HALEY ALDRICH

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2017 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
BOTTOM ASH SETTLING POND
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 2018
Revised: March 2021

Table of Contents

Revision No.	Date	Notes
0	January 2018	Original
1	March 2021	Revised to include groundwater potentiometric contour maps for covered in this 2017 annual report

List of Tables

List of Figures

This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Tecumseh Energy Center (TEC) Bottom Ash Settling Area consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2017) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2017 Annual Groundwater Monitoring and Corrective Action Report for the TEC Bottom Ash Settling Area is, to the best of my knowledge, accurate and complete.

Signed:_____
Professional Geologist

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

1. Introduction

This 2017 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the Bottom Ash Settling Area (BASA) at the Tecumseh Energy Center (TEC), operated by Evergy Kansas Central, Inc. (Evergy; f/k/a Westar Energy, Inc.). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency Coal Combustion Residual (CCR) Rule (Rule) effective October 19, 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection 257.90(e). The Annual Report documents the groundwater monitoring system for the TEC BASA consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2017) and documents compliance with the Rule. The specific requirements for the annual report listed in § 257.90(e) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a short narrative describing how each Rule requirement has been met.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

Except as provided for in § 257.100 for inactive CCR surface impoundments, 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 257.98.

The Bottom Ash Settling Area at the TEC, which is the CCR management unit addressed in this Annual Report, is subject to the groundwater monitoring and corrective action requirements described under 40 CFR §§ 257.90 through 257.98. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

2.2 40 CFR § 257.90(e)

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 is the initial report for the TEC BASA as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to October 17, 2017, Evergy installed a groundwater monitoring system at the BASA consistent with § 257.91. 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 is provided in this report. This Annual Report documents the activities completed in the calendar year 2017.

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 BASA is included in this report as Figure 1. In addition, this information is presented in the CCR Groundwater Monitoring Network Description Report prepared for Evergy, which was placed in the facility's operating record by October 17, 2017 as required by § 257.105(h)(2).

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;

The design and construction of the monitoring well network for the TEC BASA are described in the CCR Groundwater Monitoring Network Description Report dated October 17, 2017. This report was placed in the facility's operating record by October 17, 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

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 § 257.94(b), eight independent samples from each background and downgradient monitoring well were collected prior to October 17, 2017. A summary table including the sample names, dates of sample collection, reason for sample collection (detection or assessment), and monitoring data obtained for the groundwater monitoring program for the BASA is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program. Groundwater potentiometric elevation contour maps associated with each groundwater monitoring sampling event in 2016 and 2017 are provided in Figures 2 through 9.

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

Detection monitoring was conducted in accordance with § 257.94(b), and no transitions between monitoring programs occurred for the BASA in calendar year 2017.

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 initial Annual Report documents activities conducted to comply with § 257.90 through § 257.94 of the Rule. It is understood that there are supplemental references in § 257.90 through § 257.98 to information that must be placed in the Annual Report; however, none of the activities referenced as required in the Annual Report are relevant to the groundwater monitoring program for activities completed in calendar year 2017.

TABLE

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

Location		Measure Point Elevation (TOC)	Sample Name	Sample Date	Depth to Water (btoc)	Groundwater Elevation (ft AMSL)	Field Parameters				USEPA Appendix III Constituents (mg/L)							USEPA Appendix IV Constituents (mg/L)													USEPA Appendix IV Constituents (pCi/L)
							Temperature (Deg C)	Conductivity (µS/cm)	Turbidity (NTU)	pH (su)	Boron, Total	Calcium, Total	Chloride	Fluoride	Sulfate	pH	TDS	Antimony, Total	Arsenic, Total	Barium, Total	Beryllium, Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Lead, Total	Lithium, Total	Molybdenum, Total	Selenium, Total	Thallium, Total	Mercury, Total	Fluoride	Radium-226 & 228 Combined
Up Gradient	MW-7	878.28	MW-7-083016	8/30/2016	21.75	856.53	**21.99**	**1780**	**9.5**	**8.45**	**0.73**	**152**	**201**	**0.26**	**455**	**7.3**	**1120**	<0.0010	**0.0021**	**0.10**	<0.0010	<0.00050	<0.0050	**0.0022**	<0.0050	**0.024**	**0.011**	<0.0010	<0.0010	<0.00020	**0.26**	**1.22**
			MW-7-092016	9/20/2016	20.47	857.81	**21.26**	**1790**	**7.6**	**6.99**	**0.75**	**146**	**187**	**0.32**	**466**	**7.2**	**1110**	<0.0010	**0.0015**	**0.079**	<0.0010	<0.00050	<0.0050	**0.0019**	<0.0050	**0.024**	**0.012**	<0.0010	<0.0010	<0.00020	**0.32**	**5.88**
			MW-7-110116	11/1/2016	21.93	856.35	**18.83**	**1740**	**4.2**	**6.65**	**0.73**	**148**	**193**	**0.33**	**459**	**7.1**	**1100**	<0.0010	**0.0014**	**0.074**	<0.0010	<0.00050	<0.0050	**0.0016**	<0.0050	**0.024**	**0.012**	<0.0010	<0.0010	<0.00020	**0.33**	**0.454**
			MW-7-121316	12/13/2016	22.68	855.6	**12.61**	**1770**	**6.8**	**6.72**	**0.71**	**147**	**201**	**0.32**	**454**	**7.2**	**1110**	<0.0010	**0.0015**	**0.073**	<0.0010	<0.00050	<0.0050	**0.0013**	<0.0050	**0.025**	**0.012**	<0.0010	<0.0010	<0.00020	**0.32**	**0.497**
			MW-7-020717	2/7/2017	23.16	855.12	**13.86**	**1790**	**6.0**	**6.74**	**0.74**	**151**	**198**	**0.32**	**469**	**6.9**	**1170**	<0.0010	**0.0016**	**0.076**	<0.0010	<0.00050	<0.0050	**0.0014**	<0.0050	**0.024**	**0.013**	<0.0010	**0.0011**	<0.00020	**0.32**	**0.555**
			MW-7-040617	4/6/2017	16.01	862.27	**13.99**	**1790**	**8.5**	**6.52**	**0.77**	**161**	**197**	**0.33**	**511**	**7.2**	**1220**	<0.0010	**0.0015**	**0.083**	<0.0010	<0.00050	<0.0050	**0.0012**	<0.0050	**0.024**	**0.0099**	<0.0010	<0.0010	<0.00020	**0.33**	**0.766**
			MW-7-052417	5/24/2017	21.32	856.96	**16.72**	**1780**	**5.5**	**6.66**	**0.70**	**152**	**195**	**0.29**	**504**	**7.0**	**1150**	<0.0010	**0.0013**	**0.072**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.023**	**0.0089**	<0.0010	<0.0010	<0.00020	**0.29**	**1.13**
			MW-7-062717	6/27/2017	21.70	856.58	**18.77**	**1720**	**3.1**	**6.64**	**0.69**	**151**	**186**	**0.32**	**446**	**7.1**	**1130**	<0.0010	**0.0016**	**0.066**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.017**	**0.010**	<0.0010	<0.0010	<0.00020	**0.32**	**0.791**
Down Gradient	MW-8	888.01	MW-8-083116	8/31/2016	33.24	854.77	**22.03**	**1960**	**25.6**	**7.89**	**1.3**	**201**	**194**	**0.25**	**720**	**6.8**	**1420**	<0.0010	**0.0023**	**0.058**	<0.0010	<0.00050	<0.0050	**0.0018**	<0.0050	**0.021**	**0.044**	<0.0010	<0.0010	<0.00020	**0.25**	**0.724**
			MW-8-092116	9/21/2016	30.96	857.05	**24.04**	**2010**	**4.9**	**6.68**	**1.3**	**217**	**190**	**0.26**	**718**	**6.9**	**1410**	<0.0010	**0.0026**	**0.058**	<0.0010	<0.00050	<0.0050	**0.0015**	<0.0050	**0.020**	**0.041**	<0.0010	<0.0010	<0.00020	**0.26**	**0.56**
			MW-8-110216	11/2/2016	32.64	855.37	**20.90**	**1830**	**7.1**	**6.54**	**1.4**	**214**	**185**	**0.29**	**785**	**7.0**	**1390**	<0.0010	**0.0020**	**0.058**	<0.0010	<0.00050	<0.0050	**0.0015**	<0.0050	**0.022**	**0.042**	<0.0010	<0.0010	<0.00020	**0.29**	**1.31**
			MW-8-121416	12/14/2016	33.71	854.3	**12.42**	**1980**	**16.3**	**6.48**	**1.2**	**188**	**188**	**0.27**	**714**	**6.9**	**1300**	<0.0010	**0.0018**	**0.057**	<0.0010	<0.00050	<0.0050	**0.0012**	<0.0050	**0.024**	**0.036**	<0.0010	<0.0010	<0.00020	**0.27**	**0.837**
			MW-8-020717	2/7/2017	34.39	853.62	**10.14**	**1950**	**23.4**	**6.74**	**1.2**	**198**	**194**	**0.25**	**711**	**6.8**	**1430**	<0.0010	**0.0017**	**0.062**	<0.0010	<0.00050	<0.0050	**0.0017**	<0.0050	**0.018**	**0.042**	<0.0010	<0.0010	<0.00020	**0.25**	**0.210**
			MW-8-040617	4/6/2017	29.63	858.38	**17.26**	**2010**	**17.1**	**6.46**	**1.5**	**244**	**170**	**0.30**	**377**	**6.7**	**1500**	<0.0010	**0.0021**	**0.063**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.017**	**0.034**	<0.0010	<0.0010	<0.00020	**0.30**	**0.665**
			MW-8-052417	5/24/2017	32.54	855.47	**17.88**	**1970**	**9.2**	**6.33**	**1.2**	**195**	**174**	**0.25**	**775**	**6.5**	**1300**	<0.0010	**0.0013**	**0.055**	<0.0010	<0.00050	<0.0050	**0.0011**	<0.0050	**0.014**	**0.042**	<0.0010	<0.0010	<0.00020	**0.25**	**1.08**
			MW-8-062717	6/27/2017	32.65	855.36	**20.66**	**1980**	**4.4**	**6.41**	**1.3**	**218**	**165**	**0.25**	**688**	**6.8**	**1490**	<0.0010	**0.0023**	**0.055**	<0.0010	<0.00050	<0.0050	**0.0011**	<0.0050	**0.012**	**0.039**	<0.0010	<0.0010	<0.00020	**0.25**	**1.19**
	MW-9	886.98	MW-9-083116	8/31/2016	33.83	853.15	**22.31**	**1990**	**131.0**	**7.85**	**0.34**	**199**	**205**	**0.34**	**298**	**6.8**	**1420**	<0.0010	**0.11**	**0.74**	<0.0010	**0.00070**	<0.0050	**0.031**	**0.0063**	**0.018**	**0.0079**	<0.0010	<0.0010	<0.00020	**0.34**	**2.23**
			MW-9-092116	9/21/2016	34.71	852.27	**21.91**	**2070**	**58.1**	**6.76**	**0.22**	**230**	**205**	**0.39**	**254**	**6.8**	**1280**	<0.0010	**0.13**	**0.87**	<0.0010	<0.00050	<0.0050	**0.017**	<0.0050	**0.014**	**0.0050**	<0.0010	<0.0010	<0.00020	**0.39**	**3.25**
			MW-9-110216	11/2/2016	35.49	851.49	**19.46**	**1890**	**22.6**	**6.49**	**0.15**	**232**	**187**	**0.39**	**124**	**6.8**	**1230**	<0.0010	**0.14**	**0.85**	<0.0010	<0.00050	<0.0050	**0.013**	<0.0050	**0.014**	**0.0029**	<0.0010	<0.0010	<0.00020	**0.39**	**1.58**
			MW-9-121616	12/16/2016	35.92	851.06	**12.15**	**1980**	**162.0**	**6.52**	**0.10**	**216**	**174**	**0.36**	**31.8**	**6.8**	**1160**	<0.0010	**0.10**	**0.81**	<0.0010	<0.00050	**0.0050**	**0.011**	**0.0082**	**0.014**	**0.0019**	<0.0010	<0.0010	<0.00020	**0.36**	**2.02**
			MW-9-020717	2/7/2017	36.00	850.98	**13.18**	**2020**	**181.0**	**6.59**	**0.14**	**217**	**186**	**0.37**	**122**	**6.6**	**1170**	<0.0010	**0.12**	**0.77**	<0.0010	<0.00050	<0.0050	**0.013**	<0.0050	<0.010	**0.0022**	<0.0010	<0.0010	<0.00020	**0.37**	**1.39**
			MW-9-040617	4/6/2017	33.03	853.95	**15.56**	**2120**	**55.1**	**6.65**	**0.41**	**221**	**218**	**0.45**	**477**	**7.0**	**1370**	<0.0010	**0.086**	**0.65**	<0.0010	<0.00050	<0.0050	**0.023**	**0.0078**	**0.015**	**0.0060**	<0.0010	<0.0010	<0.00020	**0.45**	**1.31**
			MW-9-052417	58/24/17	35.06	851.92	**19.13**	**2070**	**16.1**	**6.62**	**0.36**	**212**	**201**	**0.42**	**239**	**6.9**	**1310**	<0.0010	**0.099**	**0.74**	<0.0010	**0.00053**	<0.0050	**0.024**	<0.0050	**0.011**	**0.0048**	<0.0010	<0.0010	<0.00020	**0.42**	**1.64**
			MW-9-062717	6/27/2017	35.42	851.56	**20.78**	**2060**	**11.1**	**6.56**	**0.30**	**226**	**193**	**0.56**	**264**	**6.6**	**1380**	<0.0010	**0.11**	**0.74**	<0.0010	<0.00050	<0.0050	**0.022**	<0.0050	<0.010	**0.0046**	<0.0010	<0.0010	<0.00020	**0.56**	**1.35**
	MW-10	887.08	MW-10-083016	8/30/2016	33.96	853.12	**22.73**	**2060**	**9.4**	**7.81**	**0.23**	**168**	**238**	**0.41**	**171**	**6.7**	**1210**	<0.0010	**0.061**	**0.27**	<0.0010	<0.00050	<0.0050	**0.0051**	<0.0050	<0.010	**0.0038**	<0.0010	<0.0010	<0.00020	**0.41**	**2.90**
			MW-10-092116	9/21/2016	32.67	854.41	**19.23**	**2110**	**6.4**	**6.71**	**0.25**	**172**	**232**	**0.44**	**208**	**6.8**	**1260**	<0.0010	**0.068**	**0.27**	<0.0010	<0.00050	<0.0050	**0.0065**	<0.0050	**0.010**	**0.0042**	<0.0010	<0.0010	<0.00020	**0.44**	**1.70**
			MW-10-110216	11/2/2016	33.65	853.43	**17.40**	**1930**	**7.0**	**6.43**	**0.25**	**182**	**229**	**0.46**	**177**	**6.8**	**1220**	<0.0010	**0.065**	**0.30**	<0.0010	<0.00050	<0.0050	**0.0043**	<0.0050	**0.011**	**0.0034**	<0.0010	<0.0010	<0.00020	**0.46**	**2.08**
			MW-10-121416	12/14/2016	34.06	853.02	**12.59**	**2100**	**9.4**	**6.65**	**0.23**	**169**	**234**	**0.42**	**167**	**6.9**	**1150**	<0.0010	**0.071**	**0.31**	<0.0010	<0.00050	<0.0050	**0.0032**	<0.0050	**0.010**	**0.0037**	<0.0010	<0.0010	<0.00020	**0.42**	**2.25**
			MW-10-020717	2/7/2017	34.09	852.99	**13.73**	**2070**	**10.6**	**6.52**	**0.23**	**170**	**235**	**0.47**	**165**	**6.6**	**1250**	<0.0010	**0.077**	**0.30**	<0.0010	<0.00050	<0.0050	**0.0033**	<0.0050	<0.010	**0.0042**	<0.0010	<0.0010	<0.00020	**0.47**	**1.87**
			MW-10-040617	4/6/2017	31.63	855.45	**14.94**	**2060**	**7.2**	**6.50**	**0.27**	**175**	**233**	**0.48**	**226**	**7.0**	**1280**	<0.0010	**0.062**	**0.28**	<0.0010	<0.00050	<0.0050	**0.0061**	<0.0050	<0.010	**0.0049**	<0.0010	<0.0010	<0.00020	**0.48**	**1.39**
			MW-10-052417	5/24/2017	32.86	854.22	**17.66**	**2110**	**6.2**	**6.59**	**0.26**	**177**	**228**	**0.46**	**205**	**6.9**	**1150**	<0.0010	**0.050**	**0.28**	<0.0010	<0.00050	<0.0050	**0.0042**	<0.0050	<0.010	**0.0028**	<0.0010	<0.0010	<0.00020	**0.46**	**2.19**
			MW-10-062717	6/27/2017	33.50	853.58	**18.60**	**2100**	**3.2**	**6.55**	**0.25**	**180**	**217**	**0.42**	**178**	**6.6**	**1260**	<0.0010	**0.064**	**0.29**	<0.0010	<0.00050	<0.0050	**0.0035**	<0.0050	<0.010	**0.0033**	<0.0010	<0.0010	<0.00020	**0.42**	**2.41**

ABBREVIATIONS AND NOTES:

Bold value: Detection above laboratory reporting limit

USEPA. 2016. Final Rule: Disposal of Coal Combustion Residuals from 'Electric Utilities. July 26. 40 CFR Part 257. https://www.epa.gov/coalash/coal-ash-rule

µS/cm = microSiemen per centimeter

btoc = below top of casing

C = Celsius

CCR = coal combustion residuals

ft AMSL = feet above mean sea level

MCL = maximum contaminant level

mg/L = milligrams per liter

NA = not applicable

NTU = Nephelometric Turbidity Units

pCi/L = picoCurie per liter

su = standard units

TDS = total dissolved solids

TOC = top of casing

USEPA = United States Environmental Protection Agency

FIGURES

LEGEND

- MONITORING WELL
- PIEZOMETRIC OBSERVATION ONLY
- BOTTOM ASH SETTLING AREA

NOTE

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, NOVEMBER 7, 2015.

N

0 50 100

SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA MONITORING WELL LOCATION MAP

MARCH 2021
SCALE: AS SHOWN

FIGURE 1

GIS FILE PATH: G:\Projects\Westar\Tecumseh Energy Center (TEC)\GIS\MXDs\2018_011TEC_BOTTOM ASH SETTLING POND_MW_LOC_map.mxd — USER: rabrown — LAST SAVED: 1/26/2018 2:39:26 PM

LEGEND

- **MW-8 849.64** — WELL NAME AND GROUNDWATER ELEVATION (AUGUST 17, 2016)
- 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 17 AUGUST 2016.
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 AUGUST 17, 2016

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MARCH 2021

FIGURE 2

LEGEND

MW-8
849.64 WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 19, 2016)

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

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

GROUNDWATER FLOW DIRECTION

BOTTOM ASH SETTLING AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 19 SEPTEMBER 2016.

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 SEPTEMBER 19, 2016

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FIGURE 3

LEGEND

MW-8 849.64 WELL NAME AND GROUNDWATER ELEVATION (OCTOBER 31, 2016)

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 31 OCTOBER 2016.

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 31, 2016

evergy

MARCH 2021

FIGURE 4

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (DECEMBER 12, 2016)
- 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 12 DECEMBER 2016.
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 12, 2016

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FIGURE 5

LEGEND

- **MW-8 849.64** — WELL NAME AND GROUNDWATER ELEVATION (FEBRUARY 6, 2017)
- 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 06 FEBRUARY 2017.
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 FEBRUARY 06, 2017

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FIGURE 6

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (APRIL 5, 2017)
- 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 05 APRIL 2017.
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 APRIL 05, 2017

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FIGURE 7

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (MAY 23, 2017)
- 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 23 MAY 2017.
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 MAY 23, 2017

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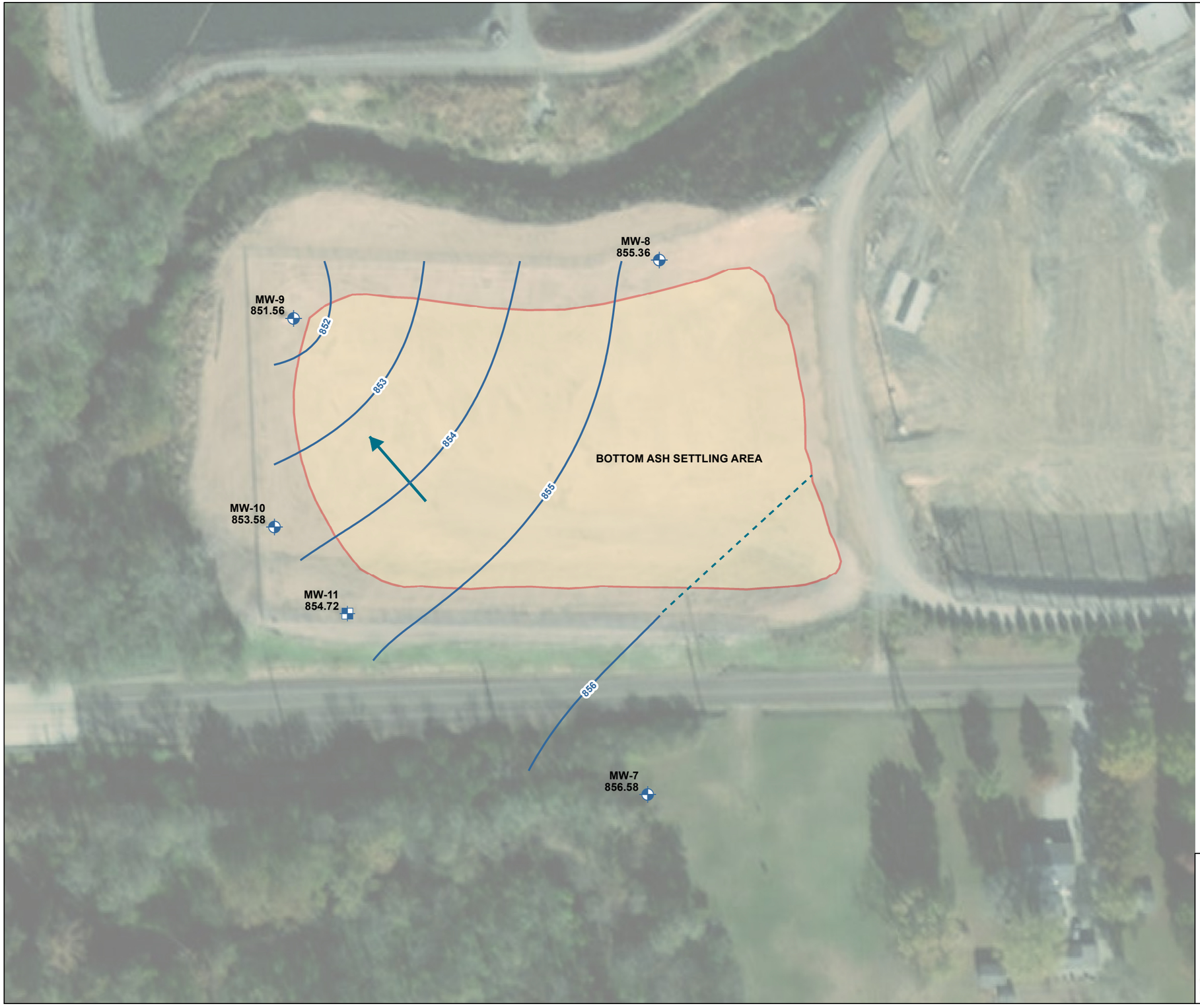
MARCH 2021

FIGURE 8



LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (JUNE 26, 2017)
- 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 26 JUNE 2017.
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 26, 2017

evergy

MARCH 2021

FIGURE 9

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

March 18, 2022
Project No. 0204993-000

Mark Nicholls
Digitally signed by Mark Nicholls
Date: 2022.03.18 13:19:39 -07'00'

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: 2017 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 2017 for the BASA was completed and placed in the facility's operating record on January 31, 2018, 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 baseline sampling events in 2016 and 2017 are included in Attachment 1. Since no statistical analyses were completed in 2017, there are no analyses to report in this addendum. Revision 1 of the 2017 GWMCA Report does include a "Groundwater Potentiometric Elevation Contour Map" for each of the 2017 sampling events as Figures 2

"Groundwater Potentiometric Elevation Contour Map" for each of the 2017 sampling events as Figures 2 through 9. 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 August, September, November, and December 2016, and February, April, May, and June 2017 are provided.
- Attachment 2 – 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 August, September, October, and December 2016, and February, April, May, and June 2017 are provided.

ATTACHMENT 1

Laboratory Analytical Reports

ATTACHMENT 1-1

August 2016 Sampling Event Laboratory Analytical Report

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

September 27, 2016

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 01, 2016. 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
Project Manager

Enclosures

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

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60226890001	**MW-7-083016**	Water	08/30/16 09:56	09/01/16 17:30
60226890002	**MW-10-083016**	Water	08/30/16 13:13	09/01/16 17:30
60226890003	**MW-8-083116**	Water	08/31/16 09:50	09/01/16 17:30
60226890004	**MW-9-083116**	Water	08/31/16 13:00	09/01/16 17:30
60226890005	**MW-10-083016 MS**	Water	08/30/16 13:13	09/01/16 17:30
60226890006	**MW-10-083016 MSD**	Water	08/30/16 13:13	09/01/16 17:30

Pace Analytical Services, Inc.
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60226890001	**MW-7-083016**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226890002	**MW-10-083016**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226890003	**MW-8-083116**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226890004	**MW-9-083116**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60226890005	**MW-10-083016 MS**	EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60226890006	**MW-10-083016 MSD**	EPA 903.1	JAL	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 27, 2016

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: 445240

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226890002,60226890003

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

- MS (Lab ID: 1820457)
  - Calcium
- MS (Lab ID: 1820459)
  - Calcium
- MSD (Lab ID: 1820458)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 27, 2016

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, Inc.
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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 27, 2016

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: 445552

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226591001,60226890002

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

- MS (Lab ID: 1821505)
  - Mercury
- MSD (Lab ID: 1821506)
  - Mercury

Additional Comments:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 27, 2016

General Information:
6 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 CCR GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 27, 2016

General Information:
6 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:

Analyte Comments:

QC Batch: 232814

1e: The % recovery for the Ra-228 matrix spike performed on sample 60226890006 was high and outside of Pace's default acceptance criteria at 135.66%. The high bias may be due to sample matrix interference and indicate a high bias in the sample result.

