<	0.00020	0.005	0.00	46	92	70-	130		
MATRIX SPIKE & N	ATRIX SPIKE	DUPLICAT	E: 23612	51		2361252							
				MS	MSD								
		60	297657001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Paramete	er	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Mercury		mg/L	ND	0.005	0.005	0.0050	0.0050	101	99	70-130	2	20	

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



Project: TEC LF CCR

Pace Project No.: 60297582

QC Batch:	575351	

QC Batch Method: EPA 200.7 Analysis Method: Analysis Description:

Matrix: Water

200.7 Metals, Total 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

EPA 200.7

METHOD BLANK: 2360336

Associated Lab Samples:

Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	03/26/19 13:05	
Beryllium	mg/L	<0.0010	0.0010	03/26/19 13:05	
Boron	mg/L	<0.10	0.10	03/26/19 13:05	
Calcium	mg/L	<0.20	0.20	03/26/19 13:05	
Chromium	mg/L	<0.0050	0.0050	03/26/19 13:05	
Lead	mg/L	<0.010	0.010	03/26/19 13:05	
Lithium	mg/L	<0.010	0.010	03/26/19 13:05	

LABORATORY CONTROL SAMPLE: 2360337

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.98	98	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.97	97	85-115	
Lead	mg/L	1	0.99	99	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKI	E DUPLI	CATE: 23603	38		2360339							
			MS	MSD								
		60297581003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.54	1	1	1.6	1.5	101	100	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	0.99	1.0	99	100	70-130	0	20	
Boron	mg/L	0.48	1	1	1.5	1.5	101	103	70-130	1	20	
Calcium	mg/L	206	10	10	221	219	154	134	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.96	0.97	96	97	70-130	1	20	
Lead	mg/L	<0.010	1	1	0.96	0.97	96	97	70-130	0	20	
Lithium	mg/L	0.021	1	1	1.0	1.0	102	102	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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Project: TEC LF CCR

Pace Project No.: 60297582

QC Batch:	57536	8	Analysis Methor	l :c	EPA 200.8	
QC Batch Method:	EPA 2	00.8	Analysis Descri	otion: 2	200.8 MET	
Associated Lab Samp	les:	60297582001, 6029758	2002, 60297582003, 6029	97582004,	60297582005	

METHOD BLANK: 2360396

Matrix: Water

Associated Lab Samples: 60297582001, 60297582002, 60297582003, 60297582004, 60297582005

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	03/28/19 13:00	
Arsenic	mg/L	<0.0010	0.0010	03/28/19 13:00	
Cadmium	mg/L	<0.00050	0.00050	03/28/19 13:00	
Cobalt	mg/L	<0.0010	0.0010	03/28/19 13:00	
Molybdenum	mg/L	<0.0010	0.0010	03/28/19 13:00	
Selenium	mg/L	<0.0010	0.0010	03/28/19 13:00	
Thallium	mg/L	<0.0010	0.0010	03/28/19 13:00	

LABORATORY CONTROL SAMPLE: 2360397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.038	95	85-115	
Arsenic	mg/L	0.04	0.039	97	85-115	
Cadmium	mg/L	0.04	0.039	96	85-115	
Cobalt	mg/L	0.04	0.039	97	85-115	
Molybdenum	mg/L	0.04	0.035	88	85-115	
Selenium	mg/L	0.04	0.039	99	85-115	
Thallium	mg/L	0.04	0.036	91	85-115	

MATRIX SPIKE & MATRIX SPIK	E DUPLI	CATE: 236039	98		2360399							
			MS	MSD								
		60297581002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.037	0.038	93	94	70-130	1	20	
Arsenic	mg/L	0.028	0.04	0.04	0.066	0.066	95	95	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.035	0.035	88	89	70-130	0	20	
Cobalt	mg/L	0.0014	0.04	0.04	0.040	0.040	96	96	70-130	0	20	
Molybdenum	mg/L	0.0029	0.04	0.04	0.040	0.040	92	92	70-130	0	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.033	0.033	81	81	70-130	0	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.038	0.038	94	95	70-130	1	20	

MATRIX SPIKE SAMPLE:	2360400						
		60297582005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.037	92	70-130	
Arsenic	mg/L	<0.0010	0.04	0.039	96	70-130	
Cadmium	mg/L	<0.00050	0.04	0.035	87	70-130	

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REPORT OF LABORATORY ANALYSIS

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Project: TEC LF CCR Pace Project No.: 60297582

MATRIX SPIKE SAMPLE:	2360400						
		60297582005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Cobalt	mg/L	0.0021	0.04	0.042	99	70-130	
Molybdenum	mg/L	<0.0010	0.04	0.037	90	70-130	
Selenium	mg/L	<0.0050	0.04	0.037	93	70-130	
Thallium	mg/L	<0.0010	0.04	0.038	94	70-130	

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REPORT OF LABORATORY ANALYSIS

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Project:	TEC LF CCR							
Pace Project No.:	60297582							
QC Batch:	575163		Analysis M	ethod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total Di	ssolved Solids		
Associated Lab Sar	nples: 60297582	001, 6029758200	02, 60297582003,	60297582004,	60297582005			
METHOD BLANK:	2359343		Matrix	x: Water				
Associated Lab Sar	mples: 60297582	001, 6029758200	02, 60297582003,	60297582004,	60297582005			
			Blank	Reporting				
Parar	neter	Units	Result	Limit	Analyze	d Quali	fiers	
Total Dissolved Soli	ds	mg/L	<5.0	5.	0 03/22/19 1	5:40		
LABORATORY CO	NTROL SAMPLE:	2359344						
			Spike	LCS	LCS	% Rec		
Parar	neter	Units	Conc.	Result	% Rec	Limits	Qualifiers	
Total Dissolved Soli	ds	mg/L	1000	986	99	80-120		
SAMPLE DUPLICA	TE: 2359345							
			60297582001	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD	Qualifiers	
Total Dissolved Soli	ds	mg/L	976	6 94	1	4	10	

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.



Project:	TEC LF CCR								
Pace Project No.:	60297582								
QC Batch:	575161		Analysis Meth	od:	SM 4500-H+B				
QC Batch Method:	SM 4500-H+B		Analysis Desc	ription:	4500H+B pH				
Associated Lab San	nples: 6029758200	5							
SAMPLE DUPLICA	TE: 2359338								
			60297249001	Dup		Ν	/lax		
Paran	neter	Units	Result	Result	RPD	R	PD	Qualifiers	
pH at 25 Degrees C	;	Std. Units	7.2	-	7.4	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.



Project:	TEC LF CCR							
Pace Project No.:	60297582							
QC Batch:	575267		Analysis Meth	od:	SM 4500-H+B			
QC Batch Method:	SM 4500-H+B		Analysis Desc	ription:	4500H+B pH			
Associated Lab Sar	nples: 60297582001,	6029758200	2, 60297582003, 60	29758200	4			
SAMPLE DUPLICA	TE: 2360124							
			60297253001	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD	Qualifiers	

pH at 25 Degrees C	Std. Units	7.8	7.9	1	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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Project:	TEC LF CCR									
Pace Project No.:	60297582									
QC Batch:	576049		Analysis	Method:	El	PA 300.0				
QC Batch Method:	EPA 300.0		Analysis	Description:	30	0.0 IC Anion	s			
Associated Lab Sar	nples: 60297582	001, 60297582002	, 6029758200	03, 602975820	04, 60	0297582005				
METHOD BLANK:	2363299		Ма	atrix: Water						
Associated Lab Sar	nples: 60297582	001, 60297582002	, 6029758200	03, 602975820	04, 60	0297582005				
			Blank	Reporti	ng					
Paran	neter	Units	Result	Limit		Analyze	d Qual	ifiers		
Chloride		mg/L	<	1.0	1.0	03/28/19 1	4:16			
Fluoride		mg/L	<0	.20	0.20	03/28/19 1	4:16			
Sulfate		mg/L	<	1.0	1.0	03/28/19 14	4:16			
LABORATORY COI	NTROL SAMPLE:	2363300								
			Spike	LCS		LCS	% Rec			
Parar	neter	Units	Conc.	Result		% Rec	Limits	Qua	lifiers	
Chloride		mg/L	5	5.1		102	90-110			
Fluoride		mg/L	2.5	2.6		106	90-110			
Sulfate		mg/L	5	5.3		105	90-110			
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 236330	D1 MS	2363 MSD	302					
		60296837001	Spike	Spike M	S	MSD	MS MS	SD '	% Rec	Max

Parameter	Units	60296837001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	199000	100000	100000	291000	286000	92	87	90-110	2	15	M1
Fluoride	mg/L	ND	50000	50000	51400	52500	100	103	90-110	2	15	
Sulfate	mg/L	ND	100000	100000	107000	107000	102	102	90-110	0	15	

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.



Project: TI	EC LF CCR								
Pace Project No.: 60	0297582								
QC Batch:	576262		Analysis I	Nethod	1:	EPA 300.0			
QC Batch Method:	EPA 300.0		Analysis [Descrip	otion:	300.0 IC Anion	S		
Associated Lab Sample	es: 60297582	002, 60297582004							
METHOD BLANK: 23	364278		Mat	rix: Wa	ater				
Associated Lab Sample	es: 60297582	002, 60297582004							
			Blank	F	Reporting				
Paramet	er	Units	Result		Limit	Analyze	d Quali	fiers	
Chloride		mg/L	<1	.0	1	.0 03/29/19 1	2:14		
LABORATORY CONTR	ROL SAMPLE:	2364279							
			Spike	LC	S	LCS	% Rec		
Paramet	er	Units	Conc.	Res	ult	% Rec	Limits	Qualifiers	
Chloride		mg/L	5		5.1	103	90-110		_
MATRIX SPIKE SAMP	LE:	2364282							
			602975820	004	Spike	MS	MS	% Rec	
Paramet	er	Units	Result		Conc.	Result	% Rec	Limits	Qualifiers
Chloride		mg/L		43.6	50	92.	5 9	98 90	-110

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.



QUALIFIERS

Project: TEC LF CCR Pace Project No.: 60297582

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.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

- D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
- 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.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	TEC LF CCR
Pace Project No.:	60297582

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297582001	MW-4-032019	EPA 200.7	575351	EPA 200.7	575421
60297582002	MW-5-032019	EPA 200.7	575351	EPA 200.7	575421
60297582003	MW-6-032019	EPA 200.7	575351	EPA 200.7	575421
60297582004	MW-1-032019	EPA 200.7	575351	EPA 200.7	575421
60297582005	DUP-032019	EPA 200.7	575351	EPA 200.7	575421
60297582001	MW-4-032019	EPA 200.8	575368	EPA 200.8	575517
60297582002	MW-5-032019	EPA 200.8	575368	EPA 200.8	575517
60297582003	MW-6-032019	EPA 200.8	575368	EPA 200.8	575517
60297582004	MW-1-032019	EPA 200.8	575368	EPA 200.8	575517
60297582005	DUP-032019	EPA 200.8	575368	EPA 200.8	575517
60297582001	MW-4-032019	EPA 245.1	575586	EPA 245.1	575627
60297582002	MW-5-032019	EPA 245.1	575586	EPA 245.1	575627
60297582003	MW-6-032019	EPA 245.1	575586	EPA 245.1	575627
60297582004	MW-1-032019	EPA 245.1	575586	EPA 245.1	575627
60297582005	DUP-032019	EPA 245.1	575586	EPA 245.1	575627
60297582001	MW-4-032019	SM 2540C	575163		
60297582002	MW-5-032019	SM 2540C	575163		
60297582003	MW-6-032019	SM 2540C	575163		
60297582004	MW-1-032019	SM 2540C	575163		
60297582005	DUP-032019	SM 2540C	575163		
60297582001	MW-4-032019	SM 4500-H+B	575267		
60297582002	MW-5-032019	SM 4500-H+B	575267		
60297582003	MW-6-032019	SM 4500-H+B	575267		
60297582004	MW-1-032019	SM 4500-H+B	575267		
60297582005	DUP-032019	SM 4500-H+B	575161		
60297582001	MW-4-032019	EPA 300.0	576049		
60297582002	MW-5-032019	EPA 300.0	576049		
60297582002	MW-5-032019	EPA 300.0	576262		
60297582003	MW-6-032019	EPA 300.0	576049		
60297582004	MW-1-032019	EPA 300.0	576049		
60297582004	MW-1-032019	EPA 300.0	576262		
60297582005	DUP-032019	EPA 300.0	576049		



Sample Condition Upon Receipt

WO#:	60297582
60297582	

Client Name: Westow Energy		
Courier: FedEx 🗆 UPS 🗆 VIA 🗇 Clay 🗆	PEX 🗆 🛛 ECI 🗆	Pace Xroads 🗆 Client 🗆 Other 🗆
Tracking #: Page Page Page Page Page Page Page Page	ce Shipping Label Used	? Yes 🗆 No 🖸
Custody Seal on Cooler/Box Present: Yes No 🗆	Seals intact: Yes 🖊	No 🗆
Packing Material: Bubble Wrap D Bubble Bags	🗆 🛛 🕞 Foam 🗆	Nong 🖸 Other 🗆
Thermometer Used: T-296 Type o	of Ice: We Blue Non	ie
Cooler Temperature (°C): As-read // Corr. Fac	tor -1-0 Correcte	ed 0. 4 Date and initials of person examining contents:
Temperature should be above freezing to 6°C		P 3/21/19
Chain of Custody present:	Yes INO IN/A	
Chain of Custody relinquished:		
Samples arrived within holding time:		
Short Hold Time analyses (<72hr):	Yes No N/A	
Rush Turn Around Time requested:	Yes No N/A	
Sufficient volume:	Yes No N/A	
Correct containers used:	Yes No IN/A	
Pace containers used:		
Containers intact:	Yes No N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?		
Filtered volume received for dissolved tests?		
Sample labels match COC: Date / time / ID / analyses	Yes No N/A	
Samples contain multiple phases? Matrix: ${\cal NT}$		
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	Yes No 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)	□Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	
Trip Blank present:	Yes No N/A	
Headspace in VOA vials (>6mm):		
Samples from USDA Regulated Area: State:		
Additional labels attached to 5035A / TX1005 vials in the fie		
Client Notification/ Resolution: Copy COC	C to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date	e/Time:	
Comments/ Resolution:		

Project Manager Review:

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section	A Climet Information	Section B Required Project Information:	Sect	tion C ce Information:					Page:	_	of	
Company:	WESTAR ENERGY	Report To: Brandon Griffin	Atter	ntion: Jared Mo	orrison	Γ		re i				
Address:	818 Kansas Ave	Copy To: Jared Morrison, Heath Hornya	Con	pany Name: WES	TAR ENERGY	REC	SULATORY	AGENCY	-		-	
	Topeka, KS 66612		Addr	ess: SEE	SECTION A	Þ	NPDES	- GROUNI	WATER	R L	INKING WAT	ER
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.: 10TEC_000007956	Pace Refer	Quote ence:			UST [- RCRA		LΟ	HER	
Phone:	(785) 575-8135 Fax:	Project Name: TEC LF CCR	Pace Mana	Project Heather	Wilson, 913-563-1407	Sit	e Location	У				
Requeste	id Due Date/TAT: 7 DAY	Project Number:	Pace	Profile #: 9656, 1			STATE:	2				
					Requ	uested Anal	ysis Filtere	(N/A) P				
	Section D Valid Matrix C Martix C Matrix C Matrix C Matrix C	cobe		Preserva	tives Y N							
	DRNKING WATER WATER WASTE WASTE WASTER PRODUCT SOULSOUD	DW WT WW WW SS SS SS SS SS SS SS SS SS SS SS	оггестіои		**Sit	Кипс			(N/Y) a			
# Wi	SAMPLE ID WIFE (A-Z, 0-9 / ,-) OTHER Sample IDS MUST BE UNIQUE TISSUE	ہ کے کچ کچ کے ATRIX CODE (4 MPLE TYPE (G=	 .мрlе темр ат с DF CONTAINER:	IC IC ©ON SO [¢] DDL6S6LN6Q	22203 Protection Prote	5.1 Total Mero 0: Cl, F SO4 1+B	50C TDS		esidual Chlorine	6003	2852	
ari	11 0334/6	S 64 DATE TIME DATE 1 WT C 2/24 D4	WE WE		50 50 1 20 1 20 20 20 20 20 20 20 20 20 20 20 20 20	30	52		ਬ ਬ	Plu /	SPIN ~	ab I.D.
	MW-5-037019	WT6 3/2010	51								1 003/2	dry our
N 67	MW-6-03209	LTG 3/2013	2 20									200
4	mu-1-032019	WT6 3/20 14	3		niì					2	*	yoo
ŋ												
9												
60			_						_			
9	Dup-032019	wr 6 3/20 0	3			-				BPW	BPIN	Se la
=												
12	ADDITIONAL COMMENTS	RELINDUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILM	ATION	DATE	TIME		SAMPLE	CONDITIONS	
200.7 To	tal Metals*: B, Ca,Ba, Be, Cr, Pb, Li	AM Wether 3	21 0	Soc 1	Unappe		3/21/19	1700	4.0	×	7	
200.8 Tc	tal Metals**: Sb, As, Cd, Co, Mo, Se, TI			~								
P												
age		SAMPLER NAME AND	SIGNATURE			1.11	1	X	э.	(N uo p	(N\Y	intact)
22 o		PRINT Name o	SAMPLER:	granden (50 Per	i			ui qme	(Y) ec	iody S	N/Y) selqn
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F-ALL-Q-020rev.08, 12-Oct-2007

