HALEY & ALDRICH, INC.
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Cleveland, OH 44131
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31 January 2018
File No. 129778-002

Westar Energy, Inc.
818 South Kansas Avenue
Topeka, Kansas 66612

Attention: Jared Morrison
Manager, Water and Waste Programs

Subject: 2017 Annual Groundwater Monitoring and Corrective Action Report for the
Fly Ash Area 1 Landfill
Jeffrey Energy Center
St. Marys, Kansas

Dear Mr. Morrison:

Haley & Aldrich, Inc. is pleased to submit this Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the Fly Ash Area 1 Landfill at the Jeffrey Energy Center. This Annual Report was developed in accordance with the United States Environmental Protection Agency CCR Rule effective 19 October 2015 (Rule), specifically Code of Federal Regulations Title 40, subsection § 257.90(e). The Annual Report documents the design and construction of the groundwater monitoring system for the Fly Ash Area 1 Landfill consistent with applicable sections of § 257.90 through 257.98.

This Annual Report describes activities conducted in the prior calendar year and documents compliance with the Rule. The specific requirements listed in Sections § 257.90(e)(1)-(5) of the Rule are provided in bold/italic type, followed by a short narrative describing how the Rule has been met.

Sincerely yours,
HALEY & ALDRICH, INC.

Steve Putrich, P.E.
Project Principal

Mark Nicholls, P.G.
Lead Hydrogeologist

HALEY ALDRICH

www.haleyaldrich.com

2017 ANNUAL GROUNDWATER MONITORING REPORT
FLY ASH AREA 1 LANDFILL
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

for Westar Energy, Inc.
Topeka, Kansas

File No. 129778-002
January 2018

Table of Contents

List of Tables

List of Figures

1. 40 CFR § 257.90 Applicability

1.1 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 Fly Ash Area 1 Landfill at the Jeffrey Energy Center (JEC), which is the coal combustion residuals (CCR) management unit addressed in this Annual Groundwater Monitoring and Corrective Action Report (Annual Report), 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. In particular, this document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e) (Rule).

1.2 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 JEC Fly Ash Area 1 Landfill as required by the Rule as the groundwater monitoring system was established and certified by 17 October 2017. Prior to 17 October 2017, Westar installed a groundwater monitoring system at the Fly Ash Area 1 Landfill 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.

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

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

(2) 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 Fly Ash Area 1 Landfill at JEC are described in the CCR Groundwater Monitoring Network Description Report dated 17 October 2017. This report was placed in the facility's operating record by 17 October 2017, as required by § 257.105(h)(2). Since the groundwater monitoring system was certified, no new monitoring wells were installed or decommissioned.

(3) 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 17 October 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 Fly Ash Area 1 Landfill is presented in Table I of this report. In 2017, the groundwater monitoring sampling and laboratory analyses were completed under the detection monitoring program.

(4) 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 Fly Ash Area 1 Landfill in calendar year 2017.

(5) 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.

1.3 40 CFR § 257.90(f)

The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(h), the notification requirements specified in § 257.106(h), and the internet requirements specified in § 257.107(h).

To comply with the Rule recordkeeping requirements:

- Pursuant to § 257.105(h)(1), this Annual Report must be placed in the facility's operating record.
- Pursuant to § 257.106(h)(1), notification must be sent to the relevant State Director and/or Tribal authority within 30 days of this Annual Report being placed on the facility's operating record [§ 257.106(d)].
- Pursuant to § 257.107(h)(1), this Annual Report must be posted to the Westar CCR Website within 30 days of this Annual Report being placed on the facility's operating record [§ 257.107(d)].

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS
Westar Jeffrey Energy Center
Fly Ash Area 1 Landfill
St. Marys, 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 (su)	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-FAA-5	1250.99	FAA5-081916	8/19/2016	86.65	1164.25	**19.05**	**3280**	**32.3**	**7.14**	**1.2**	**290**	**96.8**	**0.64**	**1010**	**7.0**	**2410**	<0.0010	**0.0012**	<0.010	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.089**	**0.025**	**0.0030**	<0.0010	<0.00020	**0.64**	**1.77**
			FAA5-092316	9/23/2016	86.74	1164.25	**18.06**	**3620**	**2.6**	**6.99**	**1.7**	**493**	**91.8**	**1.0**	**2010**	**7.0**	**3210**	<0.0010	**0.0035**	<0.010	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.16**	**0.047**	<0.0010	<0.0010	<0.00020	**1.0**	**1.44**
			FAA-5-110416	11/4/2016	86.61	1164.38	**14.40**	**2020**	**3.5**	**6.87**	**1.0**	**220**	**99.6**	**0.54**	**834**	**7.1**	**1470**	<0.0010	**0.0010**	**0.011**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.075**	**0.0093**	**0.0039**	<0.0010	<0.00020	**0.54**	**0.956**
			FAA-5-121616	12/16/2016	86.98	1164.01	**11.99**	**2810**	**7.7**	**6.75**	**1.2**	**343**	**101**	**0.61**	**1300**	**7.2**	**2400**	<0.0010	**0.0012**	**0.0074**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.12**	**0.023**	**0.0018**	<0.0010	<0.00020	**0.61**	**1.12**
			FAA-5-021017	2/10/2017	87.14	1163.85	**12.58**	**3620**	**5.7**	**6.56**	**1.6**	**509**	**87.2**	**0.86**	**2150**	**7.2**	**3700**	<0.0010	**0.0034**	<0.0050	<0.0010	<0.00050	<0.0050	**0.0031**	<0.0050	**0.15**	**0.057**	<0.0010	<0.0010	<0.00020	**0.86**	**1.56**
			FAA-5-041017	4/10/2017	86.91	1164.08	**15.07**	**3650**	**5.0**	**6.78**	**1.7**	**526**	**88.9**	**1.0**	**2130**	**6.9**	**3730**	<0.0010	**0.0024**	<0.0050	<0.0010	<0.00050	<0.0050	**0.0036**	<0.0050	**0.15**	**0.067**	<0.0010	<0.0010	<0.00020	**1.0**	**1.62**
			FAA-5-053017	5/13/2017	86.21	1164.78	**14.59**	**2570**	**5.1**	**6.58**	**0.85**	**261**	**178**	**0.68**	**912**	**7.3**	**1810**	**0.00022**	**0.00081**	**0.013**	**0.00081**	**0.000045**	<0.00072	**0.00048**	<0.0024	**0.061**	**0.012**	**0.0020**	**0.00014**	<0.000083	**0.68**	**1.85**
			FAA-5-063017	6/30/2017	86.46	1164.53	**17.02**	**3580**	**2.7**	**6.79**	**1.6**	**446**	**94.0**	**0.83**	**1970**	**7.0**	**3360**	<0.0010	**0.0018**	**<0.0050**	**0.0018**	<0.00050	<0.0050	**0.0012**	<0.0050	**0.14**	**0.041**	<0.0010	<0.0010	<0.00020	**0.83**	**1.91**
Down Gradient	MW-FAA-3	1165.66	FAA3-081916	8/19/2016	12.60	1153.06	**19.98**	**1920**	**18.2**	**7.30**	**0.76**	**213**	**87.7**	**0.28**	**762**	**7.1**	**1470**	<0.0010	<0.0010	**0.047**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.015**	**0.0095**	<0.0010	<0.0010	<0.00020	**0.28**	**1.79**
			FAA3-092616	9/26/2016	12.34	1153.32	**15.60**	**1880**	**13.5**	**6.91**	**0.85**	**218**	**88.2**	**0.31**	**706**	**7.1**	**1490**	<0.0010	<0.0010	**0.038**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.017**	**0.011**	<0.0010	<0.0010	<0.00020	**0.31**	**0.0647**
			FAA-3-110416	11/4/2016	12.48	1153.18	**15.90**	**1970**	**4.6**	**6.90**	**0.95**	**214**	**89.5**	**0.31**	**896**	**6.9**	**1490**	<0.0010	<0.0010	**0.034**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.017**	**0.014**	<0.0010	<0.0010	<0.00020	**0.31**	**0.118**
			FAA-3-121916	12/19/2016	13.05	1152.61	**12.59**	**1880**	**8.7**	**6.47**	**0.79**	**225**	**86.6**	**0.29**	**651**	**7.3**	**1390**	<0.0010	<0.0010	**0.036**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.019**	**0.011**	<0.0010	<0.0010	<0.00020	**0.29**	**0.484**
			FAA-3-021017	2/10/2017	13.13	1152.53	**13.71**	**1850**	**8.1**	**7.01**	**0.68**	**210**	**84.7**	**0.32**	**702**	**7.3**	**1290**	<0.0010	<0.0010	**0.032**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.012**	**0.010**	<0.0010	<0.0010	<0.00020	**0.32**	**0.986**
			FAA-3-041117	4/11/2017	11.87	1153.79	**13.30**	**2040**	**7.0**	**6.82**	**0.93**	**242**	**82.9**	**0.33**	**818**	**7.4**	**1460**	<0.0010	**0.0011**	**0.034**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.014**	**0.012**	<0.0010	<0.0010	<0.00020	**0.33**	**0.495**
			FAA-3-053017	5/30/2017	12.08	1153.58	**15.86**	**1990**	**6.3**	**6.78**	**0.91**	**208**	**82.7**	**0.35**	**778**	**7.2**	**1450**	<0.0010	<0.0010	**0.033**	<0.0020	<0.00050	<0.0050	<0.0010	<0.0050	**<0.020**	**0.013**	<0.0010	<0.0010	<0.00020	**0.35**	**1.21**
			FAA-3-070317	7/3/2017	12.50	1153.16	**18.18**	**1930**	**4.2**	**7.60**	**0.84**	**193**	**81.3**	**0.30**	**628**	**7.1**	**688**	**0.000077**	**0.00098**	**0.028**	**0.00079**	<0.000018	<0.00072	**0.00052**	<0.0024	**0.014**	**0.011**	<0.0010	<0.000086	<0.000024	**0.30**	**0.291**
	MW-FAA-4	1213.81	FAA4-081916	8/19/2016	57.78	1156.03	**17.06**	**1700**	**2.1**	**7.28**	**0.36**	**215**	**89.5**	**0.29**	**534**	**7.1**	**1270**	<0.0010	<0.0010	**0.048**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.015**	**0.0026**	<0.0010	<0.0010	<0.00020	**0.29**	**0.539**
			FAA4-092316	9/23/2016	57.62	1156.19	**17.01**	**1680**	**2.3**	**7.11**	**0.35**	**210**	**89.4**	**0.32**	**552**	**7.3**	**1190**	<0.0010	<0.0010	**0.050**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.016**	**0.0026**	<0.0010	<0.0010	<0.00020	**0.32**	**0.452**
			FAA-4-110416	11/4/2016	57.51	1156.30	**14.50**	**1580**	**3.2**	**6.89**	**0.36**	**205**	**85.6**	**0.32**	**579**	**7.3**	**1170**	<0.0010	<0.0010	**0.053**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.016**	**0.0030**	<0.0010	<0.0010	<0.00020	**0.32**	**0.472**
			FAA-4-121916	12/19/2016	58.04	1155.77	**11.84**	**1630**	**5.8**	**6.55**	**0.36**	**223**	**83.7**	**0.31**	**531**	**7.4**	**1150**	<0.0010	<0.0010	**0.053**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.016**	**0.0026**	<0.0010	<0.0010	<0.00020	**0.31**	**0.349**
			FAA-4-021017	2/10/2017	58.20	1155.61	**13.00**	**1650**	**4.0**	**6.86**	**0.35**	**212**	**84.6**	**0.32**	**524**	**7.4**	**1210**	<0.0010	<0.0010	**0.049**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.013**	**0.0026**	<0.0010	<0.0010	**0.00023**	**0.32**	**0.233**
			FAA-4-041117	4/11/2017	56.49	1157.32	**13.11**	**1650**	**5.5**	**6.85**	**0.40**	**223**	**84.7**	**0.36**	**516**	**7.3**	**1190**	<0.0010	<0.0010	**0.051**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	**0.012**	**0.0033**	<0.0010	<0.0010	<0.00020	**0.36**	**0.960**
			FAA-4-053017	5/30/2017	56.68	1157.13	**14.43**	**1600**	**3.6**	**6.75**	**0.40**	**200**	**80.6**	**0.35**	**518**	**7.2**	**1140**	<0.0010	<0.0010	**0.050**	<0.0020	<0.00050	<0.0050	<0.0010	<0.0050	**<0.020**	**0.0031**	<0.0010	<0.0010	<0.00020	**0.35**	**0.692**
			FAA-4-063017	6/30/2017	57.53	1156.28	**16.56**	**1630**	**3.3**	**7.04**	**0.39**	**199**	**78.5**	**0.32**	**486**	**7.0**	**1170**	<0.0010	<0.0010	**0.049**	<0.0010	<0.00050	<0.0050	<0.0010	<0.0050	<0.010	**0.0027**	<0.0010	<0.0010	<0.00020	**0.32**	**1.03**
	MW-FAA-6	1162.76	MW-FAA-6-061717	6/17/2017	13.08	1149.68	**17.31**	**2710**	**141**	**7.29**	**2.2**	**145**	**65.7**	**0.81**	**1120**	**7.3 J**	**2020**	<0.0010	**0.0049**	**0.065**	<0.0010	<0.00050	<0.0050	**0.0018**	<0.0050	<0.010	**0.31**	<0.0010	<0.0010	<0.00020	**0.81**	**0.647**
			FAA-6-071817	7/18/2017	14.30	1148.46	**16.92**	**2580**	**3.4**	**7.35**	**2.9**	**137**	**64.3**	**0.74**	**1360**	**7.4**	**2300**	<0.0010	**0.0056**	**0.067**	<0.0010	<0.00050	<0.0050	**0.0012**	<0.0050	**0.012**	**0.55**	<0.0010	<0.0010	<0.00020	**0.74**	**0.192**
			FAA-6-072717	7/27/2017	14.22	1148.54	**18.75**	**2520**	**6.7**	**7.01**	**2.4**	**135**	**64.8**	**0.76**	**1320**	**7.4**	**2390**	<0.0010	**0.0055**	**0.059**	<0.0010	<0.00050	<0.0050	**0.0012**	<0.0050	**0.011**	**0.50**	<0.0010	<0.0010	<0.00020	**0.76**	**0.599**
			FAA-6-080117	8/1/2017	14.26	1148.50	**17.71**	**2860**	**5.2**	**7.07**	**3.0**	**141**	**63.6**	**0.81**	**1400**	**7.5**	**2370**	<0.0010	**0.0060**	**0.066**	<0.0020	<0.00050	<0.0050	**0.0012**	<0.0050	<0.020	**0.59**	<0.0010	<0.0010	<0.00020	**0.81**	**0.128**
			FAA-6-080717	8/7/2017	14.07	1148.69	**18.21**	**2880**	**5.9**	**6.98**	**3.1**	**140**	**66.0**	**0.81**	**1380**	**7.4**	**2390**	<0.0010	**0.0060**	**0.067**	<0.0010	<0.00050	<0.0050	**0.0015**	<0.0050	**0.012**	**0.58**	<0.0010	<0.0010	<0.00020	**0.81**	**0.365**
			FAA-6-081617	8/16/2017	14.40	1148.36	**18.86**	**2900**	**6.3**	**6.87**	**2.9**	**141**	**69.0**	**0.80**	**1450**	**7.4**	**2330**	<0.0010	**0.0059**	**0.065**	<0.0010	<0.00050	<0.0050	**0.0011**	<0.0050	**0.016**	**0.57**	<0.0010	<0.0010	<0.00020	**0.80**	**0.930**
			FAA-6-082317	8/23/2017	14.55	1148.21	**18.13**	**2840**	**5.0**	**7.23**	**2.9**	**143**	**66.2**	**0.81**	**1350**	**7.5**	**2330**	<0.0010	**0.0054**	**0.065**	<0.0010	<0.00050	<0.0050	**0.0011**	<0.0050	**0.011**	**0.53**	<0.0010	<0.0010	<0.00020	**0.81**	**0.580**
			FAA-6-082817	8/28/2017	14.72	1148.04	**18.23**	**2790**	**5.4**	**7.03**	**2.6**	**136**	**66.8**	**0.80**	**1390**	**7.4**	**2340**	<0.0010	**0.0051**	**0.065**	<0.0010	<0.00050	<0.0050	**0.0012**	<0.0050	**0.012**	**0.48**	**0.0011**	<0.0010	<0.00020	**0.80**	**0.872**

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

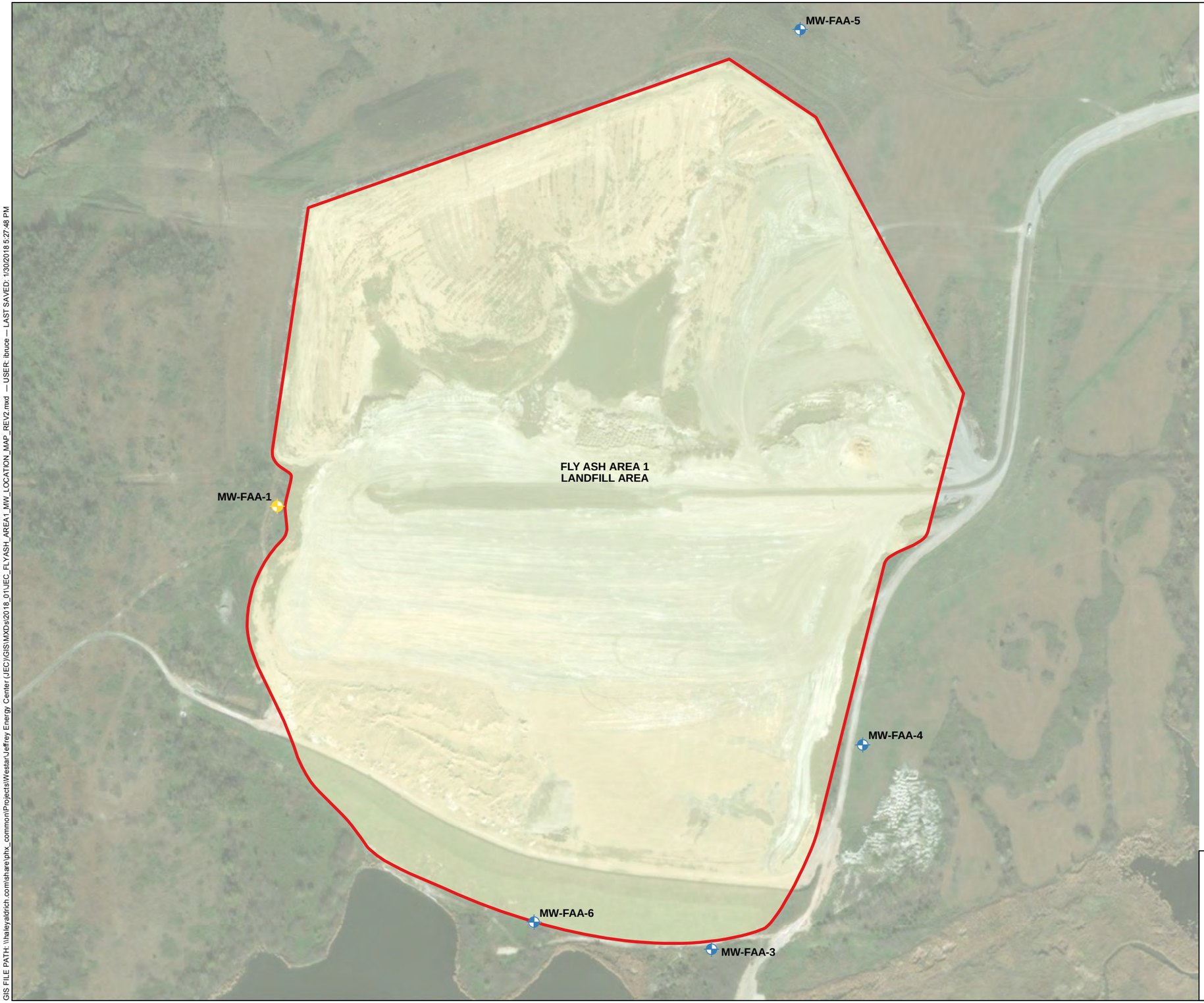
su = standard units

TDS = total dissolved solids

TOC = top of casing

USEPA = United States Environmental Protection Agency

FIGURES



LEGEND

- MONITORING WELL
- PIEZOMETRIC OBSERVATION ONLY
- FLY ASH AREA 1 LIMITS OF DISPOSAL AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI

N

0 300 600

SCALE IN FEET

HALEY ALDRICH

WESTAR ENERGY
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

FLY ASH AREA 1 LANDFILL MONITORING WELL LOCATION MAP

JANUARY 2018

FIGURE 1

GIS FILE PATH: \\haleyaldrich.com\share\phx_common\Projects\Westar\Jeffrey Energy Center (JEC)\GIS\MXDs\2018_01\JEC_FLYASH_AREA1_MW_LOCATION_MAP_REV2.mxd — USER: lbruce — LAST SAVED: 1/30/2018 5:27:48 PM

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

November 4, 2022
Project No. 0204993-000

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

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

Mark Nicholls Digitally signed by Mark Nicholls Date: 2022.11.04 09:39:05 -07'00'

SUBJECT: 2017 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc.
Jeffrey Energy Center
Fly Ash Landfill

The Evergy Kansas Central, Inc. (Evergy) Fly Ash Landfill (FAL) at the Jeffrey Energy Center 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 FAL 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 were no analyses to report in this addendum. For each of the 2017 sampling events, the measured groundwater elevations, with calculated groundwater flow rates and directions, have been included in Attachment 2.