- MW-10-083016 MSD (Lab ID: 60226890006)
  - Radium-228

Pace Analytical Services, Inc.
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Lenexa, KS 66219
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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 27, 2016

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 GROUNDWATER
Pace Project No.: 60226890

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 27, 2016

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-10-083016 (Lab ID: 60226890002)
- MW-7-083016 (Lab ID: 60226890001)
- MW-8-083116 (Lab ID: 60226890003)
- MW-9-083116 (Lab ID: 60226890004)

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 GROUNDWATER
Pace Project No.: 60226890

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 27, 2016

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: 445893

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226890002

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

- MSD (Lab ID: 1822829)
  - Chloride

Additional Comments:

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

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-7-083016 **Lab ID: 60226890001** Collected: 08/30/16 09:56 Received: 09/01/16 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.10**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:16	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/06/16 11:16	7440-41-7	
Boron, Total Recoverable	**0.73**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:16	7440-42-8	
Calcium, Total Recoverable	**152**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:16	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:16	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:16	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:16	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	09/02/16 14:45	09/07/16 10:57	7440-36-0	
Arsenic, Total Recoverable	**0.0021**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 10:57	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/02/16 14:45	09/07/16 10:57	7440-43-9	
Cobalt, Total Recoverable	**0.0022**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 10:57	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 10:57	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 10:57	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 10:57	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/07/16 08:45	09/07/16 15:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1120**	mg/L	5.0	1		09/02/16 16:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/02/16 17:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**201**	mg/L	20.0	20		09/09/16 10:17	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	1		09/07/16 19:47	16984-48-8	
Sulfate	**455**	mg/L	50.0	50		09/09/16 10:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-10-083016 **Lab ID: 60226890002** Collected: 08/30/16 13:13 Received: 09/01/16 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.27**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:19	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/06/16 11:19	7440-41-7	
Boron, Total Recoverable	**0.23**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:19	7440-42-8	
Calcium, Total Recoverable	**168**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:19	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:19	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:19	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:19	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	09/02/16 14:45	09/07/16 11:01	7440-36-0	
Arsenic, Total Recoverable	**0.061**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:01	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/02/16 14:45	09/07/16 11:01	7440-43-9	
Cobalt, Total Recoverable	**0.0051**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:01	7440-48-4	
Molybdenum, Total Recoverable	**0.0038**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:01	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:01	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:01	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/07/16 08:45	09/07/16 15:05	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1210**	mg/L	5.0	1		09/02/16 16:43		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.7**	Std. Units	0.10	1		09/02/16 17:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**238**	mg/L	20.0	20		09/09/16 11:14	16887-00-6	M1
Fluoride	**0.41**	mg/L	0.20	1		09/07/16 20:01	16984-48-8	
Sulfate	**171**	mg/L	20.0	20		09/09/16 11:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-8-083116 **Lab ID: 60226890003** Collected: 08/31/16 09:50 Received: 09/01/16 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.058**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:30	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/06/16 11:30	7440-41-7	
Boron, Total Recoverable	**1.3**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:30	7440-42-8	
Calcium, Total Recoverable	**201**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:30	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:30	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:30	7439-92-1	
Lithium	**0.021**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:30	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	09/02/16 14:45	09/07/16 11:14	7440-36-0	
Arsenic, Total Recoverable	**0.0023**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/02/16 14:45	09/07/16 11:14	7440-43-9	
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:14	7440-48-4	
Molybdenum, Total Recoverable	**0.044**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:14	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/07/16 08:45	09/07/16 15:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1420**	mg/L	5.0	1		09/06/16 09:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/06/16 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**194**	mg/L	20.0	20		09/09/16 11:58	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		09/07/16 20:44	16984-48-8	
Sulfate	**720**	mg/L	50.0	50		09/09/16 12:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-9-083116 **Lab ID: 60226890004** Collected: 08/31/16 13:00 Received: 09/01/16 17:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.74**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:34	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/06/16 11:34	7440-41-7	
Boron, Total Recoverable	**0.34**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:34	7440-42-8	
Calcium, Total Recoverable	**199**	mg/L	0.10	1	09/02/16 14:45	09/06/16 11:34	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:34	7440-47-3	
Lead, Total Recoverable	**0.0063**	mg/L	0.0050	1	09/02/16 14:45	09/06/16 11:34	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	09/02/16 14:45	09/06/16 11:34	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	09/02/16 14:45	09/07/16 11:27	7440-36-0	
Arsenic, Total Recoverable	**0.11**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:27	7440-38-2	
Cadmium, Total Recoverable	**0.00070**	mg/L	0.00050	1	09/02/16 14:45	09/07/16 11:27	7440-43-9	
Cobalt, Total Recoverable	**0.031**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:27	7440-48-4	
Molybdenum, Total Recoverable	**0.0079**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:27	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:27	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/02/16 14:45	09/07/16 11:27	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/07/16 08:45	09/07/16 15:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1420**	mg/L	5.0	1		09/06/16 09:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/06/16 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**205**	mg/L	20.0	20		09/09/16 12:26	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	1		09/07/16 20:59	16984-48-8	
Sulfate	**298**	mg/L	20.0	20		09/09/16 12:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445552 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

METHOD BLANK: 1821502 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/07/16 14:25	

LABORATORY CONTROL SAMPLE: 1821503

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0050	100	85-115	

MATRIX SPIKE SAMPLE: 1821504

Parameter	Units	60226591001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0054	107	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1821505 1821506

Parameter	Units	60226890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.00020	.005	.005	0.0012	0.0011	24	22	70-130	8	20	M1

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445240 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

METHOD BLANK: 1820455 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.010	0.010	09/06/16 10:36	
Beryllium	mg/L	<0.0010	0.0010	09/06/16 10:36	
Boron	mg/L	<0.10	0.10	09/06/16 10:36	
Calcium	mg/L	<0.10	0.10	09/06/16 10:36	
Chromium	mg/L	<0.0050	0.0050	09/06/16 10:36	
Lead	mg/L	<0.0050	0.0050	09/06/16 10:36	
Lithium	mg/L	<0.010	0.010	09/06/16 10:36	

LABORATORY CONTROL SAMPLE: 1820456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.99	99	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	0.99	99	85-115	
Lithium	mg/L	1	0.98	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1820457 1820458

Parameter	Units	60226890002 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	1.3	1.3	104	103	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	103	102	70-130	1	20	
Boron	mg/L	0.23	1	1	1.3	1.3	108	108	70-130	0	20	
Calcium	mg/L	168	10	10	184	185	161	174	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.99	0.99	99	98	70-130	0	20	
Lead	mg/L	<0.0050	1	1	0.96	0.95	96	95	70-130	1	20	
Lithium	mg/L	<0.010	1	1	1.1	1.1	108	107	70-130	1	20	

MATRIX SPIKE SAMPLE: 1820459

Parameter	Units	60226890003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.058	1	1.1	102	70-130	
Beryllium	mg/L	<0.0010	1	1.0	101	70-130	
Boron	mg/L	1.3	1	2.5	111	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

MATRIX SPIKE SAMPLE: 1820459

Parameter	Units	60226890003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	201	10	216	148	70-130	M1
Chromium	mg/L	<0.0050	1	0.97	97	70-130	
Lead	mg/L	<0.0050	1	0.95	95	70-130	
Lithium	mg/L	0.021	1	1.1	107	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445271 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

METHOD BLANK: 1820574 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	09/07/16 10:40	
Arsenic	mg/L	<0.0010	0.0010	09/07/16 10:40	
Cadmium	mg/L	<0.00050	0.00050	09/07/16 10:40	
Cobalt	mg/L	<0.0010	0.0010	09/07/16 10:40	
Molybdenum	mg/L	<0.0010	0.0010	09/07/16 10:40	
Selenium	mg/L	<0.0010	0.0010	09/07/16 10:40	
Thallium	mg/L	<0.0010	0.0010	09/07/16 10:40	

LABORATORY CONTROL SAMPLE: 1820575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.041	104	85-115	
Arsenic	mg/L	.04	0.042	105	85-115	
Cadmium	mg/L	.04	0.042	105	85-115	
Cobalt	mg/L	.04	0.042	104	85-115	
Molybdenum	mg/L	.04	0.043	106	85-115	
Selenium	mg/L	.04	0.042	105	85-115	
Thallium	mg/L	.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1820576 1820577

Parameter	Units	60226890002 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	.04	.04	0.040	0.040	101	99	70-130	2	20	
Arsenic	mg/L	0.061	.04	.04	0.11	0.11	124	120	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.039	0.038	97	95	70-130	2	20	
Cobalt	mg/L	0.0051	.04	.04	0.049	0.049	111	110	70-130	1	20	
Molybdenum	mg/L	0.0038	.04	.04	0.051	0.050	117	116	70-130	1	20	
Selenium	mg/L	<0.0010	.04	.04	0.042	0.041	104	101	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.040	0.040	101	100	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 CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445301 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60226890001, 60226890002

METHOD BLANK: 1820714 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/02/16 16:41	

LABORATORY CONTROL SAMPLE: 1820715

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	979	98	80-120	

SAMPLE DUPLICATE: 1820716

Parameter	Units	60226890002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1210	1190	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445393 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60226890003, 60226890004

METHOD BLANK: 1821124 Matrix: Water
Associated Lab Samples: 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/06/16 09:33	

LABORATORY CONTROL SAMPLE: 1821125

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	998	100	80-120	

SAMPLE DUPLICATE: 1821126

Parameter	Units	60226880001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	21100	22600	7	10	

SAMPLE DUPLICATE: 1821127

Parameter	Units	60226944002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	392	382	3	10	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445212 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60226890001, 60226890002

SAMPLE DUPLICATE: 1820253

Parameter	Units	60226890002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.7	6.7	0	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 CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445348 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60226890003, 60226890004

SAMPLE DUPLICATE: 1821021

Parameter	Units	60226797002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445544 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

METHOD BLANK: 1821471 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/07/16 18:49	

LABORATORY CONTROL SAMPLE: 1821472

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1821473 1821474

Parameter	Units	60226890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.41	2.5	2.5	2.8	2.8	94	94	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 445893 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

METHOD BLANK: 1822826 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/09/16 09:11	
Sulfate	mg/L	<1.0	1.0	09/09/16 09:11	

LABORATORY CONTROL SAMPLE: 1822827

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822828 1822829

Parameter	Units	60226890002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	238	100	100	337	360	99	122	80-120	7	15	M1
Sulfate	mg/L	171	100	100	266	282	95	111	80-120	6	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-7-083016 **Lab ID: 60226890001** Collected: 08/30/16 09:56 Received: 09/01/16 17:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.122 ± 0.278 (0.448) C:NA T:97%**	pCi/L	09/23/16 11:13	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.423 (0.634) C:76% T:94%**	pCi/L	09/21/16 12:30	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-10-083016 **Lab ID: 60226890002** Collected: 08/30/16 13:13 Received: 09/01/16 17:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.466 ± 0.509 (0.800) C:NA T:90%**	pCi/L	09/23/16 10:53	13982-63-3	
Radium-228	EPA 904.0	**2.43 ± 0.717 (0.840) C:61% T:87%**	pCi/L	09/21/16 12:30	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-8-083116 **Lab ID: 60226890003** Collected: 08/31/16 09:50 Received: 09/01/16 17:30 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 ± 0.468 (0.972) C:NA T:90%**	pCi/L	09/23/16 10:52	13982-63-3	
Radium-228	EPA 904.0	**0.724 ± 0.440 (0.814) C:67% T:86%**	pCi/L	09/21/16 12:30	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-9-083116 **Lab ID: 60226890004** Collected: 08/31/16 13:00 Received: 09/01/16 17:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.330 ± 0.469 (0.794) C:NA T:89%**	pCi/L	09/23/16 10:50	13982-63-3	
Radium-228	EPA 904.0	**1.90 ± 0.578 (0.672) C:68% T:86%**	pCi/L	09/21/16 12:30	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-10-083016 MS **Lab ID: 60226890005** Collected: 08/30/16 13:13 Received: 09/01/16 17:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**81.77 %REC ± NA (NA) C:NA T:NA**	pCi/L	09/23/16 11:16	13982-63-3	
Radium-228	EPA 904.0	**103 %REC +/- NA (NA) C:NA T:NA**	pCi/L	09/21/16 12:30	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

Sample: MW-10-083016 MSD **Lab ID: 60226890006** Collected: 08/30/16 13:13 Received: 09/01/16 17:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**102.33 %REC 22.34 RPD ± NA (NA) C:NA T:NA**	pCi/L	09/23/16 11:38	13982-63-3	
Radium-228	EPA 904.0	**136 %REC 27.5 RPD +/- NA (NA) C:NA T:NA**	pCi/L	09/21/16 12:31	15262-20-1	1e

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 232814 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004, 60226890005, 60226890006

METHOD BLANK: 1141148 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004, 60226890005, 60226890006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.344 ± 0.349 (0.724) C:77% T:91%	pCi/L	09/21/16 12:28	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

QC Batch: 232813 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004, 60226890005, 60226890006

METHOD BLANK: 1141146 Matrix: Water
Associated Lab Samples: 60226890001, 60226890002, 60226890003, 60226890004, 60226890005, 60226890006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.318 (0.712) C:NA T:94%	pCi/L	09/23/16 10:13	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60226890

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

1e	The % recovery for the Ra-228 matrix spike performed on sample 60226890006 was high and outside of Pace's default acceptance criteria at 135.66%. The high bias may be due to sample matrix interference and indicate a high bias in the sample result.
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 CCR GROUNDWATER
Pace Project No.: 60226890

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60226890001	**MW-7-083016**	EPA 200.7	445240	EPA 200.7	445375
60226890002	**MW-10-083016**	EPA 200.7	445240	EPA 200.7	445375
60226890003	**MW-8-083116**	EPA 200.7	445240	EPA 200.7	445375
60226890004	**MW-9-083116**	EPA 200.7	445240	EPA 200.7	445375
60226890001	**MW-7-083016**	EPA 200.8	445271	EPA 200.8	445373
60226890002	**MW-10-083016**	EPA 200.8	445271	EPA 200.8	445373
60226890003	**MW-8-083116**	EPA 200.8	445271	EPA 200.8	445373
60226890004	**MW-9-083116**	EPA 200.8	445271	EPA 200.8	445373
60226890001	**MW-7-083016**	EPA 245.1	445552	EPA 245.1	445584
60226890002	**MW-10-083016**	EPA 245.1	445552	EPA 245.1	445584
60226890003	**MW-8-083116**	EPA 245.1	445552	EPA 245.1	445584
60226890004	**MW-9-083116**	EPA 245.1	445552	EPA 245.1	445584
60226890001	**MW-7-083016**	EPA 903.1	232813		
60226890002	**MW-10-083016**	EPA 903.1	232813		
60226890003	**MW-8-083116**	EPA 903.1	232813		
60226890004	**MW-9-083116**	EPA 903.1	232813		
60226890005	**MW-10-083016 MS**	EPA 903.1	232813		
60226890006	**MW-10-083016 MSD**	EPA 903.1	232813		
60226890001	**MW-7-083016**	EPA 904.0	232814		
60226890002	**MW-10-083016**	EPA 904.0	232814		
60226890003	**MW-8-083116**	EPA 904.0	232814		
60226890004	**MW-9-083116**	EPA 904.0	232814		
60226890005	**MW-10-083016 MS**	EPA 904.0	232814		
60226890006	**MW-10-083016 MSD**	EPA 904.0	232814		
60226890001	**MW-7-083016**	SM 2540C	445301		
60226890002	**MW-10-083016**	SM 2540C	445301		
60226890003	**MW-8-083116**	SM 2540C	445393		
60226890004	**MW-9-083116**	SM 2540C	445393		
60226890001	**MW-7-083016**	SM 4500-H+B	445212		
60226890002	**MW-10-083016**	SM 4500-H+B	445212		
60226890003	**MW-8-083116**	SM 4500-H+B	445348		
60226890004	**MW-9-083116**	SM 4500-H+B	445348		
60226890001	**MW-7-083016**	EPA 300.0	445544		
60226890001	**MW-7-083016**	EPA 300.0	445893		
60226890002	**MW-10-083016**	EPA 300.0	445544		
60226890002	**MW-10-083016**	EPA 300.0	445893		
60226890003	**MW-8-083116**	EPA 300.0	445544		
60226890003	**MW-8-083116**	EPA 300.0	445893		
60226890004	**MW-9-083116**	EPA 300.0	445544		
60226890004	**MW-9-083116**	EPA 300.0	445893		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO# : 60226890

60226890

Client Name: Waste 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: CF +1.1 / CF -0.1 T-266 / T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2.3 **Corr. Factor** CF +1.1 CF -0.1 **Corrected** 3.4

Date and initials of person examining contents: MG 9/2/16

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	pH
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	
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No N/A	
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: [signature] Date: 9/2/16

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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.:	
Project Name:	TEC CCR Groundwater
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: 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

Matrix code (see valid codes to left); Sample type (G=GRAB C=COMP)

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-7-083016	WT	G			8/30/16	0956		4	1		3						1BP/U		1BP/N		2-0		2BP/N			001
2	MW-10-083016	WT	G			8/30/16	1313		8	2		6								2BP/U		2BP/N			4BP/N		MS/MSD 002
3	MW-8-083116	WT	G			8/31/16	0950		4	1		3						↓			↓			↓			003
4	MW-9-083116	WT	G			8/31/16	1300		4	1		3						↓			↓			↓			004
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

Pace Project No.: 60226590

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: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	8/31/16	1500	[signature]	9/1/16	1730	3.4	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/31/16

*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

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60226890 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 9/1/2016 **Results Requested By:** 9/28/2016

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30195281

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: BP1N	Preserved Containers: OTHR	Preserved Containers	Preserved Containers	Preserved Containers	Preserved Containers	Requested Analysis: Radium 226/228	LAB USE ONLY
1	MW-7-083016	PS	8/30/2016 09:56	60226890001	Water	2						X	001
2	MW-10-083016	RQS	8/30/2016 13:13	60226890002	Water	2						X	002
3	MW-8-083116	PS	8/31/2016 09:50	60226890003	Water	2						X	003
4	MW-9-083116	PS	8/31/2016 13:00	60226890004	Water	2						X	004
5	MW-10-083016 MS	PS	8/30/2016 13:13	60226890005	Water		1					X	005
6	MW-10-083016 MSD	PS	8/30/2016 13:13	60226890006	Water		1					X	006

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	9/6/16 1600	Karen E. Hill	9-7-16 1035
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace, Kansas Project # 30195281

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

Tracking #: 7044 6053 1220

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 N/A °C Correction Factor: N/A °C Final Temp: N/A °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 9-7-16

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/Analysis 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. Sample 5 and 6 have low volume
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.	✓			13. PH ≤ 2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed KH; Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: KH; Date:

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

September 2016 Sampling Event Laboratory Analytical Report

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

October 14, 2016

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 21, 2016. 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,

Colleen Clyne for
Heather Wilson
heather.wilson@pacelabs.com
Project Manager

Enclosures

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

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228265001	**MW-4-092016**	Water	09/20/16 07:56	09/21/16 16:40
60228265002	**MW-5-092016**	Water	09/20/16 09:11	09/21/16 16:40
60228265003	**MW-6-092016**	Water	09/20/16 10:32	09/21/16 16:40
60228265004	**MW-1-092016**	Water	09/20/16 12:37	09/21/16 16:40
60228265005	**MW-7-092016**	Water	09/20/16 13:36	09/21/16 16:40
60228265006	**DUP-092016**	Water	09/20/16 07:00	09/21/16 16:40

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Lenexa, KS 66219
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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228265001	**MW-4-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228265002	**MW-5-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228265003	**MW-6-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228265004	**MW-1-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228265005	**MW-7-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228265006	**DUP-092016**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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: 447700

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228263003,60228265003

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

- MS (Lab ID: 1831373)
  - Calcium

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.: 60228265

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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 CCR GROUNDWATER
Pace Project No.: 60228265

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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: 447972

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228265001,60228265002

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

- MS (Lab ID: 1832814)
  - Mercury

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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.: 60228265

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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-092016 (Lab ID: 60228265006)
- MW-1-092016 (Lab ID: 60228265004)
- MW-4-092016 (Lab ID: 60228265001)
- MW-5-092016 (Lab ID: 60228265002)
- MW-6-092016 (Lab ID: 60228265003)
- MW-7-092016 (Lab ID: 60228265005)

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 CCR GROUNDWATER
Pace Project No.: 60228265

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
6 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: 450555

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228265001

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

- MS (Lab ID: 1843631)
  - Chloride
- MSD (Lab ID: 1843632)
  - 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 CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-4-092016 **Lab ID: 60228265001** Collected: 09/20/16 07:56 Received: 09/21/16 16:40 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	**0.13**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:22	7440-41-7	
Boron, Total Recoverable	**<0.10**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:22	7440-42-8	
Calcium, Total Recoverable	**176**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:22	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:22	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:22	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	09/23/16 12:00	10/10/16 13:39	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:39	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 13:39	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:39	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:39	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:39	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:39	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 08:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1080**	mg/L	5.0	1		09/25/16 20:31		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/27/16 12:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**271**	mg/L	20.0	20		10/14/16 10:35	16887-00-6	M1
Fluoride	**0.24**	mg/L	0.20	1		10/14/16 00:48	16984-48-8	
Sulfate	**141**	mg/L	20.0	20		10/14/16 10:35	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 GROUNDWATER
Pace Project No.: 60228265

Sample: MW-5-092016 **Lab ID: 60228265002** Collected: 09/20/16 09:11 Received: 09/21/16 16:40 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	**0.033**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:24	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:24	7440-42-8	
Calcium, Total Recoverable	**291**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:24	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:24	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:24	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	09/23/16 12:00	09/28/16 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	09/23/16 12:00	10/10/16 13:43	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:43	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 13:43	7440-43-9	
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:43	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:43	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:43	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:43	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:00	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1690**	mg/L	5.0	1		09/25/16 20:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**49.3**	mg/L	5.0	5		10/14/16 11:46	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	1		10/14/16 01:02	16984-48-8	
Sulfate	**868**	mg/L	100	100		10/14/16 12:01	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 GROUNDWATER
Pace Project No.: 60228265

Sample: MW-6-092016 **Lab ID: 60228265003** Collected: 09/20/16 10:32 Received: 09/21/16 16:40 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	**0.034**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:26	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:26	7440-41-7	
Boron, Total Recoverable	**1.1**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:26	7440-42-8	
Calcium, Total Recoverable	**276**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:26	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:26	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:26	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	09/23/16 12:00	09/28/16 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	09/23/16 12:00	10/10/16 13:47	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 13:47	7440-43-9	
Cobalt, Total Recoverable	**0.0033**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:47	7440-48-4	
Molybdenum, Total Recoverable	**0.0014**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1690**	mg/L	5.0	1		09/25/16 20:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**64.3**	mg/L	5.0	5		10/14/16 12:15	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	1		10/14/16 01:16	16984-48-8	
Sulfate	**857**	mg/L	100	100		10/14/16 12:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-1-092016 **Lab ID: 60228265004** Collected: 09/20/16 12:37 Received: 09/21/16 16:40 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	**0.12**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:31	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:31	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:31	7440-42-8	
Calcium, Total Recoverable	**158**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:31	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:31	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:31	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:31	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	09/23/16 12:00	10/10/16 13:52	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:52	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 13:52	7440-43-9	
Cobalt, Total Recoverable	**0.0054**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:52	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:52	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:52	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 13:52	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**913**	mg/L	5.0	1		09/25/16 20:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.3**	mg/L	5.0	5		10/14/16 10:19	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		10/14/16 01:30	16984-48-8	
Sulfate	**359**	mg/L	50.0	50		10/14/16 10:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-7-092016 **Lab ID: 60228265005** Collected: 09/20/16 13:36 Received: 09/21/16 16:40 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	**0.079**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:33	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:33	7440-41-7	
Boron, Total Recoverable	**0.75**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:33	7440-42-8	
Calcium, Total Recoverable	**146**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:33	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:33	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:33	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:33	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	09/23/16 12:00	10/10/16 14:00	7440-36-0	
Arsenic, Total Recoverable	**0.0015**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:00	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 14:00	7440-43-9	
Cobalt, Total Recoverable	**0.0019**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:00	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:00	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:00	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:00	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1110**	mg/L	5.0	1		09/25/16 20:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**187**	mg/L	20.0	20		10/14/16 11:16	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		10/14/16 01:44	16984-48-8	
Sulfate	**466**	mg/L	50.0	50		10/14/16 11:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: DUP-092016 **Lab ID: 60228265006** Collected: 09/20/16 07:00 Received: 09/21/16 16:40 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	**0.032**	mg/L	0.010	1	09/23/16 12:00	09/28/16 17:36	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 17:36	7440-41-7	
Boron, Total Recoverable	**1.1**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:36	7440-42-8	
Calcium, Total Recoverable	**280**	mg/L	0.10	1	09/23/16 12:00	09/28/16 17:36	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:36	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 17:36	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	09/23/16 12:00	09/28/16 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	09/23/16 12:00	10/10/16 14:13	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:13	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 14:13	7440-43-9	
Cobalt, Total Recoverable	**0.0032**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:13	7440-48-4	
Molybdenum, Total Recoverable	**0.0014**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:13	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:13	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 14:13	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1700**	mg/L	5.0	1		09/25/16 20:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		09/27/16 12:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**63.3**	mg/L	5.0	5		10/14/16 11:58	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		10/14/16 11:44	16984-48-8	
Sulfate	**869**	mg/L	100	100		10/14/16 12:12	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 CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 447972 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1832810 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/27/16 08:48	

LABORATORY CONTROL SAMPLE: 1832811

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0056	112	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1832812 1832813

Parameter	Units	60228265001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.00020	.005	.005	0.0056	0.0058	111	116	70-130	4	20	

MATRIX SPIKE SAMPLE: 1832814

Parameter	Units	60228265002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	.005	0.0033	67	70-130	M1

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 447700 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1831369 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/28/16 16:44	
Beryllium	mg/L	<0.0010	0.0010	09/28/16 16:44	
Boron	mg/L	<0.10	0.10	09/28/16 16:44	
Calcium	mg/L	<0.10	0.10	09/28/16 16:44	
Chromium	mg/L	<0.0050	0.0050	09/28/16 16:44	
Lead	mg/L	<0.0050	0.0050	09/28/16 16:44	
Lithium	mg/L	<0.010	0.010	09/28/16 16:44	

LABORATORY CONTROL SAMPLE: 1831370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	101	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	1.0	100	85-115	
Calcium	mg/L	10	10.2	102	85-115	
Chromium	mg/L	1	1.0	103	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1831371 1831372

Parameter	Units	60228263003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.058	1	1	1.1	1.1	102	100	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	104	102	70-130	2	20	
Boron	mg/L	1.3	1	1	2.4	2.4	108	105	70-130	1	20	
Calcium	mg/L	217	10	10	229	228	119	116	70-130	0	20	
Chromium	mg/L	<0.0050	1	1	1.0	1.0	104	102	70-130	2	20	
Lead	mg/L	<0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.020	1	1	1.1	1.0	104	102	70-130	2	20	

MATRIX SPIKE SAMPLE: 1831373

Parameter	Units	60228265003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.034	1	1.0	100	70-130	
Beryllium	mg/L	<0.0010	1	1.0	101	70-130	
Boron	mg/L	1.1	1	2.2	111	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

MATRIX SPIKE SAMPLE: 1831373

Parameter	Units	60228265003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	276	10	307	306	70-130	M1
Chromium	mg/L	<0.0050	1	1.0	102	70-130	
Lead	mg/L	<0.0050	1	0.97	97	70-130	
Lithium	mg/L	0.017	1	1.0	103	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 447701 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1831374 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/10/16 12:29	
Arsenic	mg/L	<0.0010	0.0010	10/10/16 12:29	
Cadmium	mg/L	<0.00050	0.00050	10/10/16 12:29	
Cobalt	mg/L	<0.0010	0.0010	10/10/16 12:29	
Molybdenum	mg/L	<0.0010	0.0010	10/10/16 12:29	
Selenium	mg/L	<0.0010	0.0010	10/10/16 12:29	
Thallium	mg/L	<0.0010	0.0010	10/10/16 12:29	

LABORATORY CONTROL SAMPLE: 1831375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	99	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1831376 1831377

Parameter	Units	60228264001 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	.04	.04	0.040	0.041	99	102	70-130	2	20	
Arsenic	mg/L	<0.0010	.04	.04	0.040	0.040	99	101	70-130	2	20	
Cadmium	mg/L	<0.00050	.04	.04	0.039	0.039	98	98	70-130	1	20	
Cobalt	mg/L	<0.0010	.04	.04	0.038	0.038	94	94	70-130	0	20	
Molybdenum	mg/L	<0.0010	.04	.04	0.044	0.044	109	110	70-130	2	20	
Selenium	mg/L	<0.0010	.04	.04	0.038	0.039	96	96	70-130	0	20	
Thallium	mg/L	<0.0010	.04	.04	0.041	0.041	101	102	70-130	0	20	

MATRIX SPIKE SAMPLE: 1831378

Parameter	Units	60228265004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.040	99	70-130	
Arsenic	mg/L	<0.0010	.04	0.040	100	70-130	
Cadmium	mg/L	<0.00050	.04	0.040	99	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

MATRIX SPIKE SAMPLE: 1831378

Parameter	Units	60228265004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0054	.04	0.042	92	70-130	
Molybdenum	mg/L	<0.0010	.04	0.045	112	70-130	
Selenium	mg/L	<0.0010	.04	0.040	100	70-130	
Thallium	mg/L	<0.0010	.04	0.041	104	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 447881 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1832511 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/25/16 20:25	

LABORATORY CONTROL SAMPLE: 1832512

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1050	105	80-120	

SAMPLE DUPLICATE: 1832513

Parameter	Units	60228264001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	497	496	0	10	

SAMPLE DUPLICATE: 1832514

Parameter	Units	60228265004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	913	912	0	10	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 448150 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60228265001, 60228265006

SAMPLE DUPLICATE: 1833401

Parameter	Units	60228264005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.6	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 448294 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60228265002, 60228265003, 60228265004, 60228265005

SAMPLE DUPLICATE: 1833942

Parameter	Units	60228265002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 450241 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005

METHOD BLANK: 1842319 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	10/13/16 18:26	

LABORATORY CONTROL SAMPLE: 1842320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1842321 1842322

Parameter	Units	60228263001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.44	2.5	2.5	3.0	3.1	105	108	80-120	3	15	

MATRIX SPIKE SAMPLE: 1842323

Parameter	Units	60228264001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.23	2.5	2.9	105	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 450555 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228265001, 60228265002, 60228265003

METHOD BLANK: 1843629 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/14/16 08:42	
Sulfate	mg/L	<1.0	1.0	10/14/16 08:42	

LABORATORY CONTROL SAMPLE: 1843630

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	91	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843631 1843632

Parameter	Units	60228265001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	271	100	100	398	392	127	121	80-120	1	15	M1
Sulfate	mg/L	141	100	100	254	252	113	111	80-120	1	15	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 450558 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228265004, 60228265005, 60228265006

METHOD BLANK: 1843633 Matrix: Water
Associated Lab Samples: 60228265004, 60228265005, 60228265006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/14/16 08:42	
Fluoride	mg/L	<0.20	0.20	10/14/16 08:42	
Sulfate	mg/L	<1.0	1.0	10/14/16 08:42	

LABORATORY CONTROL SAMPLE: 1843634

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	2.5	101	90-110	
Sulfate	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843635 1843636

Parameter	Units	60228264005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	95.5	50	50	153	154	116	116	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-4-092016 **Lab ID: 60228265001** Collected: 09/20/16 07:56 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.665 ± 0.564 (0.699) C:NA T:85%**	pCi/L	10/07/16 11:38	13982-63-3	
Radium-228	EPA 904.0	**1.79 ± 0.501 (0.530) C:70% T:88%**	pCi/L	10/06/16 20:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-5-092016 **Lab ID: 60228265002** Collected: 09/20/16 09:11 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.498 ± 0.519 (0.732) C:NA T:86%**	pCi/L	10/07/16 11:49	13982-63-3	
Radium-228	EPA 904.0	**0.575 ± 0.352 (0.632) C:67% T:83%**	pCi/L	10/06/16 20:18	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-6-092016 **Lab ID: 60228265003** Collected: 09/20/16 10:32 Received: 09/21/16 16:40 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 ± 0.401 (0.817) C:NA T:92%**	pCi/L	10/07/16 11:51	13982-63-3	
Radium-228	EPA 904.0	**0.353 ± 0.368 (0.742) C:73% T:79%**	pCi/L	10/06/16 20:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-1-092016 **Lab ID: 60228265004** Collected: 09/20/16 12:37 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.660 ± 0.495 (0.256) C:NA T:87%**	pCi/L	10/07/16 11:52	13982-63-3	
Radium-228	EPA 904.0	**1.12 ± 0.478 (0.753) C:58% T:83%**	pCi/L	10/06/16 20:04	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: MW-7-092016 **Lab ID: 60228265005** Collected: 09/20/16 13:36 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**5.46 ± 1.61 (1.24) C:NA T:87%**	pCi/L	10/07/16 12:01	13982-63-3	
Radium-228	EPA 904.0	**0.420 ± 0.375 (0.731) C:61% T:75%**	pCi/L	10/06/16 20:19	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Sample: DUP-092016 **Lab ID: 60228265006** Collected: 09/20/16 07:00 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.166 ± 0.461 (0.895) C:NA T:95%**	pCi/L	10/07/16 12:01	13982-63-3	
Radium-228	EPA 904.0	**0.435 ± 0.304 (0.568) C:78% T:81%**	pCi/L	10/06/16 20:05	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 234946 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1152992 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.876 ± 0.397 (0.651) C:72% T:83%	pCi/L	10/06/16 20:17	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

QC Batch: 234935 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

METHOD BLANK: 1152976 Matrix: Water
Associated Lab Samples: 60228265001, 60228265002, 60228265003, 60228265004, 60228265005, 60228265006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.423 (0.683) C:NA T:89%	pCi/L	10/07/16 11:21	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

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.

