I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Jared Morrison Digitally signed by Jared Morrison Date: 2022.12.06 09:32:08 -06'00'

12/06/2022

Jared Morrison
Director Environmental Services
Evergy, Inc.

Date

HALEY ALDRICH

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2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
BOTTOM ASH SETTLING AREA
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)
Topeka, Kansas

File No. 129778-041
January 2020

Amended: December 5, 2022

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Revision No.	Date	Notes
0	January 2020	Original
1	March 2021	Revised to include groundwater potentiometric contour maps for 2019
2	December 5, 2022	Revised to withdraw alternate source demonstrations in accordance with Paragraph 10.b. of the Consent Agreement and Final Order In the Matter of Evergy Kansas Central, Inc.: Docket No. RCRA-07-2023-0001 dated November 7, 2022

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This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Tecumseh Energy Center Bottom Ash Settling Area (BASA) 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 BASA is, to the best of my knowledge, accurate and complete.

Signed:_____
Certifying Engineer

Print Name:	Steven E. Putrich, P.E.
Kansas License No.:	PE24363
Title:	Project Principal
Company:	Haley & Aldrich, Inc.

Signed:_____
Professional Geologist

Print Name:	Mark Nicholls, P.G.
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Title:	Lead Hydrogeologist
Company:	Haley & Aldrich, Inc.

1. Introduction

This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the Bottom Ash Settling Area (BASA; also known as the Bottom Ash Settling Pond) 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 (EPA) 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 BASA 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.

This Annual Report has been amended to indicate that attachments covering the alternate source demonstrations for elevated levels of Appendix IV constituents (i.e., Attachments 1 and 2 in the TEC BASA 2019 Annual Groundwater Monitoring and Corrective Action Report) are withdrawn pursuant to requirements set forth in Paragraph 10.b. of the Consent Agreement and Final Order In the Matter of Evergy Kansas Central, Inc.: Docket No. RCRA-07-2023-0001 dated November 7, 2022 (Consent Agreement).

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 BASA. The BASA 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 TEC BASA as required by the Rule. Groundwater sampling and analysis was conducted per the 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 BASA 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 previously submitted alternate source demonstration (ASD) for the September 2018 assessment monitoring sampling event has been withdrawn in accordance with the requirements of the Consent Agreement.

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 for the March 2019 assessment monitoring sampling event. A previously submitted ASD for the March 2019 semi-annual assessment monitoring sampling event has been withdrawn in accordance with the requirements of the Consent Agreement.

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

During closure of the unit, substantial material around the monitoring well casings was removed to assist with closure activities. The monitoring well casings for downgradient wells MW-8, MW-9, and MW-10 were shortened accordingly between the June annual assessment monitoring sampling event and the October semi-annual assessment monitoring sampling event. Updated top of casing elevations are recorded in Table I.

An additional semi-annual assessment monitoring sampling event occurred in December 2019 associated with confirmation sampling for the closure of the BASA unit.

2.2.3 Problems Encountered

During the additional confirmation sampling event completed in December 2019, downgradient monitoring well MW-9 was identified as being dry. The monitoring well was unable to be sampled.

2.2.4 Actions to Resolve Problems

Evergy plans to monitor downgradient well MW-9 for the presence of groundwater in 2020. If sufficient groundwater is present at the well, an additional sample will be collected and analyzed for Appendix IV constituents to support closure of the unit.

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 and statistical evaluation of semi-annual assessment monitoring analytical data collected in October and December 2019. Semi-annual assessment monitoring with subsequent statistical evaluations and annual assessment monitoring will be completed if necessary. Supplemental confirmation sampling and analysis is planned to support closure if sufficient groundwater is present at well MW-9.

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 TEC BASA 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, along with an additional confirmation monitoring event in December 2019. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the TEC BASA 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 5.

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 BASA 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 alternative 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, along with an additional confirmation monitoring event in December 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 TEC BASA are included in Table II. The background concentrations and groundwater protection standards provided in Table II were utilized for the statistical evaluations completed in 2019 for September 2018 and March 2019 semi-annual assessment monitoring sampling events.

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

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

Previously submitted ASDs for the September 2018 and March 2019 semi-annual assessment monitoring sampling events have been withdrawn in accordance with the requirements of the Consent Agreement.

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

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
BOTTOM ASH SETTLING AREA
TECUMSEH, KANSAS

Location	Upgradient					Downgradient										
	MW-7					MW-8				MW-9			MW-10			
Measure Point (TOC)	878.28					888.01		869.90*		886.98		865.60*	887.08		867.15*	
Sample Name	MW-7-032019	MW-7-062519	MW-7	MW-07-120519	DUP-120519	MW-8-032119	MW-8-062519	MW-8	MW-08-120519	MW-9-032119	MW-9-062519	MW-9	MW-10-032119	MW-10-062519	MW-10	MW-10-120519
Sample Date	3/20/2019	6/25/2019	10/10/2019	12/5/2019	12/5/2019	3/21/2019	6/25/2019	10/10/2019	12/5/2019	3/21/2019	6/25/2019	10/10/2019	3/21/2019	6/25/2019	10/9/2019	12/5/2019
Final Lab Report Date	4/1/2019	7/9/2019	10/22/2019	12/18/2019	12/18/2019	4/1/2019	7/9/2019	10/22/2019	12/18/2019	4/1/2019	7/9/2019	10/22/2019	4/1/2019	7/9/2019	10/22/2019	12/18/2019
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	N/A
Final Radiation Lab Report Date	4/3/2019	7/16/2019	11/8/2019	1/2/2020	1/2/2020	4/3/2019	7/16/2019	11/8/2019	1/2/2020	4/3/2019	7/16/2019	11/8/2019	4/3/2019	7/16/2019	11/8/2019	1/2/2020
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	N/A
Lab Data Reviewed and Accepted	5/3/2019	7/17/2019	12/6/2019	1/9/2020	1/9/2020	5/3/2019	7/17/2019	12/6/2019	1/9/2020	5/3/2019	7/17/2019	12/6/2019	5/3/2019	7/17/2019	12/6/2019	1/9/2020
Depth to Water (ft btoc)	23.55	16.18	23.50	25.04	--	35.29	27.43	18.50	18.41	36.14	30.39	18.46	34.58	28.95	17.57	18.01
Temperature (Deg C)	15.56	17.62	17.28	15.48	15.48	15.62	20.61	19.69	16.07	15.67	19.52	17.96	12.92	19.72	16.85	14.33
Conductivity (µS/cm)	1800	1740	1354	1559	1559	1920	2010	1874	1933	1960	2160	1797	1900	2110	1877	2082
Turbidity (NTU)	3.23	4.56	0.91	1.54	1.54	5.47	1.33	0.91	19.86	18.0	3.22	12.01	3.31	2.17	7.96	5.6
Boron, Total (mg/L)	**0.73**	--	**0.66**	**0.66**	**0.65**	**1.4**	--	**1.3**	**1.3**	**0.48**	--	**0.11**	**0.23**	--	**0.22**	**0.22**
Calcium, Total (mg/L)	**188**	--	**129**	**126**	**128**	**223**	--	**205**	**199**	**206**	--	**203**	**174**	--	**182**	**162**
Chloride (mg/L)	**268**	--	**172**	**197**	**199**	**271**	--	**216**	**220**	**261**	--	**206**	**252**	--	**222**	**228**
Fluoride (mg/L)	**0.26**	--	**0.34**	**0.22**	**0.21**	**0.23**	--	**0.25**	<0.20	**0.38**	--	**0.32**	**0.50**	--	**0.41**	**0.35**
Sulfate (mg/L)	**617**	--	**375**	**418**	**417**	**733**	--	**648**	**654**	**443**	--	**19.3**	**86.7**	--	**98.6**	**175**
pH (su)	**6.9**	--	**7.2**	**6.9**	**6.9**	**6.7**	--	**7.2**	**7.0**	**6.7**	--	**7.8**	**6.8**	--	**6.9**	**6.8**
TDS (mg/L)	**1,340**	--	**1,000**	**1,080**	**1,100**	**1,440**	--	**1,380**	**1,330**	**1,440**	--	**1,110**	**1,190**	--	**1,260**	**1,250**
Antimony, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010
Arsenic, Total (mg/L)	**0.0016**	**0.0016**	**0.0016**	**0.0016**	**0.0015**	**0.0023**	**0.0029**	**0.0024**	**0.0039**	**0.040**	**0.093**	**0.051**	**0.028**	**0.029**	**0.021**	**0.026**
Barium, Total (mg/L)	**0.078**	**0.063**	**0.053**	**0.053**	**0.053**	**0.054**	**0.055**	**0.064**	**0.077**	**0.54**	**0.36**	**0.85**	**0.36**	**0.27**	**0.36**	**0.30**
Beryllium, Total (mg/L)	<0.0010	<0.0010	--	<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	**0.0013**	**0.00053**	<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	<0.0050	--	<0.0050
Cobalt, Total (mg/L)	**0.0016**	**0.0016**	<0.0010	**0.0018**	**0.0016**	<0.0010	<0.0010	**0.0014**	**0.0025**	**0.048**	**0.032**	**0.016**	**0.0014**	**0.0091**	**0.002**	**0.0028**
Lead, Total (mg/L)	<0.010	<0.010	--	<0.010	<0.010	<0.010	<0.010	--	<0.010	<0.010	<0.010	--	<0.010	<0.010	--	<0.010
Lithium, Total (mg/L)	**0.028**	**0.027**	**0.017**	**0.024**	**0.024**	**0.017**	**0.019**	**0.017**	**0.024**	**0.021**	**0.020**	<0.010	<0.010	<0.010	<0.010	<0.010
Molybdenum, Total (mg/L)	**0.0050**	**0.0072**	**0.0110**	**0.0100**	**0.0110**	**0.031**	**0.025**	**0.039**	**0.046**	**0.0062**	**0.0024**	**0.0085**	**0.0029**	**0.0053**	**0.0041**	**0.0043**
Selenium, Total (mg/L)	<0.0010	<0.0010	--	<0.0010	<0.0010	<0.0050	<0.0010	--	<0.0010	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010
Thallium, Total	<0.0010	<0.0010	--	<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	--	<0.20	<0.20	<0.00020	<0.00020	--	<0.20	<0.00020	<0.00020	--	<0.00020	<0.00020	--	<0.20
Fluoride (mg/L)	**0.26**	**0.32**	**0.34**	**0.22**	**0.21**	**0.23**	<0.20	**0.25**	<0.20	**0.38**	<0.20	**0.32**	**0.50**	<0.20	**0.41**	**0.35**
Radium-226 & 228 Combined (pCi/L)	0.0990 ± 0.718 (1.59)	0.933 ± 0.772 (1.31)	0.403 ± 0.611 (1.25)	0.666 +/- 0.573 (0.873)	0.755 +/- 0.581 (0.988)	0.465 ± 0.962 (1.89)	**1.46 ± 0.891 (1.30)**	0.721 ± 0.842 (1.63)	0.569 +/- 0.668 (1.06)	0.663 ± 0.907 (1.70)	**1.01 ± 0.808 (1.35)**	**1.67 ± 1.01 (1.17)**	1.57 ± 1.04 (1.73)	**1.87 ± 0.973 (1.30)**	**2.64 ± 1.15 (1.50)**	1.60 +/- 0.752 (1.11)

Notes and Abbreviations:

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).

Downgradient monitoring wells were shortened during closure of the unit, which occurred between the June annual assessment monitoring sampling event and the October semi-annual assessment monitoring sampling event.

**Top of Casing (TOC) elevations are estimated based on surveyed ground surface elevations plus 3 feet at monitoring wells MW-8, MW-9, and MW-10 for the October and December sampling events.*

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 II

ANNUAL ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS

JUNE 2019 SAMPLING EVENT

EVERGY KANSAS CENTRAL, INC.

TECUMSEH ENERGY CENTER

BOTTOM ASH SETTLING AREA

TECUMSEH, KANSAS

Well #	Background Value*	GWPS
CCR Appendix-IV Arsenic, Total (mg/L)		
MW-7 (upgradient)	0.002	NA
MW-10		0.118**
MW-8		0.010
MW-9		0.198**
CCR Appendix-IV Barium, Total (mg/L)		
MW-7 (upgradient)	0.095	NA
MW-10		2
MW-8		2
MW-9		2
CCR Appendix-IV Cadmium, Total (mg/L)		
MW-7 (upgradient)	0.001	NA
MW-10		0.005
MW-8		0.005
MW-9		0.005
CCR Appendix-IV Cobalt, Total (mg/L)		
MW-7 (upgradient)	0.002	NA
MW-10		0.006
MW-8		0.006
MW-9		0.0641**
CCR Appendix-IV Fluoride, Total (mg/L)		
MW-7 (upgradient)	0.371	NA
MW-10		4.0
MW-8		4.0
MW-9		4.0
CCR Appendix-IV Lithium, Total (mg/L)		
MW-7 (upgradient)	0.03	NA
MW-10		0.040
MW-8		0.040
MW-9		0.040
CCR Appendix-IV Molybdenum, Total (mg/L)		
MW-7 (upgradient)	0.014	NA
MW-10		0.100
MW-8		0.100
MW-9		0.100
CCR Appendix-IV Radium-226 & 228 Combined (pCi/L)		
MW-7 (upgradient)	5.9	NA
MW-10		5.9
MW-8		5.9
MW-9		5.9

Notes and Abbreviations:

** Background value for interwell evaluation based on data collected through June 2018.*

*** GWPS based on background value using intrawell evaluation based on data collected through June 2019.*

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
- BOTTOM ASH SETTLING AREA

NOTE

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

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

N

0 75 150

SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA MONITORING WELL LOCATION MAP

DECEMBER 2022
SCALE: AS SHOWN

FIGURE 1

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (MARCH 20, 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 20 MARCH 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 20, 2019

evergy

DECEMBER 2022

FIGURE 2

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (JUNE 25, 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 25 JUNE 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 25, 2019

evergy

DECEMBER 2022

FIGURE 3

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (MARCH 9, 2020)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 10 OCTOBER 2019. MW-11 GROUNDWATER ELEVATION WAS NOT MEASURED IN OCTOBER 2019.

3. AMSL = ABOVE MEAN SEA LEVEL

4. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP OCTOBER 10, 2019

evergy

DECEMBER 2022

FIGURE 4

LEGEND

MW-8
849.64 WELL NAME AND GROUNDWATER ELEVATION (DECEMBER 5, 2019)

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 0.5-FT INTERVAL (AMSL)

ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR

GROUNDWATER FLOW DIRECTION

BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 05 DECEMBER 2019. MW-9 WAS DRY DURING DECEMBER 2019 AND WAS THEREFORE NOT INCLUDED IN THIS CONTOURING DATASET.