The Attachments to this addendum are described below:

- 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 baseline sampling events completed in August, September, November, and December 2016, and February, April, May, June, July, and August 2017 are provided.
  - Groundwater sampling and analysis was completed at monitoring well MW-FAA-2 during baseline groundwater monitoring; however, the monitoring well was not included in the final certified network design established in October 2017. Therefore, MW-FAA-2 laboratory analytical data is included in many of these laboratory analytical reports.
  - Since groundwater samples were collected from multiple units during each baseline sampling event, analytical data included in these laboratory analytical reports may include data from monitoring wells not associated with the FAL.
- Attachment 2 – 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, November, 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 14, 2016

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

RE: Project: JEC CCR Groundwater
Pace Project No.: 60226141

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 20, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI 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

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CERTIFICATIONS

Project: JEC CCR Groundwater
Pace Project No.: 60226141

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

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SAMPLE SUMMARY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60226141001	**FAA5-081916**	Water	08/19/16 13:16	08/20/16 09:25
60226141002	**FAA4-081916**	Water	08/19/16 14:35	08/20/16 09:25
60226141003	**FAA3-081916**	Water	08/19/16 15:53	08/20/16 09:25
60226141004	**FAA5-081916 MS**	Water	08/19/16 13:16	08/20/16 09:25
60226141005	**FAA5-081916 MSD**	Water	08/19/16 13:16	08/20/16 09:25

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SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60226141001	**FAA5-081916**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	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
60226141002	**FAA4-081916**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	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
60226141003	**FAA3-081916**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K
		EPA 903.1	AB1	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
60226141004	**FAA5-081916 MS**	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
60226141005	**FAA5-081916 MSD**	EPA 903.1	AB1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 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: 443713

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60225865003,60226099002,60226141001

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

- MS (Lab ID: 1814603)
  - Calcium
- MS (Lab ID: 1814605)
  - Calcium
- MSD (Lab ID: 1814606)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 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, Inc.
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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 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: 443695

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60226141001,60226141003

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

- MS (Lab ID: 1814568)
  - Mercury

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

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

Pace Analytical Services, Inc.
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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 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.
- FAA3-081916 (Lab ID: 60226141003)
- FAA4-081916 (Lab ID: 60226141002)
- FAA5-081916 (Lab ID: 60226141001)

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, Inc.
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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 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.

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA5-081916 **Lab ID: 60226141001** Collected: 08/19/16 13:16 Received: 08/20/16 09:25 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	**<0.010**	mg/L	0.010	1	08/22/16 16:30	08/23/16 12:13	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/23/16 12:13	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:13	7440-42-8	
Calcium, Total Recoverable	**290**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:13	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:13	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:13	7439-92-1	
Lithium	**0.089**	mg/L	0.010	1	08/22/16 16:30	08/23/16 12:13	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	08/22/16 16:30	08/24/16 11:24	7440-36-0	
Arsenic, Total Recoverable	**0.0012**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:24	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/22/16 16:30	08/24/16 11:24	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:24	7440-48-4	
Molybdenum, Total Recoverable	**0.025**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:24	7439-98-7	
Selenium, Total Recoverable	**0.0030**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:24	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:24	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	08/23/16 08:40	08/23/16 12:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2410**	mg/L	5.0	1		08/25/16 10:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		08/24/16 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**96.8**	mg/L	10.0	10		09/08/16 15:12	16887-00-6	
Fluoride	**0.64**	mg/L	0.20	1		09/07/16 10:34	16984-48-8	
Sulfate	**1010**	mg/L	100	100		09/08/16 15:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA4-081916 **Lab ID: 60226141002** Collected: 08/19/16 14:35 Received: 08/20/16 09:25 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	**0.048**	mg/L	0.010	1	08/22/16 16:30	08/23/16 12:25	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/23/16 12:25	7440-41-7	
Boron, Total Recoverable	**0.36**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:25	7440-42-8	
Calcium, Total Recoverable	**215**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:25	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:25	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:25	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	08/22/16 16:30	08/23/16 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	08/22/16 16:30	08/24/16 11:15	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:15	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/22/16 16:30	08/24/16 11:15	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:15	7440-48-4	
Molybdenum, Total Recoverable	**0.0026**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:15	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:15	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:15	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	08/23/16 08:40	08/23/16 12:37	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1270**	mg/L	5.0	1		08/25/16 10:50		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		08/24/16 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**89.5**	mg/L	10.0	10		09/08/16 16:38	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		09/07/16 11:17	16984-48-8	
Sulfate	**534**	mg/L	50.0	50		09/08/16 16:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA3-081916 **Lab ID: 60226141003** Collected: 08/19/16 15:53 Received: 08/20/16 09:25 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	**0.047**	mg/L	0.010	1	08/22/16 16:30	08/23/16 12:28	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/23/16 12:28	7440-41-7	
Boron, Total Recoverable	**0.76**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:28	7440-42-8	
Calcium, Total Recoverable	**213**	mg/L	0.10	1	08/22/16 16:30	08/23/16 12:28	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:28	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/22/16 16:30	08/23/16 12:28	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	08/22/16 16:30	08/23/16 12:28	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	08/22/16 16:30	08/24/16 11:20	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/22/16 16:30	08/24/16 11:20	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:20	7440-48-4	
Molybdenum, Total Recoverable	**0.0095**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:20	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:20	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/22/16 16:30	08/24/16 11:20	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	08/23/16 08:40	08/23/16 12:40	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1470**	mg/L	5.0	1		08/25/16 10:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		08/24/16 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**87.7**	mg/L	10.0	10		09/08/16 17:07	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	1		09/07/16 14:15	16984-48-8	
Sulfate	**762**	mg/L	50.0	50		09/08/16 17:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 443695 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1814564 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	08/23/16 11:44	

LABORATORY CONTROL SAMPLE: 1814565

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814566 1814567

Parameter	Units	60226141001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.20	5	5	4.8	5.0	96	99	70-130	3	20	

MATRIX SPIKE SAMPLE: 1814568

Parameter	Units	60226141003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	3.4	67	70-130	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 443713 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1814601 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.010	0.010	08/23/16 10:28	
Beryllium	mg/L	<0.0010	0.0010	08/23/16 10:28	
Boron	mg/L	<0.10	0.10	08/23/16 10:28	
Calcium	mg/L	<0.10	0.10	08/23/16 10:28	
Chromium	mg/L	<0.0050	0.0050	08/23/16 10:28	
Lead	mg/L	<0.0050	0.0050	08/23/16 10:28	
Lithium	mg/L	<0.010	0.010	08/23/16 10:28	

LABORATORY CONTROL SAMPLE: 1814602

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10.0	100	85-115	
Chromium	mg/L	1	1.0	104	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814603 1814604

Parameter	Units	60226099002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	547 ug/L	1	1	1.6	1.6	104	103	70-130	1	20	
Beryllium	mg/L	<1.0 ug/L	1	1	1.0	1.0	102	101	70-130	1	20	
Boron	mg/L	658 ug/L	1	1	1.7	1.7	105	104	70-130	1	20	
Calcium	mg/L	288000 ug/L	10	10	304	298	152	96	70-130	2	20	M1
Chromium	mg/L	<5.0 ug/L	1	1	1.0	1.0	103	103	70-130	0	20	
Lead	mg/L	<5.0 ug/L	1	1	0.99	0.99	99	98	70-130	1	20	
Lithium	mg/L	57.8 ug/L	1	1	1.1	1.1	104	103	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814605 1814606

Parameter	Units	60225865003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.18	1	1	1.2	1.2	100	100	70-130	0	20	

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814605 1814606

Parameter	Units	60225865003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	101	70-130	1	20	
Boron	mg/L	0.71	1	1	1.7	1.7	102	102	70-130	0	20	
Calcium	mg/L	214	10	10	216	216	21	19	70-130	0	20	M1
Chromium	mg/L	<0.0050	1	1	1.0	1.0	105	104	70-130	1	20	
Lead	mg/L	<0.0050	1	1	0.95	0.95	95	95	70-130	0	20	
Lithium	mg/L	0.12	1	1	1.2	1.2	106	105	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814607 1814608

Parameter	Units	60226141001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	<0.010	1	1	1.0	1.0	100	102	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	1.2	1	1	2.2	2.3	104	109	70-130	2	20	
Calcium	mg/L	290	10	10	300	303	92	129	70-130	1	20	
Chromium	mg/L	<0.0050	1	1	1.0	1.0	104	104	70-130	0	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	100	100	70-130	0	20	
Lithium	mg/L	0.089	1	1	1.1	1.1	103	105	70-130	2	20	

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 443719 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1814621 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/23/16 14:54	
Arsenic	mg/L	<0.0010	0.0010	08/23/16 14:54	
Cadmium	mg/L	<0.00050	0.00050	08/23/16 14:54	
Cobalt	mg/L	<0.0010	0.0010	08/23/16 14:54	
Molybdenum	mg/L	<0.0010	0.0010	08/23/16 14:54	
Selenium	mg/L	<0.0010	0.0010	08/23/16 14:54	
Thallium	mg/L	<0.0010	0.0010	08/23/16 14:54	

LABORATORY CONTROL SAMPLE: 1814622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.042	105	85-115	
Arsenic	mg/L	.04	0.043	108	85-115	
Cadmium	mg/L	.04	0.042	105	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.045	113	85-115	
Thallium	mg/L	.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1814623 1814624

Parameter	Units	60226141001 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	100	101	70-130	1	20	
Arsenic	mg/L	0.0012	.04	.04	0.041	0.042	100	103	70-130	3	20	
Cadmium	mg/L	<0.00050	.04	.04	0.038	0.038	95	94	70-130	1	20	
Cobalt	mg/L	<0.0010	.04	.04	0.038	0.039	95	96	70-130	1	20	
Molybdenum	mg/L	0.025	.04	.04	0.068	0.068	107	106	70-130	1	20	
Selenium	mg/L	0.0030	.04	.04	0.045	0.045	104	105	70-130	1	20	
Thallium	mg/L	<0.0010	.04	.04	0.042	0.042	104	105	70-130	1	20	

MATRIX SPIKE SAMPLE: 1814625

Parameter	Units	60226141002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.042	104	70-130	
Arsenic	mg/L	<0.0010	.04	0.042	104	70-130	
Cadmium	mg/L	<0.00050	.04	0.039	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

MATRIX SPIKE SAMPLE: 1814625

Parameter	Units	60226141002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.039	96	70-130	
Molybdenum	mg/L	0.0026	.04	0.045	106	70-130	
Selenium	mg/L	<0.0010	.04	0.041	102	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: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 444157 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1816260 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/25/16 10:45	

LABORATORY CONTROL SAMPLE: 1816261

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

SAMPLE DUPLICATE: 1816262

Parameter	Units	60226141001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2410	2360	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 443953 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60226141001, 60226141002, 60226141003

SAMPLE DUPLICATE: 1815499

Parameter	Units	60226141001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.1	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 445543 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1821465 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/07/16 10:05	

LABORATORY CONTROL SAMPLE: 1821466

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1821467 1821468

Parameter	Units	60226141001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.64	2.5	2.5	3.1	3.1	96	99	80-120	2	15	

MATRIX SPIKE SAMPLE: 1821469

Parameter	Units	60226141002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.29	2.5	2.7	95	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 445717 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60226141001, 60226141002, 60226141003

METHOD BLANK: 1822153 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/08/16 10:52	
Sulfate	mg/L	<1.0	1.0	09/08/16 10:52	

LABORATORY CONTROL SAMPLE: 1822154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1822155 1822156

Parameter	Units	60226095001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	263	100	100	367	372	104	109	80-120	1	15	
Sulfate	mg/L	137	50	50	187	186	100	97	80-120	1	15	

MATRIX SPIKE SAMPLE: 1822157

Parameter	Units	60226141001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	96.8	50	146	98	80-120	
Sulfate	mg/L	1010	500	1500	99	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA5-081916 **Lab ID: 60226141001** Collected: 08/19/16 13:16 Received: 08/20/16 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.550 ± 0.431 (0.506) C:NA T:89%**	pCi/L	09/13/16 22:19	13982-63-3	
Radium-228	EPA 904.0	**1.22 ± 0.408 (0.550) C:77% T:87%**	pCi/L	09/10/16 02:02	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA4-081916 **Lab ID: 60226141002** Collected: 08/19/16 14:35 Received: 08/20/16 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0668 ± 0.493 (0.941) C:NA T:81%**	pCi/L	09/13/16 22:50	13982-63-3	
Radium-228	EPA 904.0	**0.472 ± 0.341 (0.644) C:75% T:79%**	pCi/L	09/10/16 02:21	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA3-081916 **Lab ID: 60226141003** Collected: 08/19/16 15:53 Received: 08/20/16 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.572 ± 0.596 (0.900) C:NA T:83%**	pCi/L	09/13/16 22:20	13982-63-3	
Radium-228	EPA 904.0	**1.22 ± 0.419 (0.576) C:73% T:84%**	pCi/L	09/10/16 02:02	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA5-081916 MS **Lab ID: 60226141004** Collected: 08/19/16 13:16 Received: 08/20/16 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**103.5 %REC ± NA (NA) C:NA T:NA**	pCi/L	09/13/16 22:20	13982-63-3	
Radium-228	EPA 904.0	**86.7 %REC +/- NA (NA) C:NA T:NA**	pCi/L	09/10/16 02:03	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

Sample: FAA5-081916 MSD **Lab ID: 60226141005** Collected: 08/19/16 13:16 Received: 08/20/16 09:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**110.6 %REC 6.64 RPD ± NA (NA) C:NA T:NA**	pCi/L	09/13/16 22:20	13982-63-3	
Radium-228	EPA 904.0	**88.9 %REC 2.49 RPD +/- NA (NA) C:NA T:NA**	pCi/L	09/10/16 02:03	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 231992 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60226141001, 60226141002, 60226141003, 60226141004, 60226141005

METHOD BLANK: 1136737 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003, 60226141004, 60226141005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.245 ± 0.341 (0.570) C:NA T:96%	pCi/L	09/13/16 22:43	

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

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60226141

QC Batch: 231993 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60226141001, 60226141002, 60226141003, 60226141004, 60226141005

METHOD BLANK: 1136739 Matrix: Water
Associated Lab Samples: 60226141001, 60226141002, 60226141003, 60226141004, 60226141005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.693 ± 0.333 (0.567) C:79% T:89%	pCi/L	09/10/16 02:02	

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

QUALIFIERS

Project: JEC CCR Groundwater
Pace Project No.: 60226141

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: JEC CCR Groundwater
Pace Project No.: 60226141

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60226141001	**FAA5-081916**	EPA 200.7	443713	EPA 200.7	443793
60226141002	**FAA4-081916**	EPA 200.7	443713	EPA 200.7	443793
60226141003	**FAA3-081916**	EPA 200.7	443713	EPA 200.7	443793
60226141001	**FAA5-081916**	EPA 200.8	443719	EPA 200.8	443796
60226141002	**FAA4-081916**	EPA 200.8	443719	EPA 200.8	443796
60226141003	**FAA3-081916**	EPA 200.8	443719	EPA 200.8	443796
60226141001	**FAA5-081916**	EPA 245.1	443695	EPA 245.1	443783
60226141002	**FAA4-081916**	EPA 245.1	443695	EPA 245.1	443783
60226141003	**FAA3-081916**	EPA 245.1	443695	EPA 245.1	443783
60226141001	**FAA5-081916**	EPA 903.1	231992		
60226141002	**FAA4-081916**	EPA 903.1	231992		
60226141003	**FAA3-081916**	EPA 903.1	231992		
60226141004	**FAA5-081916 MS**	EPA 903.1	231992		
60226141005	**FAA5-081916 MSD**	EPA 903.1	231992		
60226141001	**FAA5-081916**	EPA 904.0	231993		
60226141002	**FAA4-081916**	EPA 904.0	231993		
60226141003	**FAA3-081916**	EPA 904.0	231993		
60226141004	**FAA5-081916 MS**	EPA 904.0	231993		
60226141005	**FAA5-081916 MSD**	EPA 904.0	231993		
60226141001	**FAA5-081916**	SM 2540C	444157		
60226141002	**FAA4-081916**	SM 2540C	444157		
60226141003	**FAA3-081916**	SM 2540C	444157		
60226141001	**FAA5-081916**	SM 4500-H+B	443953		
60226141002	**FAA4-081916**	SM 4500-H+B	443953		
60226141003	**FAA3-081916**	SM 4500-H+B	443953		
60226141001	**FAA5-081916**	EPA 300.0	445543		
60226141001	**FAA5-081916**	EPA 300.0	445717		
60226141002	**FAA4-081916**	EPA 300.0	445543		
60226141002	**FAA4-081916**	EPA 300.0	445717		
60226141003	**FAA3-081916**	EPA 300.0	445543		
60226141003	**FAA3-081916**	EPA 300.0	445717		

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Sample Condition Upon Receipt

WO# : 60226141

60226141

Client Name: Westar

Optional
Proj Due Date:
Proj Name:

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

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 T-266 / CF -0.1 T-239 **Type of Ice:** (Wet) Blue None ☐ Samples received on ice, cooling process has begun. (circle one)

Cooler Temperature: 1.3

Date and initials of person examining contents: JS 8/22

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	1.
Chain of Custody filled out:	☒Yes ☐No ☐N/A	2.
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	3.
Sampler name & signature on COC:	☒Yes ☐No ☐N/A	4.
Samples arrived within holding time:	☒Yes ☐No ☐N/A	5.
Short Hold Time analyses (<72hr):	☒Yes ☐No ☐N/A	6. pH
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	7.
Sufficient volume:	☒Yes ☐No ☐N/A	8.
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	9.
Containers intact:	☒Yes ☐No ☐N/A	10.
Unpreserved 5035A soils frozen w/in 48hrs?	☐Yes ☐No ☒N/A	11.
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	12.
Sample labels match COC:	☒Yes ☐No ☐N/A	
Includes date/time/ID/analyses Matrix: WT		13.
All containers needing preservation have been checked.	☒Yes ☐No ☐N/A	
All containers needing preservation are found to be in compliance with EPA recommendation.	☒Yes ☐No ☐N/A	14.
Exceptions: VOA, Coliform, O&G, WI-DRO (water)	☐Yes ☒No	Initial when completed / Lot # of added preservative
Trip Blank present:	☐Yes ☐No ☒N/A	
Pace Trip Blank lot # (if purchased): _____		15.
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	16.
Project sampled in USDA Regulated Area:	☐Yes ☐No ☒N/A	17. List State:
Additional labels attached to 5035A vials in the field?	☐Yes ☐No ☒N/A	18.