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.

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228265

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228265001	**MW-4-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265002	**MW-5-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265003	**MW-6-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265004	**MW-1-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265005	**MW-7-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265006	**DUP-092016**	EPA 200.7	447700	EPA 200.7	447802
60228265001	**MW-4-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265002	**MW-5-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265003	**MW-6-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265004	**MW-1-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265005	**MW-7-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265006	**DUP-092016**	EPA 200.8	447701	EPA 200.8	447804
60228265001	**MW-4-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265002	**MW-5-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265003	**MW-6-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265004	**MW-1-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265005	**MW-7-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265006	**DUP-092016**	EPA 245.1	447972	EPA 245.1	448022
60228265001	**MW-4-092016**	EPA 903.1	234935		
60228265002	**MW-5-092016**	EPA 903.1	234935		
60228265003	**MW-6-092016**	EPA 903.1	234935		
60228265004	**MW-1-092016**	EPA 903.1	234935		
60228265005	**MW-7-092016**	EPA 903.1	234935		
60228265006	**DUP-092016**	EPA 903.1	234935		
60228265001	**MW-4-092016**	EPA 904.0	234946		
60228265002	**MW-5-092016**	EPA 904.0	234946		
60228265003	**MW-6-092016**	EPA 904.0	234946		
60228265004	**MW-1-092016**	EPA 904.0	234946		
60228265005	**MW-7-092016**	EPA 904.0	234946		
60228265006	**DUP-092016**	EPA 904.0	234946		
60228265001	**MW-4-092016**	SM 2540C	447881		
60228265002	**MW-5-092016**	SM 2540C	447881		
60228265003	**MW-6-092016**	SM 2540C	447881		
60228265004	**MW-1-092016**	SM 2540C	447881		
60228265005	**MW-7-092016**	SM 2540C	447881		
60228265006	**DUP-092016**	SM 2540C	447881		
60228265001	**MW-4-092016**	SM 4500-H+B	448150		
60228265002	**MW-5-092016**	SM 4500-H+B	448294		
60228265003	**MW-6-092016**	SM 4500-H+B	448294		
60228265004	**MW-1-092016**	SM 4500-H+B	448294		
60228265005	**MW-7-092016**	SM 4500-H+B	448294		
60228265006	**DUP-092016**	SM 4500-H+B	448150		
60228265001	**MW-4-092016**	EPA 300.0	450241		
60228265001	**MW-4-092016**	EPA 300.0	450555		

REPORT OF LABORATORY ANALYSIS

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.: 60228265

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228265002	**MW-5-092016**	EPA 300.0	450241		
60228265002	**MW-5-092016**	EPA 300.0	450555		
60228265003	**MW-6-092016**	EPA 300.0	450241		
60228265003	**MW-6-092016**	EPA 300.0	450555		
60228265004	**MW-1-092016**	EPA 300.0	450241		
60228265004	**MW-1-092016**	EPA 300.0	450558		
60228265005	**MW-7-092016**	EPA 300.0	450241		
60228265005	**MW-7-092016**	EPA 300.0	450558		
60228265006	**DUP-092016**	EPA 300.0	450558		

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Sample Condition Upon Receipt

WO# : 60228265

60228265

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: CF +1.1 / CF -0.1 T-266 / T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 4.1/2.2 **Corr. Factor** CF +1.1 CF -0.1 **Corrected** 4.0/2.1

Date and initials of person examining contents: 9/21/16

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	
Cyanide water sample checks: ☐ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: AMW Date: 9/22/16

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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.:	
Project Name:	TEC CCR Groundwater
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	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300.0 Cl, Fl, SO_4	4500 H+B	2540C TDS	Radium 226	Radium 228		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-4-092016	WT	G			9/20/16	0756		4	1		3															001		60228265
2	MW-5-092016	WT	G			9/20/16	0911		4	1		3															002		2(BP1N) BB2N, BB2U
3	MW-6-092016	WT	G			9/20/16	1032		4	1		3															003		2-4 2-0
4	MW-1-092016	WT	G			9/20/16	1237		4	1		3															004		
5	MW-7-092016	WT	G			9/20/16	1336		4	1		3															005		
6																													
7																													
8																													
9																													
10																													
11																													
12	Dup-092016	WT	G			9/20/16	0700		4	1		3															006		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	/westar	9/20/16	1500	MCL/PACE	9/21/16	1640	4.0
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl							2.1

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: _____ DATE Signed (MM/DD/YY): 09/20/16

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

Chain of Custody

WO#:30196935

30196935

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Workorder: 60228265 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 9/21/2016 **Results Requested By:** 10/14/2016

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	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: BP1N	Requested Analysis: Radium 226 & 228	LAB USE ONLY
1	MW-4-092016	PS	9/20/2016 07:56	60228265001	Water	2	X	001
2	MW-5-092016	PS	9/20/2016 09:11	60228265002	Water	2	X	002
3	MW-6-092016	PS	9/20/2016 10:32	60228265003	Water	2	X	003
4	MW-1-092016	PS	9/20/2016 12:37	60228265004	Water	2	X	004
5	MW-7-092016	PS	9/20/2016 13:36	60228265005	Water	2	X	005
6	DUP-092016	PS	9/20/2016 07:00	60228265006	Water	2	X	006

Transfers	Released By	Date/Time	Received	Date/Time
1		9/20/16 1700		9-23-16 1030
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace KS

Project # 30196935

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

Tracking #: 704466538647

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

Date and Initials of person examining contents: NTV 9-23-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.	X			13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	X			Initial when completed NTV Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:			X	15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: NTV Date: 9-23-16

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

October 14, 2016

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 21, 2016. 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
Project Manager

Enclosures

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

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228263001	**MW-10-092116**	Water	09/21/16 07:36	09/21/16 16:40
60228263002	**MW-9-092116**	Water	09/21/16 09:20	09/21/16 16:40
60228263003	**MW-8-092116**	Water	09/21/16 11:06	09/21/16 16:40

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

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228263001	**MW-10-092116**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228263002	**MW-9-092116**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228263003	**MW-8-092116**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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: 447700

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228263003,60228265003

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

- MS (Lab ID: 1831373)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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: 447973

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228295001,60228342001

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

- MS (Lab ID: 1832817)
  - Mercury
- MSD (Lab ID: 1832818)
  - Mercury

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60228263

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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 GROUNDWATER
Pace Project No.: 60228263

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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-10-092116 (Lab ID: 60228263001)
- MW-8-092116 (Lab ID: 60228263003)
- MW-9-092116 (Lab ID: 60228263002)

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 GROUNDWATER
Pace Project No.: 60228263

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 14, 2016

General Information:
3 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.

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Sample: MW-10-092116 **Lab ID: 60228263001** Collected: 09/21/16 07:36 Received: 09/21/16 16:40 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	0.010	1	09/23/16 12:00	09/28/16 16:53	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 16:53	7440-41-7	
Boron, Total Recoverable	**0.25**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:53	7440-42-8	
Calcium, Total Recoverable	**172**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:53	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:53	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:53	7439-92-1	
Lithium	**0.010**	mg/L	0.010	1	09/23/16 12:00	09/28/16 16:53	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	09/23/16 12:00	10/10/16 12:47	7440-36-0	
Arsenic, Total Recoverable	**0.068**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 12:47	7440-43-9	
Cobalt, Total Recoverable	**0.0065**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:47	7440-48-4	
Molybdenum, Total Recoverable	**0.0042**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1260**	mg/L	5.0	1		09/26/16 15:57		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**232**	mg/L	20.0	20		10/13/16 19:36	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	1		10/13/16 18:54	16984-48-8	
Sulfate	**208**	mg/L	20.0	20		10/13/16 19:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Sample: MW-9-092116 **Lab ID: 60228263002** Collected: 09/21/16 09:20 Received: 09/21/16 16:40 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	**0.87**	mg/L	0.010	1	09/23/16 12:00	09/28/16 16:56	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 16:56	7440-41-7	
Boron, Total Recoverable	**0.22**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:56	7440-42-8	
Calcium, Total Recoverable	**230**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:56	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:56	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:56	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	09/23/16 12:00	09/28/16 16:56	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	09/23/16 12:00	10/10/16 12:51	7440-36-0	
Arsenic, Total Recoverable	**0.13**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:51	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 12:51	7440-43-9	
Cobalt, Total Recoverable	**0.017**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:51	7440-48-4	
Molybdenum, Total Recoverable	**0.0050**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:51	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:51	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:51	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 10:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1280**	mg/L	5.0	1		09/26/16 15:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**205**	mg/L	20.0	20		10/13/16 20:33	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		10/13/16 20:19	16984-48-8	
Sulfate	**254**	mg/L	20.0	20		10/13/16 20:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Sample: MW-8-092116 **Lab ID: 60228263003** Collected: 09/21/16 11:06 Received: 09/21/16 16:40 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	**0.058**	mg/L	0.010	1	09/23/16 12:00	09/28/16 16:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	09/28/16 16:58	7440-41-7	
Boron, Total Recoverable	**1.3**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:58	7440-42-8	
Calcium, Total Recoverable	**217**	mg/L	0.10	1	09/23/16 12:00	09/28/16 16:58	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:58	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/23/16 12:00	09/28/16 16:58	7439-92-1	
Lithium	**0.020**	mg/L	0.010	1	09/23/16 12:00	09/28/16 16:58	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	09/23/16 12:00	10/10/16 12:55	7440-36-0	
Arsenic, Total Recoverable	**0.0026**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:55	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/23/16 12:00	10/10/16 12:55	7440-43-9	
Cobalt, Total Recoverable	**0.0015**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:55	7440-48-4	
Molybdenum, Total Recoverable	**0.041**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:55	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:55	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/23/16 12:00	10/10/16 12:55	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 10:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1410**	mg/L	5.0	1		09/26/16 15:59		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		09/28/16 10:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**190**	mg/L	20.0	20		10/13/16 21:30	16887-00-6	
Fluoride	**0.26**	mg/L	0.20	1		10/13/16 21:15	16984-48-8	
Sulfate	**718**	mg/L	100	100		10/13/16 21:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 447973 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1832815 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/27/16 09:53	

LABORATORY CONTROL SAMPLE: 1832816

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0058	115	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1832817 1832818

Parameter	Units	60228295001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	0.0031	0.0032	62	63	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 1832819

Parameter	Units	60228342001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0060	119	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 447700 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1831369 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/28/16 16:44	
Beryllium	mg/L	<0.0010	0.0010	09/28/16 16:44	
Boron	mg/L	<0.10	0.10	09/28/16 16:44	
Calcium	mg/L	<0.10	0.10	09/28/16 16:44	
Chromium	mg/L	<0.0050	0.0050	09/28/16 16:44	
Lead	mg/L	<0.0050	0.0050	09/28/16 16:44	
Lithium	mg/L	<0.010	0.010	09/28/16 16:44	

LABORATORY CONTROL SAMPLE: 1831370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	101	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	1.0	100	85-115	
Calcium	mg/L	10	10.2	102	85-115	
Chromium	mg/L	1	1.0	103	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1831371 1831372

Parameter	Units	60228263003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.058	1	1	1.1	1.1	102	100	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	104	102	70-130	2	20	
Boron	mg/L	1.3	1	1	2.4	2.4	108	105	70-130	1	20	
Calcium	mg/L	217	10	10	229	228	119	116	70-130	0	20	
Chromium	mg/L	<0.0050	1	1	1.0	1.0	104	102	70-130	2	20	
Lead	mg/L	<0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.020	1	1	1.1	1.0	104	102	70-130	2	20	

MATRIX SPIKE SAMPLE: 1831373

Parameter	Units	60228265003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.034	1	1.0	100	70-130	
Beryllium	mg/L	<0.0010	1	1.0	101	70-130	
Boron	mg/L	1.1	1	2.2	111	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

MATRIX SPIKE SAMPLE: 1831373

Parameter	Units	60228265003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	276	10	307	306	70-130	M1
Chromium	mg/L	<0.0050	1	1.0	102	70-130	
Lead	mg/L	<0.0050	1	0.97	97	70-130	
Lithium	mg/L	0.017	1	1.0	103	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 447701 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1831374 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/10/16 12:29	
Arsenic	mg/L	<0.0010	0.0010	10/10/16 12:29	
Cadmium	mg/L	<0.00050	0.00050	10/10/16 12:29	
Cobalt	mg/L	<0.0010	0.0010	10/10/16 12:29	
Molybdenum	mg/L	<0.0010	0.0010	10/10/16 12:29	
Selenium	mg/L	<0.0010	0.0010	10/10/16 12:29	
Thallium	mg/L	<0.0010	0.0010	10/10/16 12:29	

LABORATORY CONTROL SAMPLE: 1831375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	99	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1831376 1831377

Parameter	Units	60228264001 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	.04	.04	0.040	0.041	99	102	70-130	2	20	
Arsenic	mg/L	<0.0010	.04	.04	0.040	0.040	99	101	70-130	2	20	
Cadmium	mg/L	<0.00050	.04	.04	0.039	0.039	98	98	70-130	1	20	
Cobalt	mg/L	<0.0010	.04	.04	0.038	0.038	94	94	70-130	0	20	
Molybdenum	mg/L	<0.0010	.04	.04	0.044	0.044	109	110	70-130	2	20	
Selenium	mg/L	<0.0010	.04	.04	0.038	0.039	96	96	70-130	0	20	
Thallium	mg/L	<0.0010	.04	.04	0.041	0.041	101	102	70-130	0	20	

MATRIX SPIKE SAMPLE: 1831378

Parameter	Units	60228265004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.040	99	70-130	
Arsenic	mg/L	<0.0010	.04	0.040	100	70-130	
Cadmium	mg/L	<0.00050	.04	0.040	99	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

MATRIX SPIKE SAMPLE: 1831378

Parameter	Units	60228265004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0054	.04	0.042	92	70-130	
Molybdenum	mg/L	<0.0010	.04	0.045	112	70-130	
Selenium	mg/L	<0.0010	.04	0.040	100	70-130	
Thallium	mg/L	<0.0010	.04	0.041	104	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 448056 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1833015 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/26/16 15:55	

LABORATORY CONTROL SAMPLE: 1833016

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1040	104	80-120	

SAMPLE DUPLICATE: 1833017

Parameter	Units	60228313001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	326	330	1	10	

SAMPLE DUPLICATE: 1833018

Parameter	Units	60228342001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	467	480	3	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 448294 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60228263001, 60228263002, 60228263003

SAMPLE DUPLICATE: 1833942

Parameter	Units	60228265002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	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

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 450241 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1842319 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/13/16 18:26	
Fluoride	mg/L	<0.20	0.20	10/13/16 18:26	
Sulfate	mg/L	<1.0	1.0	10/13/16 18:26	

LABORATORY CONTROL SAMPLE: 1842320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1842321 1842322

Parameter	Units	60228263001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	232	100	100	350	348	118	117	80-120	0	15	
Fluoride	mg/L	0.44	2.5	2.5	3.0	3.1	105	108	80-120	3	15	
Sulfate	mg/L	208	100	100	319	318	112	110	80-120	0	15	

MATRIX SPIKE SAMPLE: 1842323

Parameter	Units	60228264001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	94.6	50	147	106	80-120	
Fluoride	mg/L	0.23	2.5	2.9	105	80-120	
Sulfate	mg/L	8.6	5	13.9	106	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Sample: MW-10-092116 **Lab ID: 60228263001** Collected: 09/21/16 07:36 Received: 09/21/16 16:40 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 ± 0.422 (0.947) C:NA T:91%**	pCi/L	10/07/16 11:21	13982-63-3	
Radium-228	EPA 904.0	**1.70 ± 0.587 (0.858) C:66% T:82%**	pCi/L	10/06/16 20:02	15262-20-1	

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.: 60228263

Sample: MW-9-092116 **Lab ID: 60228263002** Collected: 09/21/16 09:20 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.999 ± 0.630 (0.271) C:NA T:89%**	pCi/L	10/07/16 11:29	13982-63-3	
Radium-228	EPA 904.0	**2.25 ± 0.669 (0.862) C:70% T:78%**	pCi/L	10/06/16 20:03	15262-20-1	

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.: 60228263

Sample: MW-8-092116 **Lab ID: 60228263003** Collected: 09/21/16 11:06 Received: 09/21/16 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0843 ± 0.548 (1.10) C:NA T:91%**	pCi/L	10/07/16 11:21	13982-63-3	
Radium-228	EPA 904.0	**0.476 ± 0.547 (1.12) C:58% T:69%**	pCi/L	10/06/16 20:03	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 234946 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1152992 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.876 ± 0.397 (0.651) C:72% T:83%	pCi/L	10/06/16 20:17	

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 - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

QC Batch: 234935 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60228263001, 60228263002, 60228263003

METHOD BLANK: 1152976 Matrix: Water
Associated Lab Samples: 60228263001, 60228263002, 60228263003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.423 (0.683) C:NA T:89%	pCi/L	10/07/16 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
9608 Loiret Blvd.
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(913)599-5665

QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60228263

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228263001	**MW-10-092116**	EPA 200.7	447700	EPA 200.7	447802
60228263002	**MW-9-092116**	EPA 200.7	447700	EPA 200.7	447802
60228263003	**MW-8-092116**	EPA 200.7	447700	EPA 200.7	447802
60228263001	**MW-10-092116**	EPA 200.8	447701	EPA 200.8	447804
60228263002	**MW-9-092116**	EPA 200.8	447701	EPA 200.8	447804
60228263003	**MW-8-092116**	EPA 200.8	447701	EPA 200.8	447804
60228263001	**MW-10-092116**	EPA 245.1	447973	EPA 245.1	448023
60228263002	**MW-9-092116**	EPA 245.1	447973	EPA 245.1	448023
60228263003	**MW-8-092116**	EPA 245.1	447973	EPA 245.1	448023
60228263001	**MW-10-092116**	EPA 903.1	234935		
60228263002	**MW-9-092116**	EPA 903.1	234935		
60228263003	**MW-8-092116**	EPA 903.1	234935		
60228263001	**MW-10-092116**	EPA 904.0	234946		
60228263002	**MW-9-092116**	EPA 904.0	234946		
60228263003	**MW-8-092116**	EPA 904.0	234946		
60228263001	**MW-10-092116**	SM 2540C	448056		
60228263002	**MW-9-092116**	SM 2540C	448056		
60228263003	**MW-8-092116**	SM 2540C	448056		
60228263001	**MW-10-092116**	SM 4500-H+B	448294		
60228263002	**MW-9-092116**	SM 4500-H+B	448294		
60228263003	**MW-8-092116**	SM 4500-H+B	448294		
60228263001	**MW-10-092116**	EPA 300.0	450241		
60228263002	**MW-9-092116**	EPA 300.0	450241		
60228263003	**MW-8-092116**	EPA 300.0	450241		

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Sample Condition Upon Receipt

WO# : 60228263

60228263

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: (CF +1.1 / CF -0.1) T-266 / T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.1 **Corr. Factor** (CF +1.1 / CF -0.1) **Corrected** 3.2

Date and initials of person examining contents: 9/9/16

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	pH
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	
Cyanide water sample checks: ☒ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: _____

REVIEWED
By HMW at 10:05 am, 9/22/16

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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.:	
Project Name:	TEC CCR Groundwater
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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-10-092116	WT	G			9/21/16	0736		4	1		3														60228263 (2) BPMW-1 001
2	MW-9-092116	WT	G			9/21/16	0920		4	1		3														BPMW-2 002
3	MW-8-092116	WT	G			9/21/16	1106		4	1		3														BPZU 003
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, B, Ca, Cr, Pb, Li	Westar	9/21/16	1230		9/21	1640	3/2	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 09/21/16

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

Chain of Custody

WO#:30196933

Pace Analytical®
www.pacelabs.com

Workorder: 60228263 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 9/21/2016 **Results Requested By:** 10/14/2016

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	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: BP1N	Requested Analysis: Radium 226 & 228	LAB USE ONLY
1	MW-10-092116	PS	9/21/2016 07:36	60228263001	Water	2	X	001
2	MW-9-092116	PS	9/21/2016 09:20	60228263002	Water	2	X	002
3	MW-8-092116	PS	9/21/2016 11:06	60228263003	Water	2	X	003
4								
5								

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	9/20/16 1700	[signature]	9-23-16 1030
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace KS Project # 30196933

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

Tracking #: 704466538647

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

Date and Initials of person examining contents: NJV 9-23-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used:	X			10.
-Pace Containers Used:	X			
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked.	X			13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	X			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed NJV Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:			X	15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: NJV Date: 9-23-16

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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 1-3

November 2016 Sampling Event Laboratory Analytical Report

The following samples are associated with the TEC BASA groundwater monitoring network:
MW-7-110116, MW-8-110116, MW-9-110116, MW-10-110116

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

December 01, 2016

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on November 02, 2016. 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
Project Manager

Enclosures

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

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231381001	**MW-4-110116**	Water	11/01/16 08:11	11/02/16 16:16
60231381002	**MW-5-110116**	Water	11/01/16 09:23	11/02/16 16:16
60231381003	**MW-6-110116**	Water	11/01/16 11:04	11/02/16 16:16
60231381004	**MW-1-110116**	Water	11/01/16 12:34	11/02/16 16:16
60231381005	**MW-7-110116**	Water	11/01/16 13:41	11/02/16 16:16
60231381006	**MW-10-110116**	Water	11/02/16 08:05	11/02/16 16:16
60231381007	**MW-9-110116**	Water	11/02/16 09:32	11/02/16 16:16
60231381008	**MW-8-110116**	Water	11/02/16 11:26	11/02/16 16:16
60231381009	**DUP-110116**	Water	11/01/16 06:00	11/02/16 16:16

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231381001	**MW-4-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381002	**MW-5-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381003	**MW-6-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381004	**MW-1-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381005	**MW-7-110116**	EPA 200.7	NDJ	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381006	**MW-10-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381007	**MW-9-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381008	**MW-8-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K
60231381009	**DUP-110116**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	ACM	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL, RAB	3	PASI-K

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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: 453405

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231381001

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

- MS (Lab ID: 1855991)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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: 455023

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231979001,60232004006

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

- MS (Lab ID: 1863357)
  - Mercury
- MS (Lab ID: 1863359)
  - Mercury
- MSD (Lab ID: 1863358)
  - Mercury

Additional Comments:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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 CCR GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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 CCR GROUNDWATER
Pace Project No.: 60231381

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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 GROUNDWATER
Pace Project No.: 60231381

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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-110116 (Lab ID: 60231381009)
- MW-1-110116 (Lab ID: 60231381004)
- MW-10-110116 (Lab ID: 60231381006)
- MW-4-110116 (Lab ID: 60231381001)
- MW-5-110116 (Lab ID: 60231381002)
- MW-6-110116 (Lab ID: 60231381003)
- MW-7-110116 (Lab ID: 60231381005)
- MW-8-110116 (Lab ID: 60231381008)
- MW-9-110116 (Lab ID: 60231381007)

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 GROUNDWATER
Pace Project No.: 60231381

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: December 01, 2016

General Information:
9 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: 456102

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231381001,60231381002

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

- MS (Lab ID: 1867496)
  - Fluoride

QC Batch: 456593

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231381001,60232075006

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

- MS (Lab ID: 1869587)
  - Chloride
- MSD (Lab ID: 1869588)
  - Chloride

Additional Comments:

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

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-4-110116 **Lab ID: 60231381001** Collected: 11/01/16 08:11 Received: 11/02/16 16:16 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	**0.12**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:41	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 18:41	7440-41-7	
Boron, Total Recoverable	**<0.10**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:41	7440-42-8	
Calcium, Total Recoverable	**180**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:41	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:41	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:41	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	11/03/16 05:45	11/07/16 18:41	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	11/05/16 10:30	11/13/16 00:17	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:17	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 00:17	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:17	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:17	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:17	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:17	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1060**	mg/L	5.0	1		11/04/16 12:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		11/08/16 16:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**251**	mg/L	25.0	25		11/28/16 13:20	16887-00-6	M1
Fluoride	**0.23**	mg/L	0.20	1		11/22/16 13:20	16984-48-8	M1
Sulfate	**128**	mg/L	25.0	25		11/28/16 13:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-5-110116 **Lab ID: 60231381002** Collected: 11/01/16 09:23 Received: 11/02/16 16:16 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	**0.030**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:48	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 18:48	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:48	7440-42-8	
Calcium, Total Recoverable	**316**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:48	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:48	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:48	7439-92-1	
Lithium	**0.022**	mg/L	0.010	1	11/03/16 05:45	11/07/16 18:48	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	11/05/16 10:30	11/13/16 00:40	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:40	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 00:40	7440-43-9	
Cobalt, Total Recoverable	**0.0021**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:40	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:40	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:40	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:40	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1810**	mg/L	5.0	1		11/04/16 12:05		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		11/08/16 16:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**45.3**	mg/L	5.0	5		11/28/16 14:06	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	1		11/22/16 14:06	16984-48-8	
Sulfate	**1020**	mg/L	100	100		11/28/16 14:22	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 GROUNDWATER
Pace Project No.: 60231381

Sample: MW-6-110116 **Lab ID: 60231381003** Collected: 11/01/16 11:04 Received: 11/02/16 16:16 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	**0.029**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:50	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 18:50	7440-41-7	
Boron, Total Recoverable	**1.1**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:50	7440-42-8	
Calcium, Total Recoverable	**311**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:50	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	11/03/16 05:45	11/07/16 18:50	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	11/05/16 10:30	11/13/16 00:53	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 00:53	7440-43-9	
Cobalt, Total Recoverable	**0.0031**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:53	7440-48-4	
Molybdenum, Total Recoverable	**0.0012**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:53	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:53	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:53	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1690**	mg/L	5.0	1		11/04/16 12:05		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/08/16 16:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**59.4**	mg/L	10.0	10		11/28/16 14:37	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		11/22/16 14:37	16984-48-8	
Sulfate	**975**	mg/L	100	100		11/28/16 14:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-1-110116 **Lab ID: 60231381004** Collected: 11/01/16 12:34 Received: 11/02/16 16:16 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	**0.20**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:57	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 18:57	7440-41-7	
Boron, Total Recoverable	**0.31**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:57	7440-42-8	
Calcium, Total Recoverable	**171**	mg/L	0.10	1	11/03/16 05:45	11/07/16 18:57	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:57	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 18:57	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	11/03/16 05:45	11/07/16 18:57	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	11/05/16 10:30	11/13/16 00:58	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:58	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 00:58	7440-43-9	
Cobalt, Total Recoverable	**0.0086**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:58	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:58	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:58	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 00:58	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**925**	mg/L	5.0	1		11/04/16 12:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/09/16 14:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**29.6**	mg/L	5.0	5		11/28/16 15:39	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		11/22/16 14:53	16984-48-8	
Sulfate	**452**	mg/L	50.0	50		11/28/16 15:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-7-110116 **Lab ID: 60231381005** Collected: 11/01/16 13:41 Received: 11/02/16 16:16 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	**0.074**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:00	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 19:00	7440-41-7	
Boron, Total Recoverable	**0.73**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:00	7440-42-8	
Calcium, Total Recoverable	**148**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:00	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:00	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:00	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	11/03/16 05:45	11/07/16 19:00	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	11/05/16 10:30	11/13/16 01:02	7440-36-0	
Arsenic, Total Recoverable	**0.0014**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:02	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 01:02	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:02	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:02	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:02	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:02	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1100**	mg/L	5.0	1		11/04/16 12:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/09/16 14:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**193**	mg/L	25.0	25		11/28/16 16:10	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	1		11/22/16 15:08	16984-48-8	
Sulfate	**459**	mg/L	25.0	25		11/28/16 16:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-10-110116 **Lab ID: 60231381006** Collected: 11/02/16 08:05 Received: 11/02/16 16:16 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	11/03/16 05:45	11/07/16 19:02	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 19:02	7440-41-7	
Boron, Total Recoverable	**0.25**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:02	7440-42-8	
Calcium, Total Recoverable	**182**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:02	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:02	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:02	7439-92-1	
Lithium	**0.011**	mg/L	0.010	1	11/03/16 05:45	11/07/16 19:02	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	11/05/16 10:30	11/13/16 01:06	7440-36-0	
Arsenic, Total Recoverable	**0.065**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:06	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 01:06	7440-43-9	
Cobalt, Total Recoverable	**0.0043**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:06	7440-48-4	
Molybdenum, Total Recoverable	**0.0034**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:06	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:06	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:06	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1220**	mg/L	5.0	1		11/04/16 12:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		11/09/16 14:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**229**	mg/L	25.0	25		11/28/16 16:40	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		11/22/16 15:23	16984-48-8	
Sulfate	**177**	mg/L	25.0	25		11/28/16 16:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-9-110116 **Lab ID: 60231381007** Collected: 11/02/16 09:32 Received: 11/02/16 16:16 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	11/03/16 05:45	11/07/16 19:04	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 19:04	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:04	7440-42-8	
Calcium, Total Recoverable	**232**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:04	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:04	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:04	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	11/03/16 05:45	11/07/16 19:04	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	11/05/16 10:30	11/13/16 01:11	7440-36-0	
Arsenic, Total Recoverable	**0.14**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:11	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 01:11	7440-43-9	
Cobalt, Total Recoverable	**0.013**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:11	7440-48-4	
Molybdenum, Total Recoverable	**0.0029**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:11	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:11	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:11	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1230**	mg/L	5.0	1		11/04/16 12:15		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		11/09/16 16:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**187**	mg/L	20.0	20		11/28/16 16:56	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		11/22/16 15:39	16984-48-8	
Sulfate	**124**	mg/L	20.0	20		11/28/16 16:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-8-110116 **Lab ID: 60231381008** Collected: 11/02/16 11:26 Received: 11/02/16 16:16 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	**0.058**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:07	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 19:07	7440-41-7	
Boron, Total Recoverable	**1.4**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:07	7440-42-8	
Calcium, Total Recoverable	**214**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:07	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:07	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:07	7439-92-1	
Lithium	**0.022**	mg/L	0.010	1	11/03/16 05:45	11/07/16 19:07	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	11/05/16 10:30	11/13/16 01:15	7440-36-0	
Arsenic, Total Recoverable	**0.0020**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:15	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 01:15	7440-43-9	
Cobalt, Total Recoverable	**0.0015**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:15	7440-48-4	
Molybdenum, Total Recoverable	**0.042**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:15	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:15	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:15	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:23	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1390**	mg/L	5.0	1		11/04/16 12:16		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		11/09/16 16:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**185**	mg/L	25.0	25		11/28/16 17:11	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		11/22/16 16:25	16984-48-8	
Sulfate	**785**	mg/L	100	100		11/28/16 17:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: DUP-110116 **Lab ID: 60231381009** Collected: 11/01/16 06:00 Received: 11/02/16 16:16 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	**0.19**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:09	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/03/16 05:45	11/07/16 19:09	7440-41-7	
Boron, Total Recoverable	**0.29**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:09	7440-42-8	
Calcium, Total Recoverable	**167**	mg/L	0.10	1	11/03/16 05:45	11/07/16 19:09	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:09	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/03/16 05:45	11/07/16 19:09	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	11/03/16 05:45	11/07/16 19:09	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	11/05/16 10:30	11/13/16 01:20	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/05/16 10:30	11/13/16 01:20	7440-43-9	
Cobalt, Total Recoverable	**0.0082**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:20	7440-48-4	
Molybdenum, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:20	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:20	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/05/16 10:30	11/13/16 01:20	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/15/16 08:30	11/16/16 12:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**927**	mg/L	5.0	1		11/04/16 12:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		11/08/16 16:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**30.4**	mg/L	5.0	5		11/28/16 17:42	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		11/22/16 16:40	16984-48-8	
Sulfate	**368**	mg/L	50.0	50		11/28/16 17:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 455023 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1863355 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	11/16/16 11:59	