3. AMSL = ABOVE MEAN SEA LEVEL

4. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP DECEMBER 05, 2019

evergy

DECEMBER 2022

FIGURE 5

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

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)
Bottom Ash Settling Area
Tecumseh Energy Center – Tecumseh, Kansas

The Bottom Ash Settling Area (BASA) 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 BASA 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

Figures 2, 3, 4, and 5. 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, October, and December 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, October, and December 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 SI CCR
Pace Project No.: 60297581

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,

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 SI CCR
Pace Project No.: 60297581

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

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: TEC SI CCR
Pace Project No.: 60297581

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297581001	**MW-7-032019**	Water	03/20/19 15:37	03/21/19 17:00
60297581002	**MW-10-032119**	Water	03/21/19 08:34	03/21/19 17:00
60297581003	**MW-9-032119**	Water	03/21/19 11:00	03/21/19 17:00
60297581004	**MW-8-032119**	Water	03/21/19 12:28	03/21/19 17:00

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: TEC SI CCR
Pace Project No.: 60297581

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297581001	**MW-7-032019**	EPA 200.7	JDE	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
60297581002	**MW-10-032119**	EPA 200.7	JDE	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
60297581003	**MW-9-032119**	EPA 200.7	JDE	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
60297581004	**MW-8-032119**	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

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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: 575351

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60297581003

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

- MS (Lab ID: 2360338)
  - Calcium
- MSD (Lab ID: 2360339)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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:

Analyte Comments:

QC Batch: 575368

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

- MW-8-032119 (Lab ID: 60297581004)
  - Selenium, Total Recoverable

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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:

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PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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.
- MW-10-032119 (Lab ID: 60297581002)
- MW-7-032019 (Lab ID: 60297581001)
- MW-8-032119 (Lab ID: 60297581004)
- MW-9-032119 (Lab ID: 60297581003)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

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

Additional Comments:

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9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297581

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: April 01, 2019

General Information:
4 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: 576049

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60296837001,60297442001

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

- MSD (Lab ID: 2363302)
  - Chloride

Additional Comments:

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

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

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60297581

Sample: MW-7-032019 **Lab ID: 60297581001** Collected: 03/20/19 15:37 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.078**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:08	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/26/19 13:08	7440-41-7	
Boron, Total Recoverable	**0.73**	mg/L	0.10	1	03/25/19 11:27	03/26/19 13:08	7440-42-8	
Calcium, Total Recoverable	**188**	mg/L	0.20	1	03/25/19 11:27	03/26/19 13:08	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:08	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:08	7439-92-1	
Lithium	**0.028**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:08	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7440-36-0	
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:34	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7440-48-4	
Molybdenum, Total Recoverable	**0.0050**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:34	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1340**	mg/L	5.0	1		03/22/19 15:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		03/25/19 11:21		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**268**	mg/L	20.0	20		03/28/19 19:58	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	1		03/28/19 19:46	16984-48-8	
Sulfate	**617**	mg/L	50.0	50		03/29/19 16:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60297581

Sample: MW-10-032119 **Lab ID: 60297581002** Collected: 03/21/19 08:34 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.36**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:10	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/26/19 13:10	7440-41-7	
Boron, Total Recoverable	**0.23**	mg/L	0.10	1	03/25/19 11:27	03/26/19 13:10	7440-42-8	
Calcium, Total Recoverable	**174**	mg/L	0.20	1	03/25/19 11:27	03/26/19 13:10	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:10	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:10	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:10	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7440-36-0	
Arsenic, Total Recoverable	**0.028**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:03	7440-43-9	
Cobalt, Total Recoverable	**0.0014**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7440-48-4	
Molybdenum, Total Recoverable	**0.0029**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:03	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1190**	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		03/25/19 11:23		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**252**	mg/L	20.0	20		03/28/19 20:37	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		03/28/19 20:24	16984-48-8	
Sulfate	**86.7**	mg/L	20.0	20		03/28/19 20:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60297581

Sample: MW-9-032119 **Lab ID: 60297581003** Collected: 03/21/19 11:00 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.54**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:12	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/26/19 13:12	7440-41-7	
Boron, Total Recoverable	**0.48**	mg/L	0.10	1	03/25/19 11:27	03/26/19 13:12	7440-42-8	
Calcium, Total Recoverable	**206**	mg/L	0.20	1	03/25/19 11:27	03/26/19 13:12	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/26/19 13:12	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:12	7439-92-1	
Lithium	**0.021**	mg/L	0.010	1	03/25/19 11:27	03/26/19 13:12	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7440-36-0	
Arsenic, Total Recoverable	**0.040**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7440-38-2	
Cadmium, Total Recoverable	**0.0013**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:37	7440-43-9	
Cobalt, Total Recoverable	**0.048**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7440-48-4	
Molybdenum, Total Recoverable	**0.0062**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:37	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1440**	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.7**	Std. Units	0.10	1		03/25/19 11:26		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**261**	mg/L	20.0	20		03/28/19 21:16	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		03/28/19 21:03	16984-48-8	
Sulfate	**443**	mg/L	100	100		03/28/19 21:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60297581

Sample: MW-8-032119 **Lab ID: 60297581004** Collected: 03/21/19 12:28 Received: 03/21/19 17:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.054**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:15	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 11:27	03/27/19 10:15	7440-41-7	
Boron, Total Recoverable	**1.4**	mg/L	0.10	1	03/25/19 11:27	03/27/19 10:15	7440-42-8	
Calcium, Total Recoverable	**223**	mg/L	0.20	1	03/25/19 11:27	03/27/19 10:15	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	03/25/19 11:27	03/27/19 10:15	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:15	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	03/25/19 11:27	03/27/19 10:15	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:40	7440-36-0	
Arsenic, Total Recoverable	**0.0023**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:40	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	03/25/19 15:00	03/28/19 13:40	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:40	7440-48-4	
Molybdenum, Total Recoverable	**0.031**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:40	7439-98-7	
Selenium, Total Recoverable	**<0.0050**	mg/L	0.0050	5	03/25/19 15:00	03/29/19 10:33	7782-49-2	D3
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	03/25/19 15:00	03/28/19 13:40	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/26/19 11:57	03/28/19 11:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1440**	mg/L	5.0	1		03/22/19 15:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.7**	Std. Units	0.10	1		03/25/19 11:27		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**271**	mg/L	20.0	20		03/28/19 22:20	16887-00-6	
Fluoride	**0.23**	mg/L	0.20	1		03/28/19 21:41	16984-48-8	
Sulfate	**733**	mg/L	100	100		03/28/19 22:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575586 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

METHOD BLANK: 2361248 Matrix: Water
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	03/28/19 10:59	

LABORATORY CONTROL SAMPLE: 2361249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0045	90	85-115	

MATRIX SPIKE SAMPLE: 2361250

Parameter	Units	60297581003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	0.005	0.0046	92	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2361251 2361252

Parameter	Units	60297657001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.005	0.005	0.0050	0.0050	101	99	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575351 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

METHOD BLANK: 2360336 Matrix: Water
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

Parameter	Units	Blank Result	Reporting 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 SPIKE DUPLICATE: 2360338 2360339

Parameter	Units	60297581003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.54	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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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575368 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

METHOD BLANK: 2360396 Matrix: Water
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

Parameter	Units	Blank Result	Reporting 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 SPIKE DUPLICATE: 2360398 2360399

Parameter	Units	60297581002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.037	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

Parameter	Units	60297582005 Result	Spike Conc.	MS Result	MS % Rec	% 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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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

MATRIX SPIKE SAMPLE: 2360400

Parameter	Units	60297582005 Result	Spike Conc.	MS Result	MS % Rec	% 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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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575162 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60297581001

METHOD BLANK: 2359339 Matrix: Water
Associated Lab Samples: 60297581001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/22/19 15:39	

LABORATORY CONTROL SAMPLE: 2359340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	992	99	80-120	

SAMPLE DUPLICATE: 2359341

Parameter	Units	60297248003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	6680	6630	1	10	

SAMPLE DUPLICATE: 2359342

Parameter	Units	60297249004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	4710	4720	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575163 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60297581002, 60297581003, 60297581004

METHOD BLANK: 2359343 Matrix: Water
Associated Lab Samples: 60297581002, 60297581003, 60297581004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/22/19 15:40	

LABORATORY CONTROL SAMPLE: 2359344

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	986	99	80-120	

SAMPLE DUPLICATE: 2359345

Parameter	Units	60297582001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	976	941	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 575267 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

SAMPLE DUPLICATE: 2360124

Parameter	Units	60297253001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.9	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 576049 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

METHOD BLANK: 2363299 Matrix: Water
Associated Lab Samples: 60297581001, 60297581002, 60297581003, 60297581004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/28/19 14:16	
Fluoride	mg/L	<0.20	0.20	03/28/19 14:16	
Sulfate	mg/L	<1.0	1.0	03/28/19 14:16	

LABORATORY CONTROL SAMPLE: 2363300

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
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 & MATRIX SPIKE DUPLICATE: 2363301 2363302

Parameter	Units	60296837001 Result	MS Spike Conc.	MSD 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.

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60297581

QC Batch: 576262 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60297581001

METHOD BLANK: 2364278 Matrix: Water
Associated Lab Samples: 60297581001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	1.0	03/29/19 12:14	

LABORATORY CONTROL SAMPLE: 2364279

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.3	106	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALIFIERS

Project: TEC SI CCR
Pace Project No.: 60297581

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC SI CCR
Pace Project No.: 60297581

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297581001	**MW-7-032019**	EPA 200.7	575351	EPA 200.7	575421
60297581002	**MW-10-032119**	EPA 200.7	575351	EPA 200.7	575421
60297581003	**MW-9-032119**	EPA 200.7	575351	EPA 200.7	575421
60297581004	**MW-8-032119**	EPA 200.7	575351	EPA 200.7	575421
60297581001	**MW-7-032019**	EPA 200.8	575368	EPA 200.8	575517
60297581002	**MW-10-032119**	EPA 200.8	575368	EPA 200.8	575517
60297581003	**MW-9-032119**	EPA 200.8	575368	EPA 200.8	575517
60297581004	**MW-8-032119**	EPA 200.8	575368	EPA 200.8	575517
60297581001	**MW-7-032019**	EPA 245.1	575586	EPA 245.1	575627
60297581002	**MW-10-032119**	EPA 245.1	575586	EPA 245.1	575627
60297581003	**MW-9-032119**	EPA 245.1	575586	EPA 245.1	575627
60297581004	**MW-8-032119**	EPA 245.1	575586	EPA 245.1	575627
60297581001	**MW-7-032019**	SM 2540C	575162		
60297581002	**MW-10-032119**	SM 2540C	575163		
60297581003	**MW-9-032119**	SM 2540C	575163		
60297581004	**MW-8-032119**	SM 2540C	575163		
60297581001	**MW-7-032019**	SM 4500-H+B	575267		
60297581002	**MW-10-032119**	SM 4500-H+B	575267		
60297581003	**MW-9-032119**	SM 4500-H+B	575267		
60297581004	**MW-8-032119**	SM 4500-H+B	575267		
60297581001	**MW-7-032019**	EPA 300.0	576049		
60297581001	**MW-7-032019**	EPA 300.0	576262		
60297581002	**MW-10-032119**	EPA 300.0	576049		
60297581003	**MW-9-032119**	EPA 300.0	576049		
60297581004	**MW-8-032119**	EPA 300.0	576049		

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Sample Condition Upon Receipt

WO# : 60297581

60297581

Client Name: WEstar Energy

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

Thermometer Used: T-296 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.0 **Corr. Factor** -1.0 **Corrected** 1.0

Date and initials of person examining contents: DW 3/21/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
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 ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<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: 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):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
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Page: 1 of 1

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	7 DAY

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC SI CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Cl, F SO4	4500 H+B	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60297581
1	MW-7-032019	WT	G			3/20	1537		2	1		1													BPIN 001
2	MW-10-032119	WT	G			3/21	0834		2	1		1													BPIN 002
3	MW-9-032119	WT	G			3/21	1100		2	1		1													003
4	MW-8-032119	WT	G			3/21	1228		2	1		1													004
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca,Ba, Be, Cr, Pb, Li	Westar	3/21/19	1400		3/21/19	1700	1.0	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Brandon Griffin				
SIGNATURE of SAMPLER:					
DATE Signed (MM/DD/YY):	03/21/19				

*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

Pace Container Order #468046

Order By :		Ship To :		Return To:	
Company	WESTAR ENERGY	Company	WESTAR ENERGY	Company	Pace Analytical Kansas
Contact	Griffin, Brandon	Contact	Griffin, Brandon	Contact	Wilson, Heather
Email	brandon.l.griffin@westarenergy.	Email	brandon.l.griffin@westarenergy.	Email	heather.wilson@pacelabs.com
Address	818 S. Kansas Ave	Address	818 S. Kansas Ave	Address	9608 Loiret Blvd.
Address 2		Address 2		Address 2	
City	Topeka	City	Topeka	City	Lenexa
State	KS Zip 66612	State	KS Zip 66612	State	KS Zip 66219
Phone	785-575-8135	Phone	785-575-8135	Phone	1(913)563-1407

Info

Project Name	TEC SI CCR- App III & IV	**Due Date**	02/27/2019	**Profile**	9657, 1	**Quote**	
Project	Wilson, Heather	**Return**		**Carrier**	Most Economical	**Locatio**	KS

Trip Blanks

- [ ] Include Trip Blanks

Bottle

- [ ] Blank
- [x] Pre-Printed No Sample IDs
- [ ] Pre-Printed With Sample IDs

- [ ] Boxed Cases
- [ ] Individually Wrapped
- [ ] Grouped By Sample

Return Shipping

- [x] No Shipper
- [ ] With Shipper

COC Options

- [ ] Number of Blanks
- [x] Pre-Printed 1

Misc

- [ ] Sampling Instructions
- [x] Custody Seal
- [x] Temp. Blanks
- [x] Coolers
- [ ] Syringes

- [ ] Extra Bubble Wrap
- [ ] Short Hold/Rush
- [ ] DI Liter(s)
- [ ] USDA Regulated Soils

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
4	WT	Metals	1-1L plastic w/HNO3	4	0	010719-2AJN	
4	WT	300.0 Anions/pH/TDS	1L plastic unpreserved	4	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 :	02/27/2019
Prepared	Ben
Verified By:	

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 SI CCR
Pace Project No.: 60297615

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,

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

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CERTIFICATIONS

Project: TEC SI CCR
Pace Project No.: 60297615

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

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SAMPLE SUMMARY

Project: TEC SI CCR
Pace Project No.: 60297615

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60297615001	**MW-7-032019**	Water	03/20/19 15:37	03/22/19 09:30
60297615002	**MW-10-032119**	Water	03/21/19 08:34	03/22/19 09:30
60297615003	**MW-9-032119**	Water	03/21/19 11:00	03/22/19 09:30
60297615004	**MW-8-032119**	Water	03/21/19 12:28	03/22/19 09:30