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: 8/22/16

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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: of

Section A — **Required** Client Information:

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

Section B — **Required** Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	
Project Name:	JEC 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 #:	9657, 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	FAA5-081916 (2)BP2U (4)BP3N (2)BP2N	WT	G			8/18/16	1316		8	2		6																60226141 MS/MSD 001
2	FAA4-081916 BP2U (2)BP3N BP2N	WT	G			8/19/16	1435		4	1		3																002
3	FAA3-081916 BP2U (2)BP1N BP2N	WT	G			8/19/16	1553		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	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		8/19/16	1730		8/19/16	1730				
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl		8/20/16	0925		8/20/16	0925	1.2	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: _____ DATE Signed (MM/DD/YY): 08/19/16

*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.

...n of Custody

WO#:30193885

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www.pacelabs.com

Workorder: 60226141 **Workorder Name:** JEC CCR Groundwater **Owner Received Date:** 8/20/2016 **Results Requested By:** 9/14/2016

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 266 & 228	LAB USE ONLY
1	FAA5-081916	RQS	8/19/2016 13:16	60226141001	Water	2	X	001
2	FAA4-081916	PS	8/19/2016 14:35	60226141002	Water	2	X	002
3	FAA3-081916	PS	8/19/2016 15:53	60226141003	Water	2	X	003
4	FAA5-081916 MS	PS	8/19/2016 13:16	60226141004	Water	1	X	004
5	FAA5-081916 MSD	PS	8/19/2016 13:16	60226141005	Water	1	X	005

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	8/22/16 1700	Kirsten E. Hill	8/23/16 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

30193885

Client Name: Pace Kansas Project #

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

Tracking #: 6703 1647 9369

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 8/23/16

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. 004, 005 low vol
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: 8/23/16

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 1-2
September 2016 Sampling Event
Laboratory Analytical Report

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

October 18, 2016

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 24, 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,

Emily Webb 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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228510001	**FGD2-092316**	Water	09/23/16 07:50	09/24/16 09:20
60228510002	**FGD3-092316**	Water	09/23/16 08:56	09/24/16 09:20
60228510003	**FGD4-092316**	Water	09/23/16 10:16	09/24/16 09:20
60228510004	**FAA 5-092316**	Water	09/23/16 11:53	09/24/16 09:20
60228510005	**FAA 4-092316**	Water	09/23/16 13:01	09/24/16 09:20
60228510006	**DUP-092316**	Water	09/23/16 17:00	09/24/16 09:20

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228510001	**FGD2-092316**	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
60228510002	**FGD3-092316**	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
60228510003	**FGD4-092316**	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
60228510004	**FAA 5-092316**	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
60228510005	**FAA 4-092316**	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

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HAC	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60228510006	**DUP-092316**	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

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 18, 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: 448189

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228378001,60228510003

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

- MS (Lab ID: 1833593)
  - Calcium
- MSD (Lab ID: 1833594)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: October 18, 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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: October 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: October 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 18, 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-092316 (Lab ID: 60228510006)
- FAA 4-092316 (Lab ID: 60228510005)
- FAA 5-092316 (Lab ID: 60228510004)
- FGD2-092316 (Lab ID: 60228510001)
- FGD3-092316 (Lab ID: 60228510002)
- FGD4-092316 (Lab ID: 60228510003)

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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 18, 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.

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD2-092316 **Lab ID: 60228510001** Collected: 09/23/16 07:50 Received: 09/24/16 09:20 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	0.010	1	09/27/16 15:20	09/30/16 16:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:24	7440-41-7	
Boron, Total Recoverable	**0.26**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:24	7440-42-8	
Calcium, Total Recoverable	**111**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:24	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:24	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:24	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:24	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	09/27/16 15:20	10/12/16 22:37	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:37	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-48-4	
Molybdenum, Total Recoverable	**0.0044**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:37	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**573**	mg/L	5.0	1		09/28/16 11:01		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**31.9**	mg/L	2.0	2		10/15/16 22:23	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		10/14/16 15:47	16984-48-8	
Sulfate	**177**	mg/L	20.0	20		10/15/16 22:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD3-092316 **Lab ID: 60228510002** Collected: 09/23/16 08:56 Received: 09/24/16 09:20 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	0.010	1	09/27/16 15:20	09/30/16 16:26	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:26	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:26	7440-42-8	
Calcium, Total Recoverable	**146**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:26	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:26	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:26	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:26	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	09/27/16 15:20	10/12/16 22:42	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:42	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-48-4	
Molybdenum, Total Recoverable	**0.0064**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:42	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**820**	mg/L	5.0	1		09/28/16 11:03		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**49.9**	mg/L	5.0	5		10/15/16 22:52	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	1		10/14/16 16:30	16984-48-8	
Sulfate	**281**	mg/L	20.0	20		10/15/16 23:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD4-092316 **Lab ID: 60228510003** Collected: 09/23/16 10:16 Received: 09/24/16 09:20 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	0.010	1	09/27/16 15:20	09/30/16 16:29	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:29	7440-41-7	
Boron, Total Recoverable	**0.29**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:29	7440-42-8	
Calcium, Total Recoverable	**160**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:29	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:29	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:29	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:29	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	09/27/16 15:20	10/12/16 22:46	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:46	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-48-4	
Molybdenum, Total Recoverable	**0.0041**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:46	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**927**	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**74.5**	mg/L	5.0	5		10/15/16 23:48	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		10/14/16 16:44	16984-48-8	
Sulfate	**371**	mg/L	50.0	50		10/16/16 00:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FAA 5-092316 **Lab ID: 60228510004** Collected: 09/23/16 11:53 Received: 09/24/16 09:20 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	**<0.010**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:33	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:33	7440-41-7	
Boron, Total Recoverable	**1.7**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:33	7440-42-8	
Calcium, Total Recoverable	**493**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:33	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:33	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:33	7439-92-1	
Lithium	**0.16**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:33	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-36-0	
Arsenic, Total Recoverable	**0.0035**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:51	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7440-48-4	
Molybdenum, Total Recoverable	**0.047**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:51	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 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3210**	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**91.8**	mg/L	10.0	10		10/16/16 00:16	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		10/14/16 16:58	16984-48-8	
Sulfate	**2010**	mg/L	200	200		10/16/16 00:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FAA 4-092316 **Lab ID: 60228510005** Collected: 09/23/16 13:01 Received: 09/24/16 09:20 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	**0.050**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:35	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:35	7440-41-7	
Boron, Total Recoverable	**0.35**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:35	7440-42-8	
Calcium, Total Recoverable	**210**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:35	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:35	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:35	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:35	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 22:59	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7440-48-4	
Molybdenum, Total Recoverable	**0.0026**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 22:59	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 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1190**	mg/L	5.0	1		09/28/16 11:04		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**89.4**	mg/L	10.0	10		10/16/16 00:45	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		10/14/16 17:13	16984-48-8	
Sulfate	**552**	mg/L	50.0	50		10/16/16 00:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: DUP-092316 **Lab ID: 60228510006** Collected: 09/23/16 17:00 Received: 09/24/16 09:20 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	0.010	1	09/27/16 15:20	09/30/16 16:42	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:42	7440-41-7	
Boron, Total Recoverable	**0.25**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:42	7440-42-8	
Calcium, Total Recoverable	**112**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:42	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:42	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:42	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:42	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	09/27/16 15:20	10/12/16 23:03	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 23:03	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7440-48-4	
Molybdenum, Total Recoverable	**0.0047**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:03	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/26/16 13:00	09/27/16 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**560**	mg/L	5.0	1		09/28/16 11:05		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		10/11/16 10:50		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**31.9**	mg/L	2.0	2		10/16/16 01:13	16887-00-6	
Fluoride	**0.38**	mg/L	0.20	1		10/14/16 17:27	16984-48-8	
Sulfate	**179**	mg/L	20.0	20		10/16/16 01:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 447972 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1832810 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

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

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 448189 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833591 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/30/16 15:57	
Beryllium	mg/L	<0.0010	0.0010	09/30/16 15:57	
Boron	mg/L	<0.10	0.10	09/30/16 15:57	
Calcium	mg/L	<0.10	0.10	09/30/16 15:57	
Chromium	mg/L	<0.0050	0.0050	09/30/16 15:57	
Lead	mg/L	<0.0050	0.0050	09/30/16 15:57	
Lithium	mg/L	<0.010	0.010	09/30/16 15:57	

LABORATORY CONTROL SAMPLE: 1833592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	0.99	99	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: 1833593 1833594

Parameter	Units	60228378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.022	1	1	1.1	1.1	106	106	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	4.0	1	1	5.2	5.2	116	117	70-130	0	20	
Calcium	mg/L	478	10	10	509	506	312	279	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.98	1.0	98	100	70-130	1	20	
Lead	mg/L	<0.0050	1	1	0.98	0.99	98	99	70-130	1	20	
Lithium	mg/L	0.10	1	1	1.2	1.2	114	115	70-130	0	20	

MATRIX SPIKE SAMPLE: 1833595

Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.057	1	1.1	102	70-130	
Beryllium	mg/L	<0.0010	1	1.0	100	70-130	
Boron	mg/L	0.29	1	1.3	101	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

MATRIX SPIKE SAMPLE: 1833595

Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	160	10	170	92	70-130	
Chromium	mg/L	<0.0050	1	0.98	98	70-130	
Lead	mg/L	<0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.014	1	1.1	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 448190 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833596 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/12/16 21:41	
Arsenic	mg/L	<0.0010	0.0010	10/12/16 21:41	
Cadmium	mg/L	<0.00050	0.00050	10/12/16 21:41	
Cobalt	mg/L	<0.0010	0.0010	10/12/16 21:41	
Molybdenum	mg/L	<0.0010	0.0010	10/12/16 21:41	
Selenium	mg/L	<0.0010	0.0010	10/12/16 21:41	
Thallium	mg/L	<0.0010	0.0010	10/12/16 21:41	

LABORATORY CONTROL SAMPLE: 1833597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	101	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.042	104	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1833598 1833599

Parameter	Units	60228378002 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	0.039	99	96	70-130	3	20	
Arsenic	mg/L	0.0080	.04	.04	0.049	0.049	102	102	70-130	0	20	
Cadmium	mg/L	<0.00050	.04	.04	0.035	0.034	88	86	70-130	2	20	
Cobalt	mg/L	0.033	.04	.04	0.068	0.068	89	88	70-130	1	20	
Molybdenum	mg/L	0.12	.04	.04	0.17	0.16	110	106	70-130	1	20	
Selenium	mg/L	<0.0010	.04	.04	0.043	0.042	107	104	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.035	0.034	87	86	70-130	1	20	

MATRIX SPIKE SAMPLE: 1833600

Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0035	.04	0.045	104	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	89	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

MATRIX SPIKE SAMPLE: 1833600

Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.038	94	70-130	
Molybdenum	mg/L	0.047	.04	0.090	108	70-130	
Selenium	mg/L	<0.0010	.04	0.044	110	70-130	
Thallium	mg/L	<0.0010	.04	0.035	87	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 448309 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1833986 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/28/16 11:00	

LABORATORY CONTROL SAMPLE: 1833987

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	99	80-120	

SAMPLE DUPLICATE: 1833988

Parameter	Units	60228510001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	573	570	1	10	

SAMPLE DUPLICATE: 1833989

Parameter	Units	60228563004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3300	3480	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 449966 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

SAMPLE DUPLICATE: 1841236

Parameter	Units	60229217001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.1	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 450605 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1843933 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	10/14/16 15:19	

LABORATORY CONTROL SAMPLE: 1843934

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1843935 1843936

Parameter	Units	60228510001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.38	2.5	2.5	3.2	3.3	115	116	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 450676 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1844258 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/15/16 12:57	
Sulfate	mg/L	<1.0	1.0	10/15/16 12:57	

LABORATORY CONTROL SAMPLE: 1844259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1844260 1844261

Parameter	Units	60228378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	233	100	100	351	345	118	112	80-120	2	15	
Sulfate	mg/L	1840	1000	1000	2960	2920	112	108	80-120	1	15	

MATRIX SPIKE SAMPLE: 1844262

Parameter	Units	60229306001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	189	100	301	113	80-120	
Sulfate	mg/L	820	500	1370	111	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD2-092316 **Lab ID: 60228510001** Collected: 09/23/16 07:50 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.118 ± 0.327 (0.635) C:NA T:85%**	pCi/L	10/12/16 22:20	13982-63-3	
Radium-228	EPA 904.0	**0.250 ± 0.441 (0.963) C:68% T:81%**	pCi/L	10/12/16 15:36	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD3-092316 **Lab ID: 60228510002** Collected: 09/23/16 08:56 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.740 ± 0.665 (1.01) C:NA T:83%**	pCi/L	10/12/16 22:46	13982-63-3	
Radium-228	EPA 904.0	**-0.0553 ± 0.385 (0.911) C:64% T:81%**	pCi/L	10/12/16 15:36	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FGD4-092316 **Lab ID: 60228510003** Collected: 09/23/16 10:16 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.180 ± 0.392 (0.903) C:NA T:84%**	pCi/L	10/12/16 22:46	13982-63-3	
Radium-228	EPA 904.0	**0.731 ± 0.509 (0.981) C:59% T:80%**	pCi/L	10/12/16 15:36	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FAA 5-092316 **Lab ID: 60228510004** Collected: 09/23/16 11:53 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.900 ± 0.504 (0.523) C:NA T:89%**	pCi/L	10/12/16 22:45	13982-63-3	
Radium-228	EPA 904.0	**0.535 ± 0.425 (0.833) C:60% T:82%**	pCi/L	10/12/16 15:56	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: FAA 4-092316 **Lab ID: 60228510005** Collected: 09/23/16 13:01 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0683 ± 0.354 (0.735) C:NA T:82%**	pCi/L	10/12/16 23:01	13982-63-3	
Radium-228	EPA 904.0	**0.384 ± 0.333 (0.658) C:65% T:84%**	pCi/L	10/12/16 15:38	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Sample: DUP-092316 **Lab ID: 60228510006** Collected: 09/23/16 17:00 Received: 09/24/16 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0601 ± 0.274 (0.443) C:NA T:86%**	pCi/L	10/12/16 22:47	13982-63-3	
Radium-228	EPA 904.0	**-0.309 ± 0.414 (1.05) C:60% T:72%**	pCi/L	10/12/16 15:56	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 234970 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1153085 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0625 ± 0.285 (0.580) C:NA T:89%	pCi/L	10/12/16 21:46	

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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

QC Batch: 234962 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

METHOD BLANK: 1153048 Matrix: Water
Associated Lab Samples: 60228510001, 60228510002, 60228510003, 60228510004, 60228510005, 60228510006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.716 ± 0.442 (0.813) C:58% T:86%	pCi/L	10/12/16 15:36	

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: JEC CCR GROUNDWATER
Pace Project No.: 60228510

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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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228510001	**FGD2-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510002	**FGD3-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510003	**FGD4-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510004	**FAA 5-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510005	**FAA 4-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510006	**DUP-092316**	EPA 200.7	448189	EPA 200.7	448246
60228510001	**FGD2-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510002	**FGD3-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510003	**FGD4-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510004	**FAA 5-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510005	**FAA 4-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510006	**DUP-092316**	EPA 200.8	448190	EPA 200.8	448248
60228510001	**FGD2-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510002	**FGD3-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510003	**FGD4-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510004	**FAA 5-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510005	**FAA 4-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510006	**DUP-092316**	EPA 245.1	447972	EPA 245.1	448022
60228510001	**FGD2-092316**	EPA 903.1	234970		
60228510002	**FGD3-092316**	EPA 903.1	234970		
60228510003	**FGD4-092316**	EPA 903.1	234970		
60228510004	**FAA 5-092316**	EPA 903.1	234970		
60228510005	**FAA 4-092316**	EPA 903.1	234970		
60228510006	**DUP-092316**	EPA 903.1	234970		
60228510001	**FGD2-092316**	EPA 904.0	234962		
60228510002	**FGD3-092316**	EPA 904.0	234962		
60228510003	**FGD4-092316**	EPA 904.0	234962		
60228510004	**FAA 5-092316**	EPA 904.0	234962		
60228510005	**FAA 4-092316**	EPA 904.0	234962		
60228510006	**DUP-092316**	EPA 904.0	234962		
60228510001	**FGD2-092316**	SM 2540C	448309		
60228510002	**FGD3-092316**	SM 2540C	448309		
60228510003	**FGD4-092316**	SM 2540C	448309		
60228510004	**FAA 5-092316**	SM 2540C	448309		
60228510005	**FAA 4-092316**	SM 2540C	448309		
60228510006	**DUP-092316**	SM 2540C	448309		
60228510001	**FGD2-092316**	SM 4500-H+B	449966		
60228510002	**FGD3-092316**	SM 4500-H+B	449966		
60228510003	**FGD4-092316**	SM 4500-H+B	449966		
60228510004	**FAA 5-092316**	SM 4500-H+B	449966		
60228510005	**FAA 4-092316**	SM 4500-H+B	449966		
60228510006	**DUP-092316**	SM 4500-H+B	449966		
60228510001	**FGD2-092316**	EPA 300.0	450605		
60228510001	**FGD2-092316**	EPA 300.0	450676		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228510