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

Pace Container Order #468041

Order	Bv:		Ship 1	Го :			Return	n To:
Company	WESTAR EN	NERGY	Company	WESTAR ENERGY			Company	Pace Analytical Kansas
Contact	Griffin, Brand	don	- Contact	Griffin, Brandon			- Contact	Wilson, Heather
Email	brandon.l.gri	iffin@westarenergy.	— Email	brandon.l.griffin@w	estarenerg	gy.	- Email	heather.wilson@pacelabs.com
Address	818 S. Kansa	as Ave	Address	818 S. Kansas Ave			Address	9608 Loiret Blvd.
ddress 2			Address 2				Address 2	
City	Topeka		City	Topeka			City	Lenexa
State	KS Z	Zip 66612	State	KS Zip 666	12		State	KS Zip 66219
Phone	785-575-813	5	Phone	785-575-8135			Phone	1(913)563-1407
Int	fo							
Project	Name TEC	LF CCR- App III & IV	Due Date	02/27/2019	Profile	9657,	2	Quote
Р	roject Wilso	n, Heather	Return		Carrie	r Most E	Economical	Locatio KS
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of Sample	es Matrix	Test	Containe	r	Total	# of	Lot #	Notes
j	WT	Metals	1-1L plastic	w/HNO3	5	0	010719-2AJN	
;	WT	300.0 Anions/pH/TDS	1L plastic u	Inpreserved	5	0	010719-2APJ	

Hazard Shipping Placard In Place : NO

*Sample receiving hours are Mon-Fri 7:00am-6:00pm and Sat 8:00am-2:00pm unless special arrangements are made with your project manager.

*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage and disposal.

*Payment term are net 30 days.

*Please include the proposal number on the chain of custody to insure proper billing.

Sample

PP COC (1), PP labels w/o sample IDs Lenexa return Scott to take on 2/28/19 Ship Date :02/27/2019PreparedBenVerified By:Page 23 of 23



Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

April 03, 2019

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: TEC LF CCR Pace Project No.: 60297616

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on March 22, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Autor m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Andrew Hare, Westar Energy Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY Melissa Michels, Westar Energy





Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

CERTIFICATIONS

Project: TEC LF CCR Pace Project No.: 60297616

Pennsylvania Certification IDs

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 **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



SAMPLE SUMMARY

Project: TEC LF CCR Pace P

roject No	60297616	
TOJECT NO	00237010	

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297616001	MW-4-032019	Water	03/20/19 09:32	03/22/19 09:30
60297616002	MW-5-032019	Water	03/20/19 10:42	03/22/19 09:30
60297616003	MW-6-032019	Water	03/20/19 13:07	03/22/19 09:30
60297616004	MW-1-032019	Water	03/20/19 14:40	03/22/19 09:30
60297616005	DUP-032019	Water	03/20/19 14:40	03/22/19 09:30



SAMPLE ANALYTE COUNT

Project:TEC LF CCRPace Project No.:60297616

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297616001	MW-4-032019	EPA 903.1		1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616002	MW-5-032019	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616003	MW-6-032019	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616004	MW-1-032019	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297616005	DUP-032019	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA



Project: TEC LF CCR

Pace Project No.: 60297616

Method:	EPA 903.1		
Description:	903.1 Radium 226		
Client:	WESTAR ENERGY		
Date:	April 03, 2019		

General Information:

5 samples were analyzed for EPA 903.1. 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:



Project: TEC LF CCR

Pace Project No.: 60297616

Method:	EPA 904.0
Description:	904.0 Radium 228
Client:	WESTAR ENERGY
Date:	April 03, 2019

General Information:

5 samples were analyzed for EPA 904.0. 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:



Project: TEC LF CCR

Pace Project No.: 60297616

Method:Total Radium CalculationDescription:Total Radium 228+226

Client:WESTAR ENERGYDate:April 03, 2019

General Information:

5 samples were analyzed for Total Radium Calculation. 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.



Project: TEC LF CCR

Pace Project No.: 60297616

Sample: MW-4-032019	Lab ID: 6029761	6001 Collected: 03/20/19 09:32	Received:	03/22/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0768 ± 0.567 (1.08) C:NA T:88%	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	1.77 ± 0.544 (0.652) C:73% T:85%	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	1.85 ± 1.11 (1.73)	pCi/L	04/03/19 16:02	2 7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60297616

Sample: MW-5-032019 PWS:	Lab ID: 6029761 Site ID:	6002 Collected: 03/20/19 10:42 Sample Type:	Received:	03/22/19 09:30	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.405 ± 0.581 (0.951) C:NA T:98%	pCi/L	04/02/19 11:54	13982-63-3	
Radium-228	EPA 904.0	0.953 ± 0.429 (0.711) C:74% T:86%	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	1.36 ± 1.01 (1.66)	pCi/L	04/03/19 16:02	7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60297616

Sample: MW-6-032019 PWS:	Lab ID: 60297616 Site ID:	003 Collected: 03/20/19 13:07 Sample Type:	Received:	03/22/19 09:30 I	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.269 ± 0.484 (0.828) C:NA T:99%	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	0.662 ± 0.392 (0.718) C:69% T:85%	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	0.931 ± 0.876 (1.55)	pCi/L	04/03/19 16:02	2 7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60297616

Sample: MW-1-032019	Lab ID: 602976	16004 Collected: 03/20/19 14:40	Received:	03/22/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	-0.151 ± 0.495 (1.06) C:NA T:86%	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	0.253 ± 0.323 (0.685) C:71% T:83%	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	0.253 ± 0.818 (1.75)	pCi/L	04/03/19 16:02	2 7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60297616

Sample: DUP-032019	Lab ID: 602976	16005 Collected: 03/20/19 14:40	Received:	03/22/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.285 ± 0.383 (0.615) C:NA T:96%	pCi/L	04/02/19 12:11	13982-63-3	
Radium-228	EPA 904.0	1.14 ± 0.490 (0.795) C:74% T:79%	pCi/L	04/02/19 14:41	15262-20-1	
Total Radium	Total Radium Calculation	1.43 ± 0.873 (1.41)	pCi/L	04/03/19 16:02	2 7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC LF CCR					
Pace Project No.:	60297616					
QC Batch:	335730	Analysis Method:	EPA 904.0			
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radiur	m 228		
Associated Lab Sar	mples: 60297616	6001, 60297616002, 60297616003, 602976160	04, 6029761600	5		
METHOD BLANK:	1633600	Matrix: Water				
Associated Lab Sar	mples: 60297616	6001, 60297616002, 60297616003, 602976160	04, 6029761600	5		
Parar	meter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-228		0.151 ± 0.414 (0.925) C:76% T:69%	pCi/L	04/02/19 11:21		

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.



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC LF CCR					
Pace Project No.:	60297616					
QC Batch:	335729	Analysis Method:	EPA 903.1			
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium	-226		
Associated Lab San	nples: 60297616	001, 60297616002, 60297616003, 60297616	6004, 60297616005	i		
METHOD BLANK:	1633599	Matrix: Water				
Associated Lab San	nples: 60297616	001, 60297616002, 60297616003, 60297616	6004, 60297616005	i		
Paran	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-226		0.506 ± 0.472 (0.661) C:NA T:98%	pCi/L	04/02/19 10:37		

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.



QUALIFIERS

Project: TEC LF CCR Pace Project No.: 60297616

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.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	TEC LF CCR
Pace Project No.:	60297616

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297616001	MW-4-032019	EPA 903.1	335729		
60297616002	MW-5-032019	EPA 903.1	335729		
60297616003	MW-6-032019	EPA 903.1	335729		
60297616004	MW-1-032019	EPA 903.1	335729		
60297616005	DUP-032019	EPA 903.1	335729		
60297616001	MW-4-032019	EPA 904.0	335730		
60297616002	MW-5-032019	EPA 904.0	335730		
60297616003	MW-6-032019	EPA 904.0	335730		
60297616004	MW-1-032019	EPA 904.0	335730		
60297616005	DUP-032019	EPA 904.0	335730		
60297616001	MW-4-032019	Total Radium Calculation	336842		
60297616002	MW-5-032019	Total Radium Calculation	336842		
60297616003	MW-6-032019	Total Radium Calculation	336842		
60297616004	MW-1-032019	Total Radium Calculation	336842		
60297616005	DUP-032019	Total Radium Calculation	336842		

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CHAIN-OF-CUSTODY / Analytical Request Document #The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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	Topeka, KS 66612						Address		SEE SE	CTION A			VPDES		VATER $ carrent $	DRINKI	VG WATER	Γ
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Phone:	(785) 575-8135 Fax	Project Name:	TEC LF CC	к К			Pace Pro Manager	He	ather W	ilson, 91:	-563-1	407	Site Location	2				
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F-ALL-Q-020rev.08, 12-Oct-2007

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

Pittsburgh La	ab Sample Conditi	ion L	Jpon	Red	ceipt				
Pace Analytical	Client Name:	WE	Stc	ir	thergy_	Project#	30	2858	363
Courier: Fed Ex Tracking #: <u>UTU</u>	1ups []usps []Client 8742 5304		ommer	cial	Pace Other		Labe	ET	
Custody Seal on Coole	r/Box Present:yes	🗌 n	0	Seals	intact: ves	🗌 no			
Thermometer Used		Туре	of Ice:	Wet	Blue None				
Cooler Temperature	Observed Temp	,Ч	° C	Corre	ection Factor: 0 (D °C _{Fina}	ITemp <u>:</u> 0	·4 °C	
Temp should be above free	zing to 6°C		•						
					pH paper Lot#	Date and conten	ts: F	son examining	
Comments:		Yes	No	N/A	1003281				
Chain of Custody Preser	it:				1.				
Chain of Custody Filled C	Dut:	$ \$			2.				
Chain of Custody Reling	uished:		,		3.				
Sampler Name & Signat	ure on COC;				4.				
Sample Labels match CO	DC:				5.				
-Includes date/time/ID	Matrix:	ω	<u> </u>			<u> </u>	-		
Samples Arrived within H	lold Time:		「		6.				
Short Hold Time Analys	sis (<72hr remaining):		/		7.				
Rush Turn Around Tim	e Requested:				8.				
Sufficient Volume:			-		9.				
Correct Containers Used	:		1		10.				
-Pace Containers Use	ed:	\square							
Containers Intact:		\square			11.				
Orthophosphate field filte	ared				12.				
Hex Cr Aqueous Compliand	e/NPDES sample field filtered				13.		-		
Organic Samples cheo	cked for dechlorination:				14.				
Filtered volume received	for Dissolved tests				15.				
All containers have been ch	ecked for preservation.	\square			16.	NΗ	17		
All containers needing pres- compliance with EPA recon	ervation are found to be in mendation.	\square	·			pri	UC		
					Initial when ET	Date/time of			
exceptions: VOA, colito	m, 100, 0ad, Fhenolics				Lot # of added preservative	preservatori			
Headspace in VOA Vials	(>6mm):				17.				
Trip Blank Present:					18.				
Trip Blank Custody Seals	s Present				Indial wheee				
Rad Samples Screened	l < 0.5 mrem/hr				completed: ET	Date: 3-	22-19		
Client Notification/ Res	olution:								
Person Contacted				Date/	Time:	Cont	acted B <u>y:</u>		************
Comments/ Resolution	ť								
						Hereit Tor			
••••••••••••••••••••••••••••••••••••••	1.000 · ·						,		·
<u> </u>								······	

\square 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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-8 5March2019)

ATTACHMENT 1-2

June 2019 Sampling Event Laboratory Analytical Report



Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

July 09, 2019

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: TEC LF CCR Pace Project No.: 60307291

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Autor m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Andrew Hare, Westar Energy Jake Humphrey, KCP&L & Westar, Evergy Companies Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY Melissa Michels, Westar Energy





CERTIFICATIONS

Project: TEC LF CCR Pace Project No.: 60307291

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 Missouri Inorganic Drinking Water Certification #: 10090 Arkansas Drinking Water Arkansas Certification #: 19-016-0 Arkansas Drinking Water Illinois Certification #: 004455 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Missouri SEKS Micro Certification: 10070 Florida: Cert E871149 SEKS WET Texas Certification #: T104704407-18-11 Utah Certification #: KS000212018-8 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587



SAMPLE SUMMARY

Project: TEC LF CCR Pace Project No.: 60307291

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307291001	MW-5-062619	Water	06/26/19 07:30	06/27/19 08:35
60307291002	MW-6-062619	Water	06/26/19 09:40	06/27/19 08:35
60307291003	MW-1-062619	Water	06/26/19 10:55	06/27/19 08:35
60307291004	DUP-062619	Water	06/26/19 11:00	06/27/19 08:35
60307291005	MW-4-062619	Water	06/26/19 12:30	06/27/19 08:35



SAMPLE ANALYTE COUNT

Project:TEC LF CCRPace Project No.:60307291

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307291001	MW-5-062619	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291002	MW-6-062619	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291003	MW-1-062619	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291004	DUP-062619	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K
60307291005	MW-4-062619	EPA 200.7	LRS	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	JDS	1	PASI-K



Project: TEC LF CCR

Pace Project No.: 60307291

Method:	EPA 200.7
Description:	200.7 Metals, Total
Client:	WESTAR ENERGY
Date:	July 09, 2019

General Information:

5 samples were analyzed for EPA 200.7. 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:



Project: TEC LF CCR

Pace Project No.: 60307291

Method:	EPA 200.8
Description:	200.8 MET ICPMS
Client:	WESTAR ENERGY
Date:	July 09, 2019

General Information:

5 samples were analyzed for EPA 200.8. 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:


Project: TEC LF CCR

Pace Project No.: 60307291

Method:EPA 245.1Description:245.1 MercuryClient:WESTAR ENERGYDate:July 09, 2019

General Information:

5 samples were analyzed for EPA 245.1. 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:



Project: TEC LF CCR

Pace Project No.: 60307291

 Method:
 EPA 300.0

 Description:
 300.0 IC Anions 28 Days

 Client:
 WESTAR ENERGY

 Date:
 July 09, 2019

General Information:

5 samples were analyzed for EPA 300.0. 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.