LABORATORY CONTROL SAMPLE: 1863356

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0051	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1863357 1863358

Parameter	Units	60231979001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	<0.00020	<0.00020	3	1	70-130		20	M1

MATRIX SPIKE SAMPLE: 1863359

Parameter	Units	60232004006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.20 ug/L	.005	0.0022	45	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 453405 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1855989 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	11/07/16 18:39	
Beryllium	mg/L	<0.0010	0.0010	11/07/16 18:39	
Boron	mg/L	<0.10	0.10	11/07/16 18:39	
Calcium	mg/L	<0.10	0.10	11/07/16 18:39	
Chromium	mg/L	<0.0050	0.0050	11/07/16 18:39	
Lead	mg/L	<0.0050	0.0050	11/07/16 18:39	
Lithium	mg/L	<0.010	0.010	11/07/16 18:39	

LABORATORY CONTROL SAMPLE: 1855990

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	100	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10.3	103	85-115	
Chromium	mg/L	1	1.0	103	85-115	
Lead	mg/L	1	1.0	105	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1855991 1855992

Parameter	Units	60231381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.12	1	1	1.1	1.1	100	101	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	101	101	70-130	1	20	
Boron	mg/L	<0.10	1	1	1.1	1.1	102	103	70-130	1	20	
Calcium	mg/L	180	10	10	186	190	60	99	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	1.0	1.0	101	102	70-130	1	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	100	100	70-130	0	20	
Lithium	mg/L	<0.010	1	1	1.0	1.0	102	102	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 453594 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1856969 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	11/12/16 22:57	
Arsenic	mg/L	<0.0010	0.0010	11/12/16 22:57	
Cadmium	mg/L	<0.00050	0.00050	11/12/16 22:57	
Cobalt	mg/L	<0.0010	0.0010	11/12/16 22:57	
Molybdenum	mg/L	<0.0010	0.0010	11/12/16 22:57	
Selenium	mg/L	<0.0010	0.0010	11/12/16 22:57	
Thallium	mg/L	<0.0010	0.0010	11/12/16 22:57	

LABORATORY CONTROL SAMPLE: 1856970

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	98	85-115	
Arsenic	mg/L	.04	0.039	97	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.040	99	85-115	
Molybdenum	mg/L	.04	0.041	103	85-115	
Selenium	mg/L	.04	0.038	94	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1856971 1856972

Parameter	Units	60231472001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.76J ug/L	.04	.04	0.039	0.040	97	97	70-130	0	20	
Arsenic	mg/L	0.43J ug/L	.04	.04	0.039	0.039	95	96	70-130	1	20	
Cadmium	mg/L	0.053J ug/L	.04	.04	0.038	0.038	95	96	70-130	0	20	
Cobalt	mg/L	<0.50 ug/L	.04	.04	0.039	0.039	97	97	70-130	0	20	
Molybdenum	mg/L	2.9 ug/L	.04	.04	0.045	0.045	106	106	70-130	1	20	
Selenium	mg/L	0.37J ug/L	.04	.04	0.036	0.037	89	91	70-130	2	20	
Thallium	mg/L	1.5 ug/L	.04	.04	0.041	0.041	99	99	70-130	0	20	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

MATRIX SPIKE SAMPLE: 1856973

Parameter	Units	60231472006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.11J ug/L	.04	0.040	99	70-130	
Arsenic	mg/L	0.16J ug/L	.04	0.039	97	70-130	
Cadmium	mg/L	4.8 ug/L	.04	0.044	98	70-130	
Cobalt	mg/L	2.9 ug/L	.04	0.042	98	70-130	
Molybdenum	mg/L	0.48J ug/L	.04	0.043	106	70-130	
Selenium	mg/L	<0.18 ug/L	.04	0.036	89	70-130	
Thallium	mg/L	<0.50 ug/L	.04	0.040	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 453479 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1856318 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	11/04/16 12:02	

LABORATORY CONTROL SAMPLE: 1856319

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1030	103	80-120	

SAMPLE DUPLICATE: 1856320

Parameter	Units	60231381001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1060	1050	1	10	

SAMPLE DUPLICATE: 1856321

Parameter	Units	60231419005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	879	877	0	10	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 454034 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381009

SAMPLE DUPLICATE: 1859039

Parameter	Units	60231176002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	6.9	0	5	H6

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 454181 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60231381004, 60231381005, 60231381006

SAMPLE DUPLICATE: 1859730

Parameter	Units	60231192001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 454194
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60231381007, 60231381008

SAMPLE DUPLICATE: 1859816

Parameter	Units	60231381007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.8	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 456102 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1867494 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	11/22/16 10:01	

LABORATORY CONTROL SAMPLE: 1867495

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1867496 1867497

Parameter	Units	60231381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.23	2.5	2.5	3.3	3.2	123	118	80-120	3	15	M1

MATRIX SPIKE SAMPLE: 1867498

Parameter	Units	60231381002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.33	2.5	3.2	114	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 456593 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1869585 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	11/28/16 10:15	
Sulfate	mg/L	<1.0	1.0	11/28/16 10:15	

LABORATORY CONTROL SAMPLE: 1869586

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1869587 1869588

Parameter	Units	60231381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	251	125	125	404	405	122	123	80-120	0	15	M1
Sulfate	mg/L	128	125	125	269	270	113	113	80-120	0	15	

MATRIX SPIKE SAMPLE: 1869589

Parameter	Units	60232075006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.1	25	31.2	105	80-120	
Sulfate	mg/L	29.0	25	57.0	112	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-4-110116 **Lab ID: 60231381001** Collected: 11/01/16 08:11 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.436 ± 0.408 (0.578) C:NA T:83%**	pCi/L	11/29/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**1.67 ± 0.718 (1.23) C:60% T:79%**	pCi/L	11/30/16 15:27	15262-20-1	
Total Radium	Total Radium Calculation	**2.11 ± 1.13 (1.81)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-5-110116 **Lab ID: 60231381002** Collected: 11/01/16 09:23 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.249 ± 0.386 (0.669) C:NA T:89%**	pCi/L	11/29/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**1.23 ± 0.512 (0.843) C:68% T:87%**	pCi/L	11/30/16 15:27	15262-20-1	
Total Radium	Total Radium Calculation	**1.48 ± 0.898 (1.51)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-6-110116 **Lab ID: 60231381003** Collected: 11/01/16 11:04 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.272 ± 0.284 (0.400) C:NA T:95%**	pCi/L	11/29/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**0.416 ± 0.471 (0.978) C:58% T:76%**	pCi/L	11/30/16 15:27	15262-20-1	
Total Radium	Total Radium Calculation	**0.688 ± 0.755 (1.38)**	pCi/L	12/01/16 10:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-1-110116 **Lab ID: 60231381004** Collected: 11/01/16 12:34 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.124 ± 0.282 (0.455) C:NA T:83%**	pCi/L	11/29/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**0.873 ± 0.460 (0.814) C:64% T:81%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**0.997 ± 0.742 (1.27)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-7-110116 **Lab ID: 60231381005** Collected: 11/01/16 13:41 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.129 ± 0.296 (0.476) C:NA T:89%**	pCi/L	11/29/16 12:30	13982-63-3	
Radium-228	EPA 904.0	**0.325 ± 0.333 (0.681) C:71% T:82%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**0.454 ± 0.629 (1.16)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-10-110116 **Lab ID: 60231381006** Collected: 11/02/16 08:05 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.387 ± 0.475 (0.775) C:NA T:89%**	pCi/L	11/29/16 12:47	13982-63-3	
Radium-228	EPA 904.0	**1.69 ± 0.611 (0.905) C:66% T:76%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**2.08 ± 1.09 (1.68)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-9-110116 **Lab ID: 60231381007** Collected: 11/02/16 09:32 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.555 ± 0.350 (0.150) C:NA T:96%**	pCi/L	11/29/16 12:47	13982-63-3	
Radium-228	EPA 904.0	**1.02 ± 0.475 (0.796) C:70% T:71%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**1.58 ± 0.825 (0.946)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: MW-8-110116 **Lab ID: 60231381008** Collected: 11/02/16 11:26 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.238 ± 0.273 (0.161) C:NA T:90%**	pCi/L	11/29/16 12:47	13982-63-3	
Radium-228	EPA 904.0	**1.07 ± 0.510 (0.879) C:61% T:84%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**1.31 ± 0.783 (1.04)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Sample: DUP-110116 **Lab ID: 60231381009** Collected: 11/01/16 06:00 Received: 11/02/16 16:16 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0711 ± 0.369 (0.766) C:NA T:77%**	pCi/L	11/29/16 12:47	13982-63-3	
Radium-228	EPA 904.0	**0.524 ± 0.387 (0.756) C:75% T:79%**	pCi/L	11/30/16 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**0.595 ± 0.756 (1.52)**	pCi/L	12/01/16 10:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 240838 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1183606 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.531 ± 0.391 (0.759) C:67% T:82%	pCi/L	11/30/16 15:26	

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 CCR GROUNDWATER
Pace Project No.: 60231381

QC Batch: 240835 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

METHOD BLANK: 1183599 Matrix: Water
Associated Lab Samples: 60231381001, 60231381002, 60231381003, 60231381004, 60231381005, 60231381006, 60231381007, 60231381008, 60231381009

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.296 (0.663) C:NA T:84%	pCi/L	11/29/16 12:00	

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 CCR GROUNDWATER
Pace Project No.: 60231381

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231381001	**MW-4-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381002	**MW-5-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381003	**MW-6-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381004	**MW-1-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381005	**MW-7-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381006	**MW-10-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381007	**MW-9-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381008	**MW-8-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381009	**DUP-110116**	EPA 200.7	453405	EPA 200.7	453458
60231381001	**MW-4-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381002	**MW-5-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381003	**MW-6-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381004	**MW-1-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381005	**MW-7-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381006	**MW-10-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381007	**MW-9-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381008	**MW-8-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381009	**DUP-110116**	EPA 200.8	453594	EPA 200.8	453693
60231381001	**MW-4-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381002	**MW-5-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381003	**MW-6-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381004	**MW-1-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381005	**MW-7-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381006	**MW-10-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381007	**MW-9-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381008	**MW-8-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381009	**DUP-110116**	EPA 245.1	455023	EPA 245.1	455073
60231381001	**MW-4-110116**	EPA 903.1	240835		
60231381002	**MW-5-110116**	EPA 903.1	240835		
60231381003	**MW-6-110116**	EPA 903.1	240835		
60231381004	**MW-1-110116**	EPA 903.1	240835		
60231381005	**MW-7-110116**	EPA 903.1	240835		
60231381006	**MW-10-110116**	EPA 903.1	240835		
60231381007	**MW-9-110116**	EPA 903.1	240835		
60231381008	**MW-8-110116**	EPA 903.1	240835		
60231381009	**DUP-110116**	EPA 903.1	240835		
60231381001	**MW-4-110116**	EPA 904.0	240838		
60231381002	**MW-5-110116**	EPA 904.0	240838		
60231381003	**MW-6-110116**	EPA 904.0	240838		
60231381004	**MW-1-110116**	EPA 904.0	240838		
60231381005	**MW-7-110116**	EPA 904.0	240838		
60231381006	**MW-10-110116**	EPA 904.0	240838		
60231381007	**MW-9-110116**	EPA 904.0	240838		
60231381008	**MW-8-110116**	EPA 904.0	240838		
60231381009	**DUP-110116**	EPA 904.0	240838		
60231381001	**MW-4-110116**	Total Radium Calculation	241944		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231381002	**MW-5-110116**	Total Radium Calculation	241944		
60231381003	**MW-6-110116**	Total Radium Calculation	241944		
60231381004	**MW-1-110116**	Total Radium Calculation	241944		
60231381005	**MW-7-110116**	Total Radium Calculation	241944		
60231381006	**MW-10-110116**	Total Radium Calculation	241944		
60231381007	**MW-9-110116**	Total Radium Calculation	241944		
60231381008	**MW-8-110116**	Total Radium Calculation	241944		
60231381009	**DUP-110116**	Total Radium Calculation	241944		
60231381001	**MW-4-110116**	SM 2540C	453479		
60231381002	**MW-5-110116**	SM 2540C	453479		
60231381003	**MW-6-110116**	SM 2540C	453479		
60231381004	**MW-1-110116**	SM 2540C	453479		
60231381005	**MW-7-110116**	SM 2540C	453479		
60231381006	**MW-10-110116**	SM 2540C	453479		
60231381007	**MW-9-110116**	SM 2540C	453479		
60231381008	**MW-8-110116**	SM 2540C	453479		
60231381009	**DUP-110116**	SM 2540C	453479		
60231381001	**MW-4-110116**	SM 4500-H+B	454034		
60231381002	**MW-5-110116**	SM 4500-H+B	454034		
60231381003	**MW-6-110116**	SM 4500-H+B	454034		
60231381004	**MW-1-110116**	SM 4500-H+B	454181		
60231381005	**MW-7-110116**	SM 4500-H+B	454181		
60231381006	**MW-10-110116**	SM 4500-H+B	454181		
60231381007	**MW-9-110116**	SM 4500-H+B	454194		
60231381008	**MW-8-110116**	SM 4500-H+B	454194		
60231381009	**DUP-110116**	SM 4500-H+B	454034		
60231381001	**MW-4-110116**	EPA 300.0	456102		
60231381001	**MW-4-110116**	EPA 300.0	456593		
60231381002	**MW-5-110116**	EPA 300.0	456102		
60231381002	**MW-5-110116**	EPA 300.0	456593		
60231381003	**MW-6-110116**	EPA 300.0	456102		
60231381003	**MW-6-110116**	EPA 300.0	456593		
60231381004	**MW-1-110116**	EPA 300.0	456102		
60231381004	**MW-1-110116**	EPA 300.0	456593		
60231381005	**MW-7-110116**	EPA 300.0	456102		
60231381005	**MW-7-110116**	EPA 300.0	456593		
60231381006	**MW-10-110116**	EPA 300.0	456102		
60231381006	**MW-10-110116**	EPA 300.0	456593		
60231381007	**MW-9-110116**	EPA 300.0	456102		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60231381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231381007	**MW-9-110116**	EPA 300.0	456593		
60231381008	**MW-8-110116**	EPA 300.0	456102		
60231381008	**MW-8-110116**	EPA 300.0	456593		
60231381009	**DUP-110116**	EPA 300.0	456102		
60231381009	**DUP-110116**	EPA 300.0	456593		

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Sample Condition Upon Receipt

WO# : 60231381

60231381

Client Name: WStar 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: CF +0.7 T-266 / CF -0.5 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 0.7/2.9 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 1.4/3.6

Date and initials of person examining contents: PV to PV 11/3/16

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	pH
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	
Cyanide water sample checks: ☑ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: AMW Date: 11/3/16

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: 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.:	
Project Name:	TEC CCR Groundwater
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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-4-110116	WT	G			11/1/16	0811		4	1		3														60231381
2	MW-5-110116	WT	G			11/1/16	0923		4	1		3														
3	MW-6-110116	WT	G			11/1/16	1104		4	1		3														
4	MW-1-110116	WT	G			11/1/16	1234		4	1		3														
5	MW-7-110116	WT	G			11/1/16	1341		4	1		3														
6	MW-10-110216	WT	G			11/2/16	0805		4	1		3														
7	MW-9-110216	WT	G			11/2/16	0932		4	1		3														
8	MW-8-110216	WT	G			11/2/16	1126		4	1		3														
9																										
10																										
11																										
12	DUP-110116	WT	G			11/1/16	0600		4	1		3														

Requested Analysis Filtered (Y/N)

1BP2U 1BP2N 2BP1N
001 002 003 004 005 006 007 008 009

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / WESTAR	11/02/16	1300	[signature] PACE	~~11/3~~ 11/2/16	1616	1-4	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl							3-6	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:	[signature]	DATE Signed (MM/DD/YY): 11/02/16				

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

ATTACHMENT 1-4

December 2016 Sampling Event Laboratory Analytical Report

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

January 17, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on December 14, 2016. 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
Project Manager

Enclosures

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

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60234341001	**MW-7-121316**	Water	12/13/16 15:56	12/14/16 16:10
60234341002	**MW-10-121316**	Water	12/13/16 09:05	12/14/16 16:10
60234341003	**MW-8-121316**	Water	12/13/16 11:26	12/14/16 16:10

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234341001	**MW-7-121316**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60234341002	**MW-10-121316**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60234341003	**MW-8-121316**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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: 459902

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60234340002,60234594003

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

- MS (Lab ID: 1882846)
  - Calcium
- MSD (Lab ID: 1882847)
  - Calcium

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.: 60234341

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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
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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60234341

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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.: 60234341

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60234341

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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:

Pace Analytical Services, LLC
9608 Loiret Blvd.
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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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-10-121316 (Lab ID: 60234341002)
- MW-7-121316 (Lab ID: 60234341001)
- MW-8-121316 (Lab ID: 60234341003)

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 CCR GROUNDWATER
Pace Project No.: 60234341

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: January 17, 2017

General Information:
3 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 CCR GROUNDWATER
Pace Project No.: 60234341

Sample: MW-7-121316 **Lab ID: 60234341001** Collected: 12/13/16 15:56 Received: 12/14/16 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	**0.073**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:47	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 18:47	7440-41-7	
Boron, Total Recoverable	**0.71**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:47	7440-42-8	
Calcium, Total Recoverable	**147**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:47	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:47	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:47	7439-92-1	
Lithium	**0.025**	mg/L	0.010	1	12/21/16 15:15	12/28/16 18:47	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	12/21/16 15:15	12/29/16 15:36	7440-36-0	
Arsenic, Total Recoverable	**0.0015**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:36	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 15:36	7440-43-9	
Cobalt, Total Recoverable	**0.0013**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:36	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:36	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:36	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:36	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 09:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1110**	mg/L	5.0	1		12/16/16 10:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		12/23/16 13:32		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**201**	mg/L	20.0	20		01/04/17 18:15	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		01/03/17 17:38	16984-48-8	
Sulfate	**454**	mg/L	50.0	50		01/04/17 18:29	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 GROUNDWATER
Pace Project No.: 60234341

Sample: MW-10-121316 **Lab ID: 60234341002** Collected: 12/13/16 09:05 Received: 12/14/16 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	**0.31**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:51	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 18:51	7440-41-7	
Boron, Total Recoverable	**0.23**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:51	7440-42-8	
Calcium, Total Recoverable	**169**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:51	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:51	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:51	7439-92-1	
Lithium	**0.010**	mg/L	0.010	1	12/21/16 15:15	12/28/16 18:51	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	12/21/16 15:15	12/29/16 15:49	7440-36-0	
Arsenic, Total Recoverable	**0.071**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:49	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 15:49	7440-43-9	
Cobalt, Total Recoverable	**0.0032**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:49	7440-48-4	
Molybdenum, Total Recoverable	**0.0037**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:49	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:49	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:49	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 09:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1150**	mg/L	5.0	1		12/16/16 10:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		12/23/16 13:32		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**234**	mg/L	20.0	20		01/04/17 18:43	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		01/03/17 17:54	16984-48-8	
Sulfate	**167**	mg/L	20.0	20		01/04/17 18:43	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 GROUNDWATER
Pace Project No.: 60234341

Sample: MW-8-121316 **Lab ID: 60234341003** Collected: 12/13/16 11:26 Received: 12/14/16 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	**0.057**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:55	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 18:55	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:55	7440-42-8	
Calcium, Total Recoverable	**188**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:55	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:55	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:55	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	12/21/16 15:15	12/28/16 18:55	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	12/21/16 15:15	12/29/16 15:53	7440-36-0	
Arsenic, Total Recoverable	**0.0018**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 15:53	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:53	7440-48-4	
Molybdenum, Total Recoverable	**0.036**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:53	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:53	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:53	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 09:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1300**	mg/L	5.0	1		12/16/16 10:28		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		12/23/16 13:32		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**188**	mg/L	20.0	20		01/04/17 18:57	16887-00-6	
Fluoride	**0.27**	mg/L	0.20	1		01/03/17 18:09	16984-48-8	
Sulfate	**714**	mg/L	100	100		01/04/17 19:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 459521 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1881503 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	12/20/16 09:20	

LABORATORY CONTROL SAMPLE: 1881504

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0048	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1881505 1881506

Parameter	Units	60234342001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	0.0041	0.0036	81	73	70-130	11	20	

MATRIX SPIKE SAMPLE: 1881507

Parameter	Units	60234340001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	.005	0.0049	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 459902 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1882844 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	12/28/16 18:10	
Beryllium	mg/L	<0.0010	0.0010	12/28/16 18:10	
Boron	mg/L	<0.10	0.10	12/28/16 18:10	
Calcium	mg/L	<0.10	0.10	12/28/16 18:10	
Chromium	mg/L	<0.0050	0.0050	12/28/16 18:10	
Lead	mg/L	<0.0050	0.0050	12/28/16 18:10	
Lithium	mg/L	<0.010	0.010	12/28/16 18:10	

LABORATORY CONTROL SAMPLE: 1882845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.96	96	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.94	94	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882846 1882847

Parameter	Units	60234340002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.028	1	1	1.0	1.0	98	99	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	103	70-130	1	20	
Boron	mg/L	1.0	1	1	1.9	2.0	92	98	70-130	3	20	
Calcium	mg/L	303	10	10	297	303	-60	-3	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	0.93	0.97	93	97	70-130	4	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	99	101	70-130	2	20	
Lithium	mg/L	0.024	1	1	1.1	1.1	104	106	70-130	2	20	

MATRIX SPIKE SAMPLE: 1882848

Parameter	Units	60234594003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.15	1	1.1	97	70-130	
Beryllium	mg/L	<0.0010	1	1.0	102	70-130	
Boron	mg/L	0.14	1	1.1	95	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

MATRIX SPIKE SAMPLE: 1882848

Parameter	Units	60234594003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	164	10	172	85	70-130	
Chromium	mg/L	<0.0050	1	0.93	93	70-130	
Lead	mg/L	<0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.018	1	1.1	104	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 459903 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1882849 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/29/16 14:56	
Arsenic	mg/L	<0.0010	0.0010	12/29/16 14:56	
Cadmium	mg/L	<0.00050	0.00050	12/29/16 14:56	
Cobalt	mg/L	<0.0010	0.0010	12/29/16 14:56	
Molybdenum	mg/L	<0.0010	0.0010	12/29/16 14:56	
Selenium	mg/L	<0.0010	0.0010	12/29/16 14:56	
Thallium	mg/L	<0.0010	0.0010	12/29/16 14:56	

LABORATORY CONTROL SAMPLE: 1882850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.038	95	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.039	96	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.037	93	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882851 1882852

Parameter	Units	60234340003 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	.04	.04	0.039	0.039	97	97	70-130	0	20	
Arsenic	mg/L	<0.0010	.04	.04	0.037	0.037	93	92	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.035	0.035	86	87	70-130	0	20	
Cobalt	mg/L	0.0029	.04	.04	0.038	0.038	87	87	70-130	0	20	
Molybdenum	mg/L	<0.0010	.04	.04	0.041	0.042	101	102	70-130	2	20	
Selenium	mg/L	<0.0010	.04	.04	0.035	0.035	87	88	70-130	2	20	
Thallium	mg/L	<0.0010	.04	.04	0.037	0.037	93	93	70-130	0	20	

MATRIX SPIKE SAMPLE: 1882853

Parameter	Units	60234594002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	97	70-130	
Arsenic	mg/L	<0.0010	.04	0.037	91	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	90	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

MATRIX SPIKE SAMPLE: 1882853

Parameter	Units	60234594002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.036	89	70-130	
Molybdenum	mg/L	0.0037	.04	0.044	102	70-130	
Selenium	mg/L	<0.0010	.04	0.034	84	70-130	
Thallium	mg/L	<0.0010	.04	0.038	95	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 459249 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1880227 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

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

LABORATORY CONTROL SAMPLE: 1880228

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	976	98	80-120	

SAMPLE DUPLICATE: 1880229

Parameter	Units	60234204001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1370	1370	0	10	

SAMPLE DUPLICATE: 1880230

Parameter	Units	60234341002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1150	1170	2	10	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 459833 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60234341001, 60234341002, 60234341003

SAMPLE DUPLICATE: 1882586

Parameter	Units	60234308002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 460944 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1886766 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	01/03/17 08:57	

LABORATORY CONTROL SAMPLE: 1886767

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1886768 1886769

Parameter	Units	60234718001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.25	2.5	2.5	2.7	2.7	99	97	80-120	2	15	

MATRIX SPIKE SAMPLE: 1886770

Parameter	Units	60234718005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.21	2.5	2.7	100	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 461087 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1887361 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	01/04/17 14:19	
Sulfate	mg/L	<1.0	1.0	01/04/17 14:19	

LABORATORY CONTROL SAMPLE: 1887362

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1887363 1887364

Parameter	Units	60234718008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.0	25	25	47.4	47.4	114	114	80-120	0	15	
Sulfate	mg/L	37.0	25	25	65.2	65.4	113	114	80-120	0	15	

MATRIX SPIKE SAMPLE: 1887365

Parameter	Units	60234718009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	0.77J	5	6.4	112	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Sample: MW-7-121316 **Lab ID: 60234341001** Collected: 12/13/16 15:56 Received: 12/14/16 16:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.275 ± 0.427 (0.739) C:NA T:95%**	pCi/L	01/15/17 18:45	13982-63-3	
Radium-228	EPA 904.0	**0.222 ± 0.319 (0.683) C:68% T:84%**	pCi/L	01/15/17 17:06	15262-20-1	
Total Radium	Total Radium Calculation	**0.497 ± 0.746 (1.42)**	pCi/L	01/16/17 15:06	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Sample: MW-10-121316 **Lab ID: 60234341002** Collected: 12/13/16 09:05 Received: 12/14/16 16:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.146 ± 0.495 (0.956) C:NA T:84%**	pCi/L	01/15/17 18:45	13982-63-3	
Radium-228	EPA 904.0	**2.10 ± 0.636 (0.769) C:71% T:85%**	pCi/L	01/15/17 17:06	15262-20-1	
Total Radium	Total Radium Calculation	**2.25 ± 1.13 (1.73)**	pCi/L	01/16/17 15:06	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Sample: MW-8-121316 **Lab ID: 60234341003** Collected: 12/13/16 11:26 Received: 12/14/16 16:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.150 ± 0.415 (0.806) C:NA T:88%**	pCi/L	01/15/17 18:45	13982-63-3	
Radium-228	EPA 904.0	**0.687 ± 0.428 (0.802) C:70% T:87%**	pCi/L	01/15/17 17:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.837 ± 0.843 (1.61)**	pCi/L	01/16/17 15:06	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 245349 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1207402 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.156 ± 0.357 (0.574) C:NA T:79%	pCi/L	01/15/17 17:33	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