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228510002	**FGD3-092316**	EPA 300.0	450605		
60228510002	**FGD3-092316**	EPA 300.0	450676		
60228510003	**FGD4-092316**	EPA 300.0	450605		
60228510003	**FGD4-092316**	EPA 300.0	450676		
60228510004	**FAA 5-092316**	EPA 300.0	450605		
60228510004	**FAA 5-092316**	EPA 300.0	450676		
60228510005	**FAA 4-092316**	EPA 300.0	450605		
60228510005	**FAA 4-092316**	EPA 300.0	450676		
60228510006	**DUP-092316**	EPA 300.0	450605		
60228510006	**DUP-092316**	EPA 300.0	450676		

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Sample Condition Upon Receipt

WO# : 60228510

60228510

HMW

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

Cooler Temperature (°C): **As-read** 0.3 / 1.1 **Corr. Factor** (CF +1.1) (CF -0.1) **Corrected** 1.4 / 2.2

Date and initials of person examining contents: DVG 9/24/16

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: HMW Date: 9/26/16

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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:	JEC 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 #:	9657, 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	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	FGD2-092316	WT	G			9/23	0750		4	1		3																60228510
2	FGD3-092316	WT	G			9/23	0856		4	1		3																002
3	FGD4-092316	WT	G			9/23	1016		4	1		3																003
4	FAA5-092316	WT	G			9/23	1153		4	1		3																004
5	FAA4-092316	WT	G			9/23	1301		4	1		3																005
6																												
7																												
8																												
9																												
10																												
11																												
12	DUP-092316	WT	G			9/23	1700		4	1		3																

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	Westar	09/23/16	1415		9/24	0920
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl						

SAMPLE CONDITIONS				
	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1-4	X	Y	Y	
2-2	X	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 09/23/16

*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#:30197253

Pace Analytical®
www.pacelabs.com
10/18/16

Workorder: 60228510 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 9/24/2016 **Results Requested By:** ~~10/5/2016~~

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	FGD2-092316	PS	9/23/2016 07:50	60228510001	Water	2	X	001
2	FGD3-092316	PS	9/23/2016 08:56	60228510002	Water	2	X	002
3	FGD4-092316	PS	9/23/2016 10:16	60228510003	Water	2	X	003
4	FAA 5-092316	PS	9/23/2016 11:53	60228510004	Water	2	X	004
5	FAA 4-092316	PS	9/23/2016 13:01	60228510005	Water	2	X	005
6	DUP-092316	PS	9/23/2016 17:00	60228510006	Water	2	X	006

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	9/26/16 1700	[signature]	9-27-16 0950
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 # 30197253

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

Tracking #: 7046 6653 9584

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: MC 9-27-16

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 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: 9-27-16

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 19, 2016

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 27, 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60228567001	**FAA3-092616**	Water	09/26/16 09:16	09/27/16 06:36
60228567002	**FAA2-092616**	Water	09/26/16 10:37	09/27/16 06:36

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60228567001	**FAA3-092616**	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
60228567002	**FAA2-092616**	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

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: 448189

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60228378001,60228510003

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

- MS (Lab ID: 1833593)
  - Calcium
- MSD (Lab ID: 1833594)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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.
- FAA2-092616 (Lab ID: 60228567002)
- FAA3-092616 (Lab ID: 60228567001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 19, 2016

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Sample: FAA3-092616 **Lab ID: 60228567001** Collected: 09/26/16 09:16 Received: 09/27/16 06:36 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	**0.038**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:45	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:45	7440-41-7	
Boron, Total Recoverable	**0.85**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:45	7440-42-8	
Calcium, Total Recoverable	**218**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:45	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:45	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:45	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:45	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	09/27/16 15:20	10/12/16 23:08	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:08	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 23:08	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:08	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:08	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:08	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:08	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/29/16 08:30	09/29/16 13:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1490**	mg/L	5.0	1		09/28/16 11:12		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		10/05/16 08:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**88.2**	mg/L	10.0	10		10/18/16 09:25	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	1		10/16/16 14:28	16984-48-8	
Sulfate	**706**	mg/L	50.0	50		10/18/16 09:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Sample: FAA2-092616 **Lab ID: 60228567002** Collected: 09/26/16 10:37 Received: 09/27/16 06:36 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	**0.028**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:47	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	09/30/16 16:47	7440-41-7	
Boron, Total Recoverable	**3.2**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:47	7440-42-8	
Calcium, Total Recoverable	**312**	mg/L	0.10	1	09/27/16 15:20	09/30/16 16:47	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:47	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/27/16 15:20	09/30/16 16:47	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	09/27/16 15:20	09/30/16 16:47	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	09/27/16 15:20	10/12/16 23:12	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:12	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/27/16 15:20	10/12/16 23:12	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:12	7440-48-4	
Molybdenum, Total Recoverable	**0.22**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:12	7439-98-7	
Selenium, Total Recoverable	**0.0024**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:12	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/27/16 15:20	10/12/16 23:12	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/29/16 08:30	09/29/16 14:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3120**	mg/L	5.0	1		09/28/16 11:13		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		10/05/16 08:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**73.5**	mg/L	10.0	10		10/18/16 09:53	16887-00-6	
Fluoride	**0.63**	mg/L	0.20	1		10/16/16 14:42	16984-48-8	
Sulfate	**2060**	mg/L	200	200		10/18/16 10:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 448464 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1834635 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/29/16 13:03	

LABORATORY CONTROL SAMPLE: 1834636

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: 1834637 1834638

Parameter	Units	60228432001 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	0.0048	0.0045	95	90	70-130	5	20	

MATRIX SPIKE SAMPLE: 1834639

Parameter	Units	60228562001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0047	94	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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 448189 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1833591 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/30/16 15:57	
Beryllium	mg/L	<0.0010	0.0010	09/30/16 15:57	
Boron	mg/L	<0.10	0.10	09/30/16 15:57	
Calcium	mg/L	<0.10	0.10	09/30/16 15:57	
Chromium	mg/L	<0.0050	0.0050	09/30/16 15:57	
Lead	mg/L	<0.0050	0.0050	09/30/16 15:57	
Lithium	mg/L	<0.010	0.010	09/30/16 15:57	

LABORATORY CONTROL SAMPLE: 1833592

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	0.99	99	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: 1833593 1833594

Parameter	Units	60228378001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.022	1	1	1.1	1.1	106	106	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	4.0	1	1	5.2	5.2	116	117	70-130	0	20	
Calcium	mg/L	478	10	10	509	506	312	279	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.98	1.0	98	100	70-130	1	20	
Lead	mg/L	<0.0050	1	1	0.98	0.99	98	99	70-130	1	20	
Lithium	mg/L	0.10	1	1	1.2	1.2	114	115	70-130	0	20	

MATRIX SPIKE SAMPLE: 1833595

Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.057	1	1.1	102	70-130	
Beryllium	mg/L	<0.0010	1	1.0	100	70-130	
Boron	mg/L	0.29	1	1.3	101	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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

MATRIX SPIKE SAMPLE: 1833595

Parameter	Units	60228510003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	160	10	170	92	70-130	
Chromium	mg/L	<0.0050	1	0.98	98	70-130	
Lead	mg/L	<0.0050	1	1.0	100	70-130	
Lithium	mg/L	0.014	1	1.1	106	70-130	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 448190 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1833596 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	10/12/16 21:41	
Arsenic	mg/L	<0.0010	0.0010	10/12/16 21:41	
Cadmium	mg/L	<0.00050	0.00050	10/12/16 21:41	
Cobalt	mg/L	<0.0010	0.0010	10/12/16 21:41	
Molybdenum	mg/L	<0.0010	0.0010	10/12/16 21:41	
Selenium	mg/L	<0.0010	0.0010	10/12/16 21:41	
Thallium	mg/L	<0.0010	0.0010	10/12/16 21:41	

LABORATORY CONTROL SAMPLE: 1833597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.041	101	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.042	104	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1833598 1833599

Parameter	Units	60228378002 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	0.039	99	96	70-130	3	20	
Arsenic	mg/L	0.0080	.04	.04	0.049	0.049	102	102	70-130	0	20	
Cadmium	mg/L	<0.00050	.04	.04	0.035	0.034	88	86	70-130	2	20	
Cobalt	mg/L	0.033	.04	.04	0.068	0.068	89	88	70-130	1	20	
Molybdenum	mg/L	0.12	.04	.04	0.17	0.16	110	106	70-130	1	20	
Selenium	mg/L	<0.0010	.04	.04	0.043	0.042	107	104	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.035	0.034	87	86	70-130	1	20	

MATRIX SPIKE SAMPLE: 1833600

Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.039	98	70-130	
Arsenic	mg/L	0.0035	.04	0.045	104	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	89	70-130	

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REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

MATRIX SPIKE SAMPLE: 1833600

Parameter	Units	60228510004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.038	94	70-130	
Molybdenum	mg/L	0.047	.04	0.090	108	70-130	
Selenium	mg/L	<0.0010	.04	0.044	110	70-130	
Thallium	mg/L	<0.0010	.04	0.035	87	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 448309 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1833986 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/28/16 11:00	

LABORATORY CONTROL SAMPLE: 1833987

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	99	80-120	

SAMPLE DUPLICATE: 1833988

Parameter	Units	60228510001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	573	570	1	10	

SAMPLE DUPLICATE: 1833989

Parameter	Units	60228563004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3300	3480	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 449176 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60228567001, 60228567002

SAMPLE DUPLICATE: 1837935

Parameter	Units	60228567001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.1	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 450690 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1844741 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	10/16/16 13:17	

LABORATORY CONTROL SAMPLE: 1844742

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1844743 1844744

Parameter	Units	60229439001 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	250	250	270	276	108	110	80-120	2	15	

MATRIX SPIKE SAMPLE: 1844745

Parameter	Units	60229450001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	25	27.8	111	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 450954 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1845361 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	10/18/16 08:57	
Sulfate	mg/L	<1.0	1.0	10/18/16 08:57	

LABORATORY CONTROL SAMPLE: 1845362

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE SAMPLE: 1845365

Parameter	Units	60229450004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	489	250	749	104	80-120	
Sulfate	mg/L	399	250	650	100	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Sample: FAA3-092616 **Lab ID: 60228567001** Collected: 09/26/16 09:16 Received: 09/27/16 06:36 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0647 ± 0.295 (0.601) C:NA T:88%**	pCi/L	10/13/16 11:46	13982-63-3	
Radium-228	EPA 904.0	**-0.213 ± 0.315 (0.767) C:67% T:81%**	pCi/L	10/13/16 14:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Sample: FAA2-092616 **Lab ID: 60228567002** Collected: 09/26/16 10:37 Received: 09/27/16 06:36 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0629 ± 0.370 (0.755) C:NA T:89%**	pCi/L	10/13/16 11:47	13982-63-3	
Radium-228	EPA 904.0	**0.498 ± 0.395 (0.773) C:63% T:77%**	pCi/L	10/13/16 14:55	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 234975 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1153094 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.361 ± 0.322 (0.801) C:65% T:83%	pCi/L	10/13/16 14:53	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

QC Batch: 234973 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60228567001, 60228567002

METHOD BLANK: 1153092 Matrix: Water
Associated Lab Samples: 60228567001, 60228567002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.057 ± 0.258 (0.525) C:NA T:98%	pCi/L	10/13/16 11:13	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60228567

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: JEC CCR GROUNDWATER
Pace Project No.: 60228567

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60228567001	**FAA3-092616**	EPA 200.7	448189	EPA 200.7	448246
60228567002	**FAA2-092616**	EPA 200.7	448189	EPA 200.7	448246
60228567001	**FAA3-092616**	EPA 200.8	448190	EPA 200.8	448248
60228567002	**FAA2-092616**	EPA 200.8	448190	EPA 200.8	448248
60228567001	**FAA3-092616**	EPA 245.1	448464	EPA 245.1	448501
60228567002	**FAA2-092616**	EPA 245.1	448464	EPA 245.1	448501
60228567001	**FAA3-092616**	EPA 903.1	234973		
60228567002	**FAA2-092616**	EPA 903.1	234973		
60228567001	**FAA3-092616**	EPA 904.0	234975		
60228567002	**FAA2-092616**	EPA 904.0	234975		
60228567001	**FAA3-092616**	SM 2540C	448309		
60228567002	**FAA2-092616**	SM 2540C	448309		
60228567001	**FAA3-092616**	SM 4500-H+B	449176		
60228567002	**FAA2-092616**	SM 4500-H+B	449176		
60228567001	**FAA3-092616**	EPA 300.0	450690		
60228567001	**FAA3-092616**	EPA 300.0	450954		
60228567002	**FAA2-092616**	EPA 300.0	450690		
60228567002	**FAA2-092616**	EPA 300.0	450954		

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Sample Condition Upon Receipt

WO# : 60228567

60228567

Client Name: Water 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** 1.8 **Corr. Factor** CF +1 / CF -0.1 **Corrected** 2.9

Date and initials of person examining contents: pvg 9/27/16

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: 9/27/16

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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:	JEC 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 #:	9657, 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 (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	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. 60228567
1	FAA3-092616	WT	G			9/26	0916		4	1		3																1BP2U 1BP2N^{2-0} 2BP1N^{2-0} 001
2	FAA2-092616	WT	G			9/26	1037		4	1		3																↓ ↓ ↓ 002
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	09/26/16	1145	[signature] PACE	9/27	0636	2-9	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 09/26/16

*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#:30197368

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www.pacelabs.com

Workorder: 60228567 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 9/27/2016 **Results Requested By:** 10/19/2016

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

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	BP1N						Radium 226 & 228												LAB USE ONLY
1	FAA3-092616	PS	9/26/2016 09:16	60228567001	Water	2						X												001
2	FAA2-092616	PS	9/26/2016 10:37	60228567002	Water	2						X												002
3																								
4																								
5																								

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	9/26/16 1700	[signature]	9-28-16 0950
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 # 30197368

Courier: [X] Fed Ex [ ] UPS [ ] USPS [ ] Client [ ] Commercial [ ] Pace Other _____

Tracking #: 704466540419

Custody Seal on Cooler/Box Present: [X] yes [X] no NVN 9-28-16 Seals intact: [X] 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 9-28-16

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.
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: 9-28-16

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

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

December 07, 2016

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on November 05, 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
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CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60231627001	**BAA-6-110316**	Water	11/03/16 08:38	11/05/16 08:50
60231627002	**BAA-2-110316**	Water	11/03/16 10:02	11/05/16 08:50
60231627003	**BAA-4-110316**	Water	11/03/16 11:17	11/05/16 08:50
60231627004	**BAA-3-110316**	Water	11/03/16 12:32	11/05/16 08:50
60231627005	**FGD-1-110316**	Water	11/03/16 13:55	11/05/16 08:50
60231627006	**FGD-4-110316**	Water	11/03/16 14:57	11/05/16 08:50
60231627007	**FGD-3-110316**	Water	11/03/16 13:55	11/05/16 08:50
60231627008	**FGD-2-110316**	Water	11/03/16 16:40	11/05/16 08:50
60231627009	**FAA-5-110416**	Water	11/03/16 08:31	11/05/16 08:50
60231627010	**FAA-4-110416**	Water	11/03/16 09:28	11/05/16 08:50
60231627011	**DUP-110416**	Water	11/03/16 06:00	11/05/16 08:50
60231627012	**DUP-110316**	Water	11/03/16 06:00	11/05/16 08:50
60231627013	**FAA-3-110416**	Water	11/04/16 10:30	11/05/16 08:50
60231627014	**FAA-2-110416**	Water	11/04/16 11:30	11/05/16 08:50

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60231627001	**BAA-6-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627002	**BAA-2-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627003	**BAA-4-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627004	**BAA-3-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627005	**FGD-1-110316**	EPA 200.7	SMW	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627006	**FGD-4-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
60231627007	**FGD-3-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627008	**FGD-2-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
60231627009	**FAA-5-110416**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

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	RAB	3	PASI-K
60231627010	**FAA-4-110416**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627011	**DUP-110416**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627012	**DUP-110316**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	RAB	3	PASI-K
60231627013	**FAA-3-110416**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	ZBM	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		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	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K
60231627014	**FAA-2-110416**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	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	AGO	1	PASI-K
		EPA 300.0	RAB	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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.
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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: 455898

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60231627003,60232038001

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

- MS (Lab ID: 1866968)
  - Mercury
- MSD (Lab ID: 1866969)
  - Mercury

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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.
- BAA-2-110316 (Lab ID: 60231627002)
- BAA-3-110316 (Lab ID: 60231627004)
- BAA-4-110316 (Lab ID: 60231627003)
- BAA-6-110316 (Lab ID: 60231627001)
- DUP-110316 (Lab ID: 60231627012)
- DUP-110416 (Lab ID: 60231627011)
- FAA-2-110416 (Lab ID: 60231627014)
- FAA-3-110416 (Lab ID: 60231627013)
- FAA-4-110416 (Lab ID: 60231627010)
- FAA-5-110416 (Lab ID: 60231627009)
- FGD-1-110316 (Lab ID: 60231627005)
- FGD-2-110316 (Lab ID: 60231627008)
- FGD-3-110316 (Lab ID: 60231627007)
- FGD-4-110316 (Lab ID: 60231627006)

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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: December 07, 2016

General Information:
14 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: 456713

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60232075004,60232096004

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

- MS (Lab ID: 1869910)
  - Sulfate
- MS (Lab ID: 1869912)
  - Chloride
  - Sulfate
- MSD (Lab ID: 1869911)
  - Fluoride
  - Sulfate