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SAMPLE ANALYTE COUNT

Project: TEC SI CCR
Pace Project No.: 60297615

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60297615001	**MW-7-032019**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297615002	**MW-10-032119**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297615003	**MW-9-032119**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
60297615004	**MW-8-032119**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA

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PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297615

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

General Information:
4 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:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297615

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

General Information:
4 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:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60297615

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: April 03, 2019

General Information:
4 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.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

Sample: MW-7-032019 **Lab ID: 60297615001** Collected: 03/20/19 15:37 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	**-0.043 ± 0.377 (0.820) C:NA T:87%**	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	**0.0990 ± 0.341 (0.767) C:76% T:87%**	pCi/L	04/02/19 14:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.0990 ± 0.718 (1.59)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

Sample: MW-10-032119 **Lab ID: 60297615002** Collected: 03/21/19 08:34 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	**0.0679 ± 0.502 (0.958) C:NA T:91%**	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	**1.50 ± 0.534 (0.776) C:76% T:84%**	pCi/L	04/02/19 14:40	15262-20-1	
Total Radium	Total Radium Calculation	**1.57 ± 1.04 (1.73)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

Sample: MW-9-032119 **Lab ID: 60297615003** Collected: 03/21/19 11:00 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	**0.170 ± 0.541 (0.995) C:NA T:92%**	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	**0.493 ± 0.366 (0.709) C:73% T:82%**	pCi/L	04/02/19 14:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.663 ± 0.907 (1.70)**	pCi/L	04/03/19 16:02	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

Sample: MW-8-032119 **Lab ID: 60297615004** Collected: 03/21/19 12:28 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	**0.0789 ± 0.583 (1.11) C:NA T:81%**	pCi/L	04/02/19 11:44	13982-63-3	
Radium-228	EPA 904.0	**0.386 ± 0.379 (0.779) C:74% T:80%**	pCi/L	04/02/19 14:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.465 ± 0.962 (1.89)**	pCi/L	04/03/19 16:02	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

QC Batch: 335730 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60297615001, 60297615002, 60297615003, 60297615004

METHOD BLANK: 1633600 Matrix: Water
Associated Lab Samples: 60297615001, 60297615002, 60297615003, 60297615004

Parameter	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC SI CCR
Pace Project No.: 60297615

QC Batch: 335729 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60297615001, 60297615002, 60297615003, 60297615004

METHOD BLANK: 1633599 Matrix: Water
Associated Lab Samples: 60297615001, 60297615002, 60297615003, 60297615004

Parameter	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.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC SI CCR
Pace Project No.: 60297615

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC SI CCR
Pace Project No.: 60297615

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60297615001	**MW-7-032019**	EPA 903.1	335729		
60297615002	**MW-10-032119**	EPA 903.1	335729		
60297615003	**MW-9-032119**	EPA 903.1	335729		
60297615004	**MW-8-032119**	EPA 903.1	335729		
60297615001	**MW-7-032019**	EPA 904.0	335730		
60297615002	**MW-10-032119**	EPA 904.0	335730		
60297615003	**MW-9-032119**	EPA 904.0	335730		
60297615004	**MW-8-032119**	EPA 904.0	335730		
60297615001	**MW-7-032019**	Total Radium Calculation	336842		
60297615002	**MW-10-032119**	Total Radium Calculation	336842		
60297615003	**MW-9-032119**	Total Radium Calculation	336842		
60297615004	**MW-8-032119**	Total Radium Calculation	336842		

Chain of Custody

Pace Analytical®
www.pacelabs.com

[X] Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: [ ] Yes [X] No

Workorder: 60297615 **Workorder Name:** TEC SI CCR

Owner Received Date: 3/22/2019 Results Requested By: 4/5/2019

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO# : 30285862

30285862

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	MW-7-032019	PS	3/20/2019 15:37	60297615001	Water	1	X	X	001
2	MW-10-032119	PS	3/21/2019 08:34	60297615002	Water	1	X	X	002
3	MW-9-032119	PS	3/21/2019 11:00	60297615003	Water	1	X	X	003
4	MW-8-032119	PS	3/21/2019 12:28	60297615004	Water	1	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1			Emily ET 3-25-19	3-22-19 0930
2				
3				

Comments

Cooler Temperature on Receipt 1.1 °C | Custody Seal (Y) or N | Received on Ice (Y) or N | Samples Intact (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.*

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RUSH

CHAIN-OF-CUSTODY / Analytical Request Document

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

30285862

Page: / of /

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10TEC-0000007956	Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	TEC SI CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	~~10 Day~~ 4/12/19	Project Number:		Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: KS

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Analysis Test: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-7-032019		WT	G			3/20	1537		2			2											
2	MW-10-032119		WT	G			3/21	0834		2			2											
3	MW-9-032119		WT	G			3/21	1100		2			2											
4	MW-8-032119		WT	G			3/21	1228		2			2											
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	BFF / Westar	3/21/19	1400	Emily	3-22-19	0930	1.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Brandon Griffin					
SIGNATURE of SAMPLER:	BFF	DATE Signed (MM/DD/YY): 03/21/19				

*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 Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar Energy Project # 30285862

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label ET
LIMS Login ET

Tracking #: 477468742 5223

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

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 1.1 °C Correction Factor: 0.0 °C Final Temp: 1.1 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D3581 / Date and Initials of person examining contents: ET 3-22-19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ET / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: Trip Blank Custody Seals Present		✓	✓	18.
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: ET / Date: 3-22-19

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

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 SI CCR
Pace Project No.: 60307292

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,

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

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

CERTIFICATIONS

Project: TEC SI CCR
Pace Project No.: 60307292

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

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

SAMPLE SUMMARY

Project: TEC SI CCR
Pace Project No.: 60307292

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307292001	**MW-8-062519**	Water	06/25/19 09:50	06/27/19 08:35
60307292002	**MW-9-062519**	Water	06/25/19 12:00	06/27/19 08:35
60307292003	**MW-10-062519**	Water	06/25/19 14:10	06/27/19 08:35
60307292004	**MW-7-062519**	Water	06/25/19 16:20	06/27/19 08:35

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SAMPLE ANALYTE COUNT

Project: TEC SI CCR
Pace Project No.: 60307292

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307292001	**MW-8-062519**	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
60307292002	**MW-9-062519**	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
60307292003	**MW-10-062519**	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
60307292004	**MW-7-062519**	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

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60307292

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

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60307292

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

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60307292

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 09, 2019

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC SI CCR
Pace Project No.: 60307292

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 09, 2019

General Information:
4 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.

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

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60307292

Sample: MW-8-062519 **Lab ID: 60307292001** Collected: 06/25/19 09:50 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.055**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:21	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 17:21	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:21	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:21	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:21	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:52	7440-36-0	
Arsenic, Total Recoverable	**0.0029**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:52	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:52	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:52	7440-48-4	
Molybdenum, Total Recoverable	**0.025**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:52	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:52	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:41	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:56	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**<0.20**	mg/L	0.20	1		07/09/19 03:53	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60307292

Sample: MW-9-062519 **Lab ID: 60307292002** Collected: 06/25/19 12:00 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.36**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 17:24	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:24	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:24	7439-92-1	
Lithium	**0.020**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:24	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:56	7440-36-0	
Arsenic, Total Recoverable	**0.093**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:47	7440-38-2	
Cadmium, Total Recoverable	**0.00053**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 14:56	7440-43-9	
Cobalt, Total Recoverable	**0.032**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:56	7440-48-4	
Molybdenum, Total Recoverable	**0.0024**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 14:56	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:58	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**<0.20**	mg/L	0.20	1		07/09/19 04:07	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60307292

Sample: MW-10-062519 **Lab ID: 60307292003** Collected: 06/25/19 14:10 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.27**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:26	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 17:26	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:26	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:26	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:26	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:03	7440-36-0	
Arsenic, Total Recoverable	**0.029**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:03	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 15:03	7440-43-9	
Cobalt, Total Recoverable	**0.0091**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:03	7440-48-4	
Molybdenum, Total Recoverable	**0.0053**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:03	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:03	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:52	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 16:00	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**<0.20**	mg/L	0.20	1		07/09/19 04:22	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC SI CCR
Pace Project No.: 60307292

Sample: MW-7-062519 **Lab ID: 60307292004** Collected: 06/25/19 16:20 Received: 06/27/19 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.063**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:36	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 17:36	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/05/19 16:17	07/08/19 17:36	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:36	7439-92-1	
Lithium	**0.027**	mg/L	0.010	1	07/05/19 16:17	07/08/19 17:36	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:07	7440-36-0	
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:07	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/05/19 16:17	07/08/19 15:07	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:07	7440-48-4	
Molybdenum, Total Recoverable	**0.0072**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:07	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/08/19 15:07	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/05/19 16:17	07/09/19 10:54	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 16:02	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.32**	mg/L	0.20	1		07/09/19 04:37	16984-48-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60307292

QC Batch: 594115 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

METHOD BLANK: 2435092 Matrix: Water
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	07/05/19 15:14	

LABORATORY CONTROL SAMPLE: 2435093

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2435094 2435095

Parameter	Units	60306868001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.20	5	5	4.6	4.5	92	90	70-130	3	20	

MATRIX SPIKE SAMPLE: 2435096

Parameter	Units	60306868002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	4.5	90	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60307292

QC Batch: 594823 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

METHOD BLANK: 2437479 Matrix: Water
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

Parameter	Units	Blank Result	Reporting 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

Parameter	Units	60307292003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.27	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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60307292

QC Batch: 594825 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

METHOD BLANK: 2437487 Matrix: Water
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

Parameter	Units	Blank Result	Reporting 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 SPIKE DUPLICATE: 2437489 2437490

Parameter	Units	60307291002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.040	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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(913)599-5665

QUALITY CONTROL DATA

Project: TEC SI CCR
Pace Project No.: 60307292

QC Batch: 595185 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

METHOD BLANK: 2438440 Matrix: Water
Associated Lab Samples: 60307292001, 60307292002, 60307292003, 60307292004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/08/19 18:58	

LABORATORY CONTROL SAMPLE: 2438441

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2438442 2438443

Parameter	Units	60307333007 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 SAMPLE: 2438444

Parameter	Units	60307291005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/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.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC SI CCR
Pace Project No.: 60307292

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC SI CCR
Pace Project No.: 60307292

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307292001	**MW-8-062519**	EPA 200.7	594823	EPA 200.7	594952
60307292002	**MW-9-062519**	EPA 200.7	594823	EPA 200.7	594952
60307292003	**MW-10-062519**	EPA 200.7	594823	EPA 200.7	594952
60307292004	**MW-7-062519**	EPA 200.7	594823	EPA 200.7	594952
60307292001	**MW-8-062519**	EPA 200.8	594825	EPA 200.8	594953
60307292002	**MW-9-062519**	EPA 200.8	594825	EPA 200.8	594953
60307292003	**MW-10-062519**	EPA 200.8	594825	EPA 200.8	594953
60307292004	**MW-7-062519**	EPA 200.8	594825	EPA 200.8	594953
60307292001	**MW-8-062519**	EPA 245.1	594115	EPA 245.1	594129
60307292002	**MW-9-062519**	EPA 245.1	594115	EPA 245.1	594129
60307292003	**MW-10-062519**	EPA 245.1	594115	EPA 245.1	594129
60307292004	**MW-7-062519**	EPA 245.1	594115	EPA 245.1	594129
60307292001	**MW-8-062519**	EPA 300.0	595185		
60307292002	**MW-9-062519**	EPA 300.0	595185		
60307292003	**MW-10-062519**	EPA 300.0	595185		
60307292004	**MW-7-062519**	EPA 300.0	595185		

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Sample Condition Upon Receipt

WO# : 60307292

60307292

Client Name: Westar Energy

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☒

Custody Seal on Cooler/Box Present: ~~Yes ☒~~ No ☒ Seals intact: ~~Yes ☒~~ No ☒ 06/27

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☒ Other ☐

Thermometer Used: T-296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2-3 **Corr. Factor** -1.0 **Corrected** 1.3

Date and initials of person examining contents: 06/27/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
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 ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<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: 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):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: Analyses on COC are inaccurate due to an IT glitch in our bottle order system. Please see attached COC

HMW 7/1/19

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.

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Page: of

Section A
Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	~~brandon.l.griffin@westarenergy.com~~
Phone:	(785) 575-8135 Fax:
Requested Due Date/TAT:	7 DAY

Section B
Required Project Information:

Report To:	~~Brandon Griffin~~
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC SI CCR
Project Number:	

Section C
Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

Preservatives: Unpreserved, H_2SO_4, HNO_3, HCl, NaOH, $Na_2S_2O_3$, Methanol, Other

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Analysis Test	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Cl, F SO4	4500 H+B	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60307292
1	MW-8_062519	WT	G			06/25	950		3		X	X	X	X	X	X		BPIN 2BPIU 001
2	MW-9_062519	WT	G			06/25	1200		3		X	X	X	X	X	X		002
3	MW-10-062519	WT	G			06/25	1410		3		X	X	X	X	X	X		003
4	MW-7-062519	WT	G			06/25	1620		3		X	X	X	X	X	X		004
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca,Ba, Be, Cr, Pb, Li	Eli Fredrickson	06/27	835	Victoria Brown/pace	6/27/19	835	1.3	Y	N	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli Fredrickson DATE Signed (MM/DD/YY): 06/27/19

*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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A **Required** Client Information:		Section B **Required** Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10TEC-0000007956	Pace Quote Reference:	
Phone: (785) 575-8135	Fax:	Project Name:	TEC SI CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9656, 2

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER

☐ UST ☐ RCRA ☐ OTHER

Site Location ***STATE:*** KS

Requested Analysis Filtered (Y/N)

Section D **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	Section D Required Client Information	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Fluoride	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																								
2																								
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
200.7 Total Metals*: Ba, Be, Cr, Pb, Li							
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl							

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: **DATE Signed (MM/DD/YY):**

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

*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

ATTACHMENT 1-3

October 2019 Sampling Event Laboratory Analytical Report

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

October 22, 2019

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

RE: Project: TEC BASA CCR
Pace Project No.: 60317942

Dear Adam Kneeling:
Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 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,

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, KCP&L and Westar, Evergy Companies
Danielle Zinmaster, Haley & Aldrich

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

CERTIFICATIONS

Project: TEC BASA CCR
Pace Project No.: 60317942

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 #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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

SAMPLE SUMMARY

Project: TEC BASA CCR
Pace Project No.: 60317942

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60317942001	**MW-10**	Water	10/09/19 14:51	10/11/19 15:41
60317942002	**MW-9**	Water	10/10/19 08:45	10/11/19 15:41
60317942003	**MW-8**	Water	10/10/19 11:44	10/11/19 15:41
60317942004	**MW-7**	Water	10/10/19 14:23	10/11/19 15:41

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SAMPLE ANALYTE COUNT

Project: TEC BASA CCR
Pace Project No.: 60317942

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60317942001	**MW-10**	EPA 200.7	LRS	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60317942002	**MW-9**	EPA 200.7	LRS	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60317942003	**MW-8**	EPA 200.7	LRS	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60317942004	**MW-7**	EPA 200.7	LRS	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	MGS	3	PASI-K

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PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317942

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: October 22, 2019

General Information:
4 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: 615723

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60317942001

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

- MS (Lab ID: 2513544)
  - Calcium
- MSD (Lab ID: 2513545)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317942

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: Evergy Kansas Central, Inc.
Date: October 22, 2019

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317942

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: October 22, 2019

General Information:
4 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.