Project: TEC LF CCR

Pace Project No.: 60307291

Sample: MW-5-062619	Lab ID: 60307291001 Co		Collected: 06/26/1	ollected: 06/26/19 07:30		Received: 06/27/19 08:35 N		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Meth	nod: EPA 20	00.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.022	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:34	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:34	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:34	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:34	7439-92-1	
Lithium	0.015	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:34	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:21	7440-43-9	
Cobalt, Total Recoverable	0.0019	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:21	7440-28-0	
245.1 Mercury	Analytical Meth	nod: EPA 24	15.1 Preparation Met	hod: Ef	PA 245.1			
Mercury	<0.20	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:41	7439-97-6	
300.0 IC Anions 28 Days	Analytical Meth	nod: EPA 30	0.0					
Fluoride	<0.20	mg/L	0.20	1		07/09/19 01:39	16984-48-8	



Project: TEC LF CCR

Pace Project No.: 60307291

Sample: MW-6-062619	Lab ID: 60307291002 Co		Collected: 06/26/1	ollected: 06/26/19 09:40		Received: 06/27/19 08:35 Matrix: Wate		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Mether	nod: EPA 20	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.016	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:37	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:37	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:37	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:37	7439-92-1	
Lithium	0.012	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:37	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:25	7440-43-9	
Cobalt, Total Recoverable	0.0026	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:25	7440-28-0	
245.1 Mercury	Analytical Meth	nod: EPA 24	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.20	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:43	7439-97-6	
300.0 IC Anions 28 Days	Analytical Meth	nod: EPA 30	0.0					
Fluoride	0.46	mg/L	0.20	1		07/09/19 02:38	16984-48-8	



Project: TEC LF CCR

Pace Project No.: 60307291

Sample: MW-1-062619	Lab ID: 60307291003 Co		Collected: 06/26/1	ollected: 06/26/19 10:55		Received: 06/27/19 08:35 Matrix: Wate		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Mether	nod: EPA 20	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.065	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:39	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:39	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:39	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:39	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:39	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:40	7440-43-9	
Cobalt, Total Recoverable	0.0011	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:40	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:33	7440-28-0	
245.1 Mercury	Analytical Meth	nod: EPA 24	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.20	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:46	7439-97-6	
300.0 IC Anions 28 Days	Analytical Meth	nod: EPA 30	0.0					
Fluoride	0.34	mg/L	0.20	1		07/09/19 02:53	16984-48-8	



Project: TEC LF CCR

Pace Project No.: 60307291

Sample: DUP-062619	Lab ID: 60307291004 Co		Collected: 06/26/1	ollected: 06/26/19 11:00		Received: 06/27/19 08:35 Matrix: Wate		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Meth	nod: EPA 20	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.069	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:41	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:41	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:41	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:41	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:41	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:44	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:44	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:36	7440-28-0	
245.1 Mercury	Analytical Meth	nod: EPA 24	5.1 Preparation Met	hod: EF	PA 245.1			
Mercury	<0.20	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:48	7439-97-6	
300.0 IC Anions 28 Days	Analytical Mether	nod: EPA 30	0.0					
Fluoride	0.35	mg/L	0.20	1		07/09/19 03:08	16984-48-8	



Project: TEC LF CCR

Pace Project No.: 60307291

Sample: MW-4-062619	Lab ID: 60307291005		Collected: 06/26/1	Collected: 06/26/19 12:30		Received: 06/27/19 08:35 Matrix: V		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Meth	nod: EPA 20	00.7 Preparation Met	thod: El	PA 200.7			
Barium, Total Recoverable	0.11	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:43	7440-39-3	
Beryllium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 12:43	7440-41-7	
Chromium, Total Recoverable	<0.0050	mg/L	0.0050	1	07/05/19 16:17	07/08/19 12:43	7440-47-3	
Lead, Total Recoverable	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:43	7439-92-1	
Lithium	<0.010	mg/L	0.010	1	07/05/19 16:17	07/08/19 12:43	7439-93-2	
200.8 MET ICPMS	Analytical Meth	nod: EPA 20	00.8 Preparation Met	thod: El	PA 200.8			
Antimony, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-36-0	
Arsenic, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-38-2	
Cadmium, Total Recoverable	<0.00050	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:48	7440-43-9	
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7440-48-4	
Molybdenum, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7439-98-7	
Selenium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:48	7782-49-2	
Thallium, Total Recoverable	<0.0010	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:39	7440-28-0	
245.1 Mercury	Analytical Meth	nod: EPA 24	15.1 Preparation Met	thod: El	PA 245.1			
Mercury	<0.20	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:50	7439-97-6	
300.0 IC Anions 28 Days	Analytical Meth	nod: EPA 30	0.0					
Fluoride	0.24	mg/L	0.20	1		07/09/19 03:23	16984-48-8	



Project:	TEC LF CCR											
Pace Project No.:	60307291											
QC Batch:	594115		Anal	ysis Metho	od: E	EPA 245.1						
QC Batch Method:	EPA 245.1		Anal	ysis Descr	iption: 2	245.1 Mercu	ıry					
Associated Lab Sar	nples: 60307291	001, 6030729100	2, 6030729	91003, 603	807291004, 6	603072910	05					
METHOD BLANK:	2435092			Matrix: W	/ater							
Associated Lab Sar	mples: 60307291	001, 6030729100	2, 6030729	91003, 603	807291004, 6	603072910	05					
			Bla	nk	Reporting							
Parar	neter	Units	Res	ult	Limit	Analy	/zed	Qualifier	S			
Mercury		ug/L		<0.20	0.20	0 07/05/19	9 15:14					
LABORATORY CO	NTROL SAMPLE:	2435093										
			Spike	LC	CS	LCS	% R	ec				
Parar	neter	Units	Conc.	Re	sult	% Rec	Limi	ts (Qualifiers			
Mercury		ug/L		5	4.7	93	3 8	35-115		_		
MATRIX SPIKE & N	ATRIX SPIKE DUF	PLICATE: 2435	094		2435095							
			MS	MSD								
Paramete	r Units	60306868001 Result	Spike Conc.	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	90	70-130	3	20	
MATRIX SPIKE SA	MPLE:	2435096										
-			60306	868002	Spike	MS		MS	% Rec	;		
Parar	neter	Units	Re	esult	Conc.	Result	%	Rec	Limits		Qualif	iers
Mercurv		ua/L		<0.20	5		4.5	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.



EPA 200.7

200.7 Metals, Total

Project: TEC LF CCR

Pace Project No.: 60307291

QC Batch:	594823	Analysis Method:
QC Batch Method:	EPA 200.7	Analysis Description:

Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

METHOD BLANK: 2437479

Matrix: Water

Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/08/19 12:32	
Beryllium	mg/L	<0.0010	0.0010	07/08/19 12:32	
Chromium	mg/L	<0.0050	0.0050	07/08/19 12:32	
Lead	mg/L	<0.010	0.010	07/08/19 12:32	
Lithium	mg/L	<0.010	0.010	07/08/19 12:32	

LABORATORY CONTROL SAMPLE: 2437480

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	0.98	98	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	0.97	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2437481 2437482												
			MS	MSD								
		60307292003	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Barium	mg/L	0.27	1	1	1.2	1.3	96	98	70-130	2	20	
Beryllium	mg/L	<0.0010	1	1	0.97	1.0	97	100	70-130	2	20	
Chromium	mg/L	<0.0050	1	1	0.92	0.95	92	95	70-130	3	20	
Lead	mg/L	<0.010	1	1	0.95	0.97	95	97	70-130	2	20	
Lithium	mg/L	<0.010	1	1	1.0	1.1	104	106	70-130	1	20	

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

REPORT OF LABORATORY ANALYSIS

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Project: TEC LF CCR

Pace Project No.: 60307291

QC Batch:	59482	25	Analysis Method:	EPA 200.8
QC Batch Method:	EPA 2	200.8	Analysis Description:	200.8 MET
Associated Lab Samp	les:	60307291001, 60307291002, 60	307291003, 60307291004	, 60307291005

METHOD BLANK: 2437487

Matrix: Water

Associated Lab Samples: 60307291001, 60307291002, 60307291003, 60307291004, 60307291005

		Blank	Reporting		
Parameter	Units	Result	Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/08/19 14:17	
Arsenic	mg/L	<0.0010	0.0010	07/08/19 14:17	
Cadmium	mg/L	<0.00050	0.00050	07/08/19 14:17	
Cobalt	mg/L	<0.0010	0.0010	07/08/19 14:17	
Molybdenum	mg/L	<0.0010	0.0010	07/08/19 14:17	
Selenium	mg/L	<0.0010	0.0010	07/08/19 14:17	
Thallium	mg/L	<0.0010	0.0010	07/08/19 14:17	

LABORATORY CONTROL SAMPLE: 2437488

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.041	103	85-115	
Arsenic	mg/L	0.04	0.041	103	85-115	
Cadmium	mg/L	0.04	0.042	105	85-115	
Cobalt	mg/L	0.04	0.042	104	85-115	
Molybdenum	mg/L	0.04	0.039	97	85-115	
Selenium	mg/L	0.04	0.041	104	85-115	
Thallium	mg/L	0.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIK	E DUPI	LICATE: 24374	489		2437490							
			MS	MSD								
		60307291002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.040	0.039	101	98	70-130	3	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.043	0.042	106	104	70-130	2	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.039	0.037	96	93	70-130	3	20	
Cobalt	mg/L	0.0026	0.04	0.04	0.047	0.045	110	107	70-130	3	20	
Molybdenum	mg/L	<0.0010	0.04	0.04	0.042	0.041	104	101	70-130	3	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.039	0.038	97	95	70-130	2	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.042	0.041	106	103	70-130	3	20	

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

REPORT OF LABORATORY ANALYSIS

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Project:	TEC LF CCR											
Pace Project No.:	60307291											
QC Batch:	595185		Analy	sis Metho	d: I	EPA 300.0						
QC Batch Method:	EPA 300.0		Analy	ysis Descrij	ption:	300.0 IC An	ions					
Associated Lab San	nples: 60307291	001, 6030729100	2, 6030729	91003, 603	07291004,	603072910	05					
METHOD BLANK:	2438440			Matrix: W	ater							
Associated Lab San	nples: 60307291	001, 6030729100	2, 6030729	91003, 603	07291004,	603072910	05					
Paran	neter	Units	Blai Res	nk l ult	Reporting Limit	Analy	/zed	Qualifier	S			
Fluoride		mg/L		<0.20	0.2	0 07/08/19	9 18:58					
LABORATORY COM	NTROL SAMPLE:	2438441										
Paran	neter	Units	Spike Conc.	LC Res	:S sult	LCS % Rec	% R Limi	ec ts (Qualifiers			
Fluoride		mg/L	2	.5	2.4	96	6 9	90-110				
MATRIX SPIKE & N	IATRIX SPIKE DUF	·LICATE: 2438	442		2438443	3						
Parameter	r Units	60307333007 8 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	. 0.40	2.5	2.5	2.9	2.9	99	99	80-120	0	15	
MATRIX SPIKE SAM	MPLE:	2438444										
Paran	neter	Units	60307 Re	291005 esult	Spike Conc.	MS Result	%	MS Rec	% Rec Limits		Qualif	iers
Fluoride		ma/L		0.24	2.5		2.8	102	80	-120		

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.



QUALIFIERS

Project: TEC LF CCR Pace Project No.: 60307291

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.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	TEC LF CCR
Pace Project No.:	60307291

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307291001	MW-5-062619	EPA 200.7	594823	EPA 200.7	594952
60307291002	MW-6-062619	EPA 200.7	594823	EPA 200.7	594952
60307291003	MW-1-062619	EPA 200.7	594823	EPA 200.7	594952
60307291004	DUP-062619	EPA 200.7	594823	EPA 200.7	594952
60307291005	MW-4-062619	EPA 200.7	594823	EPA 200.7	594952
60307291001	MW-5-062619	EPA 200.8	594825	EPA 200.8	594953
60307291002	MW-6-062619	EPA 200.8	594825	EPA 200.8	594953
60307291003	MW-1-062619	EPA 200.8	594825	EPA 200.8	594953
60307291004	DUP-062619	EPA 200.8	594825	EPA 200.8	594953
60307291005	MW-4-062619	EPA 200.8	594825	EPA 200.8	594953
60307291001	MW-5-062619	EPA 245.1	594115	EPA 245.1	594129
60307291002	MW-6-062619	EPA 245.1	594115	EPA 245.1	594129
60307291003	MW-1-062619	EPA 245.1	594115	EPA 245.1	594129
60307291004	DUP-062619	EPA 245.1	594115	EPA 245.1	594129
60307291005	MW-4-062619	EPA 245.1	594115	EPA 245.1	594129
60307291001	MW-5-062619	EPA 300.0	595185		
60307291002	MW-6-062619	EPA 300.0	595185		
60307291003	MW-1-062619	EPA 300.0	595185		
60307291004	DUP-062619	EPA 300.0	595185		
60307291005	MW-4-062619	EPA 300.0	595185		



Sample Condition Upon Receipt

WO#:60307291

Client Name: Westow Evergy		1
Courier: FedEx 🗆 UPS 🗆 VIA 🗆 Clay 🗆	PEX 🗆 ECI 🗆	Pace 🗆 Xroads 🗆 Client 🗋 Other 🗆
Fracking #: Pa	ce Shipping Label Used	? Yes D North
Custody Seal on Cooler/Box Present: Yes 🗆 No 🗖	Seals intact: Yes 🗆	NOZ
Packing Material: Bubble Wrap 🗆 Bubble Bags	Foam	None 🖸 Other 🗆
Thermometer Used: T-296 Type of	of Ice: (Vet) Blue Nor	Date and initials of person
Cooler Temperature (°C): As-read $\underline{\gamma\cdot3}$ Corr. Fac	tor - 1.0 Correct	ed 5.3 examining contents:
emperature should be above freezing to 6°C	,	196127119
Chain of Custody present:	Yes No N/A	
Chain of Custody relinquished:	Ves INO IN/A	
Samples arrived within holding time:	Yes INO IN/A	
Short Hold Time analyses (<72hr):	TYes No DN/A	
Rush Turn Around Time requested:	TYes No DN/A	
Sufficient volume:	Yes No N/A	
Correct containers used.		
Pace containers used		
Containers intact:	Yes INO IN/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	Yes No N/A	
Filtered volume received for dissolved tests?		
Sample labels match COC: Date / time / ID / analyses	AYes DNO DN/A	
Samples contain multiple phases? Matrix: 📈	T DYes INO DN/A	
Containers requiring pH preservation in compliance? (HNO₃, H₂SO₄, HCI<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	Yes No N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks:	□Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	
Trip Blank present:	□Yes □No □AA	
Headspace in VOA vials (>6mm):		
Samples from USDA Regulated Area: State:		
Additional labels attached to 5035A / TX1005 vials in the fie	Id? TYes No N/A	
Client Notification/ Resolution: Copy COC	C to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date	e/Time:	
Comments/ Resolution: The analyses on the COC ar HMW 7/1/19	e inaccurate due to an	IT glitch in out bottle order system. Please see attached (

Project Manager Review:

Date:

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	Pace Anal

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section	A Alicel Information	Section B	Information:				<i>0</i> , <u>-</u>	ection C	malion:									age:		of	
Company	WESTAR ENERGY	Report To:«Bran	don Griffin	Ala	× w	neel		ttention:	Jared	1 Morriso	u			Г]				
Address:	818 Kansas Ave	Copy To: Jarec	Morrison,	, Heath F	łornya		5	ompany N	ame: W	/ESTAR	ENERC	34		R	GULAT	ORY AG	ENCY	-8/			B. C.
	Topeka, KS 66612						a	ddress:	SE	EE SECT	TION A			D	NPDE	L	ROUND	WATER		RINKING V	ATER
Email To:	-brandorn.r.gniffin@woctaronorgy.aom	Purchase Order N	0. 10TE(00000	07956		LL OF	ace Quole eference:							UST	L	CRA		ю L	HER	
Phone:	(785) 575-8135 Fax:	Project Name:	TEC LF C	CR			u ≥	ace Project anager:	Heath	her Wilso	on, 913-	-563-1	407	07	ite Local	lon	3				
Requeste	ed Due Date/TAT: 7 DAY	Project Number:						ace Profile #	*: 9656,	-				Γ	STA	- ij	2				
							1				Π	E.	sentes	ted An	alysis F	Itered ()	(N)				
	Section D Valid Matrix C Required Client Information MATRIX	odes CODE	(an	8	TLECTEL	0			Prese,	ivatives		1 N/A									
	DRINKING WATER WASTE WARTER PRODUCT SULSOUD	9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	100=0 8AAE	3MPOSITE START	8	MPOSITE						*Sle	Auna _{**} sit			1		(N/X) €			
	SAMPLE ID WIPE (A-Z, 0-9 /) OTHER Sample IDS MUST BE UNIQUE TISSUE	CODE (se	TYPE (G=0				TEMP AT C	NTAINERS beved		٤,		visi Mete	otal Meto ⁻ otal Mero	+B , F SO4	SQT	57		al Chlorine		1000	
# MƏT		ХІЯТАМ	SAMPLE .	Ш Ш	Ë DAT	TIME	SAMPLE	Unprese Unprese	HCI HNO ³ H ⁵ 20 ⁴	N ⁹⁵ S ² 6N	Methan Other	(ISNA)	T 8.002 T 1.845	300: CI	2640C			nbizəЯ	Pace P	- + 2 4 (oject No.	/ Lab I.D.
1	M1-5 067619	LOT	2	0	2/90	6 731		m			F	X	X	XX	×		BPIU	¢¢	9-46	NIN	1001
2	ANJ-LOBTLIA	5	0	-	06/	26 92	0	m				×	XX	X	X			8	16/27		002
m	M.J. 1 062619	7	0		06/1	6 105.	5	2				X	X	X	X		<u></u>				003
4	DUP-062619	Hr	9		<i>cfb/z</i>	9 1100	0	M				×	X X	X	X			_			400
5	M.J4_062619	J.	0		2/96	6 123	2	m				×	XX	X	×		→		*		200
9			-		•:		1														
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	ADDITIONAL COMMENTS	RELI	NQUISHED	BY / AFFIL	IATION		ATE	TIME	1	AC	CEPTED	BYIAF	FILIATIC	N	DAT		ME		SAMPLE	CONDITIO	NS
200.7 Tc	otal Metals*: B, Ca,Ba, Be, Cr, Pb, Li	للله	Fred	NCK	Sern	061	29	835	NI	TUR	lin	Bu	MM	puce	Col	0	353	ŝ	>	5	>
200.8 Tc	otal Metals**: Sb, As, Cd, Co, Mo, Se, Tl					•			, 						-				~		
Pa						_															
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21 0					PRINT	Name of S/	MPLER:	12	1,1	Pavid	Ri C	K S	S					ui du	oevie: I\Y) e	ody S	(N/Y)
122					SIGNA	TURE of SI	AMPLER:	Ce,	10	12	\backslash		MM/DD/	hed :(YY	2/96	112	5	1 0 T	ା ଅନ୍ୟ	Coc	meS