QC Batch: 456831

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60232532002,60233017001

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

- MS (Lab ID: 1870416)
  - Chloride
- MSD (Lab ID: 1870417)
  - 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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-6-110316 **Lab ID: 60231627001** Collected: 11/03/16 08:38 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.021**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:08	7440-41-7	
Boron, Total Recoverable	**3.8**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:08	7440-42-8	
Calcium, Total Recoverable	**513**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:08	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:08	7439-92-1	
Lithium	**0.095**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:08	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-36-0	
Arsenic, Total Recoverable	**0.0012**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:26	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-48-4	
Molybdenum, Total Recoverable	**0.0059**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:26	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3220**	mg/L	5.0	1		11/09/16 11:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**183**	mg/L	20.0	20		11/29/16 15:27	16887-00-6	
Fluoride	**0.62**	mg/L	0.20	1		11/29/16 15:13	16984-48-8	
Sulfate	**2070**	mg/L	200	200		11/30/16 03:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-2-110316 **Lab ID: 60231627002** Collected: 11/03/16 10:02 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.055**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:19	7440-41-7	
Boron, Total Recoverable	**1.1**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:19	7440-42-8	
Calcium, Total Recoverable	**188**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:19	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:19	7439-92-1	
Lithium	**0.020**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:19	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	11/08/16 09:00	11/28/16 16:39	7440-36-0	
Arsenic, Total Recoverable	**0.0062**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:39	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-48-4	
Molybdenum, Total Recoverable	**0.044**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:39	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1360**	mg/L	5.0	1		11/09/16 11:29		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**137**	mg/L	10.0	10		11/29/16 16:10	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	1		11/29/16 15:56	16984-48-8	
Sulfate	**983**	mg/L	100	100		11/30/16 18:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-4-110316 **Lab ID: 60231627003** Collected: 11/03/16 11:17 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.032**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:23	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:23	7440-41-7	
Boron, Total Recoverable	**0.92**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:23	7440-42-8	
Calcium, Total Recoverable	**393**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:23	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:23	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:23	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:23	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	11/08/16 09:00	11/28/16 16:48	7440-36-0	
Arsenic, Total Recoverable	**0.0082**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:48	7440-43-9	
Cobalt, Total Recoverable	**0.026**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-48-4	
Molybdenum, Total Recoverable	**0.13**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:48	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:35	7439-97-6	M1
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3820**	mg/L	5.0	1		11/09/16 11:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**183**	mg/L	20.0	20		11/29/16 18:59	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		11/29/16 18:45	16984-48-8	
Sulfate	**2800**	mg/L	200	200		11/29/16 19:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-3-110316 **Lab ID: 60231627004** Collected: 11/03/16 12:32 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.015**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:27	7440-41-7	
Boron, Total Recoverable	**2.3**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:27	7440-42-8	
Calcium, Total Recoverable	**507**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:27	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:27	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:27	7439-92-1	
Lithium	**0.095**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:27	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:52	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-48-4	
Molybdenum, Total Recoverable	**0.0023**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:52	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3150**	mg/L	5.0	1		11/09/16 11:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**157**	mg/L	20.0	20		11/29/16 20:10	16887-00-6	
Fluoride	**0.92**	mg/L	0.20	1		11/29/16 19:56	16984-48-8	
Sulfate	**2290**	mg/L	200	200		11/29/16 20:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-1-110316 **Lab ID: 60231627005** Collected: 11/03/16 13:55 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.31**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:31	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:31	7440-41-7	
Boron, Total Recoverable	**0.10**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:31	7440-42-8	
Calcium, Total Recoverable	**94.6**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:31	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:31	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:31	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:31	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	11/08/16 09:00	11/28/16 16:56	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 16:56	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-48-4	
Molybdenum, Total Recoverable	**0.0013**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 16:56	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**495**	mg/L	5.0	1		11/09/16 11:31		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**49.2**	mg/L	5.0	5		11/29/16 20:53	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		11/29/16 20:39	16984-48-8	
Sulfate	**95.4**	mg/L	5.0	5		11/29/16 20:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-4-110316 **Lab ID: 60231627006** Collected: 11/03/16 14:57 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.057**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:35	7440-41-7	
Boron, Total Recoverable	**0.28**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:35	7440-42-8	
Calcium, Total Recoverable	**164**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:35	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:35	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:35	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:09	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-48-4	
Molybdenum, Total Recoverable	**0.0040**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:09	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:46	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**947**	mg/L	5.0	1		11/09/16 11:32		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**80.9**	mg/L	5.0	5		11/29/16 21:21	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		11/29/16 21:07	16984-48-8	
Sulfate	**412**	mg/L	50.0	50		11/29/16 21:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-3-110316 **Lab ID: 60231627007** Collected: 11/03/16 13:55 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.19**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:38	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:38	7440-41-7	
Boron, Total Recoverable	**0.13**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:38	7440-42-8	
Calcium, Total Recoverable	**160**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:38	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:38	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:38	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:38	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	11/08/16 09:00	11/28/16 17:14	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:14	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7440-48-4	
Molybdenum, Total Recoverable	**0.0062**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 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	11/22/16 08:30	11/22/16 12:53	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**817**	mg/L	5.0	1		11/09/16 11:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.7**	mg/L	5.0	5		11/29/16 22:46	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		11/29/16 21:50	16984-48-8	
Sulfate	**313**	mg/L	20.0	20		11/29/16 22:04	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-2-110316 **Lab ID: 60231627008** Collected: 11/03/16 16:40 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.097**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:42	7440-41-7	
Boron, Total Recoverable	**0.26**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:42	7440-42-8	
Calcium, Total Recoverable	**161**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:42	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:42	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:42	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	11/08/16 09:00	11/28/16 17:18	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:18	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7440-48-4	
Molybdenum, Total Recoverable	**0.0040**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7439-98-7	
Selenium, Total Recoverable	**0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:18	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 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	11/22/16 08:30	11/22/16 12:55	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**769**	mg/L	5.0	1		11/09/16 11:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**36.6**	mg/L	5.0	5		11/30/16 18:44	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		11/29/16 23:01	16984-48-8	
Sulfate	**325**	mg/L	20.0	20		11/29/16 23:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-5-110416 **Lab ID: 60231627009** Collected: 11/03/16 08:31 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.011**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:46	7440-41-7	
Boron, Total Recoverable	**1.0**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:46	7440-42-8	
Calcium, Total Recoverable	**220**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:46	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:46	7439-92-1	
Lithium	**0.075**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:46	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	11/08/16 09:00	11/28/16 17:23	7440-36-0	
Arsenic, Total Recoverable	**0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:23	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7440-48-4	
Molybdenum, Total Recoverable	**0.0093**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7439-98-7	
Selenium, Total Recoverable	**0.0039**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:23	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 12:58	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1470**	mg/L	5.0	1		11/09/16 11:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**99.6**	mg/L	10.0	10		11/29/16 23:57	16887-00-6	
Fluoride	**0.54**	mg/L	0.20	1		11/29/16 23:43	16984-48-8	
Sulfate	**834**	mg/L	200	200		11/30/16 00:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-4-110416 **Lab ID: 60231627010** Collected: 11/03/16 09:28 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:50	7440-41-7	
Boron, Total Recoverable	**0.36**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:50	7440-42-8	
Calcium, Total Recoverable	**205**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:50	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:50	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	11/08/16 09:00	11/28/16 17:27	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:27	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-48-4	
Molybdenum, Total Recoverable	**0.0030**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:27	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1170**	mg/L	5.0	1		11/09/16 11:35		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		11/11/16 16:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**85.6**	mg/L	10.0	10		11/30/16 00:40	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		11/30/16 00:26	16984-48-8	
Sulfate	**579**	mg/L	50.0	50		11/30/16 00:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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9608 Loiret Blvd.
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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: DUP-110416 **Lab ID: 60231627011** Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.052**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:54	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 13:54	7440-41-7	
Boron, Total Recoverable	**0.35**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:54	7440-42-8	
Calcium, Total Recoverable	**203**	mg/L	0.10	1	11/08/16 09:00	11/09/16 13:54	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:54	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 13:54	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	11/08/16 09:00	11/09/16 13:54	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	11/08/16 09:00	11/28/16 17:31	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:31	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-48-4	
Molybdenum, Total Recoverable	**0.0030**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:31	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1150**	mg/L	5.0	1		11/09/16 11:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		11/09/16 16:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**86.1**	mg/L	20.0	20		11/30/16 01:51	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		11/30/16 01:37	16984-48-8	
Sulfate	**562**	mg/L	50.0	50		11/30/16 18:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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9608 Loiret Blvd.
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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: DUP-110316 **Lab ID: 60231627012** Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:14	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:14	7440-42-8	
Calcium, Total Recoverable	**205**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:14	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:14	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:14	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	11/08/16 09:00	11/28/16 17:36	7440-36-0	
Arsenic, Total Recoverable	**0.0075**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:36	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-48-4	
Molybdenum, Total Recoverable	**0.054**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:36	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:04	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1460**	mg/L	5.0	1		11/09/16 11:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		11/09/16 16:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**158**	mg/L	20.0	20		11/30/16 02:34	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	1		11/30/16 02:19	16984-48-8	
Sulfate	**900**	mg/L	200	200		11/30/16 02:48	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-3-110416 **Lab ID: 60231627013** Collected: 11/04/16 10:30 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.034**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:18	7440-41-7	
Boron, Total Recoverable	**0.95**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:18	7440-42-8	
Calcium, Total Recoverable	**214**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:18	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:18	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:18	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	11/08/16 09:00	11/28/16 17:40	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:40	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-48-4	
Molybdenum, Total Recoverable	**0.014**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:40	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1490**	mg/L	5.0	1		11/09/16 11:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**89.5**	mg/L	10.0	10		11/30/16 03:16	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	1		11/30/16 03:02	16984-48-8	
Sulfate	**896**	mg/L	50.0	50		11/30/16 03:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-2-110416 **Lab ID: 60231627014** Collected: 11/04/16 11:30 Received: 11/05/16 08:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.035**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/09/16 14:22	7440-41-7	
Boron, Total Recoverable	**3.2**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:22	7440-42-8	
Calcium, Total Recoverable	**330**	mg/L	0.10	1	11/08/16 09:00	11/09/16 14:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	11/08/16 09:00	11/09/16 14:22	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	11/08/16 09:00	11/09/16 14:22	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	11/08/16 09:00	11/28/16 17:44	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	11/08/16 09:00	11/28/16 17:44	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-48-4	
Molybdenum, Total Recoverable	**0.27**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	11/08/16 09:00	11/28/16 17:44	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	11/22/16 08:30	11/22/16 13:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3160**	mg/L	5.0	1		11/09/16 11:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		11/12/16 11:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**68.8**	mg/L	10.0	10		11/30/16 17:19	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	1		11/30/16 18:15	16984-48-8	
Sulfate	**2030**	mg/L	200	200		11/30/16 17:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 455898 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1866966 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	11/22/16 12:26	

LABORATORY CONTROL SAMPLE: 1866967

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0052	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1866968 1866969

Parameter	Units	60231627003 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	0.0028	0.0028	57	55	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 1866970

Parameter	Units	60232038001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0063	126	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 453876 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1858392 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	11/09/16 12:35	
Beryllium	mg/L	<0.0010	0.0010	11/09/16 12:35	
Boron	mg/L	<0.10	0.10	11/09/16 12:35	
Calcium	mg/L	<0.10	0.10	11/09/16 12:35	
Chromium	mg/L	<0.0050	0.0050	11/09/16 12:35	
Lead	mg/L	<0.0050	0.0050	11/09/16 12:35	
Lithium	mg/L	<0.010	0.010	11/09/16 12:35	

LABORATORY CONTROL SAMPLE: 1858393

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.1	106	85-115	
Beryllium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.9	99	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1858394 1858395

Parameter	Units	60231598001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	6.3 ug/L	1	1	1.1	1.1	105	105	70-130	0	20	
Beryllium	mg/L	ND	1	1	0.97	0.97	97	97	70-130	0	20	
Boron	mg/L	ND	1	1	0.96	0.96	96	96	70-130	0	20	
Calcium	mg/L	2220 ug/L	10	10	12.2	12.2	99	100	70-130	0	20	
Chromium	mg/L	ND	1	1	1.0	1.0	103	102	70-130	1	20	
Lead	mg/L	ND	1	1	1.0	1.0	105	104	70-130	0	20	
Lithium	mg/L	ND	1	1	1.0	1.0	102	102	70-130	1	20	

MATRIX SPIKE SAMPLE: 1858396

Parameter	Units	60231598002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	60.5 ug/L	1	1.1	105	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

MATRIX SPIKE SAMPLE: 1858396

Parameter	Units	60231598002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Beryllium	mg/L	ND	1	0.99	99	70-130	
Boron	mg/L	ND	1	0.98	97	70-130	
Calcium	mg/L	11700 ug/L	10	21.4	97	70-130	
Chromium	mg/L	ND	1	1.0	102	70-130	
Lead	mg/L	ND	1	1.0	105	70-130	
Lithium	mg/L	ND	1	1.0	103	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 453882 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1858415 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	11/28/16 16:18	
Arsenic	mg/L	<0.0010	0.0010	11/28/16 16:18	
Cadmium	mg/L	<0.00050	0.00050	11/28/16 16:18	
Cobalt	mg/L	<0.0010	0.0010	11/28/16 16:18	
Molybdenum	mg/L	<0.0010	0.0010	11/28/16 16:18	
Selenium	mg/L	<0.0010	0.0010	11/28/16 16:18	
Thallium	mg/L	<0.0010	0.0010	11/28/16 16:18	

LABORATORY CONTROL SAMPLE: 1858416

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.041	103	85-115	
Cadmium	mg/L	.04	0.040	100	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.038	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1858417 1858418

Parameter	Units	60231627001 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	0.041	0.041	101	101	70-130	0	20	
Arsenic	mg/L	0.0012	.04	.04	0.043	0.043	105	105	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.036	0.036	91	91	70-130	0	20	
Cobalt	mg/L	<0.0010	.04	.04	0.038	0.038	92	93	70-130	1	20	
Molybdenum	mg/L	0.0059	.04	.04	0.050	0.050	110	110	70-130	0	20	
Selenium	mg/L	<0.0010	.04	.04	0.040	0.042	100	103	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.035	0.036	88	89	70-130	1	20	

MATRIX SPIKE SAMPLE: 1858419

Parameter	Units	60231627002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.041	102	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

MATRIX SPIKE SAMPLE: 1858419

Parameter	Units	60231627002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0062	.04	0.048	105	70-130	
Cadmium	mg/L	<0.00050	.04	0.038	94	70-130	
Cobalt	mg/L	<0.0010	.04	0.039	96	70-130	
Molybdenum	mg/L	0.044	.04	0.088	110	70-130	
Selenium	mg/L	<0.0010	.04	0.037	94	70-130	
Thallium	mg/L	<0.0010	.04	0.037	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 454069 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1859185 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	11/09/16 11:25	

LABORATORY CONTROL SAMPLE: 1859186

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	938	94	80-120	

SAMPLE DUPLICATE: 1859187

Parameter	Units	60231627001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3220	3180	1	10	

SAMPLE DUPLICATE: 1859188

Parameter	Units	60231627010 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1170	1140	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 454194 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60231627011, 60231627012

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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 454625 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627007, 60231627009, 60231627010

SAMPLE DUPLICATE: 1861765

Parameter	Units	60231480001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.2	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 454661 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60231627006, 60231627008, 60231627013, 60231627014

SAMPLE DUPLICATE: 1862077

Parameter	Units	60231506002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 456713 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013

METHOD BLANK: 1869908 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	11/29/16 09:18	
Fluoride	mg/L	<0.20	0.20	11/29/16 09:18	
Sulfate	mg/L	<1.0	1.0	11/29/16 09:18	

LABORATORY CONTROL SAMPLE: 1869909

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1869910 1869911

Parameter	Units	60232075004 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	113	117	103	107	80-120	3	15	
Fluoride	mg/L	ND	50	50	57.9	60.8	116	122	80-120	5	15	M1
Sulfate	mg/L	166	100	100	287	288	121	122	80-120	0	15	M1

MATRIX SPIKE SAMPLE: 1869912

Parameter	Units	60232096004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	97.9	50	160	123	80-120	M1
Fluoride	mg/L	ND	25	30.0	117	80-120	
Sulfate	mg/L	194	50	255	122	80-120	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 456831 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60231627002, 60231627008, 60231627011, 60231627014

METHOD BLANK: 1870414 Matrix: Water
Associated Lab Samples: 60231627002, 60231627008, 60231627011, 60231627014

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	11/30/16 14:28	
Fluoride	mg/L	<0.20	0.20	11/30/16 14:28	
Sulfate	mg/L	<1.0	1.0	11/30/16 14:28	

LABORATORY CONTROL SAMPLE: 1870415

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1870416 1870417

Parameter	Units	60232532002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	66400	25000	25000	97800	98100	125	127	80-120	0	15	M1
Fluoride	mg/L	ND	12500	12500	13700	14700	107	115	80-120	7	15	
Sulfate	mg/L	19500	25000	25000	48100	48100	115	114	80-120	0	15	