QC Batch: 245350 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60234341001, 60234341002, 60234341003

METHOD BLANK: 1207404 Matrix: Water
Associated Lab Samples: 60234341001, 60234341002, 60234341003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.461 ± 0.371 (0.733) C:71% T:87%	pCi/L	01/15/17 17:03	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234341

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234341001	**MW-7-121316**	EPA 200.7	459902	EPA 200.7	459945
60234341002	**MW-10-121316**	EPA 200.7	459902	EPA 200.7	459945
60234341003	**MW-8-121316**	EPA 200.7	459902	EPA 200.7	459945
60234341001	**MW-7-121316**	EPA 200.8	459903	EPA 200.8	459947
60234341002	**MW-10-121316**	EPA 200.8	459903	EPA 200.8	459947
60234341003	**MW-8-121316**	EPA 200.8	459903	EPA 200.8	459947
60234341001	**MW-7-121316**	EPA 245.1	459521	EPA 245.1	459549
60234341002	**MW-10-121316**	EPA 245.1	459521	EPA 245.1	459549
60234341003	**MW-8-121316**	EPA 245.1	459521	EPA 245.1	459549
60234341001	**MW-7-121316**	EPA 903.1	245349		
60234341002	**MW-10-121316**	EPA 903.1	245349		
60234341003	**MW-8-121316**	EPA 903.1	245349		
60234341001	**MW-7-121316**	EPA 904.0	245350		
60234341002	**MW-10-121316**	EPA 904.0	245350		
60234341003	**MW-8-121316**	EPA 904.0	245350		
60234341001	**MW-7-121316**	Total Radium Calculation	246590		
60234341002	**MW-10-121316**	Total Radium Calculation	246590		
60234341003	**MW-8-121316**	Total Radium Calculation	246590		
60234341001	**MW-7-121316**	SM 2540C	459249		
60234341002	**MW-10-121316**	SM 2540C	459249		
60234341003	**MW-8-121316**	SM 2540C	459249		
60234341001	**MW-7-121316**	SM 4500-H+B	459833		
60234341002	**MW-10-121316**	SM 4500-H+B	459833		
60234341003	**MW-8-121316**	SM 4500-H+B	459833		
60234341001	**MW-7-121316**	EPA 300.0	460944		
60234341001	**MW-7-121316**	EPA 300.0	461087		
60234341002	**MW-10-121316**	EPA 300.0	460944		
60234341002	**MW-10-121316**	EPA 300.0	461087		
60234341003	**MW-8-121316**	EPA 300.0	460944		
60234341003	**MW-8-121316**	EPA 300.0	461087		

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Sample Condition Upon Receipt

WO# : 60234341

60234341

Client Name: Nostar Env

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: CF +0.7 T-266 / CF -0.5 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 3.4 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 4.1

Date and initials of person examining contents: 12/14/16

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	
Cyanide water sample checks: ☐ N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: [signature] Date: 12/15/16

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: 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.:	
Project Name:	TEC CCR Groundwater
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	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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60234341
1	MW-7-121316	WT	G			12/13/16	1556		4	1		3																2(BG1N) BB3N, BB2U 20 20 001
2	MW-10-121416	WT	G			12/14/16	0905		4	1		3																002
3	MW-8-121416	WT	G			12/14/16	1126		4	1		3																003
4																												
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: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	12/14/16	1245	[signature] / PASI	12/14/16	1610	4.1	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Brandon Griffin
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY): 12/14/16

*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

Chain of Custody

WO#:30205834

Pace Analytical®
www.pacelabs.com

Workorder: 60234341 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 12/14/2016 **Results Requested By:** 1/9/2017

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	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: BP1N						Requested Analysis: Radium 226 & total sum	Radium 228										LAB USE ONLY
1	MW-7-121316	PS	12/13/2016 15:56	60234341001	Water	2						X	X										001
2	MW-10-121316	PS	12/13/2016 09:05	60234341002	Water	2						X	X										002
3	MW-8-121316	PS	12/13/2016 11:26	60234341003	Water	2						X	X										003
4																							
5																							

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	12/15/16 1700	[signature] Pace	12/16/16 1120
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: PACKS Project # 30205834

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

Tracking #: Ripped Off

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

Date and Initials of person examining contents: ARM 12/17/16

Comments:	Yes	No	N/A	
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:		✓		4.
Sample Labels match COC:	✓			5.
-Includes date/time/ID/Analysis 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.
Filtered volume received for Dissolved tests			✓	12.
All containers needing preservation have been checked.	✓			13. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: ARM Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	14.
Trip Blank Present:			✓	15.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ARM Date: 12/17/16

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

January 19, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on December 17, 2016. 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
Project Manager

Enclosures

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

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60234593001	**MW-9-121616**	Water	12/16/16 07:45	12/17/16 09:45

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

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234593001	**MW-9-121616**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	NDJ	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	AGO	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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: 459902

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60234340002,60234594003

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

- MS (Lab ID: 1882846)
  - Calcium
- MSD (Lab ID: 1882847)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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 CCR GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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 CCR GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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.: 60234593

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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: 459669

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.
- DUP (Lab ID: 1881982)
  - Total Dissolved Solids

Additional Comments:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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-9-121616 (Lab ID: 60234593001)

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 GROUNDWATER
Pace Project No.: 60234593

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: January 19, 2017

General Information:
1 sample was 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: 461088

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60235068001,60235068003

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

- MS (Lab ID: 1887370)
  - Fluoride

QC Batch: 461555

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60235242001,60235242002

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

- MSD (Lab ID: 1889268)
  - Chloride

Additional Comments:

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

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Sample: MW-9-121616 **Lab ID: 60234593001** Collected: 12/16/16 07:45 Received: 12/17/16 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.81**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:07	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:07	7440-41-7	
Boron, Total Recoverable	**0.10**	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:07	7440-42-8	
Calcium, Total Recoverable	**216**	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:07	7440-70-2	
Chromium, Total Recoverable	**0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:07	7440-47-3	
Lead, Total Recoverable	**0.0082**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:07	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:07	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	12/21/16 15:15	12/29/16 16:06	7440-36-0	
Arsenic, Total Recoverable	**0.10**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:06	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:06	7440-43-9	
Cobalt, Total Recoverable	**0.011**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:06	7440-48-4	
Molybdenum, Total Recoverable	**0.0019**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:06	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:06	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:06	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1160**	mg/L	5.0	1		12/20/16 12:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		12/28/16 09:29		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**174**	mg/L	20.0	20		01/10/17 21:15	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		01/04/17 15:46	16984-48-8	
Sulfate	**31.8**	mg/L	2.0	2		01/10/17 23:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 459521 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60234593001

METHOD BLANK: 1881503 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	12/20/16 09:20	

LABORATORY CONTROL SAMPLE: 1881504

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0048	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1881505 1881506

Parameter	Units	60234342001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	0.0041	0.0036	81	73	70-130	11	20	

MATRIX SPIKE SAMPLE: 1881507

Parameter	Units	60234340001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	.005	0.0049	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 459902
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60234593001

METHOD BLANK: 1882844 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	12/28/16 18:10	
Beryllium	mg/L	<0.0010	0.0010	12/28/16 18:10	
Boron	mg/L	<0.10	0.10	12/28/16 18:10	
Calcium	mg/L	<0.10	0.10	12/28/16 18:10	
Chromium	mg/L	<0.0050	0.0050	12/28/16 18:10	
Lead	mg/L	<0.0050	0.0050	12/28/16 18:10	
Lithium	mg/L	<0.010	0.010	12/28/16 18:10	

LABORATORY CONTROL SAMPLE: 1882845

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.96	96	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.94	94	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882846 1882847

Parameter	Units	60234340002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.028	1	1	1.0	1.0	98	99	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	103	70-130	1	20	
Boron	mg/L	1.0	1	1	1.9	2.0	92	98	70-130	3	20	
Calcium	mg/L	303	10	10	297	303	-60	-3	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	0.93	0.97	93	97	70-130	4	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	99	101	70-130	2	20	
Lithium	mg/L	0.024	1	1	1.1	1.1	104	106	70-130	2	20	

MATRIX SPIKE SAMPLE: 1882848

Parameter	Units	60234594003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.15	1	1.1	97	70-130	
Beryllium	mg/L	<0.0010	1	1.0	102	70-130	
Boron	mg/L	0.14	1	1.1	95	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

MATRIX SPIKE SAMPLE: 1882848

Parameter	Units	60234594003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	164	10	172	85	70-130	
Chromium	mg/L	<0.0050	1	0.93	93	70-130	
Lead	mg/L	<0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.018	1	1.1	104	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 459903 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60234593001

METHOD BLANK: 1882849 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/29/16 14:56	
Arsenic	mg/L	<0.0010	0.0010	12/29/16 14:56	
Cadmium	mg/L	<0.00050	0.00050	12/29/16 14:56	
Cobalt	mg/L	<0.0010	0.0010	12/29/16 14:56	
Molybdenum	mg/L	<0.0010	0.0010	12/29/16 14:56	
Selenium	mg/L	<0.0010	0.0010	12/29/16 14:56	
Thallium	mg/L	<0.0010	0.0010	12/29/16 14:56	

LABORATORY CONTROL SAMPLE: 1882850

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.038	95	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.039	96	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.037	93	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1882851 1882852

Parameter	Units	60234340003 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	.04	.04	0.039	0.039	97	97	70-130	0	20	
Arsenic	mg/L	<0.0010	.04	.04	0.037	0.037	93	92	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.035	0.035	86	87	70-130	0	20	
Cobalt	mg/L	0.0029	.04	.04	0.038	0.038	87	87	70-130	0	20	
Molybdenum	mg/L	<0.0010	.04	.04	0.041	0.042	101	102	70-130	2	20	
Selenium	mg/L	<0.0010	.04	.04	0.035	0.035	87	88	70-130	2	20	
Thallium	mg/L	<0.0010	.04	.04	0.037	0.037	93	93	70-130	0	20	

MATRIX SPIKE SAMPLE: 1882853

Parameter	Units	60234594002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	97	70-130	
Arsenic	mg/L	<0.0010	.04	0.037	91	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	90	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

MATRIX SPIKE SAMPLE: 1882853

Parameter	Units	60234594002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.036	89	70-130	
Molybdenum	mg/L	0.0037	.04	0.044	102	70-130	
Selenium	mg/L	<0.0010	.04	0.034	84	70-130	
Thallium	mg/L	<0.0010	.04	0.038	95	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 459669 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60234593001

METHOD BLANK: 1881980 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	12/20/16 12:22	

LABORATORY CONTROL SAMPLE: 1881981

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	975	98	80-120	

SAMPLE DUPLICATE: 1881982

Parameter	Units	60234338001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3610	3230	11	10	D6

SAMPLE DUPLICATE: 1881983

Parameter	Units	60234594001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	496	502	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 460511
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60234593001

SAMPLE DUPLICATE: 1884873

Parameter	Units	60234593001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.9	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 461088 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234593001

METHOD BLANK: 1887366 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	01/04/17 12:48	

LABORATORY CONTROL SAMPLE: 1887367

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1887368 1887369

Parameter	Units	60235068001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	ND	2.5	2.5	3.1	3.1	118	119	80-120	0	15	

MATRIX SPIKE SAMPLE: 1887370

Parameter	Units	60235068003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.30	2.5	3.3	121	80-120	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 461555 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234593001

METHOD BLANK: 1889265 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	01/10/17 17:09	
Sulfate	mg/L	<1.0	1.0	01/10/17 17:09	

LABORATORY CONTROL SAMPLE: 1889266

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1889267 1889268

Parameter	Units	60235242001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2960	2500	2500	5640	5980	120	134	80-120	6	15	M1
Sulfate	mg/L	ND	2500	2500	3340	3410	116	118	80-120	2	15	

MATRIX SPIKE SAMPLE: 1889269

Parameter	Units	60235242002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1150	500	1720	113	80-120	
Sulfate	mg/L	131	500	694	113	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

Sample: MW-9-121616 **Lab ID: 60234593001** Collected: 12/16/16 07:45 Received: 12/17/16 09:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.881 ± 0.645 (0.721) C:NA T:63%**	pCi/L	01/18/17 11:43	13982-63-3	
Radium-228	EPA 904.0	**1.14 ± 0.477 (0.751) C:69% T:86%**	pCi/L	01/17/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**2.02 ± 1.12 (1.47)**	pCi/L	01/19/17 08:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 245951 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60234593001

METHOD BLANK: 1209764 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.132 ± 0.301 (0.178) C:NA T:86%	pCi/L	01/18/17 10:45	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

QC Batch: 245952 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60234593001

METHOD BLANK: 1209765 Matrix: Water
Associated Lab Samples: 60234593001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0251 ± 0.336 (0.783) C:63% T:80%	pCi/L	01/17/17 11:52	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60234593

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

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.

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.: 60234593

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234593001	**MW-9-121616**	EPA 200.7	459902	EPA 200.7	459945
60234593001	**MW-9-121616**	EPA 200.8	459903	EPA 200.8	459947
60234593001	**MW-9-121616**	EPA 245.1	459521	EPA 245.1	459549
60234593001	**MW-9-121616**	EPA 903.1	245951		
60234593001	**MW-9-121616**	EPA 904.0	245952		
60234593001	**MW-9-121616**	Total Radium Calculation	246856		
60234593001	**MW-9-121616**	SM 2540C	459669		
60234593001	**MW-9-121616**	SM 4500-H+B	460511		
60234593001	**MW-9-121616**	EPA 300.0	461088		
60234593001	**MW-9-121616**	EPA 300.0	461555		

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Sample Condition Upon Receipt

WO# : 60234593

60234593

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: CF +0.7 T-266 / CF -0.5 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 0.3 Corr. Factor CF +0.7 CF -0.5 Corrected 1.0

Date and initials of person examining contents: PV 12/17/16

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	PH
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	
Cyanide water sample checks: ☑N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: _____

REVIEWED
By HMW at 10:05 am, 12/19/16

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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.:	
Project Name:	TEC CCR Groundwater
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	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Mercury	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-9-121616					121616	0745		4	1		3																60234593
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

1BP1N 1BA2N 2BP1N

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: Ba, Be, B, Ca, Cr, Pb, Li	BJF/Westar	12/16/16	1545		12/17/16	0945	1.0	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BJF

DATE Signed (MM/DD/YY): 12/16/16

*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

WO#:30206149

Pace Analytical®
www.pacelabs.com

Workorder: 60234593 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 12/17/2016 **Results Requested By:** 1/12/2017

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	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: BP1N	Requested Analysis: Radium 226 & Total Sum	Requested Analysis: Radium 228	LAB USE ONLY
1	MW-9-121616	PS	12/16/2016 07:45	60234593001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	12/19/16 1200	[signature]	12-20-16 1220
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

30206149

Pace Analytical

Client Name: Pace KS Project #

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

Tracking #: 7044 6657 8478

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 N/A °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ML 12-20-16

Comments:	Yes	No	N/A	
Chain of Custody Present:	X			1.
Chain of Custody Filled Out:	X			2.
Chain of Custody Relinquished:	X			3.
Sampler Name & Signature on COC:		X		4.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	X			5.
Samples Arrived within Hold Time:	X			6.
Short Hold Time Analysis (<72hr remaining):		X		7.
Rush Turn Around Time Requested:		X		8.
Sufficient Volume:	X			9.
Correct Containers Used: -Pace Containers Used:	X			10.
Containers Intact:	X			11.
Filtered volume received for Dissolved tests			X	12.
All containers needing preservation have been checked. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	X X			13. pH<2 Initial when completed ML Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			X	14.
Trip Blank Present:		X		15.
Trip Blank Custody Seals Present			X	
Rad Aqueous Samples Screened > 0.5 mrem/hr		X		Initial when completed: ML Date: 12-20-16

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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 1-5

February 2017 Sampling Event Laboratory Analytical Report

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

March 03, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on February 08, 2017. 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
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY

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CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60237510001	**MW-7-020717**	Water	02/07/17 12:21	02/08/17 15:45
60237510002	**MW-10-020717**	Water	02/07/17 14:09	02/08/17 15:45
60237510003	**MW-9-020717**	Water	02/08/17 07:20	02/08/17 15:45
60237510004	**MW-8-020717**	Water	02/08/17 09:29	02/08/17 15:45

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60237510001	**MW-7-020717**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237510002	**MW-10-020717**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237510003	**MW-9-020717**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237510004	**MW-8-020717**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JJY	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	OL	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: March 03, 2017

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: 465590

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60237510001,60237510002

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

- MS (Lab ID: 1905575)
  - Calcium
- MSD (Lab ID: 1905574)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: March 03, 2017

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.

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 CCR GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: March 03, 2017

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 CCR GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: March 03, 2017

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: March 03, 2017

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.: 60237510

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: March 03, 2017

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:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: March 03, 2017

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 GROUNDWATER
Pace Project No.: 60237510

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: March 03, 2017

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-10-020717 (Lab ID: 60237510002)
- MW-7-020717 (Lab ID: 60237510001)
- MW-8-020717 (Lab ID: 60237510004)
- MW-9-020717 (Lab ID: 60237510003)

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 GROUNDWATER
Pace Project No.: 60237510

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: March 03, 2017

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.

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-7-020717 **Lab ID: 60237510001** Collected: 02/07/17 12:21 Received: 02/08/17 15:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.076**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:18	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:18	7440-41-7	
Boron, Total Recoverable	**0.74**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:18	7440-42-8	
Calcium, Total Recoverable	**151**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:18	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:18	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:18	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:18	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	02/15/17 16:00	02/22/17 12:44	7440-36-0	
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:44	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 12:44	7440-43-9	
Cobalt, Total Recoverable	**0.0014**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:44	7440-48-4	
Molybdenum, Total Recoverable	**0.013**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:44	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:44	7782-49-2	
Thallium, Total Recoverable	**0.0011**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:44	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:19	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1170**	mg/L	5.0	1		02/13/17 14:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		02/12/17 07:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**198**	mg/L	20.0	20		02/15/17 11:14	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		02/14/17 18:37	16984-48-8	
Sulfate	**469**	mg/L	50.0	50		02/15/17 11:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-10-020717 **Lab ID: 60237510002** Collected: 02/07/17 14:09 Received: 02/08/17 15:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.30**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:25	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:25	7440-41-7	
Boron, Total Recoverable	**0.23**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:25	7440-42-8	
Calcium, Total Recoverable	**170**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:25	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:25	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:25	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:25	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	02/15/17 16:00	02/22/17 12:49	7440-36-0	
Arsenic, Total Recoverable	**0.077**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:49	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 12:49	7440-43-9	
Cobalt, Total Recoverable	**0.0033**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:49	7440-48-4	
Molybdenum, Total Recoverable	**0.0042**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:49	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:49	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:49	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1250**	mg/L	5.0	1		02/13/17 14:26		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.6**	Std. Units	0.10	1		02/12/17 07:43		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**235**	mg/L	20.0	20		02/15/17 11:42	16887-00-6	
Fluoride	**0.47**	mg/L	0.20	1		02/14/17 19:20	16984-48-8	
Sulfate	**165**	mg/L	20.0	20		02/15/17 11:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-9-020717 **Lab ID: 60237510003** Collected: 02/08/17 07:20 Received: 02/08/17 15:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.77**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:29	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:29	7440-41-7	
Boron, Total Recoverable	**0.14**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:29	7440-42-8	
Calcium, Total Recoverable	**217**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:29	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:29	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:29	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:29	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	02/15/17 16:00	02/22/17 12:53	7440-36-0	
Arsenic, Total Recoverable	**0.12**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 12:53	7440-43-9	
Cobalt, Total Recoverable	**0.013**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:53	7440-48-4	
Molybdenum, Total Recoverable	**0.0022**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:53	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:53	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 12:53	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1170**	mg/L	5.0	1		02/14/17 14:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.6**	Std. Units	0.10	1		02/12/17 07:44		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**186**	mg/L	20.0	20		02/15/17 12:24	16887-00-6	
Fluoride	**0.37**	mg/L	0.20	1		02/14/17 19:49	16984-48-8	
Sulfate	**122**	mg/L	20.0	20		02/15/17 12:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-8-020717 **Lab ID: 60237510004** Collected: 02/08/17 09:29 Received: 02/08/17 15:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.062**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:31	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:31	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:31	7440-42-8	
Calcium, Total Recoverable	**198**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:31	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:31	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:31	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:31	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	02/15/17 16:00	02/22/17 13:06	7440-36-0	
Arsenic, Total Recoverable	**0.0017**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:06	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:06	7440-43-9	
Cobalt, Total Recoverable	**0.0017**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:06	7440-48-4	
Molybdenum, Total Recoverable	**0.042**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:06	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:06	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:06	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1430**	mg/L	5.0	1		02/14/17 14:25		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		02/12/17 07:46		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**194**	mg/L	20.0	20		02/15/17 12:52	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		02/14/17 20:04	16984-48-8	
Sulfate	**711**	mg/L	100	100		02/15/17 13:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465533 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1905322 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	02/17/17 12:30	

LABORATORY CONTROL SAMPLE: 1905323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0053	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905324 1905325

Parameter	Units	60237454001 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	.005	.005	0.0052	0.0050	104	100	70-130	4	20	

MATRIX SPIKE SAMPLE: 1905326

Parameter	Units	60237584003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0052	103	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465590 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1905571 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	02/17/17 12:14	
Beryllium	mg/L	<0.0010	0.0010	02/17/17 12:14	
Boron	mg/L	<0.10	0.10	02/17/17 12:14	
Calcium	mg/L	<0.10	0.10	02/17/17 12:14	
Chromium	mg/L	<0.0050	0.0050	02/17/17 12:14	
Lead	mg/L	<0.0050	0.0050	02/17/17 12:14	
Lithium	mg/L	<0.010	0.010	02/17/17 12:14	

LABORATORY CONTROL SAMPLE: 1905572

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.97	97	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.92	92	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	0.96	96	85-115	
Lithium	mg/L	1	1.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905573 1905574

Parameter	Units	60237510001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.076	1	1	0.99	0.98	92	91	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	0.93	0.92	93	92	70-130	1	20	
Boron	mg/L	0.74	1	1	1.7	1.7	93	91	70-130	1	20	
Calcium	mg/L	151	10	10	159	156	82	49	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	0.91	0.91	91	91	70-130	0	20	
Lead	mg/L	<0.0050	1	1	0.88	0.88	88	88	70-130	0	20	
Lithium	mg/L	0.024	1	1	0.98	0.97	95	95	70-130	1	20	

MATRIX SPIKE SAMPLE: 1905575

Parameter	Units	60237510002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.30	1	1.2	92	70-130	
Beryllium	mg/L	<0.0010	1	0.93	93	70-130	
Boron	mg/L	0.23	1	1.1	91	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

MATRIX SPIKE SAMPLE: 1905575

Parameter	Units	60237510002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	170	10	175	53	70-130	M1
Chromium	mg/L	<0.0050	1	0.91	91	70-130	
Lead	mg/L	<0.0050	1	0.88	88	70-130	
Lithium	mg/L	<0.010	1	0.97	96	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465593 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1905588 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	02/22/17 12:27	
Arsenic	mg/L	<0.0010	0.0010	02/22/17 12:27	
Cadmium	mg/L	<0.00050	0.00050	02/22/17 12:27	
Cobalt	mg/L	<0.0010	0.0010	02/22/17 12:27	
Molybdenum	mg/L	<0.0010	0.0010	02/22/17 12:27	
Selenium	mg/L	<0.0010	0.0010	02/22/17 12:27	
Thallium	mg/L	<0.0010	0.0010	02/22/17 12:27	

LABORATORY CONTROL SAMPLE: 1905589

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	98	85-115	
Arsenic	mg/L	.04	0.040	99	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.039	97	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.040	100	85-115	
Thallium	mg/L	.04	0.037	93	85-115	

MATRIX SPIKE SAMPLE: 1905590

Parameter	Units	60237510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.035	88	70-130	
Arsenic	mg/L	0.12	.04	0.17	110	70-130	
Cadmium	mg/L	<0.00050	.04	0.040	99	70-130	
Cobalt	mg/L	0.013	.04	0.051	94	70-130	
Molybdenum	mg/L	0.0022	.04	0.040	94	70-130	
Selenium	mg/L	<0.0010	.04	0.037	91	70-130	
Thallium	mg/L	<0.0010	.04	0.038	93	70-130	

MATRIX SPIKE SAMPLE: 1905592

Parameter	Units	60237510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0017	.04	0.042	100	70-130	
Cadmium	mg/L	<0.00050	.04	0.039	98	70-130	
Cobalt	mg/L	0.0017	.04	0.039	94	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

MATRIX SPIKE SAMPLE: 1905592

Parameter	Units	60237510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Molybdenum	mg/L	0.042	.04	0.084	106	70-130	
Selenium	mg/L	<0.0010	.04	0.039	97	70-130	
Thallium	mg/L	<0.0010	.04	0.037	91	70-130	

SAMPLE DUPLICATE: 1909305

Parameter	Units	60237510003 Result	Dup Result	RPD	Max RPD	Qualifiers
Antimony	mg/L	<0.0010	<0.0010		20	
Arsenic	mg/L	0.12	0.12	0	20	
Cadmium	mg/L	<0.00050	<0.00050		20	
Cobalt	mg/L	0.013	0.014	1	20	
Molybdenum	mg/L	0.0022	0.0022	2	20	
Selenium	mg/L	<0.0010	<0.0010		20	
Thallium	mg/L	<0.0010	<0.0010		20	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465288 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60237510001, 60237510002

METHOD BLANK: 1904626 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	02/13/17 14:18	

LABORATORY CONTROL SAMPLE: 1904627

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

SAMPLE DUPLICATE: 1904628

Parameter	Units	60237755001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3040	3030	0	10	

SAMPLE DUPLICATE: 1904629

Parameter	Units	60237408005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	993	1010	2	10	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465477 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60237510003, 60237510004

METHOD BLANK: 1905096 Matrix: Water
Associated Lab Samples: 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	02/14/17 14:20	

LABORATORY CONTROL SAMPLE: 1905097

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	982	98	80-120	

SAMPLE DUPLICATE: 1905098

Parameter	Units	60237584001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	971	980	1	10	

SAMPLE DUPLICATE: 1905099

Parameter	Units	60237681002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1030	987	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465176 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

SAMPLE DUPLICATE: 1904288

Parameter	Units	60237510001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	6.9	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465470 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1905076 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	02/14/17 18:08	

LABORATORY CONTROL SAMPLE: 1905077

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905078 1905079

Parameter	Units	60237510001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.32	2.5	2.5	3.0	3.0	106	106	80-120	1	15	

MATRIX SPIKE SAMPLE: 1905080

Parameter	Units	60237510002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.47	2.5	3.1	105	80-120	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 465543 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1905374 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	02/15/17 10:46	
Sulfate	mg/L	<1.0	1.0	02/15/17 10:46	

LABORATORY CONTROL SAMPLE: 1905375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	99	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1905376 1905377

Parameter	Units	60237510002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	235	100	100	329	332	94	97	80-120	1	15	
Sulfate	mg/L	165	100	100	260	263	96	99	80-120	1	15	

MATRIX SPIKE SAMPLE: 1905378

Parameter	Units	60237510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	186	100	287	101	80-120	
Sulfate	mg/L	122	100	223	102	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-7-020717 **Lab ID: 60237510001** Collected: 02/07/17 12:21 Received: 02/08/17 15:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.190 ± 0.330 (0.589) C:NA T:86%**	pCi/L	03/02/17 23:53	13982-63-3	
Radium-228	EPA 904.0	**0.365 ± 0.321 (0.641) C:79% T:88%**	pCi/L	03/02/17 19:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.555 ± 0.651 (1.23)**	pCi/L	03/03/17 17:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-10-020717 **Lab ID: 60237510002** Collected: 02/07/17 14:09 Received: 02/08/17 15:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.522 ± 0.447 (0.605) C:NA T:90%**	pCi/L	03/02/17 23:40	13982-63-3	
Radium-228	EPA 904.0	**1.35 ± 0.443 (0.590) C:77% T:87%**	pCi/L	03/02/17 19:52	15262-20-1	
Total Radium	Total Radium Calculation	**1.87 ± 0.890 (1.20)**	pCi/L	03/03/17 17:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-9-020717 **Lab ID: 60237510003** Collected: 02/08/17 07:20 Received: 02/08/17 15:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.510 ± 0.556 (0.874) C:NA T:83%**	pCi/L	03/02/17 23:40	13982-63-3	
Radium-228	EPA 904.0	**0.876 ± 0.429 (0.743) C:76% T:78%**	pCi/L	03/02/17 19:52	15262-20-1	
Total Radium	Total Radium Calculation	**1.39 ± 0.985 (1.62)**	pCi/L	03/03/17 17:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Sample: MW-8-020717 **Lab ID: 60237510004** Collected: 02/08/17 09:29 Received: 02/08/17 15:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.062 ± 0.320 (0.740) C:NA T:88%**	pCi/L	03/02/17 23:40	13982-63-3	
Radium-228	EPA 904.0	**0.210 ± 0.290 (0.607) C:80% T:89%**	pCi/L	03/02/17 19:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.210 ± 0.610 (1.35)**	pCi/L	03/03/17 17:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 250070 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1230259 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.217 ± 0.317 (0.668) C:80% T:85%	pCi/L	03/02/17 19:51	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

QC Batch: 250073 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

METHOD BLANK: 1230264 Matrix: Water
Associated Lab Samples: 60237510001, 60237510002, 60237510003, 60237510004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.324 ± 0.339 (0.478) C:NA T:87%	pCi/L	03/02/17 22:55	

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

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.