QC Batch: 616608

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.
- DUP (Lab ID: 2516900)
  - Total Dissolved Solids

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317942

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: October 22, 2019

General Information:
4 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.
- MW-10 (Lab ID: 60317942001)
- MW-7 (Lab ID: 60317942004)
- MW-8 (Lab ID: 60317942003)
- MW-9 (Lab ID: 60317942002)

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:

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

PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317942

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: October 22, 2019

General Information:
4 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.

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

ANALYTICAL RESULTS

Project: TEC BASA CCR
Pace Project No.: 60317942

Sample: MW-10 **Lab ID: 60317942001** Collected: 10/09/19 14:51 Received: 10/11/19 15:41 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.36**	mg/L	0.0050	1	10/15/19 09:00	10/17/19 16:19	7440-39-3	
Boron, Total Recoverable	**0.22**	mg/L	0.10	1	10/15/19 09:00	10/17/19 16:19	7440-42-8	
Calcium, Total Recoverable	**182**	mg/L	0.20	1	10/15/19 09:00	10/17/19 16:19	7440-70-2	M1
Lithium	**<0.010**	mg/L	0.010	1	10/15/19 09:00	10/18/19 13:53	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.021**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:12	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	10/15/19 09:00	10/16/19 10:12	7440-43-9	
Cobalt, Total Recoverable	**0.0020**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:12	7440-48-4	
Molybdenum, Total Recoverable	**0.0041**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:12	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1260**	mg/L	13.3	1		10/16/19 10:14		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		10/17/19 11:47		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**222**	mg/L	20.0	20		10/21/19 22:18	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	1		10/21/19 21:46	16984-48-8	
Sulfate	**98.6**	mg/L	10.0	10		10/21/19 22:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC BASA CCR
Pace Project No.: 60317942

Sample: MW-9 **Lab ID: 60317942002** Collected: 10/10/19 08:45 Received: 10/11/19 15:41 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.85**	mg/L	0.0050	1	10/15/19 09:00	10/17/19 16:26	7440-39-3	
Boron, Total Recoverable	**0.11**	mg/L	0.10	1	10/15/19 09:00	10/17/19 16:26	7440-42-8	
Calcium, Total Recoverable	**203**	mg/L	0.20	1	10/15/19 09:00	10/17/19 16:26	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	10/15/19 09:00	10/18/19 14:04	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.051**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:17	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	10/15/19 09:00	10/16/19 10:17	7440-43-9	
Cobalt, Total Recoverable	**0.016**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:17	7440-48-4	
Molybdenum, Total Recoverable	**0.0085**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:17	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1110**	mg/L	13.3	1		10/17/19 16:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		10/17/19 11:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**206**	mg/L	50.0	50		10/17/19 01:22	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		10/17/19 01:05	16984-48-8	
Sulfate	**19.3**	mg/L	1.0	1		10/17/19 01:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC BASA CCR
Pace Project No.: 60317942

Sample: MW-8 **Lab ID: 60317942003** Collected: 10/10/19 11:44 Received: 10/11/19 15:41 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.064**	mg/L	0.0050	1	10/15/19 09:00	10/17/19 16:29	7440-39-3	
Boron, Total Recoverable	**1.3**	mg/L	0.10	1	10/15/19 09:00	10/17/19 16:29	7440-42-8	
Calcium, Total Recoverable	**205**	mg/L	0.20	1	10/15/19 09:00	10/17/19 16:29	7440-70-2	
Lithium	**0.017**	mg/L	0.010	1	10/15/19 09:00	10/18/19 14:06	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.0024**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:18	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	10/15/19 09:00	10/16/19 10:18	7440-43-9	
Cobalt, Total Recoverable	**0.0014**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:18	7440-48-4	
Molybdenum, Total Recoverable	**0.039**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:18	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1380**	mg/L	13.3	1		10/17/19 16:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		10/17/19 11:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**216**	mg/L	50.0	50		10/17/19 01:55	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		10/17/19 01:38	16984-48-8	
Sulfate	**648**	mg/L	50.0	50		10/17/19 01:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC BASA CCR
Pace Project No.: 60317942

Sample: MW-7 **Lab ID: 60317942004** Collected: 10/10/19 14:23 Received: 10/11/19 15:41 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	10/15/19 09:00	10/17/19 16:31	7440-39-3	
Boron, Total Recoverable	**0.66**	mg/L	0.10	1	10/15/19 09:00	10/17/19 16:31	7440-42-8	
Calcium, Total Recoverable	**129**	mg/L	0.20	1	10/15/19 09:00	10/17/19 16:31	7440-70-2	
Lithium	**0.017**	mg/L	0.010	1	10/15/19 09:00	10/18/19 14:09	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	10/15/19 09:00	10/16/19 10:20	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:20	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	10/15/19 09:00	10/16/19 10:20	7439-98-7	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1000**	mg/L	13.3	1		10/17/19 16:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		10/17/19 11:52		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**172**	mg/L	50.0	50		10/17/19 02:29	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	1		10/17/19 02:12	16984-48-8	
Sulfate	**375**	mg/L	50.0	50		10/17/19 02:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 615723 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

METHOD BLANK: 2513542 Matrix: Water
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	10/17/19 16:14	
Boron	mg/L	<0.10	0.10	10/17/19 16:14	
Calcium	mg/L	<0.20	0.20	10/17/19 16:14	
Lithium	mg/L	<0.010	0.010	10/18/19 13:47	

LABORATORY CONTROL SAMPLE: 2513543

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.94	94	85-115	
Calcium	mg/L	10	9.9	99	85-115	
Lithium	mg/L	1	0.94	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2513544 2513545

Parameter	Units	60317942001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.36	1	1	1.4	1.3	100	97	70-130	2	20	
Boron	mg/L	0.22	1	1	1.2	1.2	98	96	70-130	2	20	
Calcium	mg/L	182	10	10	187	186	53	44	70-130	0	20	M1
Lithium	mg/L	<0.010	1	1	0.96	0.94	95	93	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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 615717 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

METHOD BLANK: 2513526 Matrix: Water
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0010	0.0010	10/16/19 10:09	
Cadmium	mg/L	<0.00050	0.00050	10/16/19 10:09	
Cobalt	mg/L	<0.0010	0.0010	10/16/19 10:09	
Molybdenum	mg/L	<0.0010	0.0010	10/16/19 10:09	

LABORATORY CONTROL SAMPLE: 2513527

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.04	0.039	98	85-115	
Cadmium	mg/L	0.04	0.040	100	85-115	
Cobalt	mg/L	0.04	0.041	102	85-115	
Molybdenum	mg/L	0.04	0.040	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2513528 2513529

Parameter	Units	60317942001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	0.021	0.04	0.04	0.059	0.059	95	95	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.037	0.037	93	94	70-130	1	20	
Cobalt	mg/L	0.0020	0.04	0.04	0.041	0.041	97	98	70-130	2	20	
Molybdenum	mg/L	0.0041	0.04	0.04	0.046	0.046	104	104	70-130	0	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 616101 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60317942001

METHOD BLANK: 2514937 Matrix: Water
Associated Lab Samples: 60317942001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	10/16/19 10:12	

LABORATORY CONTROL SAMPLE: 2514938

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1070	107	80-120	

SAMPLE DUPLICATE: 2514939

Parameter	Units	60317792003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	93.5	93.0	1	10	

SAMPLE DUPLICATE: 2514940

Parameter	Units	60317867005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1740	1760	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 616608 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60317942002, 60317942003, 60317942004

METHOD BLANK: 2516897 Matrix: Water
Associated Lab Samples: 60317942002, 60317942003, 60317942004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	10/17/19 16:58	

LABORATORY CONTROL SAMPLE: 2516898

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	993	99	80-120	

SAMPLE DUPLICATE: 2516899

Parameter	Units	60317759001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	53.5	53.5	0	10	

SAMPLE DUPLICATE: 2516900

Parameter	Units	60318009001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1590	1220	26	10	D6

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 616086 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

SAMPLE DUPLICATE: 2514885

Parameter	Units	60317530002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.3	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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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 615749 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60317942002, 60317942003, 60317942004

METHOD BLANK: 2513647 Matrix: Water
Associated Lab Samples: 60317942001, 60317942002, 60317942003, 60317942004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/16/19 15:48	
Fluoride	mg/L	<0.20	0.20	10/16/19 15:48	
Sulfate	mg/L	<1.0	1.0	10/16/19 15:48	

LABORATORY CONTROL SAMPLE: 2513648

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2513649 2513650

Parameter	Units	60317619001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	220	100	100	325	324	105	104	80-120	0	15	
Fluoride	mg/L	ND	12.5	12.5	11.1	11.3	86	87	80-120	2	15	
Sulfate	mg/L	67.6	25	25	90.6	90.8	92	93	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC BASA CCR
Pace Project No.: 60317942

QC Batch: 617263 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60317942001

METHOD BLANK: 2519017 Matrix: Water
Associated Lab Samples: 60317942001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/21/19 10:52	
Fluoride	mg/L	<0.20	0.20	10/21/19 10:52	
Sulfate	mg/L	<1.0	1.0	10/21/19 10:52	

LABORATORY CONTROL SAMPLE: 2519018

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.3	94	90-110	
Sulfate	mg/L	5	4.8	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2519019 2519020

Parameter	Units	60317142007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.3J	100	100	97.5	97.8	89	90	80-120	0	15	
Fluoride	mg/L	ND	50	50	49.5	49.8	99	100	80-120	0	15	
Sulfate	mg/L	113	100	100	212	208	99	95	80-120	2	15	

MATRIX SPIKE SAMPLE: 2519021

Parameter	Units	60318577004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	641	250	926	114	80-120	
Fluoride	mg/L	23.0	125	154	105	80-120	
Sulfate	mg/L	59.4	250	308	99	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC BASA CCR
Pace Project No.: 60317942

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

D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC BASA CCR
Pace Project No.: 60317942

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60317942001	**MW-10**	EPA 200.7	615723	EPA 200.7	615961
60317942002	**MW-9**	EPA 200.7	615723	EPA 200.7	615961
60317942003	**MW-8**	EPA 200.7	615723	EPA 200.7	615961
60317942004	**MW-7**	EPA 200.7	615723	EPA 200.7	615961
60317942001	**MW-10**	EPA 200.8	615717	EPA 200.8	615958
60317942002	**MW-9**	EPA 200.8	615717	EPA 200.8	615958
60317942003	**MW-8**	EPA 200.8	615717	EPA 200.8	615958
60317942004	**MW-7**	EPA 200.8	615717	EPA 200.8	615958
60317942001	**MW-10**	SM 2540C	616101		
60317942002	**MW-9**	SM 2540C	616608		
60317942003	**MW-8**	SM 2540C	616608		
60317942004	**MW-7**	SM 2540C	616608		
60317942001	**MW-10**	SM 4500-H+B	616086		
60317942002	**MW-9**	SM 4500-H+B	616086		
60317942003	**MW-8**	SM 4500-H+B	616086		
60317942004	**MW-7**	SM 4500-H+B	616086		
60317942001	**MW-10**	EPA 300.0	617263		
60317942002	**MW-9**	EPA 300.0	615749		
60317942003	**MW-8**	EPA 300.0	615749		
60317942004	**MW-7**	EPA 300.0	615749		

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Sample Condition Upon Receipt

WO# : 60317942

60317942

Client Name: Weston

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-294 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.0 **Corr. Factor** 0.4 **Corrected** 3.4

Date and initials of person examining contents: 10/11/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
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 ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<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: 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):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A — **Required** Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	**7 DAY**

Section B — **Required** Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC BASA CCR
Project Number:	

Section C — Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location — **STATE:** KS

Section D — **Required** Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	2540C TDS	300: Cl, F SO4	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-10	WT	G			10/9/19	1451		3	2		1							X	X	X	X	X		40317942 001
2	MW-9	WT	G			10/10/19	0845		3	2		1							X	X	X	X	X		002
3	MW-8	WT	G			10/10/19	1144		3	2		1							X	X	X	X	X		003
4	MW-7	WT	G			10/10/19	1423		3	2		1							X	X	X	X	X		004
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca,Ba, Li	M.Miller-Gulmore / HHA	10/11/19	0800	[signature] TDE	10/11/19	1541	3.2	Y	Y	Y
200.8 Total Metals**: As, Cd, Co, Mo										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Misha Miller-Gulmore

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/10/19

*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.