MATRIX SPIKE SAMPLE: 1870418

Parameter	Units	60233017001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	587	500	1090	101	80-120	
Fluoride	mg/L	ND	250	254	97	80-120	
Sulfate	mg/L	ND	500	572	98	80-120	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-6-110316 **Lab ID: 60231627001** Collected: 11/03/16 08:38 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.142 ± 0.342 (0.661) C:NA T:89%**	pCi/L	12/05/16 22:01	13982-63-3	
Radium-228	EPA 904.0	**1.73 ± 0.641 (0.939) C:62% T:81%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**1.87 ± 0.983 (1.60)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-2-110316 **Lab ID: 60231627002** Collected: 11/03/16 10:02 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.479 ± 0.406 (0.503) C:NA T:91%**	pCi/L	12/05/16 22:01	13982-63-3	
Radium-228	EPA 904.0	**0.845 ± 0.453 (0.816) C:72% T:83%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**1.32 ± 0.859 (1.32)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-4-110316 **Lab ID: 60231627003** Collected: 11/03/16 11:17 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.137 ± 0.314 (0.739) C:NA T:90%**	pCi/L	12/05/16 22:01	13982-63-3	
Radium-228	EPA 904.0	**0.456 ± 0.507 (1.07) C:77% T:82%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.593 ± 0.821 (1.81)**	pCi/L	12/07/16 11:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: BAA-3-110316 **Lab ID: 60231627004** Collected: 11/03/16 12:32 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.262 ± 0.364 (0.608) C:NA T:90%**	pCi/L	12/05/16 22:01	13982-63-3	
Radium-228	EPA 904.0	**0.635 ± 0.416 (0.790) C:77% T:80%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.897 ± 0.780 (1.40)**	pCi/L	12/07/16 11:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-1-110316 **Lab ID: 60231627005** Collected: 11/03/16 13:55 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.01 ± 0.577 (0.531) C:NA T:85%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.325 ± 0.388 (0.820) C:73% T:84%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.965 (1.35)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-4-110316 **Lab ID: 60231627006** Collected: 11/03/16 14:57 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.149 ± 0.461 (0.892) C:NA T:84%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.345 ± 0.434 (0.922) C:67% T:81%**	pCi/L	12/06/16 11:38	15262-20-1	
Total Radium	Total Radium Calculation	**0.494 ± 0.895 (1.81)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-3-110316 **Lab ID: 60231627007** Collected: 11/03/16 13:55 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.667 ± 0.568 (0.798) C:NA T:88%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.131 ± 0.336 (0.749) C:73% T:88%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.798 ± 0.904 (1.55)**	pCi/L	12/07/16 11:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FGD-2-110316 **Lab ID: 60231627008** Collected: 11/03/16 16:40 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.233 ± 0.356 (0.211) C:NA T:80%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.470 ± 0.342 (0.662) C:75% T:87%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.703 ± 0.698 (0.873)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-5-110416 **Lab ID: 60231627009** Collected: 11/03/16 08:31 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.135 ± 0.373 (0.724) C:NA T:91%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.821 ± 0.519 (0.988) C:61% T:85%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.956 ± 0.892 (1.71)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-4-110416 **Lab ID: 60231627010** Collected: 11/03/16 09:28 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0681 ± 0.311 (0.502) C:NA T:88%**	pCi/L	12/05/16 22:32	13982-63-3	
Radium-228	EPA 904.0	**0.404 ± 0.395 (0.811) C:68% T:83%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.472 ± 0.706 (1.31)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: DUP-110416 **Lab ID: 60231627011** Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.30 ± 0.679 (0.668) C:NA T:91%**	pCi/L	12/05/16 23:00	13982-63-3	
Radium-228	EPA 904.0	**-0.163 ± 0.338 (0.822) C:66% T:89%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 1.02 (1.49)**	pCi/L	12/07/16 11:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: DUP-110316 **Lab ID: 60231627012** Collected: 11/03/16 06:00 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.907 ± 0.540 (0.514) C:NA T:88%**	pCi/L	12/05/16 23:00	13982-63-3	
Radium-228	EPA 904.0	**1.03 ± 0.450 (0.722) C:68% T:86%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**1.94 ± 0.990 (1.24)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-3-110416 **Lab ID: 60231627013** Collected: 11/04/16 10:30 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0681 ± 0.353 (0.733) C:NA T:89%**	pCi/L	12/05/16 23:00	13982-63-3	
Radium-228	EPA 904.0	**0.0499 ± 0.328 (0.756) C:65% T:87%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.118 ± 0.681 (1.49)**	pCi/L	12/07/16 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Sample: FAA-2-110416 **Lab ID: 60231627014** Collected: 11/04/16 11:30 Received: 11/05/16 08:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.203 ± 0.310 (0.499) C:NA T:93%**	pCi/L	12/05/16 23:00	13982-63-3	
Radium-228	EPA 904.0	**0.0530 ± 0.350 (0.802) C:67% T:86%**	pCi/L	12/06/16 11:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.256 ± 0.660 (1.30)**	pCi/L	12/07/16 11:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 241312 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1186284 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.214 ± 0.327 (0.193) C:NA T:87%	pCi/L	12/05/16 22:01	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

QC Batch: 241313 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

METHOD BLANK: 1186285 Matrix: Water
Associated Lab Samples: 60231627001, 60231627002, 60231627003, 60231627004, 60231627005, 60231627006, 60231627007, 60231627008, 60231627009, 60231627010, 60231627011, 60231627012, 60231627013, 60231627014

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.214 ± 0.294 (0.629) C:76% T:91%	pCi/L	12/06/16 11:40	

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

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: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231627001	BAA-6-110316	EPA 200.7	453876	EPA 200.7	453988
60231627002	BAA-2-110316	EPA 200.7	453876	EPA 200.7	453988
60231627003	BAA-4-110316	EPA 200.7	453876	EPA 200.7	453988
60231627004	BAA-3-110316	EPA 200.7	453876	EPA 200.7	453988
60231627005	FGD-1-110316	EPA 200.7	453876	EPA 200.7	453988
60231627006	FGD-4-110316	EPA 200.7	453876	EPA 200.7	453988
60231627007	FGD-3-110316	EPA 200.7	453876	EPA 200.7	453988
60231627008	FGD-2-110316	EPA 200.7	453876	EPA 200.7	453988
60231627009	FAA-5-110416	EPA 200.7	453876	EPA 200.7	453988
60231627010	FAA-4-110416	EPA 200.7	453876	EPA 200.7	453988
60231627011	DUP-110416	EPA 200.7	453876	EPA 200.7	453988
60231627012	DUP-110316	EPA 200.7	453876	EPA 200.7	453988
60231627013	FAA-3-110416	EPA 200.7	453876	EPA 200.7	453988
60231627014	FAA-2-110416	EPA 200.7	453876	EPA 200.7	453988
60231627001	BAA-6-110316	EPA 200.8	453882	EPA 200.8	453990
60231627002	BAA-2-110316	EPA 200.8	453882	EPA 200.8	453990
60231627003	BAA-4-110316	EPA 200.8	453882	EPA 200.8	453990
60231627004	BAA-3-110316	EPA 200.8	453882	EPA 200.8	453990
60231627005	FGD-1-110316	EPA 200.8	453882	EPA 200.8	453990
60231627006	FGD-4-110316	EPA 200.8	453882	EPA 200.8	453990
60231627007	FGD-3-110316	EPA 200.8	453882	EPA 200.8	453990
60231627008	FGD-2-110316	EPA 200.8	453882	EPA 200.8	453990
60231627009	FAA-5-110416	EPA 200.8	453882	EPA 200.8	453990
60231627010	FAA-4-110416	EPA 200.8	453882	EPA 200.8	453990
60231627011	DUP-110416	EPA 200.8	453882	EPA 200.8	453990
60231627012	DUP-110316	EPA 200.8	453882	EPA 200.8	453990
60231627013	FAA-3-110416	EPA 200.8	453882	EPA 200.8	453990
60231627014	FAA-2-110416	EPA 200.8	453882	EPA 200.8	453990
60231627001	BAA-6-110316	EPA 245.1	455898	EPA 245.1	455994
60231627002	BAA-2-110316	EPA 245.1	455898	EPA 245.1	455994
60231627003	BAA-4-110316	EPA 245.1	455898	EPA 245.1	455994
60231627004	BAA-3-110316	EPA 245.1	455898	EPA 245.1	455994
60231627005	FGD-1-110316	EPA 245.1	455898	EPA 245.1	455994
60231627006	FGD-4-110316	EPA 245.1	455898	EPA 245.1	455994
60231627007	FGD-3-110316	EPA 245.1	455898	EPA 245.1	455994
60231627008	FGD-2-110316	EPA 245.1	455898	EPA 245.1	455994
60231627009	FAA-5-110416	EPA 245.1	455898	EPA 245.1	455994
60231627010	FAA-4-110416	EPA 245.1	455898	EPA 245.1	455994
60231627011	DUP-110416	EPA 245.1	455898	EPA 245.1	455994
60231627012	DUP-110316	EPA 245.1	455898	EPA 245.1	455994
60231627013	FAA-3-110416	EPA 245.1	455898	EPA 245.1	455994
60231627014	FAA-2-110416	EPA 245.1	455898	EPA 245.1	455994
60231627001	BAA-6-110316	EPA 903.1	241312		
60231627002	BAA-2-110316	EPA 903.1	241312		
60231627003	BAA-4-110316	EPA 903.1	241312		
60231627004	BAA-3-110316	EPA 903.1	241312		
60231627005	FGD-1-110316	EPA 903.1	241312		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231627006	**FGD-4-110316**	EPA 903.1	241312		
60231627007	**FGD-3-110316**	EPA 903.1	241312		
60231627008	**FGD-2-110316**	EPA 903.1	241312		
60231627009	**FAA-5-110416**	EPA 903.1	241312		
60231627010	**FAA-4-110416**	EPA 903.1	241312		
60231627011	**DUP-110416**	EPA 903.1	241312		
60231627012	**DUP-110316**	EPA 903.1	241312		
60231627013	**FAA-3-110416**	EPA 903.1	241312		
60231627014	**FAA-2-110416**	EPA 903.1	241312		
60231627001	**BAA-6-110316**	EPA 904.0	241313		
60231627002	**BAA-2-110316**	EPA 904.0	241313		
60231627003	**BAA-4-110316**	EPA 904.0	241313		
60231627004	**BAA-3-110316**	EPA 904.0	241313		
60231627005	**FGD-1-110316**	EPA 904.0	241313		
60231627006	**FGD-4-110316**	EPA 904.0	241313		
60231627007	**FGD-3-110316**	EPA 904.0	241313		
60231627008	**FGD-2-110316**	EPA 904.0	241313		
60231627009	**FAA-5-110416**	EPA 904.0	241313		
60231627010	**FAA-4-110416**	EPA 904.0	241313		
60231627011	**DUP-110416**	EPA 904.0	241313		
60231627012	**DUP-110316**	EPA 904.0	241313		
60231627013	**FAA-3-110416**	EPA 904.0	241313		
60231627014	**FAA-2-110416**	EPA 904.0	241313		
60231627001	**BAA-6-110316**	Total Radium Calculation	242594		
60231627002	**BAA-2-110316**	Total Radium Calculation	242594		
60231627003	**BAA-4-110316**	Total Radium Calculation	242594		
60231627004	**BAA-3-110316**	Total Radium Calculation	242594		
60231627005	**FGD-1-110316**	Total Radium Calculation	242594		
60231627006	**FGD-4-110316**	Total Radium Calculation	242594		
60231627007	**FGD-3-110316**	Total Radium Calculation	242594		
60231627008	**FGD-2-110316**	Total Radium Calculation	242594		
60231627009	**FAA-5-110416**	Total Radium Calculation	242594		
60231627010	**FAA-4-110416**	Total Radium Calculation	242594		
60231627011	**DUP-110416**	Total Radium Calculation	242594		
60231627012	**DUP-110316**	Total Radium Calculation	242594		
60231627013	**FAA-3-110416**	Total Radium Calculation	242594		
60231627014	**FAA-2-110416**	Total Radium Calculation	242594		
60231627001	**BAA-6-110316**	SM 2540C	454069		
60231627002	**BAA-2-110316**	SM 2540C	454069		
60231627003	**BAA-4-110316**	SM 2540C	454069		
60231627004	**BAA-3-110316**	SM 2540C	454069		
60231627005	**FGD-1-110316**	SM 2540C	454069		
60231627006	**FGD-4-110316**	SM 2540C	454069		
60231627007	**FGD-3-110316**	SM 2540C	454069		
60231627008	**FGD-2-110316**	SM 2540C	454069		
60231627009	**FAA-5-110416**	SM 2540C	454069		
60231627010	**FAA-4-110416**	SM 2540C	454069		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60231627

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60231627011	**DUP-110416**	SM 2540C	454069		
60231627012	**DUP-110316**	SM 2540C	454069		
60231627013	**FAA-3-110416**	SM 2540C	454069		
60231627014	**FAA-2-110416**	SM 2540C	454069		
60231627001	**BAA-6-110316**	SM 4500-H+B	454625		
60231627002	**BAA-2-110316**	SM 4500-H+B	454625		
60231627003	**BAA-4-110316**	SM 4500-H+B	454625		
60231627004	**BAA-3-110316**	SM 4500-H+B	454625		
60231627005	**FGD-1-110316**	SM 4500-H+B	454625		
60231627006	**FGD-4-110316**	SM 4500-H+B	454661		
60231627007	**FGD-3-110316**	SM 4500-H+B	454625		
60231627008	**FGD-2-110316**	SM 4500-H+B	454661		
60231627009	**FAA-5-110416**	SM 4500-H+B	454625		
60231627010	**FAA-4-110416**	SM 4500-H+B	454625		
60231627011	**DUP-110416**	SM 4500-H+B	454194		
60231627012	**DUP-110316**	SM 4500-H+B	454194		
60231627013	**FAA-3-110416**	SM 4500-H+B	454661		
60231627014	**FAA-2-110416**	SM 4500-H+B	454661		
60231627001	**BAA-6-110316**	EPA 300.0	456713		
60231627002	**BAA-2-110316**	EPA 300.0	456713		
60231627002	**BAA-2-110316**	EPA 300.0	456831		
60231627003	**BAA-4-110316**	EPA 300.0	456713		
60231627004	**BAA-3-110316**	EPA 300.0	456713		
60231627005	**FGD-1-110316**	EPA 300.0	456713		
60231627006	**FGD-4-110316**	EPA 300.0	456713		
60231627007	**FGD-3-110316**	EPA 300.0	456713		
60231627008	**FGD-2-110316**	EPA 300.0	456713		
60231627008	**FGD-2-110316**	EPA 300.0	456831		
60231627009	**FAA-5-110416**	EPA 300.0	456713		
60231627010	**FAA-4-110416**	EPA 300.0	456713		
60231627011	**DUP-110416**	EPA 300.0	456713		
60231627011	**DUP-110416**	EPA 300.0	456831		
60231627012	**DUP-110316**	EPA 300.0	456713		
60231627013	**FAA-3-110416**	EPA 300.0	456713		
60231627014	**FAA-2-110416**	EPA 300.0	456831		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60231627

60231627

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 0.7/1.1/2.2/1.4 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 1.4/1.8/2.9/2.1

Temperature should be above freezing to 6°C

Date and initials of person examining contents: PV 11/5/16

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): PV 11/5/16	☑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	FAA-4 collected @ 0930
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 9:53 am, 11/7/16

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

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:	JEC 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 #:	9657, 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	BAA-6-110316	WT	G			11/3/16	0838		4	1		3														01
2	BAA-2-110316	WT	G			11/3/16	1002		4	1		3														02
3	BAA-5-110316	WT	G			11/3/16	1117		4	1		3														03
4	BAA-3-110316	WT	G			11/3/16	1232		4	1		3														04
5	FGD-1-110316	WT	G			11/3/16	1355		4	1		3														05
6	FGD-4-110316	WT	G			11/3/16	1457		4	1		3														06
7	FGD-3-110316	WT	G			11/3/16	1355		4	1		3														07
8	FGD-2-110316	WT	G			11/3/16	1640		4	1		3														08
9	FAA-5-110416	WT	G			11/4/16	0831		4	1		3														09
10	FAA-4-110416	WT	G			11/4/16			4	1		3														10
11	DUP-110416	WT	G			11/4/16	0600		4	1		3														11
12	DUP-110316	WT	G			11/3/16	0600		4	1		3														12

Requested Analysis Filtered (Y/N)

6073/627

Pace Project No./ Lab I.D.

1BP2U 1BP2N$^{2-6}$ 2BP1N 01 02 03 04 05 06 07 08 09 10 11 12

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	BJF / Westar	11/4/16	1300		11/5/16	0850
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl						

SAMPLE CONDITIONS

Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.4	Y	Y	Y
1.8			
2.9			
2.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BJF DATE Signed (MM/DD/YY): 11/04/16

*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

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.

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:	JEC 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 #:	9657, 1

REGULATORY AGENCY

- [x] NPDES
- [ ] GROUND WATER
- [ ] DRINKING WATER
- [ ] UST
- [ ] RCRA
- [ ] OTHER ______

Site Location STATE: KS

Section D
Required Client Information

Valid Matrix Codes

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	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	FAA-3-110416	WT	G			11/4/16	1030		4	1		3																1BP2U 1BP2N 20 2BP1N 003
2	FAA-2-110416	WT	G			11/4/16	1130		4	1		3																↓ ↓ ↓ 004
3																												
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	11/4/16	1300	[signature] PASI	11/5/16	0850	1.4	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl							1.8	↓	↓	↓
							2.9	↓	↓	↓
							2.1	↓	↓	↓

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 11/04/16

*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#:30201895

Pace Analytical®
www.pacelabs.com

Workorder: 60231627 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 11/5/2016 **Results Requested By:** 12/1/2016

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	BAA-6-110316	PS	11/3/2016 08:38	60231627001	Water	2						X												001
2	BAA-2-110316	PS	11/3/2016 10:02	60231627002	Water	2						X												002
3	BAA-4-110316	PS	11/3/2016 11:17	60231627003	Water	2						X												003
4	BAA-3-110316	PS	11/3/2016 12:32	60231627004	Water	2						X												004
5	FGD-1-110316	PS	11/3/2016 13:55	60231627005	Water	2						X												005
6	FGD-4-110316	PS	11/3/2016 14:57	60231627006	Water	2						X												006
7	FGD-3-110316	PS	11/3/2016 13:55	60231627007	Water	2						X												007
8	FGD-2-110316	PS	11/3/2016 16:40	60231627008	Water	2						X												008
9	FAA-5-110416	PS	11/3/2016 08:31	60231627009	Water	2						X												009
10	FAA-4-110416	PS	11/3/2016 09:28	60231627010	Water	2						X												010
11	DUP-110416	PS	11/3/2016 06:00	60231627011	Water	2						X												011
12	DUP-110316	PS	11/3/2016 06:00	60231627012	Water	2						X												012
13	FAA-3-110416	PS	11/4/2016 10:30	60231627013	Water	2						X												013
14	FAA-2-110416	PS	11/4/2016 11:30	60231627014	Water	2						X												014

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	11/7/16 1200	Kieran Hill	11-8-16 0950
2				
3				

Comments

* Please report total result as well.