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.

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60237510

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237510001	**MW-7-020717**	EPA 200.7	465590	EPA 200.7	465696
60237510002	**MW-10-020717**	EPA 200.7	465590	EPA 200.7	465696
60237510003	**MW-9-020717**	EPA 200.7	465590	EPA 200.7	465696
60237510004	**MW-8-020717**	EPA 200.7	465590	EPA 200.7	465696
60237510001	**MW-7-020717**	EPA 200.8	465593	EPA 200.8	465698
60237510002	**MW-10-020717**	EPA 200.8	465593	EPA 200.8	465698
60237510003	**MW-9-020717**	EPA 200.8	465593	EPA 200.8	465698
60237510004	**MW-8-020717**	EPA 200.8	465593	EPA 200.8	465698
60237510001	**MW-7-020717**	EPA 245.1	465533	EPA 245.1	465636
60237510002	**MW-10-020717**	EPA 245.1	465533	EPA 245.1	465636
60237510003	**MW-9-020717**	EPA 245.1	465533	EPA 245.1	465636
60237510004	**MW-8-020717**	EPA 245.1	465533	EPA 245.1	465636
60237510001	**MW-7-020717**	EPA 903.1	250073		
60237510002	**MW-10-020717**	EPA 903.1	250073		
60237510003	**MW-9-020717**	EPA 903.1	250073		
60237510004	**MW-8-020717**	EPA 903.1	250073		
60237510001	**MW-7-020717**	EPA 904.0	250070		
60237510002	**MW-10-020717**	EPA 904.0	250070		
60237510003	**MW-9-020717**	EPA 904.0	250070		
60237510004	**MW-8-020717**	EPA 904.0	250070		
60237510001	**MW-7-020717**	Total Radium Calculation	251067		
60237510002	**MW-10-020717**	Total Radium Calculation	251067		
60237510003	**MW-9-020717**	Total Radium Calculation	251067		
60237510004	**MW-8-020717**	Total Radium Calculation	251067		
60237510001	**MW-7-020717**	SM 2540C	465288		
60237510002	**MW-10-020717**	SM 2540C	465288		
60237510003	**MW-9-020717**	SM 2540C	465477		
60237510004	**MW-8-020717**	SM 2540C	465477		
60237510001	**MW-7-020717**	SM 4500-H+B	465176		
60237510002	**MW-10-020717**	SM 4500-H+B	465176		
60237510003	**MW-9-020717**	SM 4500-H+B	465176		
60237510004	**MW-8-020717**	SM 4500-H+B	465176		
60237510001	**MW-7-020717**	EPA 300.0	465470		
60237510001	**MW-7-020717**	EPA 300.0	465543		
60237510002	**MW-10-020717**	EPA 300.0	465470		
60237510002	**MW-10-020717**	EPA 300.0	465543		
60237510003	**MW-9-020717**	EPA 300.0	465470		
60237510003	**MW-9-020717**	EPA 300.0	465543		
60237510004	**MW-8-020717**	EPA 300.0	465470		
60237510004	**MW-8-020717**	EPA 300.0	465543		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO# : 60237510

60237510

Client Name: Wester En.

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

Tracking #: ______ Pace Shipping Label Used? Yes ☐ No ☐

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

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

Thermometer Used: CF +1.5 T-266 / CF +0.9 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.6 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 2.1

Date and initials of person examining contents: 2/8/17

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	(1221)
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	
Cyanide water sample checks: ☐ N/A		
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: AMW Date: 2/9/17

AMW 2/9/17

Pace Analytical
www.pacelabs.com

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.:	
Project Name:	TEC CCR Groundwater
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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-7-020717	WT	G			2/7	1221		4	1		3														6023751001
2	MW-10-020717	WT	G			2/7	1409		4	1		3														002
3	MW-9-020817	WT	G			2/8	0720		4	1		3														003
4	MW-8-020817	WT	G			2/8	0929		4	1		3														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: Ba, Be, B, Ca, Cr, Pb, Li	Westar	2/8/17	1030		2/8/17	1545	2.1	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, 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):	02/08/17				

*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

30210456

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60237510 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 2/8/2017 **Results Requested By:** 3/3/2017

Report To	Subcontract To
Heather Wilson Pace Analytical Kansas 9608 Loiret Blvd. Lenexa, KS 66219 Phone (913)599-5665	Pace Analytical Pittsburgh 1638 Roseytown Road Suites 2,3, & 4 Greensburg, PA 15601 Phone (724)850-5600

WO#:30210456

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis: Radium-228	Radium-226 & Total Radium	LAB USE ONLY
1	MW-7-020717	PS	2/7/2017 12:21	60237510001	Water	2	X	X	001
2	MW-10-020717	PS	2/7/2017 14:09	60237510002	Water	2	X	X	002
3	MW-9-020717	PS	2/8/2017 07:20	60237510003	Water	2	X	X	003
4	MW-8-020717	PS	2/8/2017 09:29	60237510004	Water	2	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1		2/9/17 1700	Pace	2/10/17 1020
2				
3				

Comments

Cooler Temperature on Receipt N/A °C | Custody Seal (Y) or (N) RTS 2/10/17 | 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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace KS Project # 30210456 1

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

Tracking #: 7044 6659 4349 RTB 2/10/17

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 N/A °C Correction Factor: N/A °C Final Temp: N/A °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: RTB 2/10/17

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

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 1-6

April 2017 Sampling Event Laboratory Analytical Report

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

September 12, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on April 07, 2017. 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 May 1, 2017 report. This report has been reissued on September 7, 2017 to correct the Total Radium Sum Calculations.

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
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60241616001	**MW-7-040617**	Water	04/06/17 09:03	04/07/17 14:47
60241616002	**MW-10-040617**	Water	04/06/17 10:49	04/07/17 14:47
60241616003	**MW-9-040617**	Water	04/06/17 12:59	04/07/17 14:47
60241616004	**MW-8-040617**	Water	04/06/17 15:06	04/07/17 14:47

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

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60241616001	MW-7-040617	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241616002	MW-10-040617	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241616003	MW-9-040617	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241616004	MW-8-040617	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 12, 2017

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: 473126

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60241617002,60241813002

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

- MS (Lab ID: 1937368)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 12, 2017

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 CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 12, 2017

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 CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 12, 2017

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 12, 2017

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.: 60241616

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 12, 2017

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:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 12, 2017

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.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 12, 2017

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-10-040617 (Lab ID: 60241616002)
- MW-7-040617 (Lab ID: 60241616001)
- MW-8-040617 (Lab ID: 60241616004)
- MW-9-040617 (Lab ID: 60241616003)

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 CCR GROUNDWATER
Pace Project No.: 60241616

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 12, 2017

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: 472240

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60241579007

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

- MS (Lab ID: 1933694)
  - Sulfate

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 CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-7-040617 **Lab ID: 60241616001** Collected: 04/06/17 09:03 Received: 04/07/17 14:47 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	**0.083**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:48	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/17/17 17:20	04/18/17 17:48	7440-41-7	
Boron, Total Recoverable	**0.77**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:48	7440-42-8	
Calcium, Total Recoverable	**161**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:48	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:48	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:48	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	04/17/17 17:20	04/18/17 17:48	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	04/13/17 10:30	04/25/17 17:05	7440-36-0	
Arsenic, Total Recoverable	**0.0015**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:05	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/13/17 10:30	04/25/17 17:05	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:05	7440-48-4	
Molybdenum, Total Recoverable	**0.0099**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:05	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:05	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:05	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/10/17 15:45	04/11/17 09:54	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1220**	mg/L	5.0	1		04/11/17 16:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		04/13/17 09:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**197**	mg/L	20.0	20		04/10/17 18:28	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	1		04/10/17 18:13	16984-48-8	
Sulfate	**511**	mg/L	50.0	50		04/10/17 18:43	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-10-040617 **Lab ID: 60241616002** Collected: 04/06/17 10:49 Received: 04/07/17 14:47 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	**0.28**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:50	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/17/17 17:20	04/18/17 17:50	7440-41-7	
Boron, Total Recoverable	**0.27**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:50	7440-42-8	
Calcium, Total Recoverable	**175**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:50	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	04/17/17 17:20	04/18/17 17:50	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	04/13/17 10:30	04/25/17 17:14	7440-36-0	
Arsenic, Total Recoverable	**0.062**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/13/17 10:30	04/25/17 17:14	7440-43-9	
Cobalt, Total Recoverable	**0.0061**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:14	7440-48-4	
Molybdenum, Total Recoverable	**0.0049**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:14	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/10/17 15:45	04/11/17 09:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1280**	mg/L	5.0	1		04/11/17 16:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		04/13/17 09:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**233**	mg/L	20.0	20		04/10/17 19:13	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		04/10/17 18:58	16984-48-8	
Sulfate	**226**	mg/L	20.0	20		04/10/17 19:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-9-040617 **Lab ID: 60241616003** Collected: 04/06/17 12:59 Received: 04/07/17 14:47 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	**0.65**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:53	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/17/17 17:20	04/18/17 17:53	7440-41-7	
Boron, Total Recoverable	**0.41**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:53	7440-42-8	
Calcium, Total Recoverable	**221**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:53	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:53	7440-47-3	
Lead, Total Recoverable	**0.0078**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:53	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	04/17/17 17:20	04/18/17 17:53	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	04/13/17 10:30	04/25/17 17:18	7440-36-0	
Arsenic, Total Recoverable	**0.086**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:18	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/13/17 10:30	04/25/17 17:18	7440-43-9	
Cobalt, Total Recoverable	**0.023**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:18	7440-48-4	
Molybdenum, Total Recoverable	**0.0060**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:18	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:18	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:18	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/10/17 15:45	04/11/17 09:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1370**	mg/L	5.0	1		04/11/17 16:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		04/13/17 09:08		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**218**	mg/L	20.0	20		04/10/17 19:43	16887-00-6	
Fluoride	**0.45**	mg/L	0.20	1		04/10/17 19:28	16984-48-8	
Sulfate	**477**	mg/L	25.0	25		04/11/17 19:19	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-8-040617 **Lab ID: 60241616004** Collected: 04/06/17 15:06 Received: 04/07/17 14:47 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	04/17/17 17:20	04/18/17 17:55	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/17/17 17:20	04/18/17 17:55	7440-41-7	
Boron, Total Recoverable	**1.5**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:55	7440-42-8	
Calcium, Total Recoverable	**244**	mg/L	0.10	1	04/17/17 17:20	04/18/17 17:55	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:55	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/17/17 17:20	04/18/17 17:55	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	04/17/17 17:20	04/18/17 17:55	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	04/13/17 10:30	04/25/17 17:22	7440-36-0	
Arsenic, Total Recoverable	**0.0021**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:22	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/13/17 10:30	04/25/17 17:22	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:22	7440-48-4	
Molybdenum, Total Recoverable	**0.034**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:22	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:22	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/13/17 10:30	04/25/17 17:22	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/10/17 15:45	04/11/17 10:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1500**	mg/L	5.0	1		04/12/17 14:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.7**	Std. Units	0.10	1		04/13/17 14:08		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**170**	mg/L	20.0	20		04/10/17 20:42	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	1		04/10/17 20:27	16984-48-8	
Sulfate	**377**	mg/L	100	100		04/10/17 20:57	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472110 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1933355 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	04/11/17 09:25	

LABORATORY CONTROL SAMPLE: 1933356

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0046	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1933357 1933358

Parameter	Units	60241514001 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	.005	.005	0.0046	0.0047	92	94	70-130	3	20	

MATRIX SPIKE SAMPLE: 1933359

Parameter	Units	60241514003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0049	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 473126 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1937364 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	04/18/17 17:19	
Beryllium	mg/L	<0.0010	0.0010	04/18/17 17:19	
Boron	mg/L	<0.10	0.10	04/18/17 17:19	
Calcium	mg/L	<0.10	0.10	04/18/17 17:19	
Chromium	mg/L	<0.0050	0.0050	04/18/17 17:19	
Lead	mg/L	<0.0050	0.0050	04/18/17 17:19	
Lithium	mg/L	<0.010	0.010	04/18/17 17:19	

LABORATORY CONTROL SAMPLE: 1937365

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	100	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10.0	100	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	1.0	103	85-115	
Lithium	mg/L	1	1.0	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1937366 1937367

Parameter	Units	60241813002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	151 ug/L	1	1	1.2	1.2	101	101	70-130	0	20	
Beryllium	mg/L	<1.0 ug/L	1	1	1.0	1.0	102	101	70-130	1	20	
Boron	mg/L	1480 ug/L	1	1	2.5	2.5	100	100	70-130	0	20	
Calcium	mg/L	205000 ug/L	10	10	213	212	81	73	70-130	0	20	
Chromium	mg/L	<5.0 ug/L	1	1	1.0	0.99	100	98	70-130	1	20	
Lead	mg/L	<5.0 ug/L	1	1	0.99	0.98	98	98	70-130	0	20	
Lithium	mg/L	18.9 ug/L	1	1	1.1	1.1	106	106	70-130	0	20	

MATRIX SPIKE SAMPLE: 1937368

Parameter	Units	60241617002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.021	1	1.0	102	70-130	
Beryllium	mg/L	<0.0010	1	1.0	100	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

MATRIX SPIKE SAMPLE: 1937368

Parameter	Units	60241617002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1.2	1	2.2	100	70-130	
Calcium	mg/L	318	10	319	6	70-130	M1
Chromium	mg/L	<0.0050	1	0.97	97	70-130	
Lead	mg/L	<0.0050	1	0.98	98	70-130	
Lithium	mg/L	<0.010	1	1.1	107	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472593 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1934995 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	04/17/17 12:46	
Arsenic	mg/L	<0.0010	0.0010	04/17/17 12:46	
Cadmium	mg/L	<0.00050	0.00050	04/17/17 12:46	
Cobalt	mg/L	<0.0010	0.0010	04/17/17 12:46	
Molybdenum	mg/L	<0.0010	0.0010	04/17/17 12:46	
Selenium	mg/L	<0.0010	0.0010	04/17/17 12:46	
Thallium	mg/L	<0.0010	0.0010	04/17/17 12:46	

LABORATORY CONTROL SAMPLE: 1934996

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.042	105	85-115	
Arsenic	mg/L	.04	0.042	105	85-115	
Cadmium	mg/L	.04	0.041	102	85-115	
Cobalt	mg/L	.04	0.041	104	85-115	
Molybdenum	mg/L	.04	0.043	108	85-115	
Selenium	mg/L	.04	0.043	108	85-115	
Thallium	mg/L	.04	0.038	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1934997 1934999

Parameter	Units	7563633001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	.04	.04	0.042	0.043	104	106	70-130	2	20	
Arsenic	mg/L	1.5 ug/L	.04	.04	0.043	0.043	104	103	70-130	1	20	
Cadmium	mg/L	ND	.04	.04	0.041	0.040	102	100	70-130	2	20	
Cobalt	mg/L	13.2 ug/L	.04	.04	0.053	0.053	100	99	70-130	1	20	
Molybdenum	mg/L	276 ug/L	.04	.04	0.32	0.32	109	110	70-130	0	20	
Selenium	mg/L	0.0023	.04	.04	0.044	0.044	103	104	70-130	0	20	
Thallium	mg/L	ND	.04	.04	0.037	0.038	93	94	70-130	1	20	

MATRIX SPIKE SAMPLE: 1935000

Parameter	Units	60241616001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	97	70-130	
Arsenic	mg/L	0.0015	.04	0.040	97	70-130	
Cadmium	mg/L	<0.00050	.04	0.037	92	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

MATRIX SPIKE SAMPLE: 1935000

Parameter	Units	60241616001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0012	.04	0.039	95	70-130	
Molybdenum	mg/L	0.0099	.04	0.053	109	70-130	
Selenium	mg/L	<0.0010	.04	0.034	84	70-130	
Thallium	mg/L	<0.0010	.04	0.043	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472273 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60241616001, 60241616002, 60241616003

METHOD BLANK: 1933845 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/11/17 16:00	

LABORATORY CONTROL SAMPLE: 1933846

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	982	98	80-120	

SAMPLE DUPLICATE: 1933847

Parameter	Units	60241444010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3600	3530	2	10	

SAMPLE DUPLICATE: 1933848

Parameter	Units	60241654001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	57000	59000	3	10	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472460 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60241616004

METHOD BLANK: 1934622 Matrix: Water
Associated Lab Samples: 60241616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/12/17 14:36	

LABORATORY CONTROL SAMPLE: 1934623

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	989	99	80-120	

SAMPLE DUPLICATE: 1934624

Parameter	Units	60241616004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1500	1490	1	10	

SAMPLE DUPLICATE: 1934625

Parameter	Units	60241652009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1270	1310	3	10	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472464 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60241616001, 60241616002, 60241616003

SAMPLE DUPLICATE: 1934648

Parameter	Units	60241544001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.2	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472465
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60241616004

SAMPLE DUPLICATE: 1934649

Parameter	Units	60241548001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.3	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472089 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1933304 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	04/10/17 16:29	
Fluoride	mg/L	<0.20	0.20	04/10/17 16:29	
Sulfate	mg/L	<1.0	1.0	04/10/17 16:29	

LABORATORY CONTROL SAMPLE: 1933305

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	2.5	99	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1933306 1933307

Parameter	Units	60241580003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	185	50	50	233	229	97	89	80-120	2	15	
Fluoride	mg/L	ND	25	25	25.9	25.6	100	99	80-120	1	15	
Sulfate	mg/L	106	50	50	155	152	98	91	80-120	2	15	

MATRIX SPIKE SAMPLE: 1933308

Parameter	Units	60241581003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	36.7	50	83.2	93	80-120	
Fluoride	mg/L	ND	25	25.0	97	80-120	
Sulfate	mg/L	109	50	160	101	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 472240 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60241616003

METHOD BLANK: 1933690 Matrix: Water
Associated Lab Samples: 60241616003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	1.0	04/11/17 14:51	

LABORATORY CONTROL SAMPLE: 1933691

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE SAMPLE: 1933694

Parameter	Units	60241579007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	110	50	172	125	80-120	M1

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-7-040617 **Lab ID: 60241616001** Collected: 04/06/17 09:03 Received: 04/07/17 14:47 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.150 ± 0.510 (0.984) C:NA T:87%**	pCi/L	04/26/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.616 ± 0.399 (0.750) C:78% T:75%**	pCi/L	04/25/17 14:56	15262-20-1	
Total Radium	Total Radium Calculation	**0.766 ± 0.909 (1.73)**	pCi/L	09/07/17 14:58	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-10-040617 **Lab ID: 60241616002** Collected: 04/06/17 10:49 Received: 04/07/17 14:47 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.216 ± 0.647 (1.20) C:NA T:87%**	pCi/L	04/26/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**1.17 ± 0.498 (0.812) C:77% T:80%**	pCi/L	04/25/17 14:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.39 ± 1.15 (2.01)**	pCi/L	09/07/17 14:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-9-040617 **Lab ID: 60241616003** Collected: 04/06/17 12:59 Received: 04/07/17 14:47 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.208 ± 0.360 (0.642) C:NA T:93%**	pCi/L	04/26/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**1.10 ± 0.541 (0.945) C:73% T:71%**	pCi/L	04/25/17 14:57	15262-20-1	
Total Radium	Total Radium Calculation	**1.31 ± 0.901 (1.59)**	pCi/L	09/07/17 14:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Sample: MW-8-040617 **Lab ID: 60241616004** Collected: 04/06/17 15:06 Received: 04/07/17 14:47 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0790 ± 0.360 (0.214) C:NA T:92%**	pCi/L	04/26/17 11:40	13982-63-3	
Radium-228	EPA 904.0	**0.586 ± 0.360 (0.661) C:80% T:79%**	pCi/L	04/25/17 14:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.665 ± 0.720 (0.875)**	pCi/L	09/07/17 14:58	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 255827 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1259996 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.308 ± 0.372 (0.788) C:76% T:80%	pCi/L	04/25/17 14:56	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

QC Batch: 255826 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

METHOD BLANK: 1259995 Matrix: Water
Associated Lab Samples: 60241616001, 60241616002, 60241616003, 60241616004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.293 ± 0.353 (0.538) C:NA T:91%	pCi/L	04/26/17 11:04	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60241616

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60241616001	**MW-7-040617**	EPA 200.7	473126	EPA 200.7	473169
60241616002	**MW-10-040617**	EPA 200.7	473126	EPA 200.7	473169
60241616003	**MW-9-040617**	EPA 200.7	473126	EPA 200.7	473169
60241616004	**MW-8-040617**	EPA 200.7	473126	EPA 200.7	473169
60241616001	**MW-7-040617**	EPA 200.8	472593	EPA 200.8	472697
60241616002	**MW-10-040617**	EPA 200.8	472593	EPA 200.8	472697
60241616003	**MW-9-040617**	EPA 200.8	472593	EPA 200.8	472697
60241616004	**MW-8-040617**	EPA 200.8	472593	EPA 200.8	472697
60241616001	**MW-7-040617**	EPA 245.1	472110	EPA 245.1	472162
60241616002	**MW-10-040617**	EPA 245.1	472110	EPA 245.1	472162
60241616003	**MW-9-040617**	EPA 245.1	472110	EPA 245.1	472162
60241616004	**MW-8-040617**	EPA 245.1	472110	EPA 245.1	472162
60241616001	**MW-7-040617**	EPA 903.1	255826		
60241616002	**MW-10-040617**	EPA 903.1	255826		
60241616003	**MW-9-040617**	EPA 903.1	255826		
60241616004	**MW-8-040617**	EPA 903.1	255826		
60241616001	**MW-7-040617**	EPA 904.0	255827		
60241616002	**MW-10-040617**	EPA 904.0	255827		
60241616003	**MW-9-040617**	EPA 904.0	255827		
60241616004	**MW-8-040617**	EPA 904.0	255827		
60241616001	**MW-7-040617**	Total Radium Calculation	257045		
60241616002	**MW-10-040617**	Total Radium Calculation	257045		
60241616003	**MW-9-040617**	Total Radium Calculation	257045		
60241616004	**MW-8-040617**	Total Radium Calculation	257045		
60241616001	**MW-7-040617**	SM 2540C	472273		
60241616002	**MW-10-040617**	SM 2540C	472273		
60241616003	**MW-9-040617**	SM 2540C	472273		
60241616004	**MW-8-040617**	SM 2540C	472460		
60241616001	**MW-7-040617**	SM 4500-H+B	472464		
60241616002	**MW-10-040617**	SM 4500-H+B	472464		
60241616003	**MW-9-040617**	SM 4500-H+B	472464		
60241616004	**MW-8-040617**	SM 4500-H+B	472465		
60241616001	**MW-7-040617**	EPA 300.0	472089		
60241616002	**MW-10-040617**	EPA 300.0	472089		
60241616003	**MW-9-040617**	EPA 300.0	472089		
60241616003	**MW-9-040617**	EPA 300.0	472240		
60241616004	**MW-8-040617**	EPA 300.0	472089		

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Sample Condition Upon Receipt

WO# : 60241616

60241616

Client Name: Westar

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: CF +1.5 T-266 / CF +0.9 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.0 **Corr. Factor** CF +1.5 CF +0.9 **Corrected** 4.5

Date and initials of person examining contents: JB 4/7/17

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	pH
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	
Cyanide water sample checks: ☒N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: AMW Date: 4/10/17

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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.:	
Project Name:	TEC CCR Groundwater
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)

Pace Project No./ Lab I.D.: 6024/6/6

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	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	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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-7-040617	WT	G			4/6	0903		4	1		3																				BP2U BP3N[20] (2) BP1N[20] 001
2	MW-10-040617	WT	G			4/6	1049		4	1		3																				002
3	MW-9-040617	WT	G			4/6	1259		4	1		3																				003
4	MW-8-040617	WT	G			4/6	1506		4	1		3																				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: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	4/6/17	1645	[signature]	4/7/17	1447	4.5	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 04/06/17

*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

Chain of Custody

WO#:30215761

30215761

Pace Analytical®
www.pacelabs.com

Workorder: 60241616 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 4/7/2017 **Results Requested By:** 5/1/2017

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	Requested Analysis: Radium-226 & Total Sum	Radium-228	LAB USE ONLY
1	MW-7-040617	PS	4/6/2017 09:03	60241616001	Water	2	X	X	001
2	MW-10-040617	PS	4/6/2017 10:49	60241616002	Water	2	X	X	002
3	MW-9-040617	PS	4/6/2017 12:59	60241616003	Water	2	X	X	003
4	MW-8-040617	PS	4/6/2017 15:06	60241616004	Water	2	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/6/17 1600	[signature]	4/11/17 0940
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace Kansas Project # 30215761

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

Tracking #: 7285 6591 4130, 7285 6591 4287

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

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

Cooler Temperature Observed Temp NA °C Correction Factor: NA °C Final Temp: NA °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 4/11/17

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: 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.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			15. pH < 2 Initial when completed: KH Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:		✓		17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: KH Date: 4/11/17

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 1-7

May 2017 Sampling Event Laboratory Analytical Report

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

June 19, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on May 25, 2017. 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 June 14, 2017 report. This report has been reissued on June 15, 2017 to correct the Total Radium Sum Calculations.