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

November 08, 2019

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

RE: Project: TEC BASA CCR
Pace Project No.: 60317943

Dear Adam Kneeling:
Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 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,

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
Laura Hines, KCP&L & Westar, Evergy Companies
Jake Humphrey, KCP&L and Westar, Evergy Companies
JARED MORRISON, KCP&L and Westar, Evergy Companies
Melissa Michels, KCP&L & Westar, Evergy Companies
Danielle Zinmaster, Haley & Aldrich

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: TEC BASA CCR
Pace Project No.: 60317943

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

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SAMPLE SUMMARY

Project: TEC BASA CCR
Pace Project No.: 60317943

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60317943001	**MW-10**	Water	10/09/19 14:51	10/11/19 15:41
60317943002	**MW-9**	Water	10/10/19 08:45	10/11/19 15:41
60317943003	**MW-8**	Water	10/10/19 11:44	10/11/19 15:41
60317943004	**MW-7**	Water	10/10/19 14:23	10/11/19 15:41

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SAMPLE ANALYTE COUNT

Project: TEC BASA CCR
Pace Project No.: 60317943

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60317943001	**MW-10**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60317943002	**MW-9**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60317943003	**MW-8**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60317943004	**MW-7**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317943

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Evergy Kansas Central, Inc.
Date: November 08, 2019

General Information:
4 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:

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PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317943

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Evergy Kansas Central, Inc.
Date: November 08, 2019

General Information:
4 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:

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PROJECT NARRATIVE

Project: TEC BASA CCR
Pace Project No.: 60317943

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Evergy Kansas Central, Inc.
Date: November 08, 2019

General Information:
4 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.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

Sample: MW-10 **Lab ID: 60317943001** Collected: 10/09/19 14:51 Received: 10/11/19 15:41 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.794 ± 0.502 (0.567) C:NA T:87%**	pCi/L	11/04/19 13:49	13982-63-3	
Radium-228	EPA 904.0	**1.85 ± 0.643 (0.935) C:68% T:79%**	pCi/L	11/01/19 12:34	15262-20-1	
Total Radium	Total Radium Calculation	**2.64 ± 1.15 (1.50)**	pCi/L	11/05/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

Sample: MW-9 **Lab ID: 60317943002** Collected: 10/10/19 08:45 Received: 10/11/19 15:41 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.696 ± 0.489 (0.236) C:NA T:98%**	pCi/L	11/04/19 13:49	13982-63-3	
Radium-228	EPA 904.0	**0.972 ± 0.523 (0.929) C:69% T:84%**	pCi/L	11/01/19 12:34	15262-20-1	
Total Radium	Total Radium Calculation	**1.67 ± 1.01 (1.17)**	pCi/L	11/05/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

Sample: MW-8 **Lab ID: 60317943003** Collected: 10/10/19 11:44 Received: 10/11/19 15:41 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.114 ± 0.386 (0.745) C:NA T:94%**	pCi/L	11/04/19 13:49	13982-63-3	
Radium-228	EPA 904.0	**0.607 ± 0.456 (0.888) C:66% T:74%**	pCi/L	11/01/19 12:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.721 ± 0.842 (1.63)**	pCi/L	11/05/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

Sample: MW-7 **Lab ID: 60317943004** Collected: 10/10/19 14:23 Received: 10/11/19 15:41 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0567 ± 0.294 (0.610) C:NA T:86%**	pCi/L	11/04/19 13:49	13982-63-3	
Radium-228	EPA 904.0	**0.346 ± 0.317 (0.641) C:71% T:90%**	pCi/L	11/01/19 12:35	15262-20-1	
Total Radium	Total Radium Calculation	**0.403 ± 0.611 (1.25)**	pCi/L	11/05/19 14:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

QC Batch: 366697 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60317943001, 60317943002, 60317943003, 60317943004

METHOD BLANK: 1778706 Matrix: Water
Associated Lab Samples: 60317943001, 60317943002, 60317943003, 60317943004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0850 ± 0.264 (0.510) C:NA T:94%	pCi/L	11/04/19 13:35	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC BASA CCR
Pace Project No.: 60317943

QC Batch: 366700 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60317943001, 60317943002, 60317943003, 60317943004

METHOD BLANK: 1778711 Matrix: Water
Associated Lab Samples: 60317943001, 60317943002, 60317943003, 60317943004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.283 ± 0.317 (0.662) C:74% T:86%	pCi/L	11/01/19 12:34	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC BASA CCR
Pace Project No.: 60317943

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

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC BASA CCR
Pace Project No.: 60317943

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60317943001	**MW-10**	EPA 903.1	366697		
60317943002	**MW-9**	EPA 903.1	366697		
60317943003	**MW-8**	EPA 903.1	366697		
60317943004	**MW-7**	EPA 903.1	366697		
60317943001	**MW-10**	EPA 904.0	366700		
60317943002	**MW-9**	EPA 904.0	366700		
60317943003	**MW-8**	EPA 904.0	366700		
60317943004	**MW-7**	EPA 904.0	366700		
60317943001	**MW-10**	Total Radium Calculation	369490		
60317943002	**MW-9**	Total Radium Calculation	369490		
60317943003	**MW-8**	Total Radium Calculation	369490		
60317943004	**MW-7**	Total Radium Calculation	369490		

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Sample Condition Upon Receipt

WO# : 60317943

60317943

Client Name: Weber

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☑ Foam ☐ None ☐ Other ☐

Thermometer Used: T-296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.0 **Corr. Factor** 0.4 **Corrected** 3.4

Date and initials of person examining contents: 6/11/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
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 ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<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: 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):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A — **Required** Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	15 Day

Section B — **Required** Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	TEC BASA CCR
Project Number:	

Section C — Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D — **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-10	WT	G			10/9/19	1451		2			2							X	X	X		001
2	MW-9	WT	G			10/10/19	0845		1			1							X	X	X		002
3	MW-8	WT	G			10/10/19	1141		2			2							X	X	X		003
4	MW-7	WT	G			10/10/19	1423		2			2							X	X	X		004
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

L403754/3

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	M. Miller-Gilmore/HEA	10/11/19	0800		10/11/19	1541	3.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Misha Miller-Gilmore

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 10/10/19

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*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

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☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: [X] Yes ☐ No

Workorder: 60317943 **Workorder Name:** TEC BASA CCR

Owner Received Date: 10/11/2019 **Results Requested By:** 11/6/2019

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone 1(913)563-1407	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	MW-10	PS	10/9/2019 14:51	60317943001	Water	2	X	X	001
2	MW-9	PS	10/10/2019 08:45	60317943002	Water	2 ~~HMW~~ 10/15/19	X	X	002
3	MW-8	PS	10/10/2019 11:44	60317943003	Water	2	X	X	003
4	MW-7	PS	10/10/2019 14:23	60317943004	Water	2	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	Nathan B Hale	10/15/19 1800	MSA	10-16-19 ~~10-16~~ 0950 MJS 10/16/19
2				
3				

Comments: *Please provide QC sheets.

Cooler Temperature on Receipt 2.6°C | Custody Seal Y or (N) | Received on Ice (Y) or N | Samples Intact (Y) or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.
This chain of custody is considered complete as is since this information is available in the owner laboratory.

WO# : 30330215

30330215

Pittsburgh Lab Sample Condition Upon Receipt

#_30330215

Pace Analytical

Client Name: Pace KS Project #

Label MJS
LIMS Login MJS

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other

Tracking #: 121929907870

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

Thermometer Used 9 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 2.6 °C Correction Factor: +0.0 °C Final Temp: 2.6 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3581 Date and initials of person examining contents: MJS 10-1679

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WA	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓	✓		9. MJS 10-1679 Only Received 1BPINFC Sample MW-9
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed MJS Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MJS Date: 10-1979

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Quality Control Sample Performance Assessment

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Test: Ra-226
Analyst: MK1
Date: 10/24/2019
Batch ID: 50446
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1778706
MB concentration:	0.085
M/B Counting Uncertainty:	0.263
MB MDC:	0.510
MB Numerical Performance Indicator:	0.63
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS50446	LCSD50446
Count Date:	11/8/2019	
Spike I.D.:	19-022	
Spike Concentration (pCi/mL):	32.116	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.648	
Target Conc. (pCi/L, g, F):	4.955	
Uncertainty (Calculated):	0.233	
Result (pCi/L, g, F):	4.783	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.973	
Numerical Performance Indicator:	-0.34	
Percent Recovery:	96.53%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/8/2019	10/14/2019
Sample I.D.	30330221001	50238593005
Sample MS I.D.	30330221001MS	50238593010
Sample MSD I.D.		50238593009
Spike I.D.:	19-022	19-022
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.118	32.117
Spike Volume Used in MS (mL):	0.10	0.20
Spike Volume Used in MSD (mL):		0.20
MS Aliquot (L, g, F):	0.321	0.655
MS Target Conc.(pCi/L, g, F):	9.992	9.801
MSD Aliquot (L, g, F):		0.650
MSD Target Conc. (pCi/L, g, F):		9.875
MS Spike Uncertainty (calculated):	0.470	0.461
MSD Spike Uncertainty (calculated):		0.464
Sample Result:	1.147	-0.061
Sample Result Counting Uncertainty (pCi/L, g, F):	0.601	0.316
Sample Matrix Spike Result:	12.228	8.399
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	2.291	1.169
Sample Matrix Spike Duplicate Result:		10.739
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		1.390
MS Numerical Performance Indicator:	0.884	-2.029
MSD Numerical Performance Indicator:		1.209
MS Percent Recovery:	110.90%	86.32%
MSD Percent Recovery:		109.36%
MS Status vs Numerical Indicator:	N/A	N/A
MSD Status vs Numerical Indicator:		N/A
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:		Pass
MS/MSD Upper % Recovery Limits:	136%	136%
MS/MSD Lower % Recovery Limits:	71%	71%

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

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		50238593005
Sample MS I.D.		50238593010
Sample MSD I.D.		50238593009
Sample Matrix Spike Result:		8.399
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		1.169
Sample Matrix Spike Duplicate Result:		10.739
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		1.390
Duplicate Numerical Performance Indicator:		-2.525
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		23.56%
MS/ MSD Duplicate Status vs Numerical Indicator:		N/A
MS/ MSD Duplicate Status vs RPD:		Pass
% RPD Limit:		32%

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

Comments:

11/8/19

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test:	Ra-228
Analyst:	VAL
Date:	10/28/2019
Worklist:	50449
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1778711
MB concentration:	0.283
M/B 2 Sigma CSU:	0.317
MB MDC:	0.662
MB Numerical Performance Indicator:	1.75
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS50449	LCSD50449
Count Date:	11/1/2019	
Spike I.D.:	19-026	
Decay Corrected Spike Concentration (pCi/mL):	34.866	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.801	
Target Conc. (pCi/L, g, F):	4.351	
Uncertainty (Calculated):	0.213	
Result (pCi/L, g, F):	4.027	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.948	
Numerical Performance Indicator:	-0.65	
Percent Recovery:	92.54%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	10/14/2019	10/8/2019
Sample I.D.	50238593002	30330220001
Sample MS I.D.	50238593010	30330220001MS
Sample MSD I.D.	50238593009	
Spike I.D.:	19-026	19-026
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	35.075	35.075
Spike Volume Used in MS (mL):	0.20	0.20
Spike Volume Used in MSD (mL):	0.20	
MS Aliquot (L, g, F):	0.808	0.653
MS Target Conc.(pCi/L, g, F):	8.687	10.750
MSD Aliquot (L, g, F):	0.801	
MSD Target Conc. (pCi/L, g, F):	8.755	
MS Spike Uncertainty (calculated):	0.426	0.527
MSD Spike Uncertainty (calculated):	0.429	
Sample Result:	-0.005	2.483
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.284	0.725
Sample Matrix Spike Result:	7.900	12.341
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.712	2.463
Sample Matrix Spike Duplicate Result:	8.070	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.762	
MS Numerical Performance Indicator:	-0.858	-0.667
MSD Numerical Performance Indicator:	-0.726	
MS Percent Recovery:	91.00%	91.70%
MSD Percent Recovery:	92.24%	
MS Status vs Numerical Indicator:	Pass	Pass
MSD Status vs Numerical Indicator:	Pass	
MS Status vs Recovery:	Pass	Pass
MSD Status vs Recovery:	Pass	
MS/MSD Upper % Recovery Limits:	135%	135%
MS/MSD Lower % Recovery Limits:	60%	60%

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

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.	50238593002	
Sample MS I.D.	50238593010	
Sample MSD I.D.	50238593009	
Sample Matrix Spike Result:	7.900	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.712	
Sample Matrix Spike Duplicate Result:	8.070	
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.762	
Duplicate Numerical Performance Indicator:	-0.136	
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:	1.35%	
MS/ MSD Duplicate Status vs Numerical Indicator:	Pass	
MS/ MSD Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

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

Comments:

11/4/19

ATTACHMENT 1-4

December 2019 Sampling Event Laboratory Analytical Report

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

December 18, 2019

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

RE: Project: TEC CCR
Pace Project No.: 60323643

Dear Adam Kneeling:
Enclosed are the analytical results for sample(s) received by the laboratory on December 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,

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
Laura Hines, KCP&L & Westar, Evergy Companies
Jake Humphrey, KCP&L and Westar, Evergy Companies
Samantha Kaney, Haley & Aldrich
JARED MORRISON, KCP&L and Westar, Evergy Companies
Melissa Michels, KCP&L & Westar, Evergy Companies
Danielle Zinmaster, Haley & Aldrich

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: TEC CCR
Pace Project No.: 60323643

Pace Analytical Services Kansas
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 #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212018-8
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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Lenexa, KS 66219
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SAMPLE SUMMARY

Project: TEC CCR
Pace Project No.: 60323643

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60323643001	**MW-08-120519**	Water	12/05/19 09:15	12/09/19 16:10
60323643002	**MW-10-120519**	Water	12/05/19 11:10	12/09/19 16:10
60323643003	**MW-07-120519**	Water	12/05/19 13:40	12/09/19 16:10
60323643004	**DUP-120519**	Water	12/05/19 13:45	12/09/19 16:10

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: TEC CCR
Pace Project No.: 60323643

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60323643001	**MW-08-120519**	EPA 200.7	HKC	7	PASI-K
		EPA 200.8	LRS	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60323643002	**MW-10-120519**	EPA 200.7	HKC	7	PASI-K
		EPA 200.8	LRS	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60323643003	**MW-07-120519**	EPA 200.7	HKC	7	PASI-K
		EPA 200.8	LRS	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60323643004	**DUP-120519**	EPA 200.7	HKC	7	PASI-K
		EPA 200.8	LRS	7	PASI-K
		EPA 245.1	JLH	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K

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PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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: 627594

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60323009001,60323643001

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

- MS (Lab ID: 2558038)
  - Calcium
- MS (Lab ID: 2558039)
  - Calcium

Additional Comments:

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(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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:

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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.

QC Batch: 627969

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60323643002,60323644007

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

- MS (Lab ID: 2559570)
  - Mercury
- MSD (Lab ID: 2559571)
  - Mercury

Additional Comments:

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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:

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PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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.
- DUP-120519 (Lab ID: 60323643004)
- MW-07-120519 (Lab ID: 60323643003)
- MW-08-120519 (Lab ID: 60323643001)
- MW-10-120519 (Lab ID: 60323643002)

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:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR
Pace Project No.: 60323643

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: December 18, 2019

General Information:
4 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.