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

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace Kansas Project # 30201895

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

Tracking #: 7044 6656 1954

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 11-8-16

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.
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: 11-8-16

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 1-4
December 2016 Sampling Event
Laboratory Analytical Report

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60234592001	**FAA-5-121616**	Water	12/16/16 13:08	12/17/16 09:45
60234592002	**DUP-121616**	Water	12/16/16 06:00	12/17/16 09:45

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234592001	**FAA-5-121616**	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
60234592002	**DUP-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

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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:

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

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

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

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

QC Batch: 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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-121616 (Lab ID: 60234592002)
- FAA-5-121616 (Lab ID: 60234592001)

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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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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

General Information:
2 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: 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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Sample: FAA-5-121616 **Lab ID: 60234592001** Collected: 12/16/16 13:08 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	**0.0074**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:59	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 18:59	7440-41-7	
Boron, Total Recoverable	**1.2**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:59	7440-42-8	
Calcium, Total Recoverable	**343**	mg/L	0.10	1	12/21/16 15:15	12/28/16 18:59	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:59	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 18:59	7439-92-1	
Lithium	**0.12**	mg/L	0.010	1	12/21/16 15:15	12/28/16 18:59	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 15:58	7440-36-0	
Arsenic, Total Recoverable	**0.0012**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:58	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 15:58	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:58	7440-48-4	
Molybdenum, Total Recoverable	**0.023**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:58	7439-98-7	
Selenium, Total Recoverable	**0.0018**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:58	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 15:58	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2400**	mg/L	5.0	1		12/20/16 12:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		12/27/16 09:30		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**101**	mg/L	10.0	10		01/10/17 20:44	16887-00-6	
Fluoride	**0.61**	mg/L	0.20	1		01/04/17 15:19	16984-48-8	
Sulfate	**1300**	mg/L	100	100		01/10/17 23:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Sample: DUP-121616 **Lab ID: 60234592002** Collected: 12/16/16 06:00 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	**0.074**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:03	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/28/16 19:03	7440-41-7	
Boron, Total Recoverable	**0.24**	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:03	7440-42-8	
Calcium, Total Recoverable	**121**	mg/L	0.10	1	12/21/16 15:15	12/28/16 19:03	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:03	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/21/16 15:15	12/28/16 19:03	7439-92-1	
Lithium	**0.011**	mg/L	0.010	1	12/21/16 15:15	12/28/16 19:03	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 16:02	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:02	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/21/16 15:15	12/29/16 16:02	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:02	7440-48-4	
Molybdenum, Total Recoverable	**0.0038**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:02	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:02	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/21/16 15:15	12/29/16 16:02	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/19/16 16:15	12/20/16 10:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**632**	mg/L	5.0	1		12/20/16 12:37		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		12/27/16 09:30		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**34.0**	mg/L	2.0	2		01/10/17 21:00	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	1		01/04/17 15:32	16984-48-8	
Sulfate	**199**	mg/L	20.0	20		01/10/17 23:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 459521 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1881503 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 459902
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1882844 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 459903 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1882849 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 459669 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1881980 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 460391 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60234592001, 60234592002

SAMPLE DUPLICATE: 1884623

Parameter	Units	60234524007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.6	6.6	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 461088 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1887366 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 461555 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1889265 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Sample: FAA-5-121616 **Lab ID: 60234592001** Collected: 12/16/16 13:08 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	**0.713 ± 0.530 (0.662) C:NA T:86%**	pCi/L	01/18/17 11:43	13982-63-3	
Radium-228	EPA 904.0	**0.411 ± 0.402 (0.824) C:66% T:85%**	pCi/L	01/17/17 11:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.932 (1.49)**	pCi/L	01/19/17 08:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Sample: DUP-121616 **Lab ID: 60234592002** Collected: 12/16/16 06:00 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	**0.226 ± 0.344 (0.204) C:NA T:87%**	pCi/L	01/18/17 11:43	13982-63-3	
Radium-228	EPA 904.0	**0.590 ± 0.444 (0.871) C:67% T:80%**	pCi/L	01/17/17 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.816 ± 0.788 (1.08)**	pCi/L	01/19/17 08:23	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 245951 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1209764 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

QC Batch: 245952 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60234592001, 60234592002

METHOD BLANK: 1209765 Matrix: Water
Associated Lab Samples: 60234592001, 60234592002

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: JEC CCR GROUNDWATER
Pace Project No.: 60234592

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234592

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234592001	**FAA-5-121616**	EPA 200.7	459902	EPA 200.7	459945
60234592002	**DUP-121616**	EPA 200.7	459902	EPA 200.7	459945
60234592001	**FAA-5-121616**	EPA 200.8	459903	EPA 200.8	459947
60234592002	**DUP-121616**	EPA 200.8	459903	EPA 200.8	459947
60234592001	**FAA-5-121616**	EPA 245.1	459521	EPA 245.1	459549
60234592002	**DUP-121616**	EPA 245.1	459521	EPA 245.1	459549
60234592001	**FAA-5-121616**	EPA 903.1	245951		
60234592002	**DUP-121616**	EPA 903.1	245951		
60234592001	**FAA-5-121616**	EPA 904.0	245952		
60234592002	**DUP-121616**	EPA 904.0	245952		
60234592001	**FAA-5-121616**	Total Radium Calculation	246856		
60234592002	**DUP-121616**	Total Radium Calculation	246856		
60234592001	**FAA-5-121616**	SM 2540C	459669		
60234592002	**DUP-121616**	SM 2540C	459669		
60234592001	**FAA-5-121616**	SM 4500-H+B	460391		
60234592002	**DUP-121616**	SM 4500-H+B	460391		
60234592001	**FAA-5-121616**	EPA 300.0	461088		
60234592001	**FAA-5-121616**	EPA 300.0	461555		
60234592002	**DUP-121616**	EPA 300.0	461088		
60234592002	**DUP-121616**	EPA 300.0	461555		

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Sample Condition Upon Receipt

WO# : 60234592

60234592

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 1.3 **Corr. Factor** CF +0.7 CF -0.5 **Corrected** 2.0

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 TRH, 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 10:02 am, 12/19/16

CHAIN-OF-CUSTODY / Analytical Request Document

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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:	JEC 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 #:	9657, 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)

60234592

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	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	~~BAA-6-121616~~	~~WT~~	~~G~~			~~121616~~			~~4~~	~~1~~		~~3~~																			
2	FAA-5-121616	WT	G			121616	1308		4	1		3																	1BP2U		1BP2N 2BP/N 001
3																															
4																															
5																															
6																															
7																															
8																															
9	DUP-121616	WT	G			121616	0600		4	1		3																	↓		↓ ↓ 002
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	BG / Westar	12/16/16	1545	[signature] / PASI	12/17/16	0945	2.0	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] 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.

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

Chain of Custody

WO#:30206143

Pace Analytical
www.pacelabs.com

Workorder: 60234592 **Workorder Name:** JEC 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	FAA-5-121616	PS	12/16/2016 13:08	60234592001	Water	2	X	X	001
2	DUP-121616	PS	12/16/2016 06:00	60234592002	Water	2	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received	Date/Time
1	[signature]	12/19/16 1700	[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

30206143

Face 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: W	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.

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

January 20, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on December 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

REPORT OF LABORATORY ANALYSIS

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60234727001	**FAA-4-121916**	Water	12/19/16 10:34	12/21/16 07:55
60234727002	**FAA-3-121916**	Water	12/19/16 11:31	12/21/16 07:55
60234727003	**FAA-2-121916**	Water	12/19/16 12:51	12/21/16 07:55

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60234727001	**FAA-4-121916**	EPA 200.7	ZBM	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
60234727002	**FAA-3-121916**	EPA 200.7	ZBM	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
60234727003	**FAA-2-121916**	EPA 200.7	ZBM	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

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: January 20, 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.

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: January 20, 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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: January 20, 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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: January 20, 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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: January 20, 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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: January 20, 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.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: January 20, 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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: January 20, 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.
- FAA-2-121916 (Lab ID: 60234727003)
- FAA-3-121916 (Lab ID: 60234727002)
- FAA-4-121916 (Lab ID: 60234727001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: January 20, 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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-4-121916 **Lab ID: 60234727001** Collected: 12/19/16 10:34 Received: 12/21/16 07:55 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.053**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:00	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:00	7440-41-7	
Boron, Total Recoverable	**0.36**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:00	7440-42-8	
Calcium, Total Recoverable	**223**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:00	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:00	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:00	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:00	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	12/27/16 14:00	12/29/16 13:52	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:52	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/27/16 14:00	12/29/16 13:52	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:52	7440-48-4	
Molybdenum, Total Recoverable	**0.0026**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:52	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:52	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 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	12/21/16 15:00	12/22/16 08:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1150**	mg/L	5.0	1		12/23/16 08:38		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		12/29/16 11:38		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**83.7**	mg/L	10.0	10		01/13/17 15:13	16887-00-6	
Fluoride	**0.31**	mg/L	0.20	1		01/11/17 15:08	16984-48-8	
Sulfate	**531**	mg/L	50.0	50		01/13/17 15:27	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-3-121916 **Lab ID: 60234727002** Collected: 12/19/16 11:31 Received: 12/21/16 07:55 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	**0.036**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:02	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:02	7440-41-7	
Boron, Total Recoverable	**0.79**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:02	7440-42-8	
Calcium, Total Recoverable	**225**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:02	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:02	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:02	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:02	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	12/27/16 14:00	12/29/16 13:56	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:56	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/27/16 14:00	12/29/16 13:56	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:56	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:56	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:56	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 13:56	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/21/16 15:00	12/22/16 08:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1390**	mg/L	5.0	1		12/23/16 08:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		12/29/16 11:39		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**86.6**	mg/L	10.0	10		01/13/17 15:41	16887-00-6	
Fluoride	**0.29**	mg/L	0.20	1		01/11/17 15:23	16984-48-8	
Sulfate	**651**	mg/L	50.0	50		01/13/17 15:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-2-121916 **Lab ID: 60234727003** Collected: 12/19/16 12:51 Received: 12/21/16 07:55 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	**0.031**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:28	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/23/16 15:15	12/28/16 13:28	7440-41-7	
Boron, Total Recoverable	**3.6**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:28	7440-42-8	
Calcium, Total Recoverable	**291**	mg/L	0.10	1	12/23/16 15:15	12/28/16 13:28	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:28	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	12/23/16 15:15	12/28/16 13:28	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	12/23/16 15:15	12/28/16 13:28	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	12/27/16 14:00	12/29/16 14:14	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	12/27/16 14:00	12/29/16 14:14	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:14	7440-48-4	
Molybdenum, Total Recoverable	**0.33**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	12/27/16 14:00	12/29/16 14:14	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	12/21/16 15:00	12/22/16 08:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3130**	mg/L	5.0	1		12/23/16 08:42		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		12/29/16 11:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**68.6**	mg/L	5.0	5		01/13/17 16:37	16887-00-6	
Fluoride	**0.60**	mg/L	0.20	1		01/11/17 15:38	16984-48-8	
Sulfate	**2100**	mg/L	200	200		01/13/17 16:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 459920 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1882906 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	12/22/16 08:29	

LABORATORY CONTROL SAMPLE: 1882907

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: 1882908 1882909

Parameter	Units	60234631003 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	0.0057	0.0057	114	113	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 460236 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1884140 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	12/28/16 12:26	
Beryllium	mg/L	<0.0010	0.0010	12/28/16 12:26	
Boron	mg/L	<0.10	0.10	12/28/16 12:26	
Calcium	mg/L	<0.10	0.10	12/28/16 12:26	
Chromium	mg/L	<0.0050	0.0050	12/28/16 12:26	
Lead	mg/L	<0.0050	0.0050	12/28/16 12:26	
Lithium	mg/L	<0.010	0.010	12/28/16 12:26	

LABORATORY CONTROL SAMPLE: 1884141

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	103	85-115	
Beryllium	mg/L	1	1.0	104	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	0.98	98	85-115	
Lithium	mg/L	1	1.1	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1884142 1884143

Parameter	Units	60234133003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.16	1	1	1.2	1.2	104	105	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	103	70-130	2	20	
Boron	mg/L	1.7	1	1	2.7	2.7	104	99	70-130	2	20	
Calcium	mg/L	254	10	10	266	262	113	83	70-130	1	20	
Chromium	mg/L	<0.0050	1	1	0.96	0.96	96	96	70-130	0	20	
Lead	mg/L	<0.0050	1	1	0.87	0.86	86	86	70-130	0	20	
Lithium	mg/L	0.21	1	1	1.3	1.3	112	114	70-130	1	20	

MATRIX SPIKE SAMPLE: 1884144

Parameter	Units	60234727003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.031	2	2.2	107	70-130	
Beryllium	mg/L	<0.0010	2	2.1	106	70-130	
Boron	mg/L	3.6	2	5.6	104	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

MATRIX SPIKE SAMPLE: 1884144

Parameter	Units	60234727003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	291	20	317	128	70-130	
Chromium	mg/L	<0.0050	2	2.0	98	70-130	
Lead	mg/L	<0.0050	2	1.8	92	70-130	
Lithium	mg/L	0.016	2	2.3	116	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 460439 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1884750 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	12/29/16 12:25	
Arsenic	mg/L	<0.0010	0.0010	12/29/16 12:25	
Cadmium	mg/L	<0.00050	0.00050	12/29/16 12:25	
Cobalt	mg/L	<0.0010	0.0010	12/29/16 12:25	
Molybdenum	mg/L	<0.0010	0.0010	12/29/16 12:25	
Selenium	mg/L	<0.0010	0.0010	12/29/16 12:25	
Thallium	mg/L	<0.0010	0.0010	12/29/16 12:25	

LABORATORY CONTROL SAMPLE: 1884751

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	0.039	98	85-115	
Cobalt	mg/L	.04	0.038	96	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.038	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1884752 1884753

Parameter	Units	60234844001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	4.2 ug/L	.04	.04	0.041	0.041	93	93	70-130	0	20	
Arsenic	mg/L	26.8 ug/L	.04	.04	0.062	0.061	88	85	70-130	2	20	
Cadmium	mg/L	<0.50 ug/L	.04	.04	0.033	0.034	82	84	70-130	2	20	
Cobalt	mg/L	1.4 ug/L	.04	.04	0.035	0.034	83	83	70-130	0	20	
Molybdenum	mg/L	35.9 ug/L	.04	.04	0.077	0.076	103	99	70-130	2	20	
Selenium	mg/L	6.5 ug/L	.04	.04	0.040	0.041	85	85	70-130	1	20	
Thallium	mg/L	<1.0 ug/L	.04	.04	0.035	0.035	86	86	70-130	0	20	

MATRIX SPIKE SAMPLE: 1884754

Parameter	Units	60234845001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<20.0 ug/L	.04	0.042	88	70-130	
Arsenic	mg/L	21.3 ug/L	.04	0.052	77	70-130	
Cadmium	mg/L	12.3 ug/L	.04	0.048	90	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

MATRIX SPIKE SAMPLE: 1884754

Parameter	Units	60234845001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	39.8 ug/L	.04	0.075	88	70-130	
Molybdenum	mg/L	156 ug/L	.04	0.20	105	70-130	
Selenium	mg/L	62.7 ug/L	.04	0.091	70	70-130	
Thallium	mg/L	<20.0 ug/L	.04	0.039	90	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 460157 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1883744 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	12/23/16 08:37	

LABORATORY CONTROL SAMPLE: 1883745

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	934	93	80-120	

SAMPLE DUPLICATE: 1883746

Parameter	Units	60234727001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1150	1180	3	10	

SAMPLE DUPLICATE: 1883747

Parameter	Units	60234723001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	538	513	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 460624 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60234727001, 60234727002, 60234727003

SAMPLE DUPLICATE: 1885275

Parameter	Units	60234727003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 461703 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1889823 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	01/11/17 10:36	

LABORATORY CONTROL SAMPLE: 1889824

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1889825 1889826

Parameter	Units	60235399001 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	125	125	132	132	105	106	80-120	0	15	

MATRIX SPIKE SAMPLE: 1889827

Parameter	Units	60235400001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	12.5	13.2	103	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 461949 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1891083 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	01/13/17 12:13	
Sulfate	mg/L	<1.0	1.0	01/13/17 12:13	

LABORATORY CONTROL SAMPLE: 1891084

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1891085 1891086

Parameter	Units	60235060014 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.4	5	5	13.8	13.4	107	101	80-120	2	15	
Sulfate	mg/L	4.6	5	5	9.8	9.8	103	103	80-120	0	15	

MATRIX SPIKE SAMPLE: 1891087

Parameter	Units	60235060015 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	12.3	5	17.9	113	80-120	
Sulfate	mg/L	13.0	5	18.3	106	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-4-121916 **Lab ID: 60234727001** Collected: 12/19/16 10:34 Received: 12/21/16 07:55 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 ± 0.489 (1.03) C:NA T:92%**	pCi/L	01/19/17 11:51	13982-63-3	
Radium-228	EPA 904.0	**0.349 ± 0.407 (0.856) C:65% T:85%**	pCi/L	01/19/17 11:35	15262-20-1	
Total Radium	Total Radium Calculation	**0.349 ± 0.896 (1.89)**	pCi/L	01/20/17 11:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-3-121916 **Lab ID: 60234727002** Collected: 12/19/16 11:31 Received: 12/21/16 07:55 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 ± 0.412 (1.04) C:NA T:93%**	pCi/L	01/19/17 12:03	13982-63-3	
Radium-228	EPA 904.0	**0.484 ± 0.403 (0.802) C:65% T:83%**	pCi/L	01/19/17 11:36	15262-20-1	
Total Radium	Total Radium Calculation	**0.484 ± 0.815 (1.84)**	pCi/L	01/20/17 11:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Sample: FAA-2-121916 **Lab ID: 60234727003** Collected: 12/19/16 12:51 Received: 12/21/16 07:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.807 ± 0.509 (0.219) C:NA T:98%**	pCi/L	01/19/17 12:02	13982-63-3	
Radium-228	EPA 904.0	**0.789 ± 0.441 (0.787) C:65% T:80%**	pCi/L	01/19/17 11:36	15262-20-1	
Total Radium	Total Radium Calculation	**1.60 ± 0.950 (1.01)**	pCi/L	01/20/17 11:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 245977 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1209835 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.657 ± 0.382 (0.688) C:65% T:93%	pCi/L	01/19/17 11:37	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

QC Batch: 245976 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60234727001, 60234727002, 60234727003

METHOD BLANK: 1209834 Matrix: Water
Associated Lab Samples: 60234727001, 60234727002, 60234727003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.078 ± 0.356 (0.840) C:NA T:94%	pCi/L	01/19/17 11:14	

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: JEC CCR GROUNDWATER
Pace Project No.: 60234727

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60234727

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60234727001	**FAA-4-121916**	EPA 200.7	460236	EPA 200.7	460373
60234727002	**FAA-3-121916**	EPA 200.7	460236	EPA 200.7	460373
60234727003	**FAA-2-121916**	EPA 200.7	460236	EPA 200.7	460373
60234727001	**FAA-4-121916**	EPA 200.8	460439	EPA 200.8	460506
60234727002	**FAA-3-121916**	EPA 200.8	460439	EPA 200.8	460506
60234727003	**FAA-2-121916**	EPA 200.8	460439	EPA 200.8	460506
60234727001	**FAA-4-121916**	EPA 245.1	459920	EPA 245.1	459935
60234727002	**FAA-3-121916**	EPA 245.1	459920	EPA 245.1	459935
60234727003	**FAA-2-121916**	EPA 245.1	459920	EPA 245.1	459935
60234727001	**FAA-4-121916**	EPA 903.1	245976		
60234727002	**FAA-3-121916**	EPA 903.1	245976		
60234727003	**FAA-2-121916**	EPA 903.1	245976		
60234727001	**FAA-4-121916**	EPA 904.0	245977		
60234727002	**FAA-3-121916**	EPA 904.0	245977		
60234727003	**FAA-2-121916**	EPA 904.0	245977		
60234727001	**FAA-4-121916**	Total Radium Calculation	246983		
60234727002	**FAA-3-121916**	Total Radium Calculation	246983		
60234727003	**FAA-2-121916**	Total Radium Calculation	246983		
60234727001	**FAA-4-121916**	SM 2540C	460157		
60234727002	**FAA-3-121916**	SM 2540C	460157		
60234727003	**FAA-2-121916**	SM 2540C	460157		
60234727001	**FAA-4-121916**	SM 4500-H+B	460624		
60234727002	**FAA-3-121916**	SM 4500-H+B	460624		
60234727003	**FAA-2-121916**	SM 4500-H+B	460624		
60234727001	**FAA-4-121916**	EPA 300.0	461703		
60234727001	**FAA-4-121916**	EPA 300.0	461949		
60234727002	**FAA-3-121916**	EPA 300.0	461703		
60234727002	**FAA-3-121916**	EPA 300.0	461949		
60234727003	**FAA-2-121916**	EPA 300.0	461703		
60234727003	**FAA-2-121916**	EPA 300.0	461949		