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
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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

SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60245129001	**MW-7-052417**	Water	05/24/17 13:02	05/25/17 16:35
60245129002	**MW-10-052417**	Water	05/24/17 14:51	05/25/17 16:35
60245129003	**MW-9-052417**	Water	05/25/17 07:06	05/25/17 16:35
60245129004	**MW-8-052417**	Water	05/25/17 08:53	05/25/17 16:35

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

SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60245129001	MW-7-052417	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245129002	MW-10-052417	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245129003	MW-9-052417	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245129004	MW-8-052417	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: June 19, 2017

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: 479127

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60245129001,60245129002

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

- MS (Lab ID: 1962385)
  - Calcium
- MS (Lab ID: 1962387)
  - Boron
  - Calcium
- MSD (Lab ID: 1962386)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: June 19, 2017

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 CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: June 19, 2017

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 CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: June 19, 2017

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: June 19, 2017

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.: 60245129

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: June 19, 2017

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:

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

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: June 19, 2017

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.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: June 19, 2017

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-10-052417 (Lab ID: 60245129002)
- MW-7-052417 (Lab ID: 60245129001)
- MW-8-052417 (Lab ID: 60245129004)
- MW-9-052417 (Lab ID: 60245129003)

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 CCR GROUNDWATER
Pace Project No.: 60245129

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: June 19, 2017

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 CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-7-052417 **Lab ID: 60245129001** Collected: 05/24/17 13:02 Received: 05/25/17 16:35 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	**0.072**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:42	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/01/17 09:44	06/07/17 17:42	7440-41-7	
Boron, Total Recoverable	**0.70**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:42	7440-42-8	
Calcium, Total Recoverable	**152**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:42	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:42	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:42	7439-92-1	
Lithium	**0.023**	mg/L	0.010	1	06/01/17 09:44	06/07/17 17:42	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	05/30/17 16:33	06/15/17 17:46	7440-36-0	
Arsenic, Total Recoverable	**0.0013**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:46	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/30/17 16:33	06/15/17 17:46	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:46	7440-48-4	
Molybdenum, Total Recoverable	**0.0089**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:46	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:46	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:46	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/02/17 15:45	06/05/17 10:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1150**	mg/L	5.0	1		05/30/17 15:29		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		05/31/17 10:13		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**195**	mg/L	20.0	20		05/31/17 13:28	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		05/31/17 13:13	16984-48-8	
Sulfate	**504**	mg/L	50.0	50		05/31/17 13:43	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 GROUNDWATER
Pace Project No.: 60245129

Sample: MW-10-052417 **Lab ID: 60245129002** Collected: 05/24/17 14:51 Received: 05/25/17 16:35 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	**0.28**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:49	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/01/17 09:44	06/07/17 17:49	7440-41-7	
Boron, Total Recoverable	**0.26**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:49	7440-42-8	M1
Calcium, Total Recoverable	**177**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:49	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:49	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:49	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	06/01/17 09:44	06/07/17 17:49	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	05/30/17 16:33	06/15/17 17:58	7440-36-0	
Arsenic, Total Recoverable	**0.050**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:58	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/30/17 16:33	06/15/17 17:58	7440-43-9	
Cobalt, Total Recoverable	**0.0042**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:58	7440-48-4	
Molybdenum, Total Recoverable	**0.0028**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:58	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:58	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 17:58	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/02/17 15:45	06/05/17 11:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1150**	mg/L	5.0	1		05/30/17 15:29		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**228**	mg/L	20.0	20		05/31/17 14:12	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		05/31/17 13:58	16984-48-8	
Sulfate	**205**	mg/L	20.0	20		05/31/17 14:12	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 GROUNDWATER
Pace Project No.: 60245129

Sample: MW-9-052417 **Lab ID: 60245129003** Collected: 05/25/17 07:06 Received: 05/25/17 16:35 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	**0.74**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:56	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/01/17 09:44	06/07/17 17:56	7440-41-7	
Boron, Total Recoverable	**0.36**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:56	7440-42-8	
Calcium, Total Recoverable	**212**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:56	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:56	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:56	7439-92-1	
Lithium	**0.011**	mg/L	0.010	1	06/01/17 09:44	06/07/17 17:56	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	05/30/17 16:33	06/15/17 18:04	7440-36-0	
Arsenic, Total Recoverable	**0.099**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:04	7440-38-2	
Cadmium, Total Recoverable	**0.00053**	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:04	7440-43-9	
Cobalt, Total Recoverable	**0.024**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:04	7440-48-4	
Molybdenum, Total Recoverable	**0.0048**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:04	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:04	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:04	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/02/17 15:45	06/05/17 11:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1310**	mg/L	5.0	1		05/30/17 15:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**201**	mg/L	20.0	20		05/31/17 15:12	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		05/31/17 14:57	16984-48-8	
Sulfate	**239**	mg/L	20.0	20		05/31/17 15:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-8-052417 **Lab ID: 60245129004** Collected: 05/25/17 08:53 Received: 05/25/17 16:35 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	06/01/17 09:44	06/07/17 17:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/01/17 09:44	06/07/17 17:58	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:58	7440-42-8	
Calcium, Total Recoverable	**195**	mg/L	0.10	1	06/01/17 09:44	06/07/17 17:58	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:58	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/07/17 17:58	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	06/01/17 09:44	06/07/17 17:58	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	05/30/17 16:33	06/15/17 18:10	7440-36-0	
Arsenic, Total Recoverable	**0.0013**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:10	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/30/17 16:33	06/15/17 18:10	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:10	7440-48-4	
Molybdenum, Total Recoverable	**0.042**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:10	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:10	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/30/17 16:33	06/15/17 18:10	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/02/17 15:45	06/05/17 11:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1300**	mg/L	5.0	1		05/30/17 15:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.5**	Std. Units	0.10	1		06/02/17 13:34		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**174**	mg/L	20.0	20		05/31/17 15:57	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		05/31/17 15:42	16984-48-8	
Sulfate	**775**	mg/L	50.0	50		05/31/17 16:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 479454 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1963749 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	06/05/17 10:03	

LABORATORY CONTROL SAMPLE: 1963750

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0046	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1963751 1963752

Parameter	Units	60244908002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.00020	.005	.005	0.0045	0.0043	90	86	70-130	4	20	

MATRIX SPIKE SAMPLE: 1963753

Parameter	Units	60245415001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0048	93	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 479127 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1962383 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	06/07/17 17:40	
Beryllium	mg/L	<0.0010	0.0010	06/07/17 17:40	
Boron	mg/L	<0.10	0.10	06/07/17 17:40	
Calcium	mg/L	<0.10	0.10	06/07/17 17:40	
Chromium	mg/L	<0.0050	0.0050	06/07/17 17:40	
Lead	mg/L	<0.0050	0.0050	06/07/17 17:40	
Lithium	mg/L	<0.010	0.010	06/07/17 17:40	

LABORATORY CONTROL SAMPLE: 1962384

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1962385 1962386

Parameter	Units	60245129001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.072	1	1	1.0	1.0	95	95	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	0.96	0.97	96	97	70-130	1	20	
Boron	mg/L	0.70	1	1	1.7	1.6	95	94	70-130	1	20	
Calcium	mg/L	152	10	10	158	158	62	58	70-130	0	20	M1
Chromium	mg/L	<0.0050	1	1	0.94	0.95	94	95	70-130	1	20	
Lead	mg/L	<0.0050	1	1	0.91	0.91	91	91	70-130	0	20	
Lithium	mg/L	0.023	1	1	1.0	1.0	99	99	70-130	1	20	

MATRIX SPIKE SAMPLE: 1962387

Parameter	Units	60245129002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.28	1	1.0	71	70-130	
Beryllium	mg/L	<0.0010	1	0.98	98	70-130	
Boron	mg/L	0.26	1	2.3	205	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

MATRIX SPIKE SAMPLE: 1962387

Parameter	Units	60245129002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	177	10	224	471	70-130	M1
Chromium	mg/L	<0.0050	1	1.0	102	70-130	
Lead	mg/L	<0.0050	1	0.96	96	70-130	
Lithium	mg/L	<0.010	1	0.98	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 478816 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1961478 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	05/31/17 12:50	
Arsenic	mg/L	<0.0010	0.0010	05/31/17 12:50	
Cadmium	mg/L	<0.00050	0.00050	05/31/17 12:50	
Cobalt	mg/L	<0.0010	0.0010	05/31/17 12:50	
Molybdenum	mg/L	<0.0010	0.0010	05/31/17 12:50	
Selenium	mg/L	<0.0010	0.0010	05/31/17 12:50	
Thallium	mg/L	<0.0010	0.0010	05/31/17 12:50	

LABORATORY CONTROL SAMPLE: 1961479

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	98	85-115	
Arsenic	mg/L	.04	0.039	98	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.039	98	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.037	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1961480 1961481

Parameter	Units	60245311001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	ND	.04	.04	0.039	0.039	95	95	70-130	0	20	
Arsenic	mg/L	40.0 ug/L	.04	.04	0.078	0.080	94	100	70-130	3	20	
Cadmium	mg/L	ND	.04	.04	0.036	0.037	90	91	70-130	1	20	
Cobalt	mg/L	ND	.04	.04	0.042	0.042	92	94	70-130	2	20	
Molybdenum	mg/L	ND	.04	.04	0.043	0.043	106	105	70-130	1	20	
Selenium	mg/L	ND	.04	.04	0.035	0.035	87	87	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.038	0.038	94	94	70-130	0	20	

MATRIX SPIKE SAMPLE: 1961482

Parameter	Units	60245129001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.038	96	70-130	
Arsenic	mg/L	0.0013	.04	0.037	89	70-130	
Cadmium	mg/L	<0.00050	.04	0.035	88	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

MATRIX SPIKE SAMPLE: 1961482

Parameter	Units	60245129001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.037	89	70-130	
Molybdenum	mg/L	0.0089	.04	0.051	104	70-130	
Selenium	mg/L	<0.0010	.04	0.033	83	70-130	
Thallium	mg/L	<0.0010	.04	0.034	85	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 478864 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1961616 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	05/30/17 15:27	

LABORATORY CONTROL SAMPLE: 1961617

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	934	93	80-120	

SAMPLE DUPLICATE: 1961618

Parameter	Units	60245105006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	466	460	1	10	

SAMPLE DUPLICATE: 1961619

Parameter	Units	60245259004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	94.5	95.5	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 478998
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60245129001

SAMPLE DUPLICATE: 1961976

Parameter	Units	60245063001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.1	8.1	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 479276 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60245129002, 60245129003, 60245129004

SAMPLE DUPLICATE: 1962983

Parameter	Units	60245416001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.0	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 478968 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1961900 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	05/31/17 09:01	
Fluoride	mg/L	<0.20	0.20	05/31/17 09:01	
Sulfate	mg/L	<1.0	1.0	05/31/17 09:01	

LABORATORY CONTROL SAMPLE: 1961901

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	100	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.2	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1961902 1961903

Parameter	Units	60245259005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	30.3	25	25	56.4	56.3	104	104	80-120	0	15	
Fluoride	mg/L	ND	12.5	12.5	13.8	13.7	107	106	80-120	0	15	
Sulfate	mg/L	33.1	25	25	58.6	58.3	102	101	80-120	1	15	

MATRIX SPIKE SAMPLE: 1961904

Parameter	Units	60245137009 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.4	5	10.7	104	80-120	
Fluoride	mg/L	0.21	2.5	2.9	106	80-120	
Sulfate	mg/L	12.9	5	18.2	106	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-7-052417 **Lab ID: 60245129001** Collected: 05/24/17 13:02 Received: 05/25/17 16:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.132 ± 0.302 (0.179) C:NA T:88%**	pCi/L	06/12/17 21:34	13982-63-3	
Radium-228	EPA 904.0	**0.996 ± 0.483 (0.863) C:79% T:85%**	pCi/L	06/12/17 11:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.13 ± 0.785 (1.04)**	pCi/L	06/14/17 09:40	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-10-052417 **Lab ID: 60245129002** Collected: 05/24/17 14:51 Received: 05/25/17 16:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.227 ± 0.316 (0.527) C:NA T:94%**	pCi/L	06/12/17 21:34	13982-63-3	
Radium-228	EPA 904.0	**1.96 ± 0.622 (0.844) C:80% T:76%**	pCi/L	06/12/17 11:07	15262-20-1	
Total Radium	Total Radium Calculation	**2.19 ± 0.938 (1.37)**	pCi/L	06/14/17 09:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-9-052417 **Lab ID: 60245129003** Collected: 05/25/17 07:06 Received: 05/25/17 16:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.613 ± 0.486 (0.660) C:NA T:89%**	pCi/L	06/12/17 21:34	13982-63-3	
Radium-228	EPA 904.0	**1.03 ± 0.460 (0.754) C:79% T:72%**	pCi/L	06/12/17 11:08	15262-20-1	
Total Radium	Total Radium Calculation	**1.64 ± 0.945 (1.41)**	pCi/L	06/14/17 09:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Sample: MW-8-052417 **Lab ID: 60245129004** Collected: 05/25/17 08:53 Received: 05/25/17 16:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.569 ± 0.416 (0.465) C:NA T:93%**	pCi/L	06/12/17 21:34	13982-63-3	
Radium-228	EPA 904.0	**0.508 ± 0.348 (0.666) C:78% T:85%**	pCi/L	06/12/17 11:08	15262-20-1	
Total Radium	Total Radium Calculation	**1.08 ± 0.764 (1.13)**	pCi/L	06/14/17 09:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 260867 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1284604 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.00842 ± 0.299 (0.693) C:81% T:82%	pCi/L	06/12/17 11:06	

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 CCR GROUNDWATER
Pace Project No.: 60245129

QC Batch: 260596 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

METHOD BLANK: 1283376 Matrix: Water
Associated Lab Samples: 60245129001, 60245129002, 60245129003, 60245129004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0588 ± 0.383 (0.771) C:NA T:96%	pCi/L	06/12/17 21:18	

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

QUALIFIERS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

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.

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

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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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60245129

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60245129001	**MW-7-052417**	EPA 200.7	479127	EPA 200.7	479269
60245129002	**MW-10-052417**	EPA 200.7	479127	EPA 200.7	479269
60245129003	**MW-9-052417**	EPA 200.7	479127	EPA 200.7	479269
60245129004	**MW-8-052417**	EPA 200.7	479127	EPA 200.7	479269
60245129001	**MW-7-052417**	EPA 200.8	478816	EPA 200.8	478960
60245129002	**MW-10-052417**	EPA 200.8	478816	EPA 200.8	478960
60245129003	**MW-9-052417**	EPA 200.8	478816	EPA 200.8	478960
60245129004	**MW-8-052417**	EPA 200.8	478816	EPA 200.8	478960
60245129001	**MW-7-052417**	EPA 245.1	479454	EPA 245.1	479500
60245129002	**MW-10-052417**	EPA 245.1	479454	EPA 245.1	479500
60245129003	**MW-9-052417**	EPA 245.1	479454	EPA 245.1	479500
60245129004	**MW-8-052417**	EPA 245.1	479454	EPA 245.1	479500
60245129001	**MW-7-052417**	EPA 903.1	260596		
60245129002	**MW-10-052417**	EPA 903.1	260596		
60245129003	**MW-9-052417**	EPA 903.1	260596		
60245129004	**MW-8-052417**	EPA 903.1	260596		
60245129001	**MW-7-052417**	EPA 904.0	260867		
60245129002	**MW-10-052417**	EPA 904.0	260867		
60245129003	**MW-9-052417**	EPA 904.0	260867		
60245129004	**MW-8-052417**	EPA 904.0	260867		
60245129001	**MW-7-052417**	Total Radium Calculation	261806		
60245129002	**MW-10-052417**	Total Radium Calculation	261806		
60245129003	**MW-9-052417**	Total Radium Calculation	261806		
60245129004	**MW-8-052417**	Total Radium Calculation	261806		
60245129001	**MW-7-052417**	SM 2540C	478864		
60245129002	**MW-10-052417**	SM 2540C	478864		
60245129003	**MW-9-052417**	SM 2540C	478864		
60245129004	**MW-8-052417**	SM 2540C	478864		
60245129001	**MW-7-052417**	SM 4500-H+B	478998		
60245129002	**MW-10-052417**	SM 4500-H+B	479276		
60245129003	**MW-9-052417**	SM 4500-H+B	479276		
60245129004	**MW-8-052417**	SM 4500-H+B	479276		
60245129001	**MW-7-052417**	EPA 300.0	478968		
60245129002	**MW-10-052417**	EPA 300.0	478968		
60245129003	**MW-9-052417**	EPA 300.0	478968		
60245129004	**MW-8-052417**	EPA 300.0	478968		

REPORT OF LABORATORY ANALYSIS

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60245129

60245129

HMW

Client Name: Westar

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: CF +2.9 T-266 / CF +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 2.8 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 3.0

Date and initials of person examining contents: JL 5-25-17

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	pH (5-25 0704)
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	MW-9-052517 BPIN initial pH 5.0 added 10mL HNO_3, pH 0.5
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: IRWA-20857

Project Manager Review: HMW Date: 5/26/17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical www.pacelabs.com

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.:	
Project Name:	TEC CCR Groundwater
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)

Pace Project No./ Lab I.D.: 60245129

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	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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-7-052417	WT	G			5/24	1302		4	1		3																0.5 2-BPIN, 0.5 1-BP2N, 1-BP2U W1
2	MW-10-052417	WT	G			5/24	1457		4	1		3																0.5 1-BP2N 1-BP2U W2
3	MW-9-052517	WT	G			5/25	0706		4	1		3																↓ W3
4	MW-8-052517	WT	G			5/25	0853		4	1		3																↓ W4
5																												JC 5.25.17
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: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	5/25/17	1015	[signature] · Pace	5·25·17	1635	3.0	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLE CONDITIONS

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 05/25/17

*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

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60245129 Workorder Name: TEC CCR GROUNDWATER Owner Received Date: 5/25/2017 Results Requested By: 6/19/2017

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#: 30220239

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Radium-228	Radium-226 & Total Radium													LAB USE ONLY
1	MW-7-052417	PS	5/24/2017 13:02	60245129001	Water	2						X	X													001
2	MW-10-052417	PS	5/24/2017 14:51	60245129002	Water	2						X	X													002
3	MW-9-052417	PS	5/25/2017 07:06	60245129003	Water	2						X	X													003
4	MW-8-052417	PS	5/25/2017 08:53	60245129004	Water	2						X	X													004
5																										

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	5/30/17 1700	Karen Hess	5/31/17 0955
2				
3				

Comments

Cooler Temperature on Receipt NA °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.

Sample Condition Upon Receipt Pittsburgh

30220239

Pace Analytical

Client Name: Pace Kansas Project #

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

Tracking #: 3285 0592 8375

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

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

Cooler Temperature Observed Temp NA °C Correction Factor: NA °C Final Temp: NA °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: KH 5/31/17

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: 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:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. pH<2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed KH / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: KH / Date: 5/31/17

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 1-8

June 2017 Sampling Event Laboratory Analytical Report

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

July 21, 2017

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

RE: Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2017. 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
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
L-A-B DOD-ELAP Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification
Connecticut Certification #: PH-0694
Delaware Certification
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 #: 90133
Louisiana DHH/TNI Certification #: LA140008
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: PA00091
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification
Missouri Certification #: 235
Montana Certification #: Cert 0082
Nebraska Certification #: NE-05-29-14
Nevada Certification #: PA014572015-1
New Hampshire/TNI Certification #: 2976
New Jersey/TNI Certification #: PA 051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Oregon/TNI Certification #: PA200002
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN2867
Texas/TNI Certification #: T104704188-14-8
Utah/TNI Certification #: PA014572015-5
USDA Soil Permit #: P330-14-00213
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Certification
Wyoming Certification #: 8TMS-L

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 15-016-0
Illinois Certification #: 003097
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212008A
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070

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SAMPLE SUMMARY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247587001	**MW-7-062717**	Water	06/27/17 14:33	06/28/17 16:40
60247587002	**MW-9-062717**	Water	06/27/17 16:06	06/28/17 16:40
60247587003	**MW-10-062717**	Water	06/28/17 07:20	06/28/17 16:40
60247587004	**MW-8-062717**	Water	06/28/17 09:00	06/28/17 16:40

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SAMPLE ANALYTE COUNT

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247587001	**MW-7-062717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	JMC1, OL	3	PASI-K
60247587002	**MW-9-062717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	JMC1, OL	3	PASI-K
60247587003	**MW-10-062717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	JMC1, OL	3	PASI-K
60247587004	**MW-8-062717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	JMC1, OL	3	PASI-K

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 21, 2017

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:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 21, 2017

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:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 21, 2017

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 CCR GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 21, 2017

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 CCR GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 21, 2017

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 CCR GROUNDWATER
Pace Project No.: 60247587

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 21, 2017

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:

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PROJECT NARRATIVE

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: July 21, 2017

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 GROUNDWATER
Pace Project No.: 60247587

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 21, 2017

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-10-062717 (Lab ID: 60247587003)
- MW-7-062717 (Lab ID: 60247587001)
- MW-8-062717 (Lab ID: 60247587004)
- MW-9-062717 (Lab ID: 60247587002)

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 GROUNDWATER
Pace Project No.: 60247587

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 21, 2017

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.

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-7-062717 **Lab ID: 60247587001** Collected: 06/27/17 14:33 Received: 06/28/17 16:40 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	**0.066**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:47	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:47	7440-41-7	
Boron, Total Recoverable	**0.69**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:47	7440-42-8	
Calcium, Total Recoverable	**151**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:47	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:47	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:47	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:47	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	06/30/17 11:00	07/14/17 15:16	7440-36-0	
Arsenic, Total Recoverable	**0.0016**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:16	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/14/17 15:16	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:16	7440-48-4	
Molybdenum, Total Recoverable	**0.010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:16	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:16	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:16	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/13/17 17:09	07/14/17 14:15	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1130**	mg/L	5.0	1		07/03/17 11:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		06/30/17 10:03		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**186**	mg/L	20.0	20		07/20/17 13:16	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		07/16/17 12:35	16984-48-8	
Sulfate	**446**	mg/L	50.0	50		07/20/17 13:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-9-062717 **Lab ID: 60247587002** Collected: 06/27/17 16:06 Received: 06/28/17 16:40 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	**0.74**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:50	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:50	7440-41-7	
Boron, Total Recoverable	**0.30**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:50	7440-42-8	
Calcium, Total Recoverable	**226**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:50	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:50	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	06/30/17 11:00	07/14/17 15:33	7440-36-0	
Arsenic, Total Recoverable	**0.11**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:33	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/14/17 15:33	7440-43-9	
Cobalt, Total Recoverable	**0.022**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:33	7440-48-4	
Molybdenum, Total Recoverable	**0.0046**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:33	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:33	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:33	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/13/17 17:09	07/14/17 14:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1380**	mg/L	5.0	1		07/03/17 11:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.6**	Std. Units	0.10	1		06/30/17 10:09		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**193**	mg/L	20.0	20		07/20/17 13:45	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	1		07/16/17 12:50	16984-48-8	
Sulfate	**264**	mg/L	20.0	20		07/20/17 13:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-10-062717 **Lab ID: 60247587003** Collected: 06/28/17 07:20 Received: 06/28/17 16:40 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	**0.29**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:56	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:56	7440-41-7	
Boron, Total Recoverable	**0.25**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:56	7440-42-8	
Calcium, Total Recoverable	**180**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:56	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:56	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:56	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:56	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	06/30/17 11:00	07/14/17 15:42	7440-36-0	
Arsenic, Total Recoverable	**0.064**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:42	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/14/17 15:42	7440-43-9	
Cobalt, Total Recoverable	**0.0035**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:42	7440-48-4	
Molybdenum, Total Recoverable	**0.0033**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:42	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:42	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:42	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/13/17 17:09	07/14/17 14:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1260**	mg/L	5.0	1		07/03/17 11:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.6**	Std. Units	0.10	1		06/30/17 10:43		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**217**	mg/L	20.0	20		07/20/17 09:31	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		07/16/17 13:34	16984-48-8	
Sulfate	**178**	mg/L	20.0	20		07/20/17 09:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-8-062717 **Lab ID: 60247587004** Collected: 06/28/17 09:00 Received: 06/28/17 16:40 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	06/30/17 11:00	07/10/17 18:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:58	7440-41-7	
Boron, Total Recoverable	**1.3**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:58	7440-42-8	
Calcium, Total Recoverable	**218**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:58	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:58	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:58	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:58	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	06/30/17 11:00	07/14/17 15:50	7440-36-0	
Arsenic, Total Recoverable	**0.0023**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:50	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/14/17 15:50	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:50	7440-48-4	
Molybdenum, Total Recoverable	**0.039**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:50	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/14/17 15:50	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/13/17 17:09	07/14/17 14:22	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1490**	mg/L	5.0	1		07/03/17 11:22		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.8**	Std. Units	0.10	1		06/30/17 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**165**	mg/L	20.0	20		07/20/17 10:10	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		07/16/17 13:49	16984-48-8	
Sulfate	**688**	mg/L	100	100		07/20/17 10:23	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 485332 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1987526 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/14/17 14:02	

LABORATORY CONTROL SAMPLE: 1987527

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0051	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1987528 1987529

Parameter	Units	60248020001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	0.0047	0.0047	93	93	70-130	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1987530 1987531

Parameter	Units	60248127001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.20 ug/L	.005	.005	0.0048	0.0048	96	95	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 483470 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1980483 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/10/17 18:03	
Beryllium	mg/L	<0.0010	0.0010	07/10/17 18:03	
Boron	mg/L	<0.10	0.10	07/10/17 18:03	
Calcium	mg/L	<0.10	0.10	07/10/17 18:03	
Chromium	mg/L	<0.0050	0.0050	07/10/17 18:03	
Lead	mg/L	<0.0050	0.0050	07/10/17 18:03	
Lithium	mg/L	<0.010	0.010	07/10/17 18:03	

LABORATORY CONTROL SAMPLE: 1980484

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.98	98	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.97	97	85-115	
Calcium	mg/L	10	10.5	105	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.0	101	85-115	
Lithium	mg/L	1	0.96	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1980485 1980486

Parameter	Units	60246928002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.051	1	1	1.0	1.0	100	99	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	1.0	0.99	100	99	70-130	1	20	
Boron	mg/L	0.79	1	1	1.8	1.8	101	102	70-130	0	20	
Calcium	mg/L	260	10	10	269	270	90	103	70-130	0	20	
Chromium	mg/L	<0.0050	1	1	1.0	1.0	101	100	70-130	1	20	
Lead	mg/L	<0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lithium	mg/L	0.037	1	1	1.1	1.1	103	103	70-130	0	20	

MATRIX SPIKE SAMPLE: 1980487

Parameter	Units	60247365006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.12	1	1.1	100	70-130	
Beryllium	mg/L	<0.0010	1	0.98	98	70-130	
Boron	mg/L	2.0	1	3.0	102	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

MATRIX SPIKE SAMPLE: 1980487

Parameter	Units	60247365006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	227	10	236	87	70-130	
Chromium	mg/L	<0.0050	1	0.97	97	70-130	
Lead	mg/L	<0.0050	1	0.89	88	70-130	
Lithium	mg/L	0.22	1	1.3	113	70-130	

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 483371 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1980101 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/03/17 11:39	
Arsenic	mg/L	<0.0010	0.0010	07/03/17 11:39	
Cadmium	mg/L	<0.00050	0.00050	07/03/17 11:39	
Cobalt	mg/L	<0.0010	0.0010	07/03/17 11:39	
Molybdenum	mg/L	<0.0010	0.0010	07/03/17 11:39	
Selenium	mg/L	<0.0010	0.0010	07/03/17 11:39	
Thallium	mg/L	<0.0010	0.0010	07/03/17 11:39	

LABORATORY CONTROL SAMPLE: 1980102

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.039	97	85-115	
Cadmium	mg/L	.04	0.038	95	85-115	
Cobalt	mg/L	.04	0.039	99	85-115	
Molybdenum	mg/L	.04	0.040	99	85-115	
Selenium	mg/L	.04	0.037	93	85-115	
Thallium	mg/L	.04	0.036	89	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1980103 1980104

Parameter	Units	60246928001 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	.04	.04	0.037	0.037	90	91	70-130	1	20	
Arsenic	mg/L	0.0049	.04	.04	0.040	0.040	88	88	70-130	0	20	
Cadmium	mg/L	<0.00050	.04	.04	0.031	0.031	78	78	70-130	0	20	
Cobalt	mg/L	0.0018	.04	.04	0.038	0.038	89	90	70-130	0	20	
Molybdenum	mg/L	0.31	.04	.04	0.36	0.36	116	105	70-130	1	20	
Selenium	mg/L	<0.0010	.04	.04	0.034	0.033	83	81	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.033	0.033	82	82	70-130	0	20	

MATRIX SPIKE SAMPLE: 1980105

Parameter	Units	60247365005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0050	.04	0.037	91	70-130	
Arsenic	mg/L	<0.0050	.04	0.037	86	70-130	
Cadmium	mg/L	<0.0025	.04	0.032	79	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

MATRIX SPIKE SAMPLE: 1980105

Parameter	Units	60247365005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0050	.04	0.036	88	70-130	
Molybdenum	mg/L	0.0054	.04	0.046	101	70-130	
Selenium	mg/L	<0.0050	.04	0.030	76	70-130	
Thallium	mg/L	<0.0050	.04	0.033	80	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 483738 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1981962 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/03/17 11:12	

LABORATORY CONTROL SAMPLE: 1981963

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	964	96	80-120	

SAMPLE DUPLICATE: 1981964

Parameter	Units	60247514002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	899	945	5	10	

SAMPLE DUPLICATE: 1981965

Parameter	Units	60247587002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1380	1380	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 483453 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60247587001, 60247587002

SAMPLE DUPLICATE: 1980388

Parameter	Units	60247516002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.7	8.7	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 483454 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60247587003, 60247587004

SAMPLE DUPLICATE: 1980389

Parameter	Units	60247605010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.9	7.0	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 485617 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1989208 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/16/17 09:11	

LABORATORY CONTROL SAMPLE: 1989209

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1989210 1989211

Parameter	Units	60247586001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	<0.20	2.5	2.5	3.1	3.1	115	114	80-120	0	15	

MATRIX SPIKE SAMPLE: 1989212

Parameter	Units	60247586002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.42	2.5	3.0	105	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 486220 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247587001, 60247587002

METHOD BLANK: 1991175 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	07/20/17 08:22	
Sulfate	mg/L	<1.0	1.0	07/20/17 08:22	

LABORATORY CONTROL SAMPLE: 1991176

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Sulfate	mg/L	5	4.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1991177 1991178

Parameter	Units	60247150009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	100	100	99.1	98.8	89	89	80-120	0	15	
Sulfate	mg/L	157	100	100	257	256	101	100	80-120	0	15	

MATRIX SPIKE SAMPLE: 1991179

Parameter	Units	60247587002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	193	100	302	109	80-120	
Sulfate	mg/L	264	100	369	105	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 486228
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247587003, 60247587004

METHOD BLANK: 1991250 Matrix: Water
Associated Lab Samples: 60247587003, 60247587004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	07/20/17 09:05	
Sulfate	mg/L	<1.0	1.0	07/20/17 09:05	

LABORATORY CONTROL SAMPLE: 1991251

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1991252 1991253

Parameter	Units	60247587003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	217	100	100	323	324	106	106	80-120	0	15	
Sulfate	mg/L	178	100	100	277	277	99	99	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-7-062717 **Lab ID: 60247587001** Collected: 06/27/17 14:33 Received: 06/28/17 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.509 ± 0.470 (0.684) C:NA T:91%**	pCi/L	07/13/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**0.282 ± 0.386 (0.827) C:75% T:78%**	pCi/L	07/14/17 15:54	15262-20-1	
Total Radium	Total Radium Calculation	**0.791 ± 0.856 (1.51)**	pCi/L	07/19/17 14:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-9-062717 **Lab ID: 60247587002** Collected: 06/27/17 16:06 Received: 06/28/17 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.466 ± 0.655 (1.11) C:NA T:91%**	pCi/L	07/13/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**0.887 ± 0.392 (0.636) C:78% T:80%**	pCi/L	07/14/17 14:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.35 ± 1.05 (1.75)**	pCi/L	07/19/17 14:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

Sample: MW-10-062717 **Lab ID: 60247587003** Collected: 06/28/17 07:20 Received: 06/28/17 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.632 ± 0.462 (0.517) C:NA T:92%**	pCi/L	07/13/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**1.78 ± 0.534 (0.654) C:77% T:87%**	pCi/L	07/14/17 14:46	15262-20-1	
Total Radium	Total Radium Calculation	**2.41 ± 0.996 (1.17)**	pCi/L	07/19/17 14:19	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.: 60247587

Sample: MW-8-062717 **Lab ID: 60247587004** Collected: 06/28/17 09:00 Received: 06/28/17 16:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.556 ± 0.391 (0.188) C:NA T:84%**	pCi/L	07/13/17 10:10	13982-63-3	
Radium-228	EPA 904.0	**0.637 ± 0.381 (0.705) C:69% T:89%**	pCi/L	07/14/17 14:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.19 ± 0.772 (0.893)**	pCi/L	07/19/17 14:19	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 264174 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1301274 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.065 ± 0.340 (0.787) C:NA T:90%	pCi/L	07/13/17 10:10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: TEC CCR GROUNDWATER
Pace Project No.: 60247587

QC Batch: 264497 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

METHOD BLANK: 1302853 Matrix: Water
Associated Lab Samples: 60247587001, 60247587002, 60247587003, 60247587004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.177 ± 0.298 (0.649) C:74% T:95%	pCi/L	07/14/17 14:43	

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 GROUNDWATER
Pace Project No.: 60247587

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.