F-ALL-Q-020rev.08, 12-Oct-2007

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



CHAIN-OF-CUSTODY / Analytical Request Document

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

1																																
Sectio Require	n A ad Client Information:	Section B Required Pro	oiect ¹	Informa	ation:					Sect Invoi	tion (C forma	tion:														Pa	age:		of		
Compar	IV: WESTAR ENERGY	Report To: E	3ran/	idon G	Griffin					Atter	ntion:	, ionna	Jareo	l Mo	rrisc	n					٦											
Address	818 Kansas Ave	Сору То: Ј	Jarec	d Mor	rison, He	eath Horr	nya			Com	pany	Name	e: W	'EST	AR	ENE	RGY	(R	EGU	LATC	DRY	AGE	NCY						
	Topeka, KS 66612									Addr	ress:		S	EE S	EC	TION	A					V N	PDES	Г	G	ROUN	ע סע	VATE	R 🗆		WATER	
Email T	o: brandon.l.griffin@westarenergy.com	Purchase Ore	der N	lo.: 1	IOTEC_(00000079	956			Pace	Quote	•											ST		1 R(CRA				OTHER		
Phone:	(785) 575-8135 Fax:	Project Name	e: ·	TEC I	LF CCR					Refer Pace	rence: Projec	ct	Heat	ner V	Vilso	on, 9'	13-56	63-1	407			Site	ocati	on					777.	7777	////	
Reques	ited Due Date/TAT: 7 DAY	Project Numb	ber:							Mana Pace	ager: Profile	e #:	9656	, 2							-	••	STAT	÷.		KS						
			—																Real	ieste	d Ai	nalvs	is Fil	L. tered	(Y/I	N)			44	H	+++	4
	Section D Valid Matrix C	odes							1								=								1							
	Required Client Information MATRIX		to left	(AMC		COLL	ECTED					ļ	Prese	rvati	ives		Ϋ́											4				
	WATER WASTE WATER WASTE WATER PRODUCT SOIL/SOLID OIL SAMPLE ID (A.7.0.9.(_)) OTHER	WT WW P SL OL WP AR OT	E (see valid codes	(G=GRAB C=C0	COMPOSIT	TE START	COMPO END/GI	OSITE RAB	AT COLLECTION	VERS							fest L	Metals*	Metals**	Mercury	0							orine (Y/N)				
ITEM #	(A-2, 0-9 , -) UNIQUE TISSUE	TS	MATRIX CODE	SAMPLE TYPE	DATE	TIME	DATE	TIME	SAMPLE TEMP	# OF CONTAIN	Unpreserved	H_2SO_4	HNO ₃	NaOH	$Na_2S_2O_3$	Methanol	L Analysis T	200.7 Total N	200.8 Total N	245.1 Total N	300: Fluoride							Residual Chlo	Pace	Project N	o./ Lab I.[D.
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2				⊢––										_			_	L				_						⊢∔				
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4				⊢													_	H				_						\vdash				
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6			—	┢──┼─									_	+		_	-	⊢			_	_						┢┼╋				
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9 10			-											+			-	F										┢┼╋				
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12																																
	ADDITIONAL COMMENTS		RELI	NQUISI	HED BY /	AFFILIATIO	ON	DATE			ТІМЕ				ACC	CEPTE	DBY	(/ AF	FILIA	TION			DATE		ТІМ	IE			SAMP		ONS	
200.7 T	otal Metals*: Ba, Be, Cr, Pb, Li																											Τ				
200.8 T	otal Metals**: Sb, As, Cd, Co, Mo, Se, Tl																											-				
																												1				
		I				SAMPLE	R NAME A	ND SIGNA	TUR	E																	ç	<u></u>	u _	aled N)	tact	
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							SIGNATUR	RE of SAMP	LER:	:								C (DATE MM/D	Signed D/YY):	t :						Ter	Ď-	Rec Icé	₽ Page	22 of 22	



Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

July 17, 2019

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: TEC LF CCR Pace Project No.: 60307734

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on June 27, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Autor m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: HEATH HORYNA, WESTAR ENERGY Andrew Hare, Westar Energy Jake Humphrey, KCP&L & Westar, Evergy Companies JARED MORRISON, WESTAR ENERGY Melissa Michels, Westar Energy





Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

CERTIFICATIONS

Project: TEC LF CCR Pace Project No.: 60307734

Pennsylvania Certification IDs

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



SAMPLE SUMMARY

Project: TEC LF CCR Pace Project No.: 60307734

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307734001	MW-5_062619	Water	06/26/19 07:30	06/27/19 09:30
60307734002	MW-6_062619	Water	06/26/19 09:40	06/27/19 09:30
60307734003	MW-1_062619	Water	06/26/19 10:55	06/27/19 09:30
60307734004	DUP_062619	Water	06/26/19 11:00	06/27/19 09:30
60307734005	MW-4_062619	Water	06/26/19 12:30	06/27/19 09:30



SAMPLE ANALYTE COUNT

Project:TEC LF CCRPace Project No.:60307734

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307734001	 MW-5_062619	EPA 903.1		1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734002	MW-6_062619	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734003	MW-1_062619	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734004	DUP_062619	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307734005	MW-4_062619	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA



Project: TEC LF CCR

Pace Project No.: 60307734

Method:	EPA 903.1
Description:	903.1 Radium 226
Client:	WESTAR ENERGY
Date:	July 17, 2019

General Information:

5 samples were analyzed for EPA 903.1. 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:



Project: TEC LF CCR

Pace Project No.: 60307734

Method:	EPA 904.0
Description:	904.0 Radium 228
Client:	WESTAR ENERGY
Date:	July 17, 2019

General Information:

5 samples were analyzed for EPA 904.0. 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:



Project: TEC LF CCR

Pace Project No.: 60307734

Method: Total Radium Calculation

Description:Total Radium 228+226Client:WESTAR ENERGYDate:July 17, 2019

General Information:

5 samples were analyzed for Total Radium Calculation. 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.



Project: TEC LF CCR

Pace Project No.: 60307734

Sample: MW-5_062619	Lab ID: 6030773	4001 Collected: 06/26/19 07:30	Received:	06/27/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.557 ± 0.566 (0.856) C:NA T:94%	pCi/L	07/15/19 15:03	3 13982-63-3	
Radium-228	EPA 904.0	0.481 ± 0.370 (0.734) C:82% T:80%	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	1.04 ± 0.936 (1.59)	pCi/L	07/16/19 13:14	7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60307734

Sample: MW-6_062619	Lab ID: 603077	34002 Collected: 06/26/19 09:40	Received:	06/27/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.24 ± 0.706 (0.649) C:NA T:83%	pCi/L	07/15/19 15:03	3 13982-63-3	
Radium-228	EPA 904.0	1.36 ± 0.521 (0.818) C:81% T:79%	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	2.60 ± 1.23 (1.47)	pCi/L	07/16/19 13:14	7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60307734

Sample: MW-1_062619 PWS:	Lab ID: 60307734 Site ID:	4003 Collected: 06/26/19 10:55 Sample Type:	Received:	06/27/19 09:30	Matrix: Water	
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.259 ± 0.448 (0.801) C:NA T:86%	pCi/L	07/15/19 15:03	13982-63-3	
Radium-228	EPA 904.0	0.466 ± 0.369 (0.735) C:82% T:80%	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	0.725 ± 0.817 (1.54)	pCi/L	07/16/19 13:14	7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60307734

Sample: DUP_062619	Lab ID: 603077	34004 Collected: 06/26/19 11:00	Received:	06/27/19 09:30	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	1.12 ± 0.745 (0.924) C:NA T:88%	pCi/L	07/15/19 15:03	3 13982-63-3	
Radium-228	EPA 904.0	0.547 ± 0.359 (0.688) C:81% T:88%	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	1.67 ± 1.10 (1.61)	pCi/L	07/16/19 13:14	1 7440-14-4	



Project: TEC LF CCR

Pace Project No.: 60307734

Sample: MW-4_062619	Lab ID: 603077	34005 Collected: 06/26/19 12:30	Received:	06/27/19 09:30 I	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.321 ± 0.499 (0.864) C:NA T:99%	pCi/L	07/15/19 15:16	13982-63-3	
Radium-228	EPA 904.0	1.52 ± 0.515 (0.730) C:79% T:89%	pCi/L	07/15/19 12:41	15262-20-1	
Total Radium	Total Radium Calculation	1.84 ± 1.01 (1.59)	pCi/L	07/16/19 13:14	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC LF CCR					
Pace Project No.:	60307734					
QC Batch:	350866	Analysis Method:	EPA 904.0			
QC Batch Method:	EPA 904.0	EPA 904.0 Analysis Description: 904.0 Radium 228				
Associated Lab San	nples: 60307734	4001, 60307734002, 60307734003, 6030773400	94, 60307734005			
METHOD BLANK:	1705168	Matrix: Water				
Associated Lab San	nples: 60307734	4001, 60307734002, 60307734003, 6030773400	04, 60307734005			
Paran	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-228		0.205 ± 0.288 (0.617) C:79% T:83%	pCi/L	07/15/19 12:40		

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.



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC LF CCR					
Pace Project No.:	60307734					
QC Batch:	350862	Analysis Method:	EPA 903.1			
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226			
Associated Lab San	nples: 60307734	001, 60307734002, 60307734003, 60307734004	4, 60307734005			
METHOD BLANK:	1705164	Matrix: Water				
Associated Lab San	nples: 60307734	001, 60307734002, 60307734003, 60307734004	4, 60307734005			
Paran	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-226		0.474 ± 0.402 (0.498) C:NA T:85%	pCi/L	07/15/19 14:49		

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.



QUALIFIERS

Project: TEC LF CCR 60307734

Pace Project No .:

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.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	TEC LF CCR
Pace Project No.:	60307734

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307734001	MW-5_062619	EPA 903.1	350862		
60307734002	MW-6_062619	EPA 903.1	350862		
60307734003	MW-1_062619	EPA 903.1	350862		
60307734004	DUP_062619	EPA 903.1	350862		
60307734005	MW-4_062619	EPA 903.1	350862		
60307734001	MW-5_062619	EPA 904.0	350866		
60307734002	MW-6_062619	EPA 904.0	350866		
60307734003	MW-1_062619	EPA 904.0	350866		
60307734004	DUP_062619	EPA 904.0	350866		
60307734005	MW-4_062619	EPA 904.0	350866		
60307734001	MW-5_062619	Total Radium Calculation	352006		
60307734002	MW-6_062619	Total Radium Calculation	352006		
60307734003	MW-1_062619	Total Radium Calculation	352006		
60307734004	DUP_062619	Total Radium Calculation	352006		
60307734005	MW-4_062619	Total Radium Calculation	352006		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section	Ar	Section B		Section C					i	4	
Require	d Client Information:	Required Project Information:		Invoice Inform	nation:			-	:	5	
Compan	W: WESTAR ENERGY	Report To: Breadon Griffin Ada	m Kneeling	Attention:	Jared Morrison						
Address	: 818 Kansas Ave	Copy To: Jared Morrison, Heath Hu	lornya	Company Na	me: WESTAR ENE	RGY	REGULATORY AGE	ENCY			
	Topeka, KS 66612			Address:	SEE SECTION	A	VPDES 7 G	SROUND W	ATER T	DRINKING W	ATER
Email To	x torandon-l-griffin@westarenergy.com	Purchase Order No.: 10TEC-000000	17956	Pace Quote Reference:			LUST L R	CRA	L	OTHER	
Phone:	(785) 575-8135 Fax	Project Name: TEC LF CCR		Pace Project Manager.	Heather Wilson, 9:	13-563-1407	Site Location				
Reques	ted Due Date/TAT: 15 Day	Project Number:		Pace Profile #:	9656, 1		STATE:	22			
						Requested A	nalysis Filtered (Y/	(N)			
	Section D Required Client Information <u>MATRIX</u>	odes cone eff) CODE e eff)	LLECTED		Preservatives	1 N /A					
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•	+ *Important Note: By signing this form you are accepting f	Pace's NET 30 day payment terms and agreeing t	to late charges of 1.5% per month	tor any invoices n	ot paid within 30 days.			Р.А.	LL-Q-020rev.(08, 12-Oct-200	20

Pittsburgh Lab Sample Condit	tion L	Jpor	Re	ceipt	
Pace Analytical' Client Name:	Pl	<u>a Ce</u>	1-	<u>ks </u>	Project #
		ommei	rcial	Pace Other	Label
Custody Seal on Cooler/Box Present: Vives	n	- 0	Seals	intact: 🛛 ves 🗔	no
Thermometer Used	Туре	of Ice:	Wet	Blue (None	
Cooler Temperature Observed Temp		۰C	Corre	ection Factor:	°C Final Temp: °C
Temp should be above freezing to 6°C		-			· · · · · · · · · · · · · · · · · · ·
				pH paper Lot#	Date and Initials of person examining contents:
Comments:	Yes	No	N/A	10194201	
Chain of Custody Present:	\mid		<u> </u>	1.	
Chain of Custody Filled Out:	\mid			2.	
Chain of Custody Relinquished:	\triangleleft			3.	
Sampler Name & Signature on COC:				4.	
Sample Labels match COC:				5.	
-Includes date/time/ID Matrix:	W		<u></u>		
Samples Arrived within Hold Time:				6.	
Short Hold Time Analysis (<72hr remaining):	1			7.	
Rush Turn Around Time Requested:				8.	
Sufficient Volume:				9.	
Correct Containers Used:	\square			10.	
-Pace Containers Used:	\square				
Containers Intact:	$\overline{\Box}$			11.	
Orthophosphate field filtered	1		\square	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, Non-aqueous matrix	Radon,			pH.	(2
All containers meet method preservation	1/			Initial when	Date/time of
	L			Lot # of added	
Headspace in VOA Viais (>6mm):				17.	
Trip Blank Present:				18.	-
Trip Blank Custody Seals Present					· •
Rad Samples Screened < 0.5 mrem/hr	\square			Initial when completed:	Date: 12919
Client Notification/ Resolution:)	
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Comments/ Resolution:				· · · · · · · · · · · · · · · · · · ·	,
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A check in this box indicates that addi	tional	inform	natior	n has been stored in e	reports.

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.

J:\QAQC\Master\Document Management\Sample Mgi\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019)

Chaim	of Custo	dy dy									6
	Samples were se	ent directly to t	the Subcontrac	ting Laborator	×	St	ate Of Origin	XS		Pace Analytica	-
						ပိ	rt. Needed:	Yes	No		
Workorde	ər: 60307734	Workorder	Name: TEC C	CR GROUNDV	NATER	ð	vner Receive	d Date:	6/27/2019	Results Requested By: 7/9/2019	ſ
Report To			Subcontr	ract To					Requested /	Analysis	
Heather W Pace Analy 9608 Loiret	ilson rtical Kansas t Blvd.		Pace 1630 Suite	e Analytical Pitts 8 Roseytown Ro es 2,3, & 4	burgh ad						
Lenexa, K Phone 1(9 ⁻	5 66219 13)563-1407		P ho	ensburg, PA 156 ne (724)850-560	00		866 5	iuni arra	_¥_	0#:30312269	
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2 MW-6_0	062619	PS	6/26/2019 09:40	0 60307734002	Water	2		< X		ත දිග	
3 MW-1_0	362619	PS	6/26/2019 10:5	5 60307734003	Water	2		X X		6003	
4 DUP_0(52619	PS	6/26/2019 11:00	0 60307734004	Water	2		×		5	
5 MW-4_(062619	PS	6/26/2019 12:30	0 60307734005	Water	2		XX		<u></u>	
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3				2			2				
Cooler Te	emperature on F	Receipt	Ū C	ustody Seal	Y or (N) R	eceived on lo	se Y o	(N)	Samples Intact) or N	
***In order	to maintain clier	nt confidentiali	ity, location/nan	ne of the samp	ling site, se	ampler's nam	e and signatı	ire may n	ot be provided	on this COC document.	
This ch	ain of custody is	considered co	omplete as is si	ince this inform	nation is av	ailable in the	owner labora	tory.			