Pace Analytical®
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60234727

60234727

Client Name: Water Energy

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

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

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

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

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

Cooler Temperature (°C): **As-read** 0.8/0.4 **Corr. Factor** (CF +0.7 / CF +0.9) **Corrected** 1.5/1.1

Date and initials of person examining contents: PM 12/21/16

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	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: [signature] Date: 12/21/16

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:	JEC 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 #:	9657, 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	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	FAA-4-121916	WT	G			121916	1034		4	1		3															60234727
2	FAA-3-121916	WT	G			121916	1131		4	1		3															
3	FAA-2-121916	WT	G			121916	1251		4	1		3															
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

IBP2U IBP2N20 2BP1N20 W1 W2 W3

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	Westar	12/20/16	1415		12/21/16	0755	1.5	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl							1.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 12/20/16

*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#:30206487

30206487

Pace Analytical
www.pacelabs.com

Workorder: 60234727 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 12/21/2016 **Results Requested By:** 1/16/2017

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 HNO3						Requested Analysis Radium-226	Radium-228										LAB USE ONLY
1	FAA-4-121916	PS	12/19/2016 10:34	60234727001	Water	2						X	X										001
2	FAA-3-121916	PS	12/19/2016 11:31	60234727002	Water	2						X	X										002
3	FAA-2-121916	PS	12/19/2016 12:51	60234727003	Water	2						X	X										003
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	12/21/16 1700	[signature] Pace	12/22 1500
2				
3				

Comments
*Please report Total Radium as well

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

30206487

Pace Analytical

Client Name: Pace KS Project #

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

Tracking #: 7044 6657 9566

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 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: PC 12-22-16

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.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Filtered volume received for Dissolved tests			✓	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	✓ ✓			13. Initial when completed: PC Date/time of preservation: 12-22-16 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: PC Date: 12-22-16

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 08, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on February 11, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

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: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60237752001	**FAA-5-021017**	Water	02/10/17 08:03	02/11/17 09:05
60237752002	**FAA-4-021017**	Water	02/10/17 08:51	02/11/17 09:05
60237752003	**FAA-3-021017**	Water	02/10/17 09:36	02/11/17 09:05
60237752004	**FAA-2-021017**	Water	02/10/17 10:35	02/11/17 09:05
60237752005	**DUP-021017**	Water	02/10/17 06:00	02/11/17 09:05

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60237752001	**FAA-5-021017**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	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	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237752002	**FAA-4-021017**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	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	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237752003	**FAA-3-021017**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	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	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237752004	**FAA-2-021017**	EPA 200.7	NDJ	7	PASI-K
		EPA 200.8	SMW	7	PASI-K
		EPA 245.1	ZBM	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	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60237752005	**DUP-021017**	EPA 200.7	NDJ	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

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	WRR	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	AGO	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

QC Batch: 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

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

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: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-021017 (Lab ID: 60237752005)
- FAA-2-021017 (Lab ID: 60237752004)
- FAA-3-021017 (Lab ID: 60237752003)
- FAA-4-021017 (Lab ID: 60237752002)
- FAA-5-021017 (Lab ID: 60237752001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: March 08, 2017

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-5-021017 **Lab ID: 60237752001** Collected: 02/10/17 08:03 Received: 02/11/17 09:05 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	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:47	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:47	7440-41-7	
Boron, Total Recoverable	**1.6**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:47	7440-42-8	
Calcium, Total Recoverable	**509**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:47	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:47	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:47	7439-92-1	
Lithium	**0.15**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:47	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	02/15/17 16:00	02/22/17 13:41	7440-36-0	
Arsenic, Total Recoverable	**0.0034**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:41	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:41	7440-43-9	
Cobalt, Total Recoverable	**0.0031**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:41	7440-48-4	
Molybdenum, Total Recoverable	**0.057**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:41	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:41	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:41	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 10:33	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3700**	mg/L	5.0	1		02/16/17 14:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		02/16/17 09:53		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**87.2**	mg/L	10.0	10		02/15/17 15:25	16887-00-6	
Fluoride	**0.86**	mg/L	0.20	1		02/14/17 21:45	16984-48-8	
Sulfate	**2150**	mg/L	200	200		02/15/17 15:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-4-021017 **Lab ID: 60237752002** Collected: 02/10/17 08:51 Received: 02/11/17 09:05 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	**0.049**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:49	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:49	7440-41-7	
Boron, Total Recoverable	**0.35**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:49	7440-42-8	
Calcium, Total Recoverable	**212**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:49	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:49	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:49	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:49	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	02/15/17 16:00	02/22/17 13:46	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:46	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:46	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:46	7440-48-4	
Molybdenum, Total Recoverable	**0.0026**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:46	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:46	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:46	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**0.00023**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:37	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1210**	mg/L	5.0	1		02/16/17 14:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		02/16/17 09:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**84.6**	mg/L	10.0	10		02/15/17 16:20	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		02/14/17 21:59	16984-48-8	
Sulfate	**524**	mg/L	50.0	50		02/15/17 16:34	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-3-021017 **Lab ID: 60237752003** Collected: 02/10/17 09:36 Received: 02/11/17 09:05 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	0.0050	1	02/15/17 16:00	02/17/17 12:51	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:51	7440-41-7	
Boron, Total Recoverable	**0.68**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:51	7440-42-8	
Calcium, Total Recoverable	**210**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:51	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:51	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:51	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:51	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	02/15/17 16:00	02/22/17 13:50	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:50	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:50	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:50	7440-48-4	
Molybdenum, Total Recoverable	**0.010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:50	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:50	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:39	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1290**	mg/L	5.0	1		02/16/17 14:48		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		02/16/17 09:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**84.7**	mg/L	10.0	10		02/15/17 16:48	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		02/14/17 22:13	16984-48-8	
Sulfate	**702**	mg/L	50.0	50		02/15/17 17:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-2-021017 **Lab ID: 60237752004** Collected: 02/10/17 10:35 Received: 02/11/17 09:05 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	02/15/17 16:00	02/17/17 12:54	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:54	7440-41-7	
Boron, Total Recoverable	**3.3**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:54	7440-42-8	
Calcium, Total Recoverable	**284**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:54	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:54	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:54	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:54	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 13:55	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:55	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:55	7440-43-9	
Cobalt, Total Recoverable	**0.0013**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:55	7440-48-4	
Molybdenum, Total Recoverable	**0.24**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:55	7439-98-7	
Selenium, Total Recoverable	**0.0015**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:55	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:55	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	02/15/17 12:15	02/16/17 10:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3570**	mg/L	5.0	1		02/16/17 14:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		02/16/17 09:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**68.3**	mg/L	5.0	5		02/15/17 17:16	16887-00-6	
Fluoride	**0.77**	mg/L	0.20	1		02/14/17 22:28	16984-48-8	
Sulfate	**1910**	mg/L	200	200		02/15/17 17:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: DUP-021017 **Lab ID: 60237752005** Collected: 02/10/17 06:00 Received: 02/11/17 09:05 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	02/15/17 16:00	02/17/17 12:56	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/17/17 12:56	7440-41-7	
Boron, Total Recoverable	**3.4**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:56	7440-42-8	
Calcium, Total Recoverable	**292**	mg/L	0.10	1	02/15/17 16:00	02/17/17 12:56	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:56	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	02/15/17 16:00	02/17/17 12:56	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	02/15/17 16:00	02/17/17 12:56	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	02/15/17 16:00	02/22/17 13:59	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:59	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	02/15/17 16:00	02/22/17 13:59	7440-43-9	
Cobalt, Total Recoverable	**0.0013**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:59	7440-48-4	
Molybdenum, Total Recoverable	**0.24**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:59	7439-98-7	
Selenium, Total Recoverable	**0.0016**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:59	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	02/15/17 16:00	02/22/17 13:59	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 10:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3250**	mg/L	5.0	1		02/16/17 14:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		02/16/17 09:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**68.8**	mg/L	5.0	5		02/15/17 17:44	16887-00-6	
Fluoride	**0.78**	mg/L	0.20	1		02/14/17 22:42	16984-48-8	
Sulfate	**2000**	mg/L	200	200		02/15/17 17:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465533 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1905322 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

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	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465590 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1905571 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

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	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

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	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465593 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1905588 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

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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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465749 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1906453 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	02/16/17 14:39	

LABORATORY CONTROL SAMPLE: 1906454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	967	97	80-120	

SAMPLE DUPLICATE: 1906455

Parameter	Units	60237681003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	977	980	0	10	

SAMPLE DUPLICATE: 1906456

Parameter	Units	60237753003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	4080	4040	1	10	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465627 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

SAMPLE DUPLICATE: 1905773

Parameter	Units	60237753001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465470 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1905076 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 465543 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1905374 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

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: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-5-021017 **Lab ID: 60237752001** Collected: 02/10/17 08:03 Received: 02/11/17 09:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.824 ± 0.576 (0.695) C:NA T:87%**	pCi/L	03/06/17 12:45	13982-63-3	
Radium-228	EPA 904.0	**0.733 ± 0.593 (1.17) C:52% T:76%**	pCi/L	03/07/17 11:42	15262-20-1	
Total Radium	Total Radium Calculation	**1.56 ± 1.17 (1.87)**	pCi/L	03/07/17 20:54	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-4-021017 **Lab ID: 60237752002** Collected: 02/10/17 08:51 Received: 02/11/17 09:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.233 ± 0.356 (0.572) C:NA T:80%**	pCi/L	03/06/17 13:04	13982-63-3	
Radium-228	EPA 904.0	**-0.0461 ± 0.367 (0.882) C:53% T:82%**	pCi/L	03/07/17 15:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.233 ± 0.723 (1.45)**	pCi/L	03/07/17 20:54	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-3-021017 **Lab ID: 60237752003** Collected: 02/10/17 09:36 Received: 02/11/17 09:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.201 ± 0.307 (0.806) C:NA T:98%**	pCi/L	03/06/17 13:05	13982-63-3	
Radium-228	EPA 904.0	**0.986 ± 0.456 (0.726) C:56% T:86%**	pCi/L	03/07/17 15:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.986 ± 0.763 (1.53)**	pCi/L	03/07/17 20:54	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: FAA-2-021017 **Lab ID: 60237752004** Collected: 02/10/17 10:35 Received: 02/11/17 09:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.508 ± 0.381 (0.197) C:NA T:86%**	pCi/L	03/06/17 13:05	13982-63-3	
Radium-228	EPA 904.0	**0.824 ± 0.412 (0.685) C:61% T:86%**	pCi/L	03/07/17 15:52	15262-20-1	
Total Radium	Total Radium Calculation	**1.33 ± 0.793 (0.882)**	pCi/L	03/07/17 20:54	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Sample: DUP-021017 **Lab ID: 60237752005** Collected: 02/10/17 06:00 Received: 02/11/17 09:05 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 ± 0.462 (0.958) C:NA T:94%**	pCi/L	03/06/17 13:05	13982-63-3	
Radium-228	EPA 904.0	**0.712 ± 0.562 (1.11) C:50% T:76%**	pCi/L	03/07/17 15:52	15262-20-1	
Total Radium	Total Radium Calculation	**0.712 ± 1.02 (2.07)**	pCi/L	03/07/17 20:54	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 250470 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1232539 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.158 ± 0.276 (0.596) C:68% T:93%	pCi/L	03/07/17 11:43	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

QC Batch: 250469 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

METHOD BLANK: 1232538 Matrix: Water
Associated Lab Samples: 60237752001, 60237752002, 60237752003, 60237752004, 60237752005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.321 (0.654) C:NA T:91%	pCi/L	03/06/17 12:09	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

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: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237752001	**FAA-5-021017**	EPA 200.7	465590	EPA 200.7	465696
60237752002	**FAA-4-021017**	EPA 200.7	465590	EPA 200.7	465696
60237752003	**FAA-3-021017**	EPA 200.7	465590	EPA 200.7	465696
60237752004	**FAA-2-021017**	EPA 200.7	465590	EPA 200.7	465696
60237752005	**DUP-021017**	EPA 200.7	465590	EPA 200.7	465696
60237752001	**FAA-5-021017**	EPA 200.8	465593	EPA 200.8	465698
60237752002	**FAA-4-021017**	EPA 200.8	465593	EPA 200.8	465698
60237752003	**FAA-3-021017**	EPA 200.8	465593	EPA 200.8	465698
60237752004	**FAA-2-021017**	EPA 200.8	465593	EPA 200.8	465698
60237752005	**DUP-021017**	EPA 200.8	465593	EPA 200.8	465698
60237752001	**FAA-5-021017**	EPA 245.1	465533	EPA 245.1	465636
60237752002	**FAA-4-021017**	EPA 245.1	465533	EPA 245.1	465636
60237752003	**FAA-3-021017**	EPA 245.1	465533	EPA 245.1	465636
60237752004	**FAA-2-021017**	EPA 245.1	465533	EPA 245.1	465636
60237752005	**DUP-021017**	EPA 245.1	465533	EPA 245.1	465636
60237752001	**FAA-5-021017**	EPA 903.1	250469		
60237752002	**FAA-4-021017**	EPA 903.1	250469		
60237752003	**FAA-3-021017**	EPA 903.1	250469		
60237752004	**FAA-2-021017**	EPA 903.1	250469		
60237752005	**DUP-021017**	EPA 903.1	250469		
60237752001	**FAA-5-021017**	EPA 904.0	250470		
60237752002	**FAA-4-021017**	EPA 904.0	250470		
60237752003	**FAA-3-021017**	EPA 904.0	250470		
60237752004	**FAA-2-021017**	EPA 904.0	250470		
60237752005	**DUP-021017**	EPA 904.0	250470		
60237752001	**FAA-5-021017**	Total Radium Calculation	251399		
60237752002	**FAA-4-021017**	Total Radium Calculation	251399		
60237752003	**FAA-3-021017**	Total Radium Calculation	251399		
60237752004	**FAA-2-021017**	Total Radium Calculation	251399		
60237752005	**DUP-021017**	Total Radium Calculation	251399		
60237752001	**FAA-5-021017**	SM 2540C	465749		
60237752002	**FAA-4-021017**	SM 2540C	465749		
60237752003	**FAA-3-021017**	SM 2540C	465749		
60237752004	**FAA-2-021017**	SM 2540C	465749		
60237752005	**DUP-021017**	SM 2540C	465749		
60237752001	**FAA-5-021017**	SM 4500-H+B	465627		
60237752002	**FAA-4-021017**	SM 4500-H+B	465627		
60237752003	**FAA-3-021017**	SM 4500-H+B	465627		
60237752004	**FAA-2-021017**	SM 4500-H+B	465627		
60237752005	**DUP-021017**	SM 4500-H+B	465627		
60237752001	**FAA-5-021017**	EPA 300.0	465470		
60237752001	**FAA-5-021017**	EPA 300.0	465543		
60237752002	**FAA-4-021017**	EPA 300.0	465470		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60237752

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60237752002	**FAA-4-021017**	EPA 300.0	465543		
60237752003	**FAA-3-021017**	EPA 300.0	465470		
60237752003	**FAA-3-021017**	EPA 300.0	465543		
60237752004	**FAA-2-021017**	EPA 300.0	465470		
60237752004	**FAA-2-021017**	EPA 300.0	465543		
60237752005	**DUP-021017**	EPA 300.0	465470		
60237752005	**DUP-021017**	EPA 300.0	465543		

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Sample Condition Upon Receipt

WO# : 60237752

60237752

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** 2.5 **Corr. Factor** CF +1.5 / CF +0.9 **Corrected** 4.0

Date and initials of person examining contents: JB 2/4/17

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: _____ Date: _____

REVIEWED
By hwilson at 9:11 am, 2/13/17

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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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC CCR Groundwater	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9657, 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	FAA-5-021017	WT	G			2/10	0803		4	1		3														60237752
2	FAA-4-021017	WT	G			2/10	0851		4	1		3														
3	FAA-3-021017	WT	G			2/10	0936		4	1		3														
4	FAA-2-021017	WT	G			2/10	1035		4	1		3														
5																										
6																										
7																										
8																										
9																										
10	Dup-021017	WT	G			2/10	0600		4	1		3														
11																										
12																										

BPIN (2) BPIN BPIN
001 002 003 004 005

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	2/10/17	1200		2/11/17	0905	4.0	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): 02/10/17				

*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#:30210712

30210712

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Workorder: 60237752 Workorder Name:JEC CCR GROUNDWATER Owner Received Date: 2/11/2017 Results Requested By: 3/7/2017

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 HNO3						Requested Analysis: Radium-226 & Total Sum Radium	Requested Analysis: Radium-228											LAB USE ONLY
1	FAA-5-021017	PS	2/10/2017 08:03	60237752001	Water	2						X	X											001
2	FAA-4-021017	PS	2/10/2017 08:51	60237752002	Water	2						X	X											002
3	FAA-3-021017	PS	2/10/2017 09:36	60237752003	Water	2						X	X											003
4	FAA-2-021017	PS	2/10/2017 10:35	60237752004	Water	2						X	X											004
5	DUP-021017	PS	2/10/2017 06:00	60237752005	Water	2						X	X											005

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	2/13/17 1700	Ben Mantlo	2-14-17 10:30
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.

BLM

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace Kansas Project # 30210712

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

Tracking #: 7044 6654 5275

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: BLM 2-14-17

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.	✓ ✓			15. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed BLM Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	16.
Trip Blank Present: Trip Blank Custody Seals Present			✓ ✓	17.
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: BLM Date: 2-14-17

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

May 04, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on April 12, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

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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(913)599-5665

SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60241789001	**FAA-5-041017**	Water	04/10/17 15:57	04/12/17 07:20
60241789002	**FAA-4-041117**	Water	04/11/17 09:08	04/12/17 07:20
60241789003	**FAA-3-041117**	Water	04/11/17 10:08	04/12/17 07:20
60241789004	**FAA-2-041117**	Water	04/11/17 11:19	04/12/17 07:20

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60241789001	**FAA-5-041017**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241789002	**FAA-4-041117**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60241789003	**FAA-3-041117**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 903.1	KAC	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
60241789004	**FAA-2-041117**	EPA 200.7	JGP	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	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	LDF	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	RAD	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: May 04, 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.
- FAA-2-041117 (Lab ID: 60241789004)
- FAA-3-041117 (Lab ID: 60241789003)
- FAA-4-041117 (Lab ID: 60241789002)
- FAA-5-041017 (Lab ID: 60241789001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: May 04, 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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-5-041017 **Lab ID: 60241789001** Collected: 04/10/17 15:57 Received: 04/12/17 07:20 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	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:50	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:50	