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: TEC CCR
Pace Project No.: 60323643

Sample: MW-08-120519 **Lab ID: 60323643001** Collected: 12/05/19 09:15 Received: 12/09/19 16:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.077**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 14:00	12/13/19 16:27	7440-41-7	
Boron, Total Recoverable	**1.3**	mg/L	0.10	1	12/11/19 14:00	12/13/19 16:27	7440-42-8	
Calcium, Total Recoverable	**199**	mg/L	0.20	1	12/11/19 14:00	12/13/19 16:27	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:27	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:27	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:27	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7440-36-0	
Arsenic, Total Recoverable	**0.0039**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/11/19 16:10	12/18/19 12:39	7440-43-9	
Cobalt, Total Recoverable	**0.0025**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7440-48-4	
Molybdenum, Total Recoverable	**0.046**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:39	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	12/12/19 15:00	12/16/19 11:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1330**	mg/L	13.3	1		12/12/19 06:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		12/10/19 09:17		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**220**	mg/L	50.0	50		12/12/19 16:06	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		12/12/19 18:13	16984-48-8	
Sulfate	**654**	mg/L	50.0	50		12/12/19 16:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC CCR
Pace Project No.: 60323643

Sample: MW-10-120519 **Lab ID: 60323643002** Collected: 12/05/19 11:10 Received: 12/09/19 16:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.30**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:31	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 14:00	12/13/19 16:31	7440-41-7	
Boron, Total Recoverable	**0.22**	mg/L	0.10	1	12/11/19 14:00	12/13/19 16:31	7440-42-8	
Calcium, Total Recoverable	**162**	mg/L	0.20	1	12/11/19 14:00	12/13/19 16:31	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:31	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:31	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:31	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7440-36-0	
Arsenic, Total Recoverable	**0.026**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/11/19 16:10	12/18/19 12:41	7440-43-9	
Cobalt, Total Recoverable	**0.0028**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7440-48-4	
Molybdenum, Total Recoverable	**0.0043**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:41	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	12/12/19 15:00	12/16/19 11:57	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1250**	mg/L	13.3	1		12/12/19 06:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		12/10/19 09:18		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**228**	mg/L	50.0	50		12/12/19 19:16	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		12/12/19 19:01	16984-48-8	
Sulfate	**175**	mg/L	50.0	50		12/12/19 19:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: TEC CCR
Pace Project No.: 60323643

Sample: MW-07-120519 **Lab ID: 60323643003** Collected: 12/05/19 13:40 Received: 12/09/19 16:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:33	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 14:00	12/13/19 16:33	7440-41-7	
Boron, Total Recoverable	**0.66**	mg/L	0.10	1	12/11/19 14:00	12/13/19 16:33	7440-42-8	
Calcium, Total Recoverable	**126**	mg/L	0.20	1	12/11/19 14:00	12/13/19 16:33	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:33	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:33	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:33	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7440-36-0	
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/11/19 16:10	12/18/19 12:48	7440-43-9	
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7440-48-4	
Molybdenum, Total Recoverable	**0.010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:48	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	12/12/19 15:00	12/16/19 12:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1080**	mg/L	13.3	1		12/12/19 06:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		12/10/19 09:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**197**	mg/L	10.0	10		12/12/19 20:36	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	1		12/12/19 20:20	16984-48-8	
Sulfate	**418**	mg/L	50.0	50		12/13/19 14:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR
Pace Project No.: 60323643

Sample: DUP-120519 **Lab ID: 60323643004** Collected: 12/05/19 13:45 Received: 12/09/19 16:10 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:35	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 14:00	12/13/19 16:35	7440-41-7	
Boron, Total Recoverable	**0.65**	mg/L	0.10	1	12/11/19 14:00	12/13/19 16:35	7440-42-8	
Calcium, Total Recoverable	**128**	mg/L	0.20	1	12/11/19 14:00	12/13/19 16:35	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/11/19 14:00	12/13/19 16:35	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:35	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	12/11/19 14:00	12/13/19 16:35	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7440-36-0	
Arsenic, Total Recoverable	**0.0015**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/11/19 16:10	12/18/19 12:50	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/11/19 16:10	12/18/19 12:50	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	12/12/19 15:00	12/16/19 12:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1100**	mg/L	13.3	1		12/12/19 06:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		12/10/19 09:23		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**199**	mg/L	10.0	10		12/12/19 21:23	16887-00-6	
Fluoride	**0.21**	mg/L	0.20	1		12/12/19 21:07	16984-48-8	
Sulfate	**417**	mg/L	50.0	50		12/13/19 14:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627969 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

METHOD BLANK: 2559568 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	12/16/19 11:50	

LABORATORY CONTROL SAMPLE: 2559569

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.7	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2559570 2559571

Parameter	Units	60323643002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.20	5	5	2.5	2.5	51	49	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 2559572

Parameter	Units	60323644007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	4.8	96	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627594 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

METHOD BLANK: 2558035 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	12/13/19 16:11	
Beryllium	mg/L	<0.0010	0.0010	12/13/19 16:11	
Boron	mg/L	<0.10	0.10	12/13/19 16:11	
Calcium	mg/L	<0.20	0.20	12/13/19 16:11	
Chromium	mg/L	<0.0050	0.0050	12/13/19 16:11	
Lead	mg/L	<0.010	0.010	12/13/19 16:11	
Lithium	mg/L	<0.010	0.010	12/13/19 16:11	

LABORATORY CONTROL SAMPLE: 2558037

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	101	85-115	
Beryllium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.94	94	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	0.98	98	85-115	

MATRIX SPIKE SAMPLE: 2558038

Parameter	Units	60323643001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.077	1	1.1	103	70-130	
Beryllium	mg/L	<0.0010	1	0.99	99	70-130	
Boron	mg/L	1.3	1	2.3	103	70-130	
Calcium	mg/L	199	10	214	155	70-130	M1
Chromium	mg/L	<0.0050	1	1.0	101	70-130	
Lead	mg/L	<0.010	1	0.98	98	70-130	
Lithium	mg/L	0.024	1	1.0	101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2558039 2558040

Parameter	Units	60323009001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	340 ug/L	1	1	1.4	1.3	103	97	70-130	4	20	
Beryllium	mg/L	ND	1	1	0.97	0.93	97	93	70-130	4	20	
Boron	mg/L	533 ug/L	1	1	1.5	1.5	97	93	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2558039 2558040

Parameter	Units	60323009001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	mg/L	438000 ug/L	10	10	466	448	290	105	70-130	4	20	M1
Chromium	mg/L	5.6 ug/L	1	1	0.98	0.94	97	93	70-130	4	20	
Lead	mg/L	ND	1	1	0.95	0.91	95	91	70-130	4	20	
Lithium	mg/L	192 ug/L	1	1	1.2	1.2	102	97	70-130	4	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627660 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

METHOD BLANK: 2558261 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/18/19 12:34	
Arsenic	mg/L	<0.0010	0.0010	12/18/19 12:34	
Cadmium	mg/L	<0.00050	0.00050	12/18/19 12:34	
Cobalt	mg/L	<0.0010	0.0010	12/18/19 12:34	
Molybdenum	mg/L	<0.0010	0.0010	12/18/19 12:34	
Selenium	mg/L	<0.0010	0.0010	12/18/19 12:34	
Thallium	mg/L	<0.0010	0.0010	12/18/19 12:34	

LABORATORY CONTROL SAMPLE: 2558262

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.039	96	85-115	
Arsenic	mg/L	0.04	0.039	98	85-115	
Cadmium	mg/L	0.04	0.039	97	85-115	
Cobalt	mg/L	0.04	0.040	100	85-115	
Molybdenum	mg/L	0.04	0.040	99	85-115	
Selenium	mg/L	0.04	0.039	96	85-115	
Thallium	mg/L	0.04	0.037	93	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2558263 2558264

Parameter	Units	60323643002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.038	0.038	96	96	70-130	0	20	
Arsenic	mg/L	0.026	0.04	0.04	0.066	0.066	101	101	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.036	0.035	89	88	70-130	0	20	
Cobalt	mg/L	0.0028	0.04	0.04	0.042	0.042	98	99	70-130	1	20	
Molybdenum	mg/L	0.0043	0.04	0.04	0.048	0.048	108	109	70-130	1	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.038	0.039	94	95	70-130	1	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.036	0.036	90	90	70-130	0	20	

MATRIX SPIKE SAMPLE: 2558265

Parameter	Units	60323644007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.038	94	70-130	
Arsenic	mg/L	0.015	0.04	0.058	109	70-130	
Cadmium	mg/L	<0.00050	0.04	0.034	85	70-130	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

MATRIX SPIKE SAMPLE: 2558265

Parameter	Units	60323644007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	0.04	0.038	96	70-130	
Molybdenum	mg/L	0.11	0.04	0.16	119	70-130	
Selenium	mg/L	<0.0010	0.04	0.041	101	70-130	
Thallium	mg/L	<0.0010	0.04	0.037	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627752 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

METHOD BLANK: 2558642 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	12/12/19 06:24	

LABORATORY CONTROL SAMPLE: 2558643

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

SAMPLE DUPLICATE: 2558644

Parameter	Units	60323643001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1330	1330	1	10	

SAMPLE DUPLICATE: 2558645

Parameter	Units	60323673004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1010	1060	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627173 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

SAMPLE DUPLICATE: 2556513

Parameter	Units	60322862003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

QC Batch: 627689 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

METHOD BLANK: 2558364 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	12/12/19 13:46	
Fluoride	mg/L	<0.20	0.20	12/12/19 13:46	
Sulfate	mg/L	<1.0	1.0	12/12/19 13:46	

METHOD BLANK: 2560357 Matrix: Water
Associated Lab Samples: 60323643001, 60323643002, 60323643003, 60323643004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	12/13/19 09:25	
Fluoride	mg/L	<0.20	0.20	12/13/19 09:25	
Sulfate	mg/L	<1.0	1.0	12/13/19 09:25	

LABORATORY CONTROL SAMPLE: 2558365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

LABORATORY CONTROL SAMPLE: 2560358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	97	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2558366 2558367

Parameter	Units	60323643001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	220	250	250	473	463	101	97	80-120	2	15	
Fluoride	mg/L	<0.20	2.5	2.5	2.8	2.9	110	112	80-120	2	15	
Sulfate	mg/L	654	250	250	922	900	107	98	80-120	2	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.

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR
Pace Project No.: 60323643

MATRIX SPIKE SAMPLE: 2558368

Parameter	Units	60323644006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	263	1000	1200	94	80-120	
Fluoride	mg/L	2.9	2.5	5.9	119	80-120	
Sulfate	mg/L	1650	1000	2680	104	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

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

QUALIFIERS

Project: TEC CCR
Pace Project No.: 60323643

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.

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR
Pace Project No.: 60323643

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60323643001	**MW-08-120519**	EPA 200.7	627594	EPA 200.7	627722
60323643002	**MW-10-120519**	EPA 200.7	627594	EPA 200.7	627722
60323643003	**MW-07-120519**	EPA 200.7	627594	EPA 200.7	627722
60323643004	**DUP-120519**	EPA 200.7	627594	EPA 200.7	627722
60323643001	**MW-08-120519**	EPA 200.8	627660	EPA 200.8	627730
60323643002	**MW-10-120519**	EPA 200.8	627660	EPA 200.8	627730
60323643003	**MW-07-120519**	EPA 200.8	627660	EPA 200.8	627730
60323643004	**DUP-120519**	EPA 200.8	627660	EPA 200.8	627730
60323643001	**MW-08-120519**	EPA 245.1	627969	EPA 245.1	628012
60323643002	**MW-10-120519**	EPA 245.1	627969	EPA 245.1	628012
60323643003	**MW-07-120519**	EPA 245.1	627969	EPA 245.1	628012
60323643004	**DUP-120519**	EPA 245.1	627969	EPA 245.1	628012
60323643001	**MW-08-120519**	SM 2540C	627752		
60323643002	**MW-10-120519**	SM 2540C	627752		
60323643003	**MW-07-120519**	SM 2540C	627752		
60323643004	**DUP-120519**	SM 2540C	627752		
60323643001	**MW-08-120519**	SM 4500-H+B	627173		
60323643002	**MW-10-120519**	SM 4500-H+B	627173		
60323643003	**MW-07-120519**	SM 4500-H+B	627173		
60323643004	**DUP-120519**	SM 4500-H+B	627173		
60323643001	**MW-08-120519**	EPA 300.0	627689		
60323643002	**MW-10-120519**	EPA 300.0	627689		
60323643003	**MW-07-120519**	EPA 300.0	627689		
60323643004	**DUP-120519**	EPA 300.0	627689		

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Sample Condition Upon Receipt

WO# : 60323643

60323643

Client Name: Westar Energy

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

Tracking #: _____ Pace Shipping Label Used? Yes ☐ No ☑

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☑ Other ☐

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

Cooler Temperature (°C): **As-read** 3.7 **Corr. Factor** 0.0 **Corrected** 3.7

Date and initials of person examining contents: pv 12/9/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
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 ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<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: 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):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	7 DAY

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC_0000007956
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300: Cl, F SO4	4500 H+B	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-08_120519	WT		12/5	915				3	X		X	BP/N	2	BP/N			X	X	X	X	X	X		60323643 001
2	MW-10_120519	WT		12/5	1110				3	X		X	↓		↓			X	X	X	X	X	X		002
3	MW-07_120519	WT		12/5	1340				3	X		X						X	X	X	X	X	X		003
4	Dup=120519	WT		12/5	1345				3	X		X						X	X	X	X	X	X		004
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

App. III & IV

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca,Ba, Be, Cr, Pb, Li	Eli F. / H&A	12-9	8:45		12-9	8:45				
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl				Pumpkse	12/9	1610	3.7	Y	N	Y

SAMPLER NAME AND SIGNATURE	Eli Fredrickson
PRINT Name of SAMPLER:	Eli Fredrickson
SIGNATURE of SAMPLER:	
DATE Signed (MM/DD/YY):	

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*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.

Pace Container Order #569725

Order By :

Company Evergy Kansas Central, Inc.
Contact Kneeling, Adam
Email akneeling@haleyaldrich.com
Address 400 E. Van Buren St
Address 2 Suite 545
City Phoenix
State AZ Zip 85004
Phone (602)760-2424

Ship To :

Company Haley & Aldrich
Contact Misha Miller-Gilmore
Email
Address 11020 King St
Address 2 Suite 450
City Overland Park
State KS Zip 66210
Phone (913) 242-5491

Return To:

Company Pace Analytical Kansas
Contact Wilson, Heather
Email heather.wilson@pacelabs.com
Address 9608 Loiret Blvd.
Address 2
City Lenexa
State KS Zip 66219
Phone 1(913)563-1407

Info

Project Name TEC CCR- App III & IV (Lenexa) **Due Date** 12/02/2019 **Profile** 0000 **Quote**
Project Wilson, Heather **Return** **Carrier** Most Economical **Locatio** KS

Trip Blanks

[ ] Include Trip Blanks

Bottle Labels

[ ] Blank
[X] Pre-Printed No Sample IDs
[ ] Pre-Printed With Sample IDs

Bottles

[ ] Boxed Cases
[ ] Individually Wrapped
[ ] Grouped By Sample

Return Shipping Labels

[X] No Shipper
[ ] With Shipper

COC Options

[ ] Number of Blanks
[X] Pre-Printed 1

Misc

[ ] Sampling Instructions
[X] Custody Seal
[X] Temp. Blanks
[X] Coolers
[ ] Syringes
[ ] Extra Bubble Wrap
[ ] Short Hold/Rush
[ ] DI Liter(s)
[ ] USDA Regulated Soils

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
5	WT	Metals	1-1L plastic w/HNO3	5	0	100719-2EIZ	
5	WT	300.0 Anions/pH	1L plastic unpreserved	5	0	102819-2AED	
5	WT	TDS	1 L plastic unpreserved	5	0	102819-2AED	
1	OT	FEDEX Prepaid Return-Lenexa lab	None	0	0		

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
*Payment term are net 30 days.
*Please include the proposal number on the chain of custody to insure proper billing.

LAB USE:

Ship Date : 12/02/2019
Prepared By: Skylar
Verified By:

Sample

PP COC (1), PP labels w/o sample IDs
Lenexa return
Client needs to arrive on 12/3 in the morning at the latest

CLIENT USE (Optional):

Date Rec'd:
Received By:
Verified By:

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

January 02, 2020

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Dear Adam Kneeling:
Enclosed are the analytical results for sample(s) received by the laboratory on December 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.