FMT-ALL-C-002rev.00 24March2009

Page 1 of 1

6	Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Section	A I	Section B		Section C				Page:	Ū	Jf	
Required		Required Project information: Report To: Beandon Cottin M		Invoice Informs Attention:	tton: Jared Morrison						
, iedinos		Han the Branch and Ham	Kneeling								
Address:	: 818 Kansas Ave	Copy To: Jared Morrison, Heath Hornya	>	Company Nam	e: WESTAR ENEI	RGY	REGULATORY AGENC	Y			
	Topeka, KS 66612			Address:	SEE SECTION	A	F NPDES F GROU	JND WATER		JKING WATEI	œ
Email To	* trlandon: Agrifin@westarenorgy.com	Purchase Order No.: 10TEC-000007956		Pace Quote Reference:			F UST F RCRA	_	нто Г	ER	
Phone:	(785) 575-8135 Fax:	Project Name: TEC LF CCR		Pace Project Manager:	Heather Wilson, 9	3-563-1407	Site Location				
Request	ted Due Date/TAT: 15 Day	Project Number:		Pace Profile #.	9656, 1		STATE:				
						Requested A	nalysis Filtered (Y/N)				
	Section D Valid Matrix Co Required Client Information MATRIX	odes a) € CollEC	TED		Preservatives	1 N/A					
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ŋ	MU-4-062619	VTG	0221 92/9	2		XXX					
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of 2		.	IGNATURE of SAMPLEF	e Gen	- the	DATE Signed (MM/DD/YY):	06/26/19		ж м м	• <u>)</u>	meS
!1	Important Note: By signing this form you are accepting	3 Pace's NET 30 day payment terms and agreeing to late	charges of 1.5% per month	for any involces n	ot paid within 30 days.			F-ALL-Q	020rev.08,	12-Oct-2007	
Pittsburgh Lab Sample Conditi	ion L	lpon	Red	ceipt							
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Pace Analytical Client Name:	Pl) 1.Ce	1-	k_{f} Project # $\frac{\# - 30312269}{2}$)						
Courier: Fed Ex UPS USPS Client Tracking #: ////////////////////////////////////		ommer	cial	Lims Login							
Custody Seal on Cooler/Box Present: Dyes	_ n	S	Seals	intact: yes no							
Thermometer Used	Туре	of Ice:	Wet	Blue (None							
Cooler Temperature Observed Temp	·	°C	Corre	ection Factor: °C Final Temp: °C							
Temp should be above freezing to 6°C				nH namer Loff							
Comments:	Yes	No	N/A	contents:							
Chain of Custody Present:				1.							
Chain of Custody Filled Out:	\mid			2							
Chain of Custody Relinquished:				3.							
Sampler Name & Signature on COC:				4.							
Sample Labels match COC:				5.							
-Includes date/time/ID Matrix:	Wt		.								
Samples Arrived within Hold Time:				6.							
Short Hold Time Analysis (<72hr remaining):	1	\square		7.							
Rush Turn Around Time Requested:				8.							
Sufficient Volume:				9.							
Correct Containers Used:	\square			10.							
-Pace Containers Used:	/										
Containers Intact:	\angle			11.							
Orthophosphate field filtered	1			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, Non-aqueous matrix	Radon	1		pH<2							
All containers meet method preservation	1/			Initial when Date/time of preservation							
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Trip Blank Custody Seals Present	ļ,			Initial when face / ACIA							
Rad Samples Screened < 0.5 Internal				completed: M Date: M J 4 1 9							
Client Notification/ Resolution:											
Person-Contacted:			-Date/	Time:Contacted By:							
Comments/ Resolution:				n							
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\Box 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.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019)

ATTACHMENT 1-3

September 2019 Sampling Event Laboratory Analytical Report



Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

October 02, 2019

Adam Kneeling Haley & Aldrich, Inc. 400 E. Van Buren St Suite 545 Phoenix, AZ 85004

RE: Project: TEC 322 LANDFILL CCR Pace Project No.: 60314408

Dear Adam Kneeling:

Enclosed are the analytical results for sample(s) received by the laboratory on September 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Astantos m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company HEATH HORYNA, WESTAR ENERGY Andrew Hare, KCP&L and Westar, Evergy Companies Jake Humphrey, KCP&L and Westar, Evergy Companies JARED MORRISON, KCP&L and Westar, Evergy Companies Melissa Michels, Westar Energy Danielle Zinmaster, Haley & Aldrich





Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Pennsylvania Certification IDs

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



SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60314408001	MW-1	Water	09/06/19 10:40	09/10/19 09:20
60314408002	MW-4	Water	09/07/19 18:27	09/10/19 09:20
60314408003	MW-5	Water	09/07/19 14:33	09/10/19 09:20
60314408004	MW-6	Water	09/07/19 12:34	09/10/19 09:20
60314408005	DUPLICATE	Water	09/06/19 10:40	09/10/19 09:20



SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60314408001	 MW-1	EPA 903.1		1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408002	MW-4	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408003	MW-5	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408004	MW-6	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60314408005	DUPLICATE	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Method: EPA 903.1

Description:903.1 Radium 226Client:Evergy Kansas Central, Inc.Date:October 02, 2019

General Information:

5 samples were analyzed for EPA 903.1. 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:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Method: EPA 904.0

Description:904.0 Radium 228Client:Evergy Kansas Central, Inc.Date:October 02, 2019

General Information:

5 samples were analyzed for EPA 904.0. 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:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Method: Total Radium Calculation

Description:Total Radium 228+226Client:Evergy Kansas Central, Inc.Date:October 02, 2019

General Information:

5 samples were analyzed for Total Radium Calculation. 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.



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Sample: MW-1	Lab ID: 60314	408001 Collected: 09/06/19 10:40	Received:	09/10/19 09:20	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.714 ± 0.531 (0.699) C:NA T:88%	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	1.01 ± 0.558 (1.04) C:73% T:84%	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	1.72 ± 1.09 (1.74)	pCi/L	09/26/19 11:20	7440-14-4	



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Sample: MW-4	Lab ID: 60314	408002 Collected: 09/07/19 18:27	Received:	09/10/19 09:20	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.429 ± 0.347 (0.194) C:NA T:80%	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	1.37 ± 0.623 (1.10) C:77% T:83%	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	1.80 ± 0.970 (1.29)	pCi/L	09/26/19 11:20	7440-14-4	



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Sample: MW-5	Lab ID: 603144	108003 Collected: 09/07/19 14:33	Received:	09/10/19 09:20 N	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.484 ± 0.379 (0.445) C:NA T:90%	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	0.523 ± 0.466 (0.955) C:77% T:86%	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	1.01 ± 0.845 (1.40)	pCi/L	09/26/19 11:20	7440-14-4	



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Sample: MW-6	Lab ID: 603144	08004 Collected: 09/07/19 12:34	Received:	09/10/19 09:20 M	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0676 ± 0.308 (0.497) C:NA T:85%	pCi/L	09/23/19 14:57	13982-63-3	
Radium-228	EPA 904.0	-0.0508 ± 0.451 (1.04) C:73% T:89%	pCi/L	09/20/19 15:10	15262-20-1	
Total Radium	Total Radium Calculation	0.0676 ± 0.759 (1.54)	pCi/L	09/26/19 11:20	7440-14-4	



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Sample: DUPLICATE	Lab ID: 603144	08005 Collected: 09/06/19 10:40	Received:	09/10/19 09:20 I	Matrix: Water	
PWS:	Site ID:	Sample Type:				
Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	0.0626 ± 0.407 (0.820) C:NA T:96%	pCi/L	09/23/19 14:57	/ 13982-63-3	
Radium-228	EPA 904.0	0.745 ± 0.399 (0.703) C:68% T:94%	pCi/L	09/20/19 15:01	15262-20-1	
Total Radium	Total Radium Calculation	0.808 ± 0.806 (1.52)	pCi/L	09/26/19 11:20	7440-14-4	



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC 322 LANDFI	LL CCR				
Pace Project No.:	60314408					
QC Batch:	361440	Analysis Method:	EPA 903.1			
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226			
Associated Lab San	nples: 60314408	001, 60314408002, 60314408003, 6031440800	4, 60314408005			
METHOD BLANK:	1754431	Matrix: Water				
Associated Lab San	nples: 60314408	001, 60314408002, 60314408003, 6031440800	4, 60314408005			
Paran	neter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-226		0.389 ± 0.395 (0.598) C:NA T:86%	pCi/L	09/23/19 14:57		

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.



QUALITY CONTROL - RADIOCHEMISTRY

Project:	TEC 322 LANDFII	L CCR					
Pace Project No.:	60314408						
QC Batch:	361441		Analysis Method:	EPA 904.0			
QC Batch Method:	EPA 904.0		Analysis Description:	904.0 Radium 228			
Associated Lab Sar	nples: 60314408	001, 603144080	02, 60314408003, 6031440800	04, 60314408005			
METHOD BLANK:	1754435		Matrix: Water				
Associated Lab Sar	nples: 60314408	001, 603144080	02, 60314408003, 6031440800	04, 60314408005			
Parar	neter	Act ±	Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers	
Radium-228		0.0333 ± 0.280	(0.649) C:78% T:87%	pCi/L	09/20/19 15:01		

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.



QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

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.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314408

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60314408001	MW-1	EPA 903.1	361440		
60314408002	MW-4	EPA 903.1	361440		
60314408003	MW-5	EPA 903.1	361440		
60314408004	MW-6	EPA 903.1	361440		
60314408005	DUPLICATE	EPA 903.1	361440		
60314408001	MW-1	EPA 904.0	361441		
60314408002	MW-4	EPA 904.0	361441		
60314408003	MW-5	EPA 904.0	361441		
60314408004	MW-6	EPA 904.0	361441		
60314408005	DUPLICATE	EPA 904.0	361441		
60314408001	MW-1	Total Radium Calculation	363319		
60314408002	MW-4	Total Radium Calculation	363319		
60314408003	MW-5	Total Radium Calculation	363319		
60314408004	MW-6	Total Radium Calculation	363319		
60314408005	DUPLICATE	Total Radium Calculation	363319		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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Email To	brandon.l.griffin@westarenergy.com	Purchase On	der No	0	10TEC-00	0000795	9		Pace QI	uote .e.							.sn ∟	. L.	- RCRA		. L	OTHER		
Phone:	(785) 575-8135 Fax:	Project Name	e: ;e	TEC	322 Land	fill CCR			Pace Pr Manage	roject F:	Heath	her Wilk	son, 91	13-560	3-140	2	Site Lo	cation						
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															Rec	Juested	Analysis	: Filtere	(N/X) F					\mathcal{M}
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n aye 17	Dage 17					SAMPLEF	R NAME AN	D SIGNATU of SAMPLER	ке : Л7: <u>5</u>	ha I	Nülk	J~~~	July 1	2						D° nì qm	no beviec (Vi\Y) e:	ody Sealed oler (Y/N)	iples intact (Y/N)	1
0123	. of 22					0	SIGNATURE	of SAMPLER	Ĵ	Ľ	M				(MM)	E Signed	919	119		эT	n 9건	isu) o)	neS	

F-ALL-Q-020rev.08, 12-Oct-2007

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

Pittsburgh Lab Sam	ple Conditio	on L	Jpon	Re	ceipt				
Pace Analytical Client	Name: _	\sim	<i>lest</i>	a	<u></u>	F	Project #		
Courier: Fed Ex \Box UPS \Box US Tracking #: 129297	sps Client 7 9,773		ommer	rcial	Pace Other	•		Labe LIMS Login	
Custody Seal on Cooler/Box Prese	ent: Zyes	[] n	0	Seals	intact: 🏹 ye	s 🗌	по		
Thermometer Used	ו <u> /</u>	Гуре «	of Ice:	Wet	Blue None			,	
Cooler Temperature Observed	Temp	<u>4</u>	°C	Corre	ection Factor:	0	°C Final	Temp:	۰c را
					pH paper Lot#		Date and	nitials of pers	on examining
Comments:	Г	Yes	No	N/A	10035	81	contents	"-Dallo	HADZ
Chain of Custody Present:			2		1.		•		
Chain of Custody Filled Out:					2.				
Chain of Custody Relinquished:					3.				
Sampler Name & Signature on COC:					4.				
Sample Labels match COC:					5.	<u>,</u> ,			
-Includes date/time/ID	Matrix:	W	Τ						
Samples Arrived within Hold Time:					6.				
Short Hold Time Analysis (<72hr re	emaining);	··· .			7.				
Rush Turn Around Time Requester	d:				8.				
Sufficient Volume:					9.				
Correct Containers Used:	ſ	\nearrow	-		10.				
-Pace Containers Lised									
Containers Intact					11				
Orthonhoenhate field filtered	F			~	12	·····			
Hey Cr Aqueous sample field filtered					12.				
Organia Samalas abadrad far dar	plarination				14				
Organic Samples checked for dec				\sim	14.				
All containers have been checked for pres	a tests	\rightarrow			15.				
exceptions: VOA, coliform, TOC, O& Non-aqueous matrix	₹ G, Phenolics, Ra	adon,			16. PHL	2			
All containers meet method preserva requirements.	tion				Initial when Completed	VB	Date/time of preservation		
				· .	Lot # of added				
Handenano in VOA Viale (Semm):					preservative				
Tria Block Brocost:				<u> </u>	17.				
Trip Blank Fresent.	-		\frown		10.				· · · ·
Rad Samples Screened < 0.5 mrem	ı/hr	/			Initial when	2			
- 	/					/0	Date:		
Client Notification/ Resolution:					_				
Person-Contacted:			·······	Date/1	Ime:		Gontac	ted By:	
Comments/ Resolution:									
· · · · · · · · · · · · · · · · · · ·									
								<u> </u>	
A check in this box indication	tes that additio	onal i	nform	nation	has been sto	ored in e	reports.		

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.