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-K	Pace Analytical Services - Kansas City
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

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

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.: 60247587

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247587001	**MW-7-062717**	EPA 200.7	483470	EPA 200.7	483561
60247587002	**MW-9-062717**	EPA 200.7	483470	EPA 200.7	483561
60247587003	**MW-10-062717**	EPA 200.7	483470	EPA 200.7	483561
60247587004	**MW-8-062717**	EPA 200.7	483470	EPA 200.7	483561
60247587001	**MW-7-062717**	EPA 200.8	483371	EPA 200.8	483560
60247587002	**MW-9-062717**	EPA 200.8	483371	EPA 200.8	483560
60247587003	**MW-10-062717**	EPA 200.8	483371	EPA 200.8	483560
60247587004	**MW-8-062717**	EPA 200.8	483371	EPA 200.8	483560
60247587001	**MW-7-062717**	EPA 245.1	485332	EPA 245.1	485347
60247587002	**MW-9-062717**	EPA 245.1	485332	EPA 245.1	485347
60247587003	**MW-10-062717**	EPA 245.1	485332	EPA 245.1	485347
60247587004	**MW-8-062717**	EPA 245.1	485332	EPA 245.1	485347
60247587001	**MW-7-062717**	EPA 903.1	264174		
60247587002	**MW-9-062717**	EPA 903.1	264174		
60247587003	**MW-10-062717**	EPA 903.1	264174		
60247587004	**MW-8-062717**	EPA 903.1	264174		
60247587001	**MW-7-062717**	EPA 904.0	264497		
60247587002	**MW-9-062717**	EPA 904.0	264497		
60247587003	**MW-10-062717**	EPA 904.0	264497		
60247587004	**MW-8-062717**	EPA 904.0	264497		
60247587001	**MW-7-062717**	Total Radium Calculation	265536		
60247587002	**MW-9-062717**	Total Radium Calculation	265536		
60247587003	**MW-10-062717**	Total Radium Calculation	265536		
60247587004	**MW-8-062717**	Total Radium Calculation	265536		
60247587001	**MW-7-062717**	SM 2540C	483738		
60247587002	**MW-9-062717**	SM 2540C	483738		
60247587003	**MW-10-062717**	SM 2540C	483738		
60247587004	**MW-8-062717**	SM 2540C	483738		
60247587001	**MW-7-062717**	SM 4500-H+B	483453		
60247587002	**MW-9-062717**	SM 4500-H+B	483453		
60247587003	**MW-10-062717**	SM 4500-H+B	483454		
60247587004	**MW-8-062717**	SM 4500-H+B	483454		
60247587001	**MW-7-062717**	EPA 300.0	485617		
60247587001	**MW-7-062717**	EPA 300.0	486220		
60247587002	**MW-9-062717**	EPA 300.0	485617		
60247587002	**MW-9-062717**	EPA 300.0	486220		
60247587003	**MW-10-062717**	EPA 300.0	485617		
60247587003	**MW-10-062717**	EPA 300.0	486228		
60247587004	**MW-8-062717**	EPA 300.0	485617		
60247587004	**MW-8-062717**	EPA 300.0	486228		

REPORT OF LABORATORY ANALYSIS

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO#: 60247587

60247587

Client Name: Weaver

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-266 (CF +2.9) / T-239 (CF +0.2) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 4.4 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 4.6

Date and initials of person examining contents: JC 6.28.17

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	pH JC 6.28.17 0720 6,27 1423
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	
Cyanide water sample checks: ☑N/A Lead acetate strip turns dark? (Record only) Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No ☐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: 6/29/17

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical www.pacelabs.com

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.:
Project Name: TEC CCR Groundwater
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

Requested Analysis Filtered (Y/N)

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

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	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	300.0 Cl, Fl, SO4	4500 H+B	2540C TDS	Radium 226	Radium 228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60247587
1	MW-7-062717	WT	G			6/27	1433		4	1		3																3-BP1NO3, 1-BP2U 001
2	MW-9-062717	WT	G			6/27	1608		4	1		3																002
3	MW-10-062817	WT	G			6/28	0720		4	1		3																003
4	MW-8-062817	WT	G			6/28	0900		4	1		3																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: Ba, Be, B, Ca, Cr, Pb, Li	[illegible] / Westar	6/28/17	1030	[illegible] Pace	6.28.17	1640	4.6	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin
SIGNATURE of SAMPLER: [illegible]
DATE Signed (MM/DD/YY): 06/28/17

*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

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60247587 **Workorder Name:** TEC CCR GROUNDWATER **Owner Received Date:** 6/28/2017 **Results Requested By:** 7/21/2017

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#:30223093

30223093

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis: Radium-228	Requested Analysis: Radium-226 & Total Radium	LAB USE ONLY
1	MW-7-062717	PS	6/27/2017 14:33	60247587001	Water	2	X	X	001
2	MW-9-062717	PS	6/27/2017 16:06	60247587002	Water	2	X	X	002
3	MW-10-062717	PS	6/28/2017 07:20	60247587003	Water	2	X	X	003
4	MW-8-062717	PS	6/28/2017 09:00	60247587004	Water	2	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1		6/29 1700		6/30/17 0:0
2				
3				

Comments

Cooler Temperature on Receipt N/A °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.*

Sample Condition Upon Receipt Pittsburgh

30223093

Pace Analytical

Client Name: PACE - KANSAS Project # ZH

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

Tracking #: 734057085781 60

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

Date and Initials of person examining contents: ZH 6/30/17

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: 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:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered				12.
Organic Samples checked for dechlorination:			✓	13.
Filtered volume received for Dissolved tests			✓	14.
All containers have been checked for preservation.	✓			15. pH <2
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed ZH / Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present:			✓	17.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH Date: 6/30/17

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 2

Revised Groundwater Potentiometric Maps

LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (AUGUST 2016)
- 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 17 AUGUST 2016.

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 AUGUST 17, 2016

evergy

MARCH 2022

FIGURE 2

LEGEND

MW-8
849.64 WELL NAME AND GROUNDWATER ELEVATION (SEPTEMBER 2016)

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 19 SEPTEMBER 2016.

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

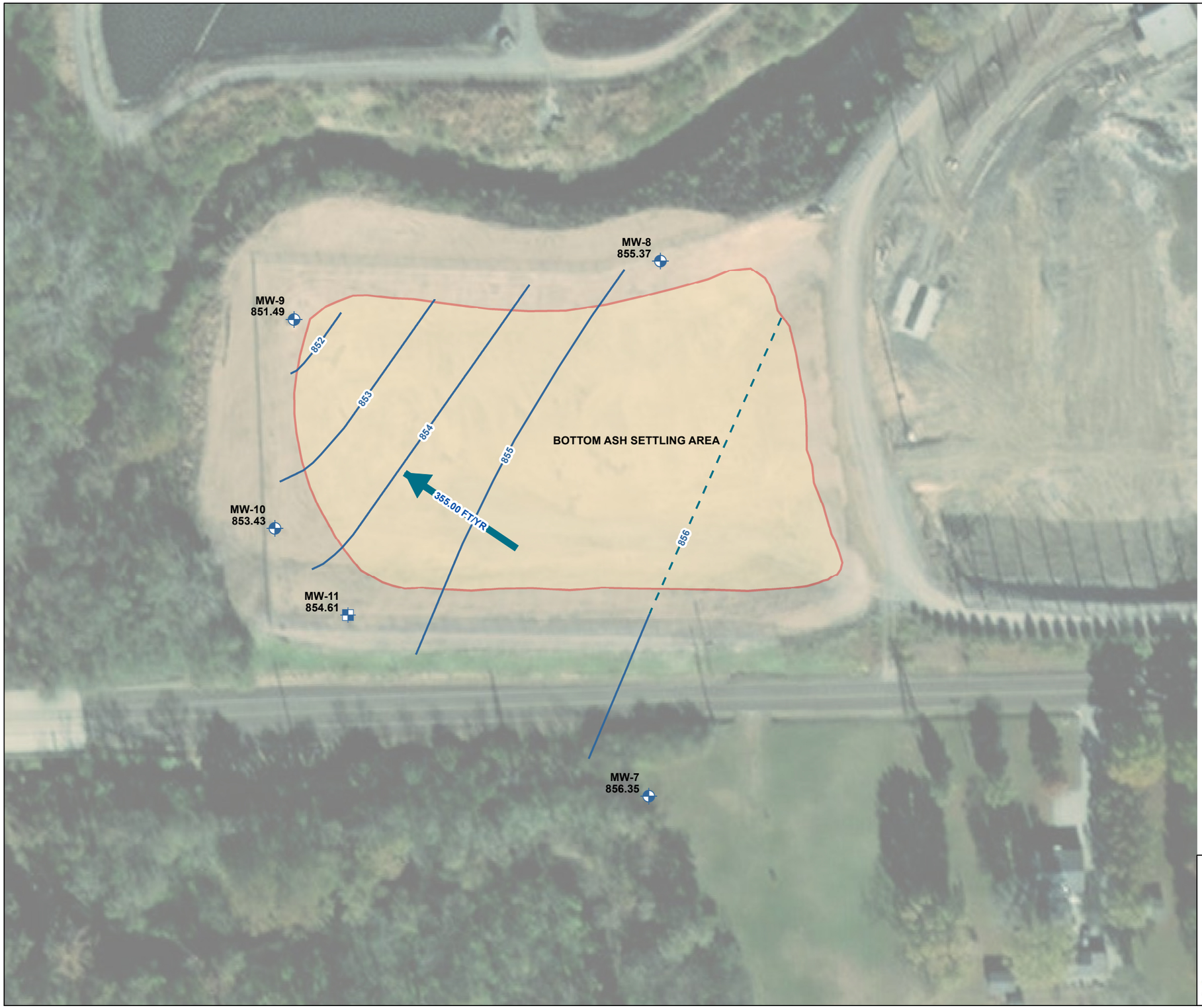
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 19, 2016

evergy

MARCH 2022

FIGURE 3



LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (OCTOBER 2016)
- 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 31 OCTOBER 2016.
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

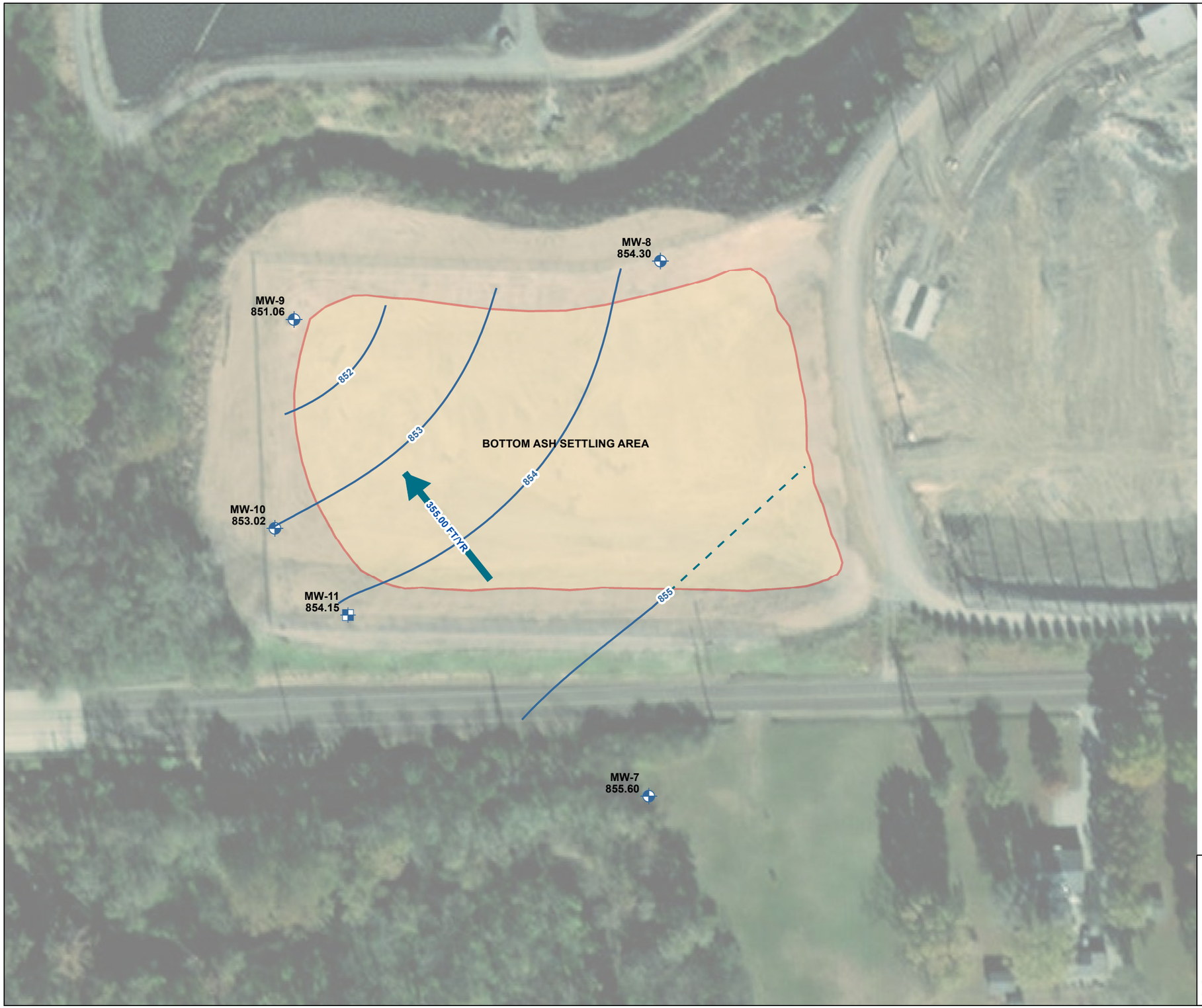
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
TECUMSEH, KANSAS

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP OCTOBER 31, 2016

evergy

MARCH 2022

FIGURE 4



LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (DECEMBER 2016)
- 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 12 DECEMBER 2016.
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 12, 2016

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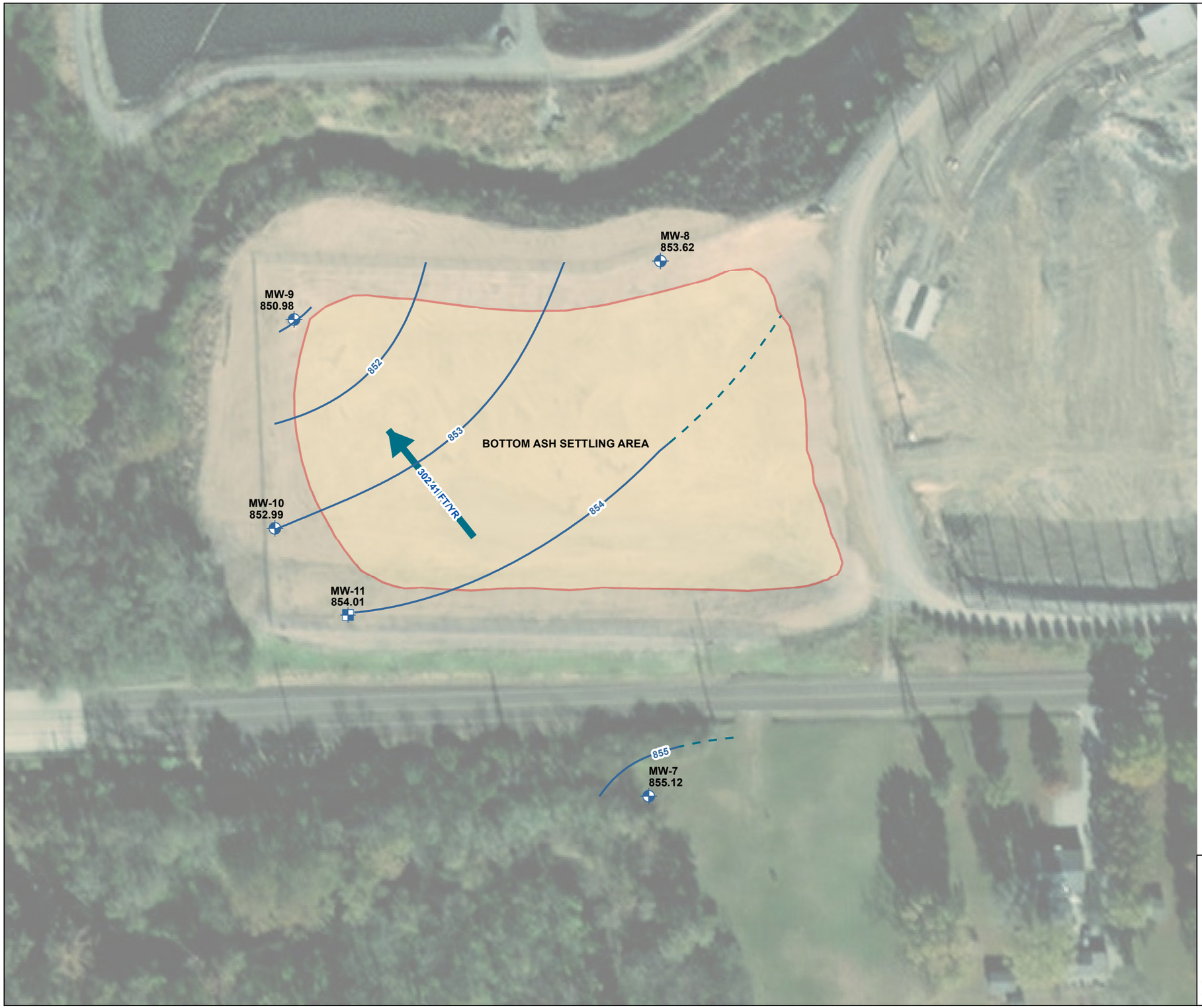
MARCH 2022

FIGURE 5



LEGEND

- **MW-8 849.64** WELL NAME AND GROUNDWATER ELEVATION (FEBRUARY 2017)
- 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 06 FEBRUARY 2017.

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

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SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP FEBRUARY 06, 2017

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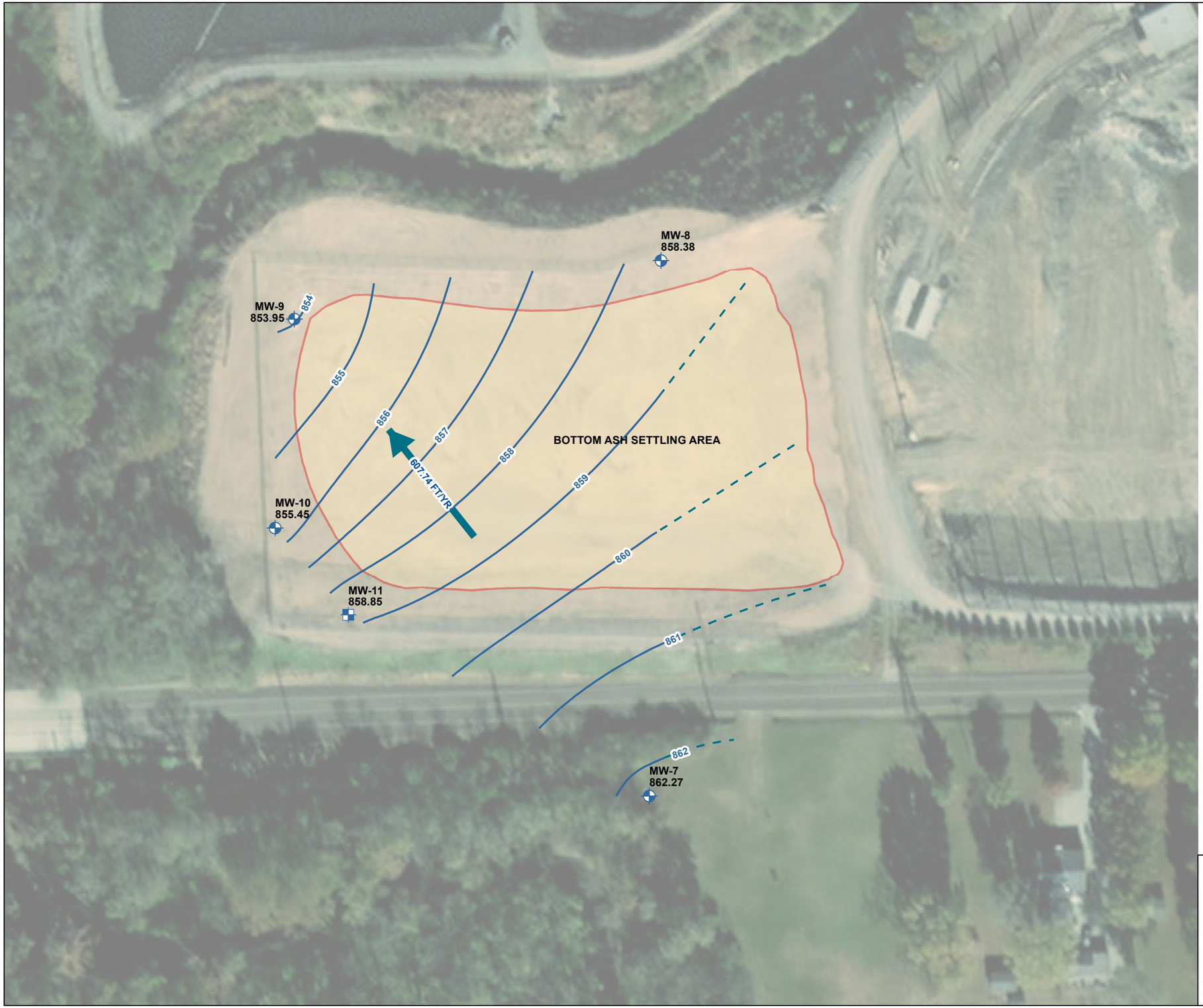
MARCH 2022

FIGURE 6



LEGEND

MW-8 849.64	WELL NAME AND GROUNDWATER ELEVATION (APRIL 2017)
	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 APRIL 2017.

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

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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 APRIL 05, 2017

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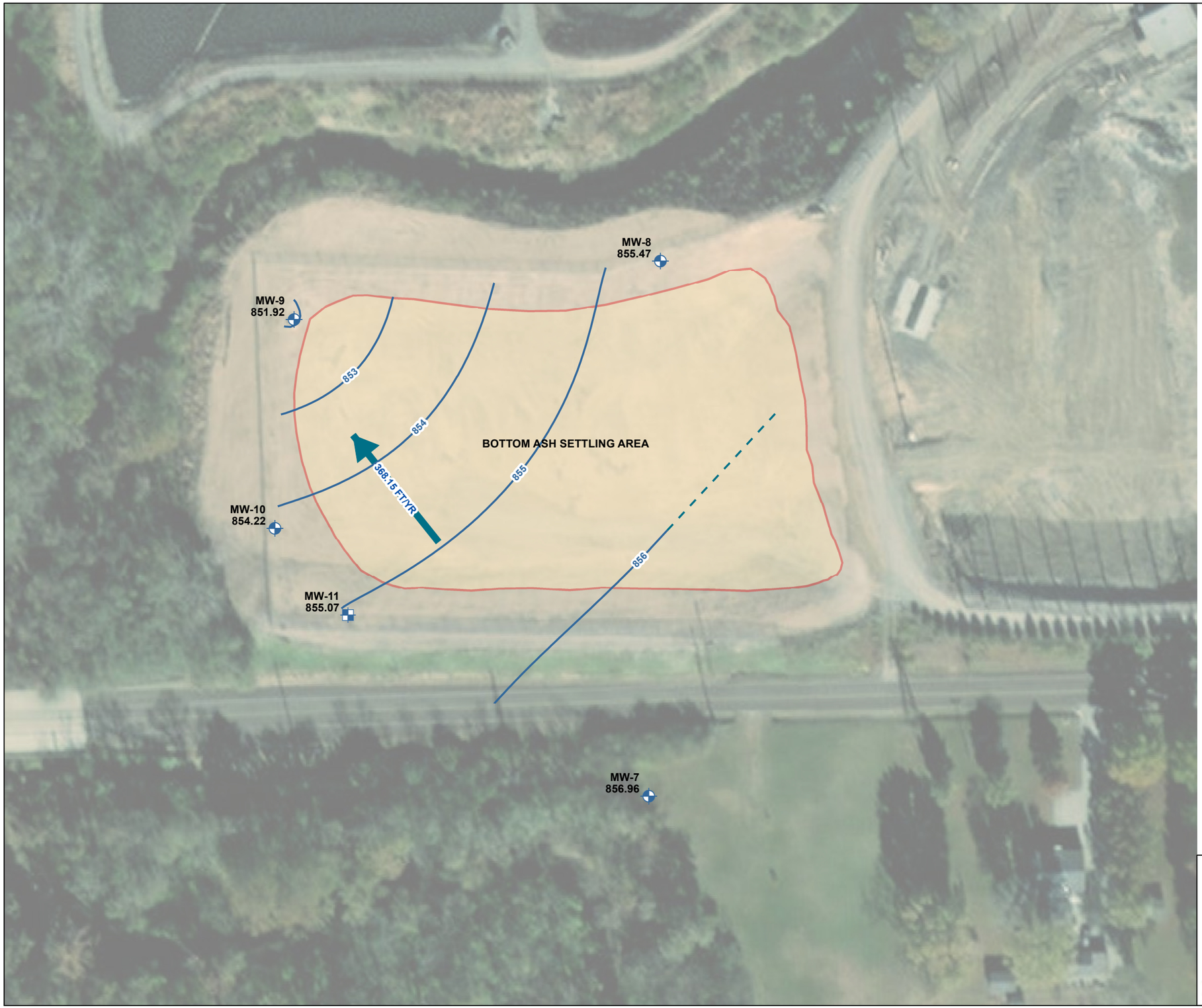
MARCH 2022

FIGURE 7



LEGEND

MW-8 849.64	WELL NAME AND GROUNDWATER ELEVATION (MAY 2017)
	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 23 MAY 2017.
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

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SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MAY 23, 2017

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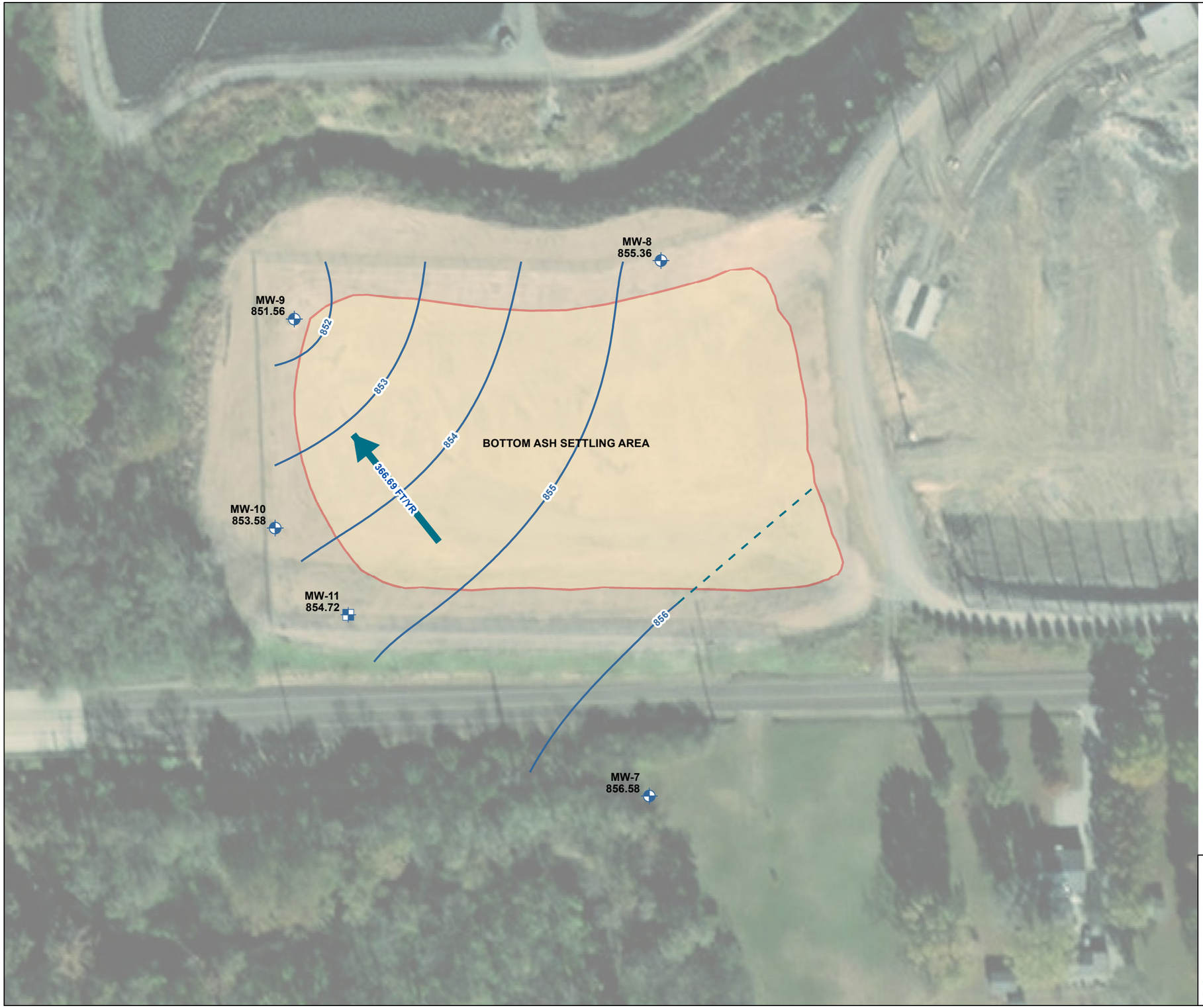
MARCH 2022

FIGURE 8



LEGEND

MW-8 849.64	WELL NAME AND GROUNDWATER ELEVATION (JUNE 2017)
	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 26 JUNE 2017.

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

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SCALE IN FEET

HALEY ALDRICH

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

BOTTOM ASH SETTLING AREA GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 26, 2017

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MARCH 2022

FIGURE 9