Revision 1 - This report replaces the December 27, 2019 report. This project was revised on January 2, 2020 to correct the Radium Sum Calculation as per client specifications and to correct the Project ID. (Greensburg, PA)

Revision 2 - This report replaces the January 2, 2020 report. This project was revised on January 2, 2020 to correct the Lab IDs for 002, 003 and 004. (Greensburg, PA)

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

Sincerely,

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

Enclosures

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

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

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CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60323759001	**MW-08_120519**	Water	12/05/19 09:15	12/09/19 09:30
60323759002	**MW-10_120519**	Water	12/05/19 11:10	12/09/19 09:30
60323759003	**MW-07_120519**	Water	12/05/19 13:40	12/09/19 09:30
60323759004	**DUP_120519**	Water	12/05/19 13:45	12/09/19 09:30

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60323759001	**MW-08_120519**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60323759002	**MW-10_120519**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60323759003	**MW-07_120519**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60323759004	**DUP_120519**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Evergy Kansas Central, Inc.
Date: January 02, 2020

General Information:
4 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:

Pace Analytical Services, LLC
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Evergy Kansas Central, Inc.
Date: January 02, 2020

General Information:
4 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:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Evergy Kansas Central, Inc.
Date: January 02, 2020

General Information:
4 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.

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Sample: MW-08_120519 **Lab ID: 60323759001** Collected: 12/05/19 09:15 Received: 12/09/19 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	**-0.191 ± 0.485 (1.06) C:NA T:89%**	pCi/L	12/24/19 11:52	13982-63-3	
Radium-228	EPA 904.0	**0.569 ± 0.459 (0.926) C:72% T:85%**	pCi/L	12/24/19 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.569 ± 0.668 (1.06)**	pCi/L	01/02/20 11:31	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Sample: MW-10_120519 **Lab ID: 60323759002** Collected: 12/05/19 11:10 Received: 12/09/19 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	**0.000 ± 0.368 (0.779) C:NA T:95%**	pCi/L	12/24/19 11:52	13982-63-3	
Radium-228	EPA 904.0	**1.60 ± 0.656 (1.11) C:73% T:82%**	pCi/L	12/24/19 12:01	15262-20-1	
Total Radium	Total Radium Calculation	**1.60 ± 0.752 (1.11)**	pCi/L	01/02/20 11:31	7440-14-4	

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Sample: MW-07_120519 **Lab ID: 60323759003** Collected: 12/05/19 13:40 Received: 12/09/19 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	**0.0619 ± 0.438 (0.873) C:NA T:92%**	pCi/L	12/24/19 12:05	13982-63-3	
Radium-228	EPA 904.0	**0.604 ± 0.370 (0.690) C:73% T:89%**	pCi/L	12/24/19 11:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.666 ± 0.573 (0.873)**	pCi/L	01/02/20 11:31	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Sample: DUP_120519 **Lab ID: 60323759004** Collected: 12/05/19 13:45 Received: 12/09/19 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	**-0.280 ± 0.390 (0.988) C:NA T:82%**	pCi/L	12/24/19 12:05	13982-63-3	
Radium-228	EPA 904.0	**0.755 ± 0.430 (0.788) C:76% T:80%**	pCi/L	12/24/19 12:01	15262-20-1	
Total Radium	Total Radium Calculation	**0.755 ± 0.581 (0.988)**	pCi/L	01/02/20 11:31	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

QC Batch: 375682 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60323759001, 60323759002, 60323759003, 60323759004

METHOD BLANK: 1822419 Matrix: Water
Associated Lab Samples: 60323759001, 60323759002, 60323759003, 60323759004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.244 (0.497) C:NA T:83%	pCi/L	12/24/19 11:32	

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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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

QC Batch: 375683 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60323759001, 60323759002, 60323759003, 60323759004

METHOD BLANK: 1822420 Matrix: Water
Associated Lab Samples: 60323759001, 60323759002, 60323759003, 60323759004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.727 ± 0.373 (0.642) C:79% T:78%	pCi/L	12/24/19 11:59	

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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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60323759

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60323759001	**MW-08_120519**	EPA 903.1	375682		
60323759002	**MW-10_120519**	EPA 903.1	375682		
60323759003	**MW-07_120519**	EPA 903.1	375682		
60323759004	**DUP_120519**	EPA 903.1	375682		
60323759001	**MW-08_120519**	EPA 904.0	375683		
60323759002	**MW-10_120519**	EPA 904.0	375683		
60323759003	**MW-07_120519**	EPA 904.0	375683		
60323759004	**DUP_120519**	EPA 904.0	375683		
60323759001	**MW-08_120519**	Total Radium Calculation	377793		
60323759002	**MW-10_120519**	Total Radium Calculation	377793		
60323759003	**MW-07_120519**	Total Radium Calculation	377793		
60323759004	**DUP_120519**	Total Radium Calculation	377793		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	~~brandon.l.griffin@westarenergy.com~~
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	15 Day

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10TEC-0000007956
Project Name:	
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	9656, 1

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: KS

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Radium-226	Radium-228	Total Radium											Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-08_120519	WT		12/5	915				2			X						X	X	X											
2	MW-10-120519	WT		12/5	1110				2			X						X	X	X											
3	MW-07-120519	WT		12/5	1340				2			X						X	X	X											
4	Dup-120519	WT		12/5	1345				2			X						X	X	X											
5																														
6																														
7																														
8																														
9																														
10																														
11																														
12																														

App. IV + IV

Pace Project No./ Lab I.D.

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eli Fredrickson	12/6	19:00	PACE	12/9/19	0930	–	N	N	Y

		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SAMPLER NAME AND SIGNATURE	Eli Fredrickson				
PRINT Name of SAMPLER:	Eli Fredrickson				
SIGNATURE of SAMPLER:	Eli For — DATE Signed (MM/DD/YY): 12/06/19				

*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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical   Client Name: Westar Energy   Project # ______

Label
LIMS Login

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ______

Tracking #: 1219 29134027

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

Thermometer Used N A   **Type of Ice:** Wet Blue (None)

Cooler Temperature **Observed Temp** ______ °C Correction Factor: ______ °C Final Temp: ______ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1OD391	Date and Initials of person examining contents: 12/10/19 OB
Chain of Custody Present:	✓			1.	
Chain of Custody Filled Out:	✓			2.	
Chain of Custody Relinquished:	✓			3.	
Sampler Name & Signature on COC:	✓			4.	
Sample Labels match COC:	✓			5.	
-Includes date/time/ID Matrix: WT					
Samples Arrived within Hold Time:	✓			6.	
Short Hold Time Analysis (<72hr remaining):		✓		7.	
Rush Turn Around Time Requested:		✓		8.	
Sufficient Volume:	✓			9.	
Correct Containers Used:	✓			10.	
-Pace Containers Used:	✓				
Containers Intact:	✓			11.	
Orthophosphate field filtered			✓	12.	
Hex Cr Aqueous sample field filtered			✓	13.	
Organic Samples checked for dechlorination:			✓	14.	
Filtered volume received for Dissolved tests			✓	15.	
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. PH<2	
All containers meet method preservation requirements.	✓			Initial when completed OB	Date/time of preservation
				Lot # of added preservative	
Headspace in VOA Vials (>6mm):			✓	17.	
Trip Blank Present:		✓		18.	
Trip Blank Custody Seals Present			✓		
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: OB	Date: 12/10/19

Client Notification/ Resolution:

~~Person Contacted:~~ ______ ~~Date/Time:~~ ______ ~~Contacted By:~~ ______

Comments/ Resolution: ______

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

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

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

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

Quality Control Sample Performance Assessment

Pace Analytical™ www.pacelabs.com

Test: Ra-226
Analyst: MK1
Date: 12/17/2019
Batch ID: 51475
Matrix: DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1822419
MB concentration:	0.000
M/B Counting Uncertainty:	0.210
MB MDC:	0.497
MB Numerical Performance Indicator:	0.00
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS51475	LCSD51475
Count Date:	12/24/2019	
Spike I.D.:	19-022	
Spike Concentration (pCi/mL):	32.115	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.664	
Target Conc. (pCi/L, g, F):	4.836	
Uncertainty (Calculated):	0.227	
Result (pCi/L, g, F):	3.827	
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	0.954	
Numerical Performance Indicator:	-2.02	
Percent Recovery:	79.14%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	73%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	11/18/2019	
Sample I.D.	30339955001	
Sample MS I.D.	30339955001MS	
Sample MSD I.D.		
Spike I.D.:	19-022	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.116	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.663	
MS Target Conc.(pCi/L, g, F):	9.684	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.455	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.206	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.247	
Sample Matrix Spike Result:	9.457	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.283	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.612	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	95.54%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	35517467001	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	35517467001DUP	
Sample Result (pCi/L, g, F):	0.210	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.307	
Sample Duplicate Result (pCi/L, g, F):	0.127	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	0.250	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.410	35517467001
Duplicate RPD:	49.05%	35517467001DUP
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Fail**	
% RPD Limit:	32%	

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

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

Comments:

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

12-24-19 MK

KLB 12-24-19

Quality Control Sample Performance Assessment

Pace Analytical
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Test:	Ra-228
Analyst:	VAL
Date:	12/19/2019
Worklist:	51476
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1822420
MB concentration:	0.727
M/B 2 Sigma CSU:	0.373
MB MDC:	0.642
MB Numerical Performance Indicator:	3.82
MB Status vs Numerical Indicator:	Fail*
MB Status vs. MDC:	See Comment*

Laboratory Control Sample Assessment	LCSD (Y or N)?	N
	LCS51476	LCSD51476
Count Date:	12/24/2019	
Spike I.D.:	19-057	
Decay Corrected Spike Concentration (pCi/mL):	35.792	
Volume Used (mL):	0.10	
Aliquot Volume (L, g, F):	0.803	
Target Conc. (pCi/L, g, F):	4.455	
Uncertainty (Calculated):	0.321	
Result (pCi/L, g, F):	4.003	
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.917	
Numerical Performance Indicator:	-0.91	
Percent Recovery:	89.86%	
Status vs Numerical Indicator:	N/A	
Status vs Recovery:	Pass	
Upper % Recovery Limits:	135%	
Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	30339965002	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	30339965002DUP	
Sample Result (pCi/L, g, F):	2.216	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.596	
Sample Duplicate Result (pCi/L, g, F):	1.845	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	0.529	
Are sample and/or duplicate results below RL?	See Below ##	
Duplicate Numerical Performance Indicator:	0.912	30339965002
Duplicate RPD:	18.26%	30339965002DUP
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	12/5/2019	
Sample I.D.	30339967001	
Sample MS I.D.	30339967001MS	
Sample MSD I.D.		
Spike I.D.:	19-057	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	36.019	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.802	
MS Target Conc.(pCi/L, g, F):	8.986	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.647	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.637	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.399	
Sample Matrix Spike Result:	9.366	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	1.896	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.247	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	97.13%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

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

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

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

JJ 12-26-19

CLJ 12.26.19

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
Bottom Ash Settling Area

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) Bottom Ash Settling Area (BASA). This semi-annual assessment monitoring groundwater sampling event was completed on September 6, 2018, with laboratory results received and validated in 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 SSL existed.

STATISTICAL EVALUATION

Either an interwell or intrawell 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, and the intrawell evaluation compares the most recent values from each compliance well against a background dataset composed of its own historical data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a 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 a 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-7 for interwell evaluation) were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset was evaluated to determine the method for UTL calculation. Per the document *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated based on statistical evaluation of analytical results collected through September 2018.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the September 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, SSLs above GWPS that occurred at the TEC BASA include arsenic and cobalt at MW-9 and arsenic at MW-10. Details are listed on Table I.**

Tables:

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

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2018 SAMPLING EVENT
TECUMSEH ENERGY CENTER
BOTTOM ASH SETTLING AREA

											MCL Comparison								Inter-well Analysis		Groundwater Protection Standard		
Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	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 Appendix-IV: Arsenic, Total (mg/L)																							
MW-7 (upgradient)	10/10	0%	-	0.0021	4.489E-08	0.0002119	0.1358	0.010	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.0015	Y	0.0021		0.010		
MW-8	10/10	0%	-	0.0041	5.911E-07	0.0007688	0.3343	0.010	mg/L	N	0	0	No	No	Stable	Normal	0.0028	Y		Yes		N	No
MW-9	10/10	0%	-	0.14	0.0002754	0.0166	0.1521	0.010	mg/L	Y	10	0	No	No	Stable	Normal	0.099	Y		Yes		Y	Yes
MW-10	10/10	0%	-	0.077	0.0001534	0.01239	0.2068	0.010	mg/L	Y	10	0	No	No	Stable	Normal	0.040	Y		Yes		Y	Yes
CCR Appendix-IV: Barium, Total (mg/L)																							
MW-7 (upgradient)	10/10	0%	-	0.10	0.00008988	0.00948	0.123	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.079	Y	0.0953		2.0		
MW-8	10/10	0%	-	0.063	0.000007122	0.002669	0.04578	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.057	Y		No		N	No
MW-9	10/10	0%	-	0.91	0.006201	0.07875	0.0993	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.91	Y		Yes		N	No
MW-10	10/10	0%	-	0.35	0.0006844	0.02616	0.08779	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.350	Y		Yes		N	No
CCR Appendix-IV: Cobalt, Total (mg/L)																							
MW-7 (upgradient)	8/10	20%	0.001-0.001	0.0022	1.782E-07	0.0004222	0.3104	0.006	mg/L	N	0	0	No	No	Decreasing	Normal	0.0010	Y	0.0022		0.006		
MW-8	9/10	10%	0.001-0.001	0.0018	7.289E-08	0.00027	0.1956	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0014	Y		No		N	No
MW-9	10/10	0%	-	0.031	0.00004566	0.006757	0.3775	0.006	mg/L	Y	10	0	No	No	Stable	Normal	0.011	Y		Yes		Y	Yes
MW-10	8/10	20%	0.001-0.001	0.0065	0.000003451	0.001858	0.4863	0.006	mg/L	Y	2	0	No	No	Stable	Normal	0.0010	N		No		N	No
CCR Appendix-IV: Fluoride, Total (mg/L)																							
MW-7 (upgradient)	11/11	0%	-	0.37	0.00074	0.0272	0.08501	4.0	mg/L	N	0	0	Yes	No	Stable	Normal	0.33	Y	0.3715		4.0		
MW-8	11/11	0%	-	0.33	0.0008073	0.02841	0.1035	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.31	Y		No		N	No
MW-9	11/11	0%	-	0.56	0.005067	0.07118	0.1677	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.51	Y		Yes		N	No
MW-10	11/11	0%	-	0.55	0.001745	0.04178	0.09011	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.51	Y		Yes		N	No
CCR Appendix-IV: Lithium, Total (mg/L)																							
MW-7 (upgradient)	10/10	0%	-	0.029	0.000008544	0.002923	0.1223	0.04	mg/L	N	0	0	Yes	No	Stable	Normal	0.029	Y	0.0295		0.040		
MW-8	10/10	0%	-	0.024	0.00001454	0.003814	0.1997	0.04	mg/L	N	0	0	No	No	Stable	Normal	0.022	Y		No		N	No
MW-9	8/10	20%	0.01-0.01	0.018	0.000006544	0.002558	0.1983	0.04	mg/L	N	0	0	No	No	NA	Non-parametric	0.012	Y		No		N	No
MW-10	3/10	70%	0.01-0.01	0.011	0.0000001	0.0003162	0.03131	0.04	mg/L	N	0	0	No	No	Stable	Normal	0.010	N		No		N	No
CCR Appendix-IV: Molybdenum, Total (mg/L)																							
MW-7 (upgradient)	10/10	0%	-	0.013	0.000003	0.001732	0.1646	0.100	mg/L	N	0	0	No	No	Stable	Normal	0.0082	Y	0.0138		0.100		
MW-8	10/10	0%	-	0.044	0.00001218	0.00349	0.08902	0.100	mg/L	N	0	0	No	No	Stable	Normal	0.037	Y		Yes		N	No
MW-9	9/10	10%	0.001-0.001	0.0079	0.000004839	0.0022	0.5774	0.100	mg/L	N	0	0	No	No	Stable	Normal	0.0010	N		No		N	No
MW-10	10/10	0%	-	0.0049	7.566E-07	0.0008698	0.2492	0.100	mg/L	N	0	0	No	No	Stable	Normal	0.0027	Y		No		N	No
CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																							
MW-7 (upgradient)	10/10	0%	-	5.88	2.721	1.65	1.318	5.0	pCi/L	Y	1	0	Yes	No	Stable	Non-parametric	0.398	N	0.0059		5.0		
MW-8	10/10	0%	-	1.308	0.1376	0.371	0.407	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.29	N		Yes		N	No
MW-9	10/10	0%	-	3.249	0.4152	0.6443	0.346	5.0	pCi/L	N	0	0	No	No	Stable	Normal	2.53	Y		Yes		N	No
MW-10	10/10	0%	-	3.58	0.4863	0.6973	0.3229	5.0	pCi/L	N	0	0	No	No	Stable	Normal	3.58	Y		Yes		N	No