Chai	n of Custo	 مرد														1		6	
5		5															A Ref	e An	Intical
×	Samples were s	sent direct	ly to the	e Subcont	tracting L	aboratory.			Stat Cert	e Of Ori Neede	d: d:	X Yes		Ñ		-			acelabs.com
Workon	der: 60314408	Worko	rder Na	me: TEC	322 LAI	NDFILL CC	Я		OWI	ier Rece	ived	Date:	9/10	/2019	Res	ults Req	uested E	y: 9/	19/2019
Report Tc				Subc	ontract To								Re	equeste	d Analy	sis			
Heather Pace Ani 9608 Loi Lenexa, 1(Wilson alytical Kansas ret Blvd. KS 66219 913)563-1407				Pace Anat 1638 Rose Suites 2,3, Greensbur Phone (72,	ytical Pittsbi sytown Roac & 4 g, PA 1560 4)850-5600	rrgh 1				աոց					*****			
							L				n-226 & Tota	822-muibe5			<u></u>				
								Prese	erved Col	ntainers	ni Bu	4							
ltem San	iple ID	<u>0 F</u>	Sample I	Collect Date/Time	te.	e	Matrix	Other			Rad							LAB	JSE ONLY
1 MW-0	-	<u>a.</u>	sc Sc	9/6/2019 10	1:40 605	314408001	Water	2			X	×							
2 MW∸	+	d.	i) Sc	9/7/2019 18	1:27 603	314408002	Water	2			X	×							
3 MW-1	2	<u>с</u>	sc Sc	9/7/2019 14	1:33 603	314408003	Water	2			×	×							
4 MW4	(<u>а</u>	s S	9/7/2019 12	::34 605	314408004	Water	7			X	Х							
5 DUPI	LICATE	<u>a</u>	S	9/6/2019 10	1:40 605	314408005	Water	7			×	×							
		1.00 Mar 100 Mar							61.000 PSte 1000							Соттеп	2		
Transfers	Released By			Date	Time	Received By	X			Date/Ti	ne	Dire	ct Ship						
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2												Ê	14-10	5-0-					
3																			
Cooler	Temperature on I	Receipt	ڊ -	ပ	Custod	y Seal (Ý)or N		Rec	eived o	n Ice	Å	Z			Sample	s Intact	د ک	N
***In ord This (er to maintain clie. chain of custody is	int confide s considen	entiality, ed com,	location/i plete as i	name of t s since th	the samplir 'is informa	ng site, sa tion is ava	ailable	s name in the o	and sigr wner lat	iature oratoi	may n Y:	ot be p	rovide	d on ti	his coc	documen	ن ه	



Page 1 of 1

FMT-ALL-C-002rev.00 24March2009

	Page: or o								SAMPLE CONDITIONS			emp in °C leceived on lece (Y/N) cooler (Y/N) Cooler (Y/N)	
ument ^{2011tely.}			REGULATORY AGENCY	C NPDES C GROUND	L UST L RCRA	Site Location KS	STATE:	Analysis Filtered (Y/N)			04101 04101-4		6 9/9/19
CHAIN-OF-CUSTODY / Analytical Request Doc The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed at #30324	ection B Invoice Information:	equired Project Information. soort To: Brandon Griffin	Company Name: WESTAR ENERGY	opy ro. Jared Montoon, room Address: SEE SECTION A		Unclasse Older YV. 101 EC-000001 300 Page Project Heather Wilson, 913-563-1407	ngeo nome. 100 cte contrar -	traject Number. Requested	は、「「「「「「」」」」」では、「「」」」」では、「」」」」では、「」」」」では、「」」」」では、「」」」」」」では、「」」」」」」」」では、「」」」」」」」」」」	RELINQUISHED BY / AFFILIATION DATE TIME ACCEPTED BI / ACTINOMY	Mishamiller-himme 919/19 08:15 MM DX	SAMPLER NAME AND SIGNATURE PRINT NAME OF SAMPLER: M71 SHV, M111QV - CALWATURE	
Pace Analytical	Section A	Required Client Information:		Address: 818 Kansas Ave	Topeka, KS 66612	Email To: brandon.I.griffin@westarenergy.com	Phone: (785) 575-8135 Fax:	Requested Due Date/TAT: 15 Day	Section D Valid Matrix CC Required Client Information MATRIX MATRIX PRANKOR WATER WAT	12 A COMMENTS	ADDITIONAL COMMENT	Page 20	of 23

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

F-ALL-Q-020rev.08, 12-Oct-2007

Pittsburgh La	ab Sample Conditi	on L	Jpon	Red	ceipt	
Pace Analytical	Client Name:	\mathcal{N}	(est	ar	Project # # 30324 1	81
Courier: Fed Ex Tracking #: 1219]UPS □USPS □Cllent 2977 977	3	ommer	cial	Pace Other Label MS LiMS Login M.	
Custody Seal on Coole Thermometer Used	r/Box Present: Vyes	Type d	ofice:	Seals Wet	sintact: Øyes 🔲 no Blue None	
Cooler Temperature	Observed Temp	4	۰c	Corre	ection Factor: 🖉 °C Final Temp: 🚺 🗘 °C	
Temp should be above free	zing to 6°C		•			
Comments:		Yes	No	N/A	pH paper Lot# Date and Initials of person examining IOD3581 contents: <u>D910149</u>	
Chain of Custody Preser	nt:		7		1.	
Chain of Custody Filled	Out:				2.	
Chain of Custody Reling	uished:	\square			3.	
Sampler Name & Signat	ure on COC:				4.	
Sample Labels match C	C:				5.	
-Includes date/time/IE) Matrix:	V	7			
Samples Arrived within H	Hold Time:		<u> </u>		6.	
Short Hold Time Analys	sis (<72hr remaining):				7.	
Rush Turn Around Tim	e Requested:				8.	
Sufficient Volume:					9.	
Correct Containers Used	1:				10,	
-Pace Containers Use	ed:	\sim				
Containers Intact:					11.	
Orthophosphate field filte	ered				12.	
Hex Cr Aqueous sample	field filtered				13.	
Organic Samples che	cked for dechlorination:				14.	
Filtered volume received	for Dissolved tests			\leq	15.	
All containers have been ch	ecked for preservation.				16. 11.2	
exceptions: VOA, colifo Non-aqueous matrix	rm, TOC, O&G, Phenolics, I	Radon,			PFIL	
All containers meet metr requirements.	od preservation				Initial when Completed Date/time of preservation	
					Lot # of added	
Headspace in VOA Vials	: (>6mm):				17.	
Trip Blank Present:				L	18.	
Trip Blank Custody Seal	s Present					
Rad Samples Screened	i < 0.5 mrem/hr				completed: DD Date:	
Client Notification/ Res	olution:	1	<u>.</u>	I <u></u>		
Person-Contacted	•			-Date/	Time:Contacted By:	
Comments/ Resolution	:				· · · · · · · · · · · · · · · · · · ·	
					,	
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□ 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.

PACE Analytical Services Ra-226 Analysis

Quality Control Sample Performance Assessment

autrulary strug			Analyst Must Manually Enter All Fields Highlighted in	n Yellow.	
Test:	Ra-226				
Analyst:	MK1		Sample Matrix Spike Control Assessment	MS/MSD 1	AS/MSD 2
Date:	9/17/2019		Sample Collection Date:	9/10/2019	*
Batch ID: Matrix:	49824 DW		Sample I.D. Sample MS I.D.	35496342004 35496342004MS	
Mathod Riank Accoccmont		_	Sample MSD I.D.		
			Spike I.D.;	19-022	
WB Sample ID	1/54431		MS/MSD Decay Corrected Spike Concentration (pCl/mL):	32.119	
MB Concentration:	0.369		Spike Volume Used in MS (mL):	0.20	
WE COUNTING UNCERTAINTY: MB MDC:	0.392 0.598		Spike Volume Used in MSD (mL):	920 C	
MB Numerical Performance Indicator	194			0.000	
MB Status vs Numerical Indicator	A/N			a.744	
MB Status vs. MDC:	Pass		MSD Target Conc. (pCi/L, g, F):		
			MS Spike Uncertainty (calculated):	0.461	
Laboratory Control Sample Assessment	LCSD (Y or N)?	z	MSD Spike Uncertainty (calculated):		-
	LCS49824	LCSD49824	Sample Result:	0.097	
Count Date:	9/23/2019		Sample Result Counting Uncertainty (pCi/L, g, F):	0.190	
Spike I.D.:	19-022		Sample Matrix Spike Result:	7.551	
Spike Concentration (pCi/mL);	32.118		Matrix Spike Result Counting Uncertainty (pCi/L, g, F);	1.164	
Volume Used (mL):	0.10		Sample Matrix Spike Duplicate Result:		
Aliquot Volume (L, g, F):	0.669		Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Target Conc. (pCi/L, g, F):	4.799		MS Numerical Performance Indicator:	-3.631	
Uncertainty (Calculated):	0.226		MSD Numerical Performance Indicator:		
Result (pCi/L, g, F):	4.938		MS Percent Recovery:	76.07%	
LCS/LCSD Counting Uncertainty (pCi/L, g, F);	1.037		MSD Percent Recovery:		
Numerical Performance Indicator:	0.26		MS Status vs Numerical Indicator:	N/A	
Percent Recovery:	102.91%		MSD Status vs Numerical Indicator:		
Status vs Numerical Indicator:	N/A		MS Status vs Recovery:	Pass	
Status vs Recovery:	Pass		MSD Status vs Recovery:		
Upper % Recovery Limits: Lower % Recovery Limits:	135% 73%		MS/MSD Upper % Recovery Limits:	136%	
	2/07		WANNER TO BE	1 1 70	
Duplicate Sample Assessment			Matrix Spike/Matrix Spike Duplicate Sample Assessment		
	35406440001	Enter Dunlinate			
Dunicate Sample LD	35496440001D13P	samole IDs if	Sample I.D.		
Sample Result (of) a E).	1 062	other then			
Sample Result Counting Uncertainty (nCi/I_0_F)	0.694	LCS/LCSD in	Sample INSU LU.		
Sample Duplicate Result (nC)/(o. F)·	0.493	the snace helow	Matrix Softe Result Counting Long Matrix Softe Result		
Sample Duplicate Result Counting Uncertainty (pCi/L, q, F);	0.535		Samole Matrix Shike Duningto Result-		
Are sample and/or duplicate results below RL?	See Below #		Matrix Spike Duplicate Result Counting Uncertainty (pCl/L. g. F):		
Duplicate Numerical Performance Indicator:	1.273	35496440001	Duplicate Numerical Performance Indicator:		
Duplicate RPD:	73.17%	35496440001DUP	(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
Duplicate Status vs Numerical indicator:	N/A		MS/ MSD Duplicate Status vs Numerical Indicator:		
Duplicate Status vs RPD:	- IEJ		MS/ MSD Duplicate Status vs RPD:		
	32.70		% RPD Limit:		

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

Comments.

t of 1

PACE Analytical Services Ra-228 Analysis

Pace Analytical

Quality Control Sample Performance Assessment

0. 35496557001 0. 35496557001MS 0.	19-026	35,480 0.20 0.312 8.744	35,480 35,480 812 812 812 812 812 812 812 812 812 812	35,480 35,480 812 812 8,744 8,744 8,231 8,231 8,231	35,480 35,480 812 0.20 0.414 0.428 0.414 1.656 1.1.656	35,480 0.20 0.21 0.212 0.312 0.414 0.414 0.313 0.313 0.313 0.313 0.414 1.044	35,480 20,20 2,480 2,480 2,412 1,444 1,556 1	35,480 120 0.20 0.312 0.414 0.428 0.414 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.313 0.312 0.312 0.312 0.312 0.313 0.428 0.428 0.428 0.444 0.313 0.428 0.313 0.428 0.313 0.31	35,480 20,20 21,20 2	35,480 120 120 120 1212 1212 1212 1212 1223 1223 1223 1223 1223 1256 135% 135% 60%	35,480 120 120 120 1212 1212 1212 1212 1223 1234 1235 1235 1235% 1355% 1	35,480 16,20 16,12 16,12 16,14 1,15566 1,15566 1,15566 1,15566 1,15566 1,15566 1,15566 1,1	35,480 12,0 12,10 1,15566 1,1556 1,1556 1,1556 1,1556 1,1556 1,1556 1,1556	35,480 120 120 120 1212 1	35,480 120 120 120 1212 1	35,480 120 120 120 1212 1212 1212 1212 1224 1235 1235 1235% 1355%	35,480 120 120 120 1212 1	35,480 120 120 120 1212 1212 1213 1213 1213 1213 1213 125% 135% 1
Sample I.D. Sample MS I.D. Sample MSD I.D.		Spike I.D.: oncentration (pCi/mL): ume Used in MSD (mL): MS Aliquot (L, g, F): get Conc. (pCi/L, g, F): MSD Aliquot (L, g, F): bet Conc. (pCi/L, g, F):	Spike I.D.: oncentration (pCi/mL): ume Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); pet Conc. (pC/l/, g, F); nectrainty (calculated); nectrainty (calculated);	Spike I.D.: oncentration (pc/iruL): ume Used in MSD (mL): MS Aliquot (L, g, F) MSD Aliquot (L, g, F) MSD Aliquot (L, g, F) pet Conc. (pc/I/L, g, F) pet Conc. (pc/I/L, g, F) pet Conc. (pc/I/L, g, F) cortainty (calculated) noertainty (calculated) noertainty (calculated) intertainty (calculated) intertainty (calculated) intertainty (calculated) that SSU (pc/I/L, g, F) intertainty (calculated) intertainty (calculated) int	Spike I.D.: oncentration (pc/iruL): ume Used in MSD (mL): MS Aliquot (L, g, F): get Conc. (pc/IL, g, F): get Conc. (pc/IL, g, F): pet Conc. (pc/IL, g, F): necrtainty (calculated): necrtainty (calculated): necrtainty (calculated): matrix Spike Result; gma CSU (pC/IL, g, F): pike Duplicate Result; pina CSU (pC/IL, g, F): pike Duplicate Result; pina CSU (pC/IL, g, F): pike Duplicate Result;	Spike I.D.: oncentration (pcl/mL): urme Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); MARD Aliquot (Calculated); Sample Result; ma CSU (pCl/L, g, F); pike Duplicate Result; ma CSU (pCl/L, g, F); pike Duplicate Result; ma CSU (pCl/L, g, F); arrownance indicator;	Spike I.D.: oncentration (pc/imL): urme Used in MSD (mL): MS Aliquot (L, g, F): MSD Aliquot (L, g, F): MSD Aliquot (L, g, F): pet Conc. (pc/i/L, g, F): pet Conc. (pc/i/L, g, F): necrtainty (calculated): necrtainty (calculated): necrtainty (calculated): pet Conc. (pc/i/L, g, F): pite Matrix Spike Result: pima CSU (pc/i/L, g, F): pitma CSU (pc/i/L, g, F): pitma CSU (pc/i/L, g, F): pitma CSU (pc/i/L, g, F): performance Indicator: AB Performance Indicator: Concord Recovery; Performance Indicator:	Spike I.D.: oncentration (pcl/mL): ume Used in MSD (mL); MS Aliquot (L, g, F); get Conc. (pcl/L, g, F); get Conc. (pcl/L, g, F); pet Conc. (pcl/L, g, F); nectrainty (calculated); nectrainty (calculated); mar CSU (pcl/L, g, F); spike Duplicate Result; mar CSU (pcl/L, g, F); spike Duplicate Result; spike Duplicate Result; spike Duplicate Result; spike Du	Spike I.D.: oncentration (pc/imL): urme Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); pet Conc. (pc/i/L, g, F); pet Conc. (pc/i/L, g, F); pet Conc. (pc/i/L, g, F); incertainty (calculated); necrtainty (calculated); marc SU (pc/i/L, g, F); pike Duplicate Result; pima CSU (pc/i/L, g, F); pike Duplicate Result; pima CSU (pc/i/L, g, F); pima CSU (pc/i/L, g, F); pitta CSU (pc/i/L, g	Spike I.D.: oncentration (pc/imL): urme Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); pet Conc. (pc/i/L, g, F); pet Conc. (pc/i/L, g, F); pet Conc. (pc/i/L, g, F); incertainty (calculated); neertainty (calculated); neertainty (calculated); pet Conc. (pc/i/L, g, F); pet Conc. (pc/i/L, g, F); pet Result; prima CSU (pc/i/L, g, F); prima CSU (pc/i/L, g, F); pet formance indicator: s Numerical Indicator: s Nu	Spike I.D.: oncentration (pCi/mL): urme Used in MSD (mL): MS Aliquot (L, g, F): MSD Aliquot (L, g, F): pet Conc. (pCi/L, g, F): metrainty (calculated): pet Conc. (pCi/L, g, F): metrainty (calculated): pet Conc. (pCi/L, g, F): petraint Spike Result ima CSU (pCi/L, g, F): pike Dupticate Result ima CSU (pCi/L, g, F): pike Dupticate Result ima CSU (pCi/L, g, F): Performance Indicator: S Status vs Recovery: s Numerical Indicator s Status vs Recovery: S S S S S S S S S S S S S S S S S S S	Spike I.D.: oncentration (pcl/mL): urme Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); MSD Aliquot (L, g, F); pet Conc. (pcl/L, g, F); metrainty (calculated); neertainty (calculated); neertainty (calculated); neertainty (calculated); mar CSU (pcl/L, g, F); pike Duplicate Result; mar CSU (pcl/L, g, F); pike Duplicate Result; pike Result;	Spike I.D.: oncentration (pcl/mL): urme Used in MSD (mL); MS Aliquot (L, g, F); MSD Aliquot (L, g, F); pet Conc. (pcl/L, g, F); inertainty (calculated); neertainty (calculated); neertainty (calculated); pet Conc. 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Ra-228_49825_DW_W Ra-228 (R086-8 04Sep2019).xls



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

Comments:

Ra-228 NELAC DW2 Printed: 9/23/2019 8:59 AM

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Pace Analytical Services, LLC 9608 Loiret Blvd. Lenexa, KS 66219 (913)599-5665

September 13, 2019

Brandon Griffin Westar Energy 818 S. Kansas Ave Topeka, KS 66612

RE: Project: TEC 322 LANDFILL CCR Pace Project No.: 60314218

Dear Brandon Griffin:

Enclosed are the analytical results for sample(s) received by the laboratory on September 09, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Autor m. Wilson

Heather Wilson heather.wilson@pacelabs.com 1(913)563-1407 Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company HEATH HORYNA, WESTAR ENERGY Andrew Hare, Westar Energy Jake Humphrey, KCP&L & Westar, Evergy Companies Adam Kneeling, Haley & Aldrich, Inc. JARED MORRISON, WESTAR ENERGY Melissa Michels, Westar Energy Danielle Zinmaster, Haley & Aldrich





CERTIFICATIONS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219 Missouri Inorganic Drinking Water Certification #: 10090 Arkansas Drinking Water Arkansas Certification #: 19-016-0 Arkansas Drinking Water Illinois Certification #: 004455 Iowa Certification #: 118 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Nevada Certification #: KS000212018-1 Oklahoma Certification #: 9205/9935 Florida: Cert E871149 SEKS WET Texas Certification #: T104704407-18-11 Utah Certification #: KS000212018-8 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587 Missouri SEKS Micro Certification: 10070



SAMPLE SUMMARY

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60314218001	MW-1	Water	09/06/19 10:40	09/09/19 15:25
60314218002	MW-4	Water	09/07/19 18:27	09/09/19 15:25
60314218003	MW-5	Water	09/07/19 14:33	09/09/19 15:25
60314218004	MW-6	Water	09/07/19 12:34	09/09/19 15:25
60314218005	DUPLICATE	Water	09/06/19 10:40	09/09/19 15:25



SAMPLE ANALYTE COUNT

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60314218001		EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K
60314218002	MW-4	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60314218003	MW-5	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K
60314218004	MW-6	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60314218005	DUPLICATE	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MGS, MJK	3	PASI-K



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Method: EPA 200.7

Description:200.7 Metals, TotalClient:WESTAR ENERGYDate:September 13, 2019

General Information:

5 samples were analyzed for EPA 200.7. 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: 608466

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60314116006,60314218001

- M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
 - MS (Lab ID: 2485614)
 - Calcium
 - MSD (Lab ID: 2485616)
 - Calcium

Additional Comments:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Method: EPA 200.8

Description:200.8 MET ICPMSClient:WESTAR ENERGYDate:September 13, 2019

General Information:

5 samples were analyzed for EPA 200.8. 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:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Method: SM 2540C

Description:2540C Total Dissolved SolidsClient:WESTAR ENERGYDate:September 13, 2019

General Information:

5 samples were analyzed for SM 2540C. 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:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Method:	SM 4500-H+B
Description:	4500H+ pH, Electrometric
Client:	WESTAR ENERGY
Date:	September 13, 2019

General Information:

5 samples were analyzed for SM 4500-H+B. 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.

- DUPLICATE (Lab ID: 60314218005)
- MW-1 (Lab ID: 60314218001)
- MW-4 (Lab ID: 60314218002)
- MW-5 (Lab ID: 60314218003)
- MW-6 (Lab ID: 60314218004)

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:



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Method:EPA 300.0Description:300.0 IC Anions 28 DaysClient:WESTAR ENERGYDate:September 13, 2019

General Information:

5 samples were analyzed for EPA 300.0. 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: 608942

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60314116004,60314218003

- M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
 - MS (Lab ID: 2487474)
 - Chloride

Additional Comments:

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



ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Sample: MW-1	Lab ID: 603	314218001	Collected: 09/06/1	9 10:40	Received: 09	/09/19 15:25 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 200	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.076	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:39	7440-39-3	
Boron, Total Recoverable	0.37	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:39	7440-42-8	
Calcium, Total Recoverable	151	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:39	7440-70-2	M1
Lithium	<0.010	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:39	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Cobalt, Total Recoverable	0.0017	mg/L	0.0010	1	09/10/19 16:39	09/12/19 15:58	7440-48-4	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	0C					
Total Dissolved Solids	905	mg/L	10.0	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	6.9	Std. Units	0.10	1		09/10/19 10:48		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	29.3	mg/L	2.0	2		09/12/19 17:17	16887-00-6	
Fluoride	0.30	mg/L	0.20	1		09/11/19 18:47	16984-48-8	
Sulfate	364	mg/L	100	100		09/11/19 19:02	14808-79-8	



ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Sample: MW-4	Lab ID: 603	314218002	Collected: 09/07/1	9 18:27	Received: 09	/09/19 15:25 N	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 20	0.7 Preparation Met	hod: EP	PA 200.7			
Barium, Total Recoverable	0.10	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:50	7440-39-3	
Boron, Total Recoverable	<0.10	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:50	7440-42-8	
Calcium, Total Recoverable	146	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:50	7440-70-2	
Lithium	<0.010	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:50	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Met	hod: EP	PA 200.8			
Cobalt, Total Recoverable	<0.0010	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:00	7440-48-4	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	OC					
Total Dissolved Solids	987	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450	0-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		09/10/19 10:50		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	266	mg/L	20.0	20		09/11/19 20:20	16887-00-6	
Fluoride	0.21	mg/L	0.20	1		09/11/19 20:05	16984-48-8	
Sulfate	140	mg/L	20.0	20		09/11/19 20:20	14808-79-8	


ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Sample: MW-5	Lab ID: 603	314218003	Collected: 09/07/	19 14:33	8 Received: 09	/09/19 15:25	Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Me	thod: EPA 20	0.7 Preparation Me	thod: EF	PA 200.7			
Barium, Total Recoverable	0.019	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:52	7440-39-3	
Boron, Total Recoverable	1.5	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:52	7440-42-8	
Calcium, Total Recoverable	328	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:52	7440-70-2	
Lithium	0.017	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:52	7439-93-2	
200.8 MET ICPMS	Analytical Me	thod: EPA 20	0.8 Preparation Me	thod: EF	PA 200.8			
Cobalt, Total Recoverable	0.0020	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:08	7440-48-4	
2540C Total Dissolved Solids	Analytical Me	thod: SM 254	40C					
Total Dissolved Solids	1750	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Me	thod: SM 450)0-H+B					
pH at 25 Degrees C	6.8	Std. Units	0.10	1		09/10/19 10:51		H6
300.0 IC Anions 28 Days	Analytical Me	thod: EPA 30	0.0					
Chloride	41.9	mg/L	5.0	5		09/12/19 17:33	16887-00-6	M1
Fluoride	0.25	mg/L	0.20	1		09/11/19 20:52	16984-48-8	
Sulfate	857	mg/L	100	100		09/11/19 21:23	14808-79-8	



ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Sample: MW-6	Lab ID: 603	314218004	Collected: 09/07/1	9 12:34	Received: 09	/09/19 15:25 N	Aatrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Met	hod: EPA 20	0.7 Preparation Met	hod: EF	PA 200.7			
Barium, Total Recoverable	0.014	mg/L	0.0050	1	09/10/19 16:39	09/11/19 11:54	7440-39-3	
Boron, Total Recoverable	0.71	mg/L	0.10	1	09/10/19 16:39	09/11/19 11:54	7440-42-8	
Calcium, Total Recoverable	295	mg/L	0.20	1	09/10/19 16:39	09/11/19 11:54	7440-70-2	
Lithium	0.015	mg/L	0.010	1	09/10/19 16:39	09/11/19 11:54	7439-93-2	
200.8 MET ICPMS	Analytical Met	hod: EPA 20	0.8 Preparation Met	hod: EF	PA 200.8			
Cobalt, Total Recoverable	0.0024	mg/L	0.0010	1	09/10/19 16:39	09/12/19 16:09	7440-48-4	
2540C Total Dissolved Solids	Analytical Met	hod: SM 254	OC					
Total Dissolved Solids	1600	mg/L	13.3	1		09/12/19 07:15		
4500H+ pH, Electrometric	Analytical Met	hod: SM 450	ю-H+B					
pH at 25 Degrees C	7.0	Std. Units	0.10	1		09/10/19 10:52		H6
300.0 IC Anions 28 Days	Analytical Met	hod: EPA 30	0.0					
Chloride	66.5	mg/L	20.0	20		09/11/19 21:54	16887-00-6	
Fluoride	0.28	mg/L	0.20	1		09/11/19 21:38	16984-48-8	
Sulfate	783	mg/L	100	100		09/11/19 22:10	14808-79-8	



ANALYTICAL RESULTS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Sample: DUPLICATE	Lab ID: 603	314218005	Collected: 09/0	6/19 10:4	0 Received: 09	/09/19 15:25	Matrix: Water	
Parameters	Results	Units	Report Limi	t DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Met	thod: EPA 20	0.7 Preparation I	/lethod: E	PA 200.7			
Barium, Total Recoverable	0.079	mg/L	0.005	0 1	09/10/19 16:39	09/11/19 11:56	7440-39-3	
Boron, Total Recoverable	0.39	mg/L	0.1	0 1	09/10/19 16:39	09/11/19 11:56	7440-42-8	
Calcium, Total Recoverable	154	mg/L	0.2	0 1	09/10/19 16:39	09/11/19 11:56	7440-70-2	
Lithium	<0.010	mg/L	0.01	0 1	09/10/19 16:39	09/11/19 11:56	7439-93-2	
200.8 MET ICPMS	Analytical Met	thod: EPA 20	0.8 Preparation I	/lethod: E	PA 200.8			
Cobalt, Total Recoverable	0.0017	mg/L	0.001	0 1	09/10/19 16:39	09/12/19 16:11	7440-48-4	
2540C Total Dissolved Solids	Analytical Met	thod: SM 254	OC					
Total Dissolved Solids	893	mg/L	10	0 1		09/12/19 07:15	5	
4500H+ pH, Electrometric	Analytical Met	thod: SM 450	0-H+B					
pH at 25 Degrees C	6.8	Std. Units	0.1	0 1		09/10/19 10:56	3	H6
300.0 IC Anions 28 Days	Analytical Met	thod: EPA 30	0.0					
Chloride	30.5	mg/L	2	0 2		09/12/19 18:05	5 16887-00-6	
Fluoride	0.30	mg/L	0.2	0 1		09/11/19 22:56	6 16984-48-8	
Sulfate	331	mg/L	20	0 20		09/11/19 23:12	2 14808-79-8	



EPA 200.7 200.7 Metals, Total

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

QC Batch:	60846	6	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 20	0.7	Analysis Description:	200.7 Metals,
Associated Lab Samp	oles:	60314218001. 60314218	002. 60314218003. 60314218004.	60314218005

METHOD BLANK: 2485612 Matrix: Water Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/11/19 10:55	
Boron	mg/L	<0.10	0.10	09/11/19 10:55	
Calcium	mg/L	<0.20	0.20	09/11/19 10:55	
Lithium	mg/L	<0.010	0.010	09/11/19 10:55	

LABORATORY CONTROL SAMPLE: 2485613

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	102	85-115	
Calcium	mg/L	10	10.5	105	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE SAMPLE: 2485614 60314116006 MS MS % Rec Spike Parameter % Rec Limits Units Result Conc. Result Qualifiers 0.035 Barium mg/L 0.98 95 70-130 1 Boron 2260 ug/L 3.1 86 70-130 mg/L 1 Calcium 545000 ug/L 10 537 -80 70-130 M1 mg/L Lithium mg/L 0.057 1 1.0 96 70-130

ATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2485615 2485616												
Darameter	Unite	60314218001 Result	MS Spike	MSD Spike	MS	MSD Result	MS % Rec	MSD % Rec	% Rec	חספ	Max	Qual
Falallielei	Units		Conc.	Conc.	Result	Result	70 REC	% Rec				Quai
Barium	mg/L	0.076	1	1	1.1	1.1	101	98	70-130	3	20	
Boron	mg/L	0.37	1	1	1.4	1.3	101	95	70-130	4	20	
Calcium	mg/L	151	10	10	161	156	100	48	70-130	3	20	M1
Lithium	mg/L	<0.010	1	1	1.0	0.97	100	97	70-130	3	20	

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

REPORT OF LABORATORY ANALYSIS

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Project:	TEC 322 LANDFIL	LCCR										
Pace Project No.:	60314218											
QC Batch:	608467		Anal	ysis Metho	d:	EPA 200.8						
QC Batch Method:	EPA 200.8		Anal	ysis Descri	iption:	200.8 MET						
Associated Lab Sar	nples: 60314218	001, 6031421800	2, 6031421	18003, 603	14218004,	603142180	05					
METHOD BLANK:	2485617			Matrix: W	/ater							
Associated Lab Sar	nples: 60314218	001, 6031421800	2, 6031421	8003, 603	14218004,	603142180	05					
			Bla	nk	Reporting							
Parar	neter	Units	Res	ult	Limit	Anal	yzed	Qualifier	ſS			
Cobalt		mg/L	<	0.0010	0.001	0 09/12/1	9 16:02					
LABORATORY CO	NTROL SAMPLE:	2485618										
			Spike	LC	S	LCS	% R	ec				
Parar	neter	Units	Conc.	Re	sult	% Rec	Lim	its	Qualifiers			
Cobalt		mg/L	0.0)4	0.041	10	2	85-115		_		
MATRIX SPIKE & M	IATRIX SPIKE DUP	PLICATE: 2485	619		2485620	0						
			MS	MSD					_			
Paramoto	r Linita	60314218002 Result	Spike	Spike	MS Pocult	MSD Bosult	MS % Roc	MSD % Roc	% Rec	חסס	Max	Qual
Faiamele				CONC.	Resuit	- rtesuit	/0 REC	-70 ReC				Qual
Cobalt	mg/L	<0.0010	0.04	0.04	0.041	0.041	102	104	70-130	1	20	

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



Project:	TEC 322 LANDFI	LL CCR						
Pace Project No.:	60314218							
QC Batch:	608845		Analysis M	ethod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total D	issolved Solids		
Associated Lab San	nples: 60314218	001, 60314218002	2, 60314218003,	60314218004	, 60314218005			
METHOD BLANK:	2487133		Matrix	x: Water				
Associated Lab San	nples: 60314218	001, 60314218002	2, 60314218003, Blank	60314218004 Reporting	, 60314218005			
Paran	neter	Units	Result	Limit	Analyze	ed Quali	fiers	
Total Dissolved Solid	ds	mg/L	<5.0) .	5.0 09/12/19 0)7:13		
	NTROI SAMPI F	2487134						
Paran	neter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers	
Total Dissolved Solie	ds	mg/L	1000	1000	100	80-120		_
SAMPLE DUPLICA	TE: 2487135							
			60313369025	Dup		Max		
Paran	neter	Units	Result	Result	RPD	RPD	Qualif	iers
Total Dissolved Solie	ds	mg/L	190) 1	89	1	10	
SAMPLE DUPLICA	TE: 2487136							
			60314218004	Dup		Max		
Paran	neter	Units	Result	Result	RPD	RPD	Qualif	ers
Total Dissolved Solid	ds	mg/L	1600) 15	20	5	10	

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.



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

QC Batch:	608287	Analysis Method:	SM 4500-H+B
QC Batch Method:	SM 4500-H+B	Analysis Description:	4500H+B pH
Associated Lab Samp	oles: 60314218001,	60314218002, 60314218003, 60314218004	60314218005

pH at 25 Degrees C	Std. Units	8.4	8.5	2		5 H6
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
SAMPLE DUPLICATE: 2485035		60313981001	Dup		Max	

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.



Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

ace	FIU	eci	110	005	142	I C

QC Batch:	60881	4		Analysis M	ethod:	EPA 300.0	
QC Batch Method:	EPA 3	300.0		Analysis De	escription:	300.0 IC Anion	s
Associated Lab Samp	oles:	60314218001,	60314218002,	60314218003,	60314218004,	60314218005	

METHOD BLANK: 2486917 Matrix: Water Associated Lab Samples: 60314218001, 60314218002, 60314218003, 60314218004, 60314218005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/11/19 12:25	
Fluoride	mg/L	<0.20	0.20	09/11/19 12:25	
Sulfate	mg/L	<1.0	1.0	09/11/19 12:25	

LABORATORY CONTROL SAMPLE: 2486918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SP	IKE DUPL	ICATE: 24869	919		2486920							
			MS	MSD								
		60313018002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	87.1	50	50	137	137	100	99	80-120	0	15	
Fluoride	mg/L	0.43	2.5	2.5	3.1	3.2	108	112	80-120	3	15	
Sulfate	mg/L	277	250	250	529	530	101	101	80-120	0	15	

MATRIX SPIKE SAMPLE:	2486921						
		60313018004	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Chloride	mg/L	4.1	5	9.1	101	80-120	
Fluoride	mg/L	0.51	2.5	3.3	110	80-120	
Sulfate	mg/L	59.5	25	86.0	106	80-120	

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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Chloride		mg/L		41.9	25	5 7	74.7	131	80	-120 N	1	
Parameter		Units	60314 Re	218003 esult	Spike Conc.	MS Result	%	MS 6 Rec	% Rec Limits	; 	Qualif	iers
MATRIX SPIKE SAMPLE:	248	7474										
Chloride	mg/L	33.6	25	25	61.7	61.4	112	111	80-120	1	15	
Parameter	603 Units	314116004 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		u∟. 2407	MS	MSD	240141	J						
MATDIX SDIKE & MATDIX S		TE: 2497	472		249747	2						
Chloride		mg/L		5	4.7	95	5	90-110				
Parameter		Units	Conc.	Res	sult	% Rec	Limi	its (Qualifiers			
LABORATORY CONTROL S	AMPLE: 248	7471	Sniko		9	109	0/ D	90				
Chloride		mg/L		<1.0	1	1.0 09/12/19	9 10:12					
Parameter		Units	Res	ult	Limit	Analy	/zed	Qualifier	S			
			Blai	nk l	Reporting							
Associated Lab Samples:	60314218001,	6031421800	3, 6031421	8005								
METHOD BLANK: 2487470)			Matrix: W	ater							
Associated Lab Samples:	60314218001,	6031421800	3, 6031421	8005								
QC Batch Method: EPA 30	0.00		Analy	ysis Descrij	otion:	300.0 IC An	ions					
QC Batch: 60894	2		Anal	ysis Method	d:	EPA 300.0						
Pace Project No.: 603142	18											
Project: TEC 322	2 LANDFILL CO	R										

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.