Notes:

[1] Based on baseline data collected from 08/30/2016 through 09/06/2018.

** 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
Bottom Ash Settling Area

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) Bottom Ash Settling Area (BASA). This semi-annual assessment monitoring groundwater sampling event was completed March 20 to 21, 2019 with laboratory results received and validated 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 SSL existed.

STATISTICAL EVALUATION

Either an interwell or intrawell 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, and the intrawell evaluation compares the most recent values from each compliance well against a background dataset composed of its own historical data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The parametric TL methods were used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a 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 a 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-7 for interwell evaluation) 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 June 2018.

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the 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, SSLs above GWPS that occurred at the TEC BASA include arsenic and cobalt at MW-9 and arsenic at MW-10. Details are listed on Table I.**

Tables:

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

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2019 SAMPLING EVENT
TECUMSEH ENERGY CENTER
BOTTOM ASH SETTLING AREA

Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	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: Arsenic, Total (mg/L)																							
MW-7 (upgradient)	11/11	0%	-	0.0021	4.055E-08	0.0002014	0.1288	0.010	mg/L	N	0	0	Yes	No	Stable	Non-parametric	0.0016	Y	0.002		0.010		
MW-8	11/11	0%	-	0.0041	0.000000532	0.0007294	0.3171	0.010	mg/L	N	0	0	No	No	Stable	Normal	0.0023	Y		Yes		N	No
MW-9	11/11	0%	-	0.14	0.000682	0.02611	0.254	0.010	mg/L	Y	11	0	No	No	Stable	Normal	0.040	Y		Yes		Y	Yes
MW-10	11/11	0%	-	0.077	0.0002306	0.01519	0.2664	0.010	mg/L	Y	11	0	No	No	Stable	Normal	0.028	Y		Yes		Y	Yes
CCR Appendix-IV: Barium, Total (mg/L)																							
MW-7 (upgradient)	11/11	0%	-	0.1	0.00008096	0.008998	0.1166	2.0	mg/L	N	0	0	Yes	No	Stable	Normal	0.078	Y	0.095		2.000		
MW-8	11/11	0%	-	0.063	0.000008091	0.002844	0.04912	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.054	Y		No		N	No
MW-9	11/11	0%	-	0.91	0.0114	0.1068	0.1387	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.54	Y		Yes		N	No
MW-10	11/11	0%	-	0.36	0.0009655	0.03107	0.1023	2.0	mg/L	N	0	0	No	No	Stable	Normal	0.36	Y		Yes		N	No
CCR Appendix-IV: Cadmium, Total (mg/L)																							
MW-7 (upgradient)	0/10	100%	0.0005-0.0005	-	0	0	0	0.0050	mg/L	N	0	0	NA	NA	NA	NA	0.00050	N	0.001		0.005		
MW-8	0/10	100%	0.0005-0.0005	-	0	0	0	0.0050	mg/L	N	0	0	NA	NA	NA	NA	0.00050	N		No		N	No
MW-9	3/10	70%	0.0005-0.0005	0.0013	6.387E-08	0.0002527	0.4191	0.0050	mg/L	N	0	0	Yes	No	NA	Non-parametric	0.0013	Y		Yes		N	No
MW-10	0/10	100%	0.0005-0.0005	-	0	0	0	0.0050	mg/L	N	0	0	NA	NA	NA	NA	0.00050	N		No		N	No
CCR Appendix-IV: Cobalt, Total (mg/L)																							
MW-7 (upgradient)	9/11	18%	0.001-0.001	0.0022	1.656E-07	0.000407	0.2945	0.006	mg/L	N	0	0	No	No	Decreasing	Normal	0.0016	Y	0.002		0.006		
MW-8	9/11	18%	0.001-0.001	0.0018	7.873E-08	0.0002806	0.2085	0.006	mg/L	N	0	0	No	No	Stable	Normal	0.0010	Y		No		N	No
MW-9	11/11	0%	-	0.048	0.0001235	0.01111	0.5384	0.006	mg/L	Y	11	0	No	No	Stable	Normal	0.048	Y		Yes		Y	Yes
MW-10	9/11	18%	0.001-0.001	0.0065	0.000003638	0.001907	0.5298	0.006	mg/L	Y	2	0	No	No	Stable	Normal	0.0014	Y		No		N	No
CCR Appendix-IV: Fluoride, Total (mg/L)																							
MW-7 (upgradient)	12/12	0%	-	0.37	0.0009727	0.03119	0.09901	4.0	mg/L	N	0	0	No	No	Stable	Non-parametric	0.38	Y	0.371		4.000		
MW-8	12/12	0%	-	0.33	0.0008992	0.02999	0.1107	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.23	Y		No		N	No
MW-9	12/12	0%	-	0.56	0.004772	0.06908	0.1641	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.38	Y		No		N	No
MW-10	12/12	0%	-	0.55	0.001697	0.04119	0.08827	4.0	mg/L	N	0	0	No	No	Stable	Normal	0.50	Y		Yes		N	No
CCR Appendix-IV: Lithium, Total (mg/L)																							
MW-7 (upgradient)	11/11	0%	-	0.029	0.000009218	0.003036	0.1251	0.04	mg/L	N	0	0	Yes	No	Stable	Normal	0.028	Y	0.030		0.040		
MW-8	11/11	0%	-	0.024	0.00001349	0.003673	0.1942	0.04	mg/L	N	0	0	No	No	Stable	Normal	0.017	Y		No		N	No
MW-9	9/11	18%	0.01-0.01	0.021	0.00001185	0.003443	0.2525	0.04	mg/L	N	0	0	No	No	Stable	Normal	0.021	Y		No		N	No
MW-10	3/11	73%	0.01-0.01	0.011	9.091E-08	0.0003015	0.02988	0.04	mg/L	N	0	0	No	No	NA	Non-parametric	0.010	N		No		N	No
CCR Appendix-IV: Molybdenum, Total (mg/L)																							
MW-7 (upgradient)	11/11	0%	-	0.013	0.00000547	0.002339	0.2334	0.10	mg/L	N	0	0	No	No	Stable	Normal	0.0050	Y	0.014		0.100		
MW-8	11/11	0%	-	0.044	0.00001707	0.004132	0.1074	0.10	mg/L	N	0	0	No	No	Stable	Normal	0.031	Y		Yes		N	No
MW-9	10/11	9%	0.001-0.001	0.0079	0.000004874	0.002208	0.5482	0.10	mg/L	N	0	0	No	No	Stable	Normal	0.0062	Y		No		N	No
MW-10	11/11	0%	-	0.0049	7.125E-07	0.0008441	0.2456	0.10	mg/L	N	0	0	No	No	Stable	Normal	0.0029	Y		No		N	No
CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																							
MW-7 (upgradient)	11/11	0%	-	5.88	2.57	1.603	1.398	5.0	pCi/L	Y	1	0	Yes	No	Stable	Non-parametric	0.0090	N	5.900		5.900		
MW-8	11/11	0%	-	1.308	0.142	0.3768	0.4327	5.0	pCi/L	N	0	0	No	No	Stable	Normal	0.465	N		No		N	No
MW-9	11/11	0%	-	3.249	0.5045	0.7103	0.4051	5.0	pCi/L	N	0	0	No	No	Stable	Normal	0.663	N		No		N	No
MW-10	11/11	0%	-	3.58	0.4693	0.685	0.3253	5.0	pCi/L	N	0	0	No	No	Stable	Normal	1.57	N		No		N	No

Notes:

[1] Based on baseline data collected from 08/30/2016 through 06/11/2018.

** 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-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (MARCH 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 20 MARCH 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 75 150

SCALE IN FEET

HALEY ALDRICH

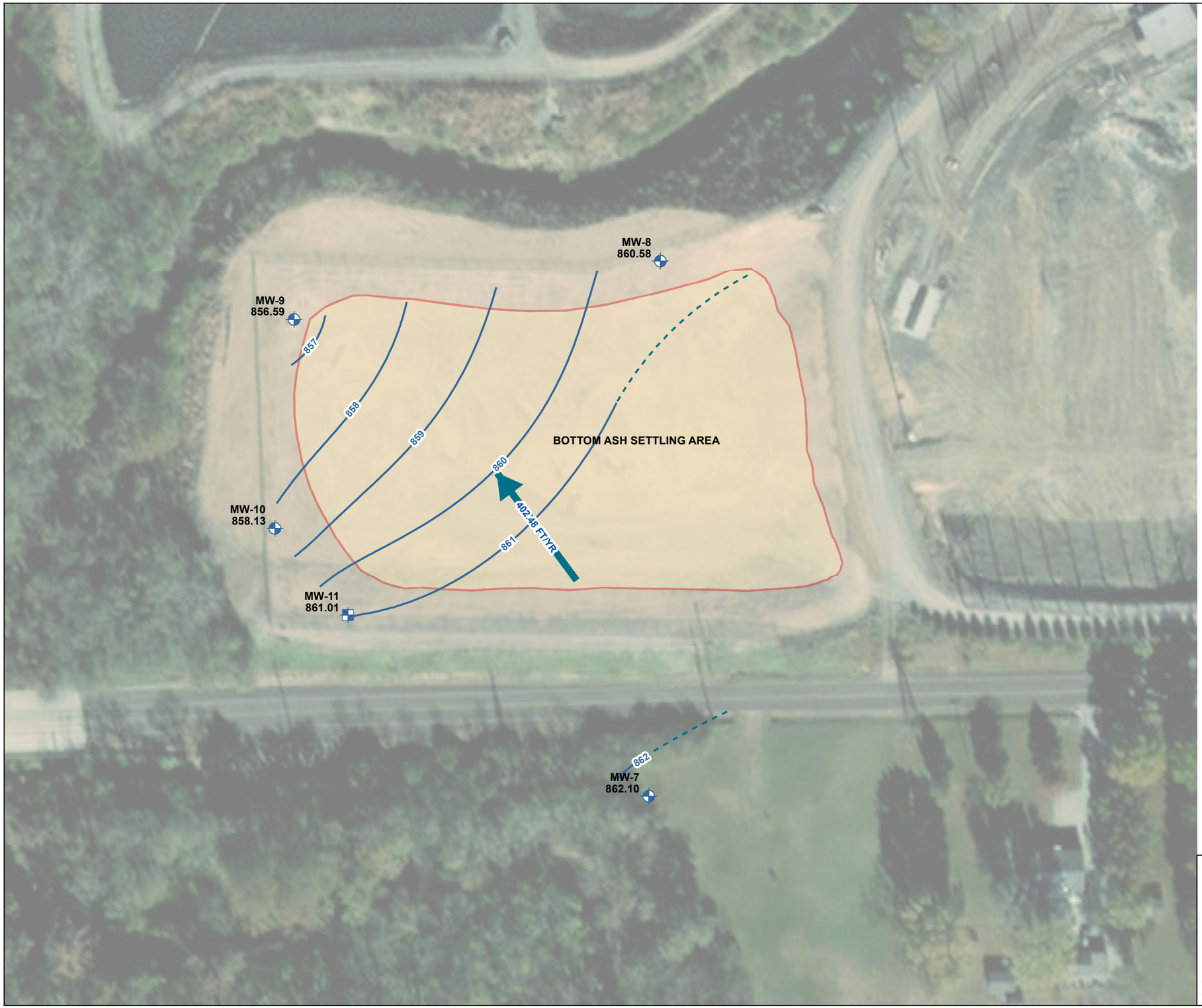
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 20, 2019

evergy

MARCH 2022

FIGURE 2



LEGEND

- MW-8 849.64 — WELL NAME AND GROUNDWATER ELEVATION (JUNE 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 25 JUNE 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 25, 2019

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FIGURE 3

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (OCTOBER 2019)
- MONITORING WELL
- PIEZOMETER OBSERVATION ONLY
- GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)
- ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)
- BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 10 OCTOBER 2019.
3. AMSL = ABOVE MEAN SEA LEVEL
4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES FROM SLUG TESTS COMPLETED IN APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP OCTOBER 10, 2019

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FIGURE 4

LEGEND

MW-8
849.64 WELL NAME AND GROUNDWATER ELEVATION (DECEMBER 5, 2019)

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 1-FT INTERVAL (AMSL)

ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 05 DECEMBER 2019.

3. AMSL = ABOVE MEAN SEA LEVEL

4. THE APPROXIMATE GROUNDWATER FLOW RATE WAS CALCULATED USING HYDRAULIC CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES FROM SLUG TESTS COMPLETED IN APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, 07 NOVEMBER 2019

N

0 75 150
SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP DECEMBER 05, 2019

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MARCH 2022

FIGURE 5