QUALIFIERS

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

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.

LABORATORIES

PASI-K Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

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

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



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC 322 LANDFILL CCR

Pace Project No.: 60314218

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60314218001	 MW-1	EPA 200.7	608466	EPA 200.7	608606
60314218002	MW-4	EPA 200.7	608466	EPA 200.7	608606
60314218003	MW-5	EPA 200.7	608466	EPA 200.7	608606
60314218004	MW-6	EPA 200.7	608466	EPA 200.7	608606
60314218005	DUPLICATE	EPA 200.7	608466	EPA 200.7	608606
60314218001	MW-1	EPA 200.8	608467	EPA 200.8	608607
60314218002	MW-4	EPA 200.8	608467	EPA 200.8	608607
60314218003	MW-5	EPA 200.8	608467	EPA 200.8	608607
60314218004	MW-6	EPA 200.8	608467	EPA 200.8	608607
60314218005	DUPLICATE	EPA 200.8	608467	EPA 200.8	608607
60314218001	MW-1	SM 2540C	608845		
60314218002	MW-4	SM 2540C	608845		
60314218003	MW-5	SM 2540C	608845		
60314218004	MW-6	SM 2540C	608845		
60314218005	DUPLICATE	SM 2540C	608845		
60314218001	MW-1	SM 4500-H+B	608287		
60314218002	MW-4	SM 4500-H+B	608287		
60314218003	MW-5	SM 4500-H+B	608287		
60314218004	MW-6	SM 4500-H+B	608287		
60314218005	DUPLICATE	SM 4500-H+B	608287		
60314218001	MW-1	EPA 300.0	608814		
60314218001	MW-1	EPA 300.0	608942		
60314218002	MW-4	EPA 300.0	608814		
60314218003	MW-5	EPA 300.0	608814		
60314218003	MW-5	EPA 300.0	608942		
60314218004	MW-6	EPA 300.0	608814		
60314218005	DUPLICATE	EPA 300.0	608814		
60314218005	DUPLICATE	EPA 300.0	608942		



Sample Condition Upon Receipt

WO#:60314218

Client Name: Westar Energy		
Courier: FedEx 🗆 UPS 🗆 VIA 🗆 Clay 🗆	PEX 🗆 ECI 🗆	Pace 🖞 Xroads 🗆 Client 🗆 Other 🗆
Tracking #: Pa	ace Shipping Label Used	I? Yes D No D
Custody Seal on Cooler/Box Present: Yes 🖍 No 🗆	Seals intact: Yes	No 🗆
Packing Material: Bubble Wrap D	Foam 🗆	None 🗆 Other 🗆
Thermometer Used: 7-300 Type	of Ice: Wet Blue Nor	
Cooler Temperature (°C): As-read 1.3/0.9 corr. Fa	ctor <u>0.0</u> Correct	ed 1.8/0.9 examining contents:
Temperature should be above freezing to 6°C		p~9/9/1/9
Chain of Custody present:	Yes No N/A	
Chain of Custody relinquished:		
Samples arrived within holding time:		
Short Hold Time analyses (<72hr):		PH
Rush Turn Around Time requested:		
Sufficient volume:	Yes No N/A	
Correct containers used:		
Pace containers used:		
Containers intact:	Yes No N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?		
Filtered volume received for dissolved tests?		
Sample labels match COC: Date / time / ID / analyses		
Samples contain multiple phases? Matrix: κau		
Containers requiring pH preservation in compliance?	Yes No N/A	List sample IDs, volumes, lot #'s of preservative and the
(HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide)	/	
(Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)		
Lead acetate strip turns dark? (Record only)	□Yes □No	
Potassium iodide test strip turns blue/purple? (Preserve)	□Yes □No	
Trip Blank present:		
Headspace in VOA vials (>6mm):		
Samples from USDA Regulated Area: State:	TYes No DNA	
Additional labels attached to 5035A / TX1005 vials in the fie	eld? 🗆 Yes 🗆 No 🖉 N/A	
Client Notification/ Resolution: Copy COC	C to Client? Y / N	Field Data Required? Y / N
Person Contacted: Date	e/Time:	
Comments/ Resolution:		

Project Manager Review:

Date:



CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Reguired Client Inform.	ation:	Section B Required Proj	iect Infor	mation:				Section Invoice in	C formation:									Page:	~	of	
Company: WES	FAR ENERGY	Report To: B	randon	ı Griffin				Attention:	Jar	ed Mor	rison						1				
Address: 818 K	ansas Ave	Copy To: J	ared Mi	orrison, H	eath Horny	a (a		Company	Name:	WEST	AR EN	ERGY			REGULA	TORY /	AGENCY	-			
Topek	(a, KS 66612							Address:		SEE SI	ECTION	4 A			NPC	Es –	GROUN	D WATER		RINKING /	VATER
Email To: brand	on.l.griffin@westarenergy.com	Purchase Ord	ler No.:	10TEC-C	000007950	9		Pace Quot Reference:	a)						LSU –	L	RCRA		0 L	THER	
Phone: (785) 575-,	8135 Fax:	Project Name:	TEC	C 322 Lan	dfill CCR			Pace Proje Manager:	d He	ather V	Vilson, 9	913-56	3-140		Site Lot	ation	<u>'</u>				
Requested Due Date/	TAT: 7 DAY	Project Numb	er:					Pace Profi	e#: 96	56, 1					S	ATE:	2				
												Н	Rec	luested	Analysis	Filtered	(VIN)				
Section D Required Clien	Valid Matrix C	todes	(Jhel o)		COLLE(CTED			Pre	servati	ves	∎ N /A				_					
	DRINKING WATER WATER WASTE WATER PRODUCT SOILSOLID	W T W Y S	BRAB C=CC	COMP	OSITE RT	COMPOSITI END/GRAB	оггестюи	5				1	*sli **sli					(N/X) (
Sample IC	MPLE ID OL WIPE (A-Z, D-9 /) OTHER 3s MUST BE UNIQUE TISSUE	AR AR	CODE (C=C				LEMP AT CO	итеи итеq			lc e	tesT eis	steM Isto	E 204 LD2	81			il Chlorine			
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"Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1 5% per month for any invoices not paid within 30 days.

ATTACHMENT 2

Statistical Analyses

ATTACHMENT 2-1

September 2018 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:	Evergy 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 2018 Semi-annual Groundwater Assessment Monitoring Data
	Statistical Evaluation
	Completed January 14, 2019
	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 2018 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 5, 2018, with laboratory results received and accepted October 2018.

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.

Evergy Kansas Central, Inc. March 18, 2022 Page 2

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 2018 using parametric TLs. If an Appendix IV constituent concentration from the September 2018 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.



Evergy Kansas Central, Inc. March 18, 2022 Page 3

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 2018 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 2018, no SSLs above GWPS occurred at the TEC 322 Landfill.

Tables:

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



TABLE

TABLE ISUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATIONSEPTEMBER 2018 SAMPLING EVENTTECUMSEH ENERGY CENTER

322 LANDFILL

									MCL Co	omparison	T							Inter-w	vell Analysis	Groundwate	er Protection Stand	Jard
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)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well*	September 2018 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) ¹	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well	SSL
				•	CCR Appen	dix-IV: Barium	, Total (μg/L)										•					
MW-4 (upgradient)	10/10	0%	0.14	0.1211	0.01101	0.09248	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.12	Y	0.1402		2.0		
MW-1	11/11	0%	0.20	2.963	0.05444	0.3722	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.079	Y		No		Ν	No
MW-5	10/10	0%	0.04	0.03401	0.005832	0.2061	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.033	Y		No		Ν	No
MW-6	10/10	0%	0.041	0.05262	0.007254	0.2769	2.0	mg/L	N	0	0	No	No	Decreasing	Normal	0.019	Y		No		Ν	No
					CCR Apper	ndix-IV: Cobalt	, Total (μg/L)															
MW-4 (upgradient)	0/10	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.0010		0.006		
MW-1	8/11	27%	0.0086	0.005485	0.002342	0.8502	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0029	Y		Yes		Ν	No
MW-5	10/10	0%	0.0021	0.0001222	0.0003496	0.1942	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0013	Y		Yes		Ν	No
MW-6	10/10	0%	0.0033	0.0005143	0.0007172	0.3132	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0017	Y		Yes		Ν	No
					CCR Appen	dix-IV: Fluoride	e, Total (μg/L)			-								-				
MW-4 (upgradient)	8/11	27%	0.35	1.745	0.4178	0.1768	4.0	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.35	Y	0.3500		4.0		
MW-1	12/12	0%	0.46	1.627	0.04034	0.1076	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.39	Y		Yes		Ν	No
MW-5	11/12	8%	0.42	33.888	0.05821	0.1919	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.35	Y		No		Ν	No
MW-6	11/11	0%	0.50	4.682	0.06842	0.1940	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.41	Y		Yes		Ν	No
					CCR Appen	dix-IV: Lithium	, Total (μg/L)			-								-				
MW-4 (upgradient)	0/10	100%	-	0	0	0	0.040	mg/L	N	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/11	91%	0.010	0	0	0	0.040	mg/L	N	0	0	No	No	NT	Non-parametric	0.010	N		No		Ν	No
MW-5	7/10	30%	0.024	0.03028	0.005503	0.0003335	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.014	Y		Yes		Ν	No
MW-6	7/10	30%	0.022	0.02388	0.004886	0.0003236	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		Ν	No
				cc	R Appendix-IV	: Radium-226 8	& 228, Total (pCi/l	.)														
MW-4 (upgradient)	10/10	0%	2.641	0.513	0.7162	0.4192	5	pCi/L	N	0	0	No	No	Stable	Normal	2.60	Y	3.0555		5		
MW-1	11/11	0%	1.78	0.2726	0.5221	0.699	5	pCi/L	N	0	0	No	No	Stable	Normal	0.855	N		No		Ν	No
MW-5	10/10	0%	1.48	0.07913	0.2813	0.263	5	pCi/L	Ν	0	0	No	No	Stable	Normal	0.530	N		No		Ν	No
MW-6	10/10	0%	1.95	0.2764	0.5258	0.64	5	pCi/L	Ν	0	0	No	No	Stable	Normal	1.95	N		No		Ν	No

Notes:

¹ 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 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:	Evergy 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:	March 2019 Semi-annual Groundwater Assessment Monitoring Data
	Statistical Evaluation
	Completed July 15, 2019
	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 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 March 20, 2019, with laboratory results received and accepted on April 15, 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.

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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 2018 using parametric TLs. If an Appendix IV constituent concentration from the March 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.



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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 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 March 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 ISUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATIONMARCH 2019 SAMPLING EVENTTECUMSEH ENERGY CENTER

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										MCL C	omparison					Inter-well Analysis		Groundwater Protection Standard				
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)	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well*	March 2019 Concentration (mg/L)	Detect?	Upper Tolerance Limit (mg/L) ¹	SSI (exceedance above Background at Individual Well)	GWPS (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	Exceedance above GWPS at Individual Well	SSL
CCR Appendix-IV: Barium, Total (mg/L)							•		•	•	•	•	•	•	-	•	•	•	•			
MW-4 (upgradient)	11/11	0%	0.14	0.0001658	0.01288	0.1103	2.0	mg/L	Ν	0	0	No	No	Stable	Normal	0.094	Y	0.1402		2.0		
MW-1	11/11	0%	0.20	0.003154	0.05616	0.3871	2.0	mg/L	Ν	0	0	No	No	Stable	Normal	0.066	Y		No		N	No
MW-5	11/11	0%	0.04	0.00004025	0.006345	0.2319	2.0	mg/L	Ν	0	0	No	No	Stable	Normal	0.018	Y		No		N	No
MW-6	11/11	0%	0.041	0.00005682	0.007538	0.2983	2.0	mg/L	Ν	0	0	No	No	Decreasing	Normal	0.016	Y		No		N	No
CCR Appendix-IV: Cobalt, Total (mg/L)																						
MW-4 (upgradient)	0/11	100%	-	0	0	0	0.006	mg/L	N	0	0	NA	NA	NA	NA	0.0010	N	0.0010		0.006		
MW-1	7/11	36%	0.0086	0.000005758	0.0024	0.9294	0.006	mg/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0010	N		No		N	No
MW-5	11/11	0%	0.0021	1.245E-07	0.0003529	0.2001	0.006	mg/L	Ν	0	0	No	No	Stable	Normal	0.0014	Y		Yes		N	No
MW-6	11/11	0%	0.0033	4.636E-07	0.0006809	0.2984	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0022	Y		Yes		N	No
	CCR Appendix-IV: Fluoride, Total (mg/L)																					
MW-4 (upgradient)	9/12	25%	0.35	0.001588	0.03985	0.1684	4.0	mg/L	Ν	0	0	Yes	No	Stable	Non-parametric	0.240	Y	0.3500		4.0		
MW-1	12/12	0%	0.46	0.001608	0.0401	0.1072	4.0	mg/L	Ν	0	0	No	No	Stable	Normal	0.38	Y		Yes		N	No
MW-5	11/12	8%	0.42	0.003542	0.05952	0.1973	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.25	Y		No		N	No
MW-6	12/12	0%	0.50	0.004488	0.06699	0.1923	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.30	Y		No		N	No
					CCR Appe	ndix-IV: Lithium,	Total (mg/L)															
MW-4 (upgradient)	0/11	100%	-	4.337E-20	2.083E-10	2.083E-08	0.040	mg/L	Ν	0	0	NA	NA	NA	NA	0.010	N	0.010		0.040		
MW-1	1/11	91%	0.010	4.337E-20	2.083E-10	2.083E-08	0.040	mg/L	Ν	0	0	NA	NA	NA	Non-parametric	0.010	N		No		N	No
MW-5	7/11	36%	0.024	0.00003109	0.005576	0.3505	0.040	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		N	No
MW-6	8/11	27%	0.022	0.00002385	0.004884	0.3337	0.040	mg/L	Ν	0	0	No	No	Stable	Normal	0.010	Y		No		N	No
					CCR Appendix-	V: Radium-226 8	228, Total (pCi/L)															
MW-4 (upgradient)	11/11	0%	2.641	0.4635	0.6808	0.3955	5	pCi/L	Ν	0	0	No	No	Stable	Normal	1.85	Y	3.0555		5		
MW-1	11/11	0%	1.78	0.2772	0.5265	0.7093	5	pCi/L	Ν	0	0	No	No	Stable	Normal	0.253	Ν		No		Ν	No
MW-5	11/11	0%	1.48	0.0789	0.2809	0.2563	5	pCi/L	Ν	0	0	No	No	Stable	Normal	1.36	Ν		No		Ν	No
MW-6	11/11	0%	1.95	0.2499	0.4999	0.6012	5	pCi/L	Ν	0	0	No	No	Stable	Normal	0.931	Ν		No		N	No

Notes:

¹ 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 3

Revised Groundwater Potentiometric Maps



LEGEND						
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) MARCH 2019					
•	MONITORING WELL					
	PIEZOMETER OBSERVATION ONLY					
-	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 20 MARCH 2019. GROUNDWATER ELEVATION WAS NOT MEASURED AT MW-2 IN MARCH 2019.

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 APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019





LEGEND						
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) JUNE 2019					
•	MONITORING WELL					
	PIEZOMETER OBSERVATION ONLY					
—	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 26 JUNE 2019.

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 APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019





LEGEND					
MW-1 900.47	WELL NAME AND GROUNDWATER ELEVATION, (FEET AMSL) SEPTEMBER 2019				
•	MONITORING WELL				
	PIEZOMETER OBSERVATION ONLY				
-	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 06 SEPTEMBER 2019.

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 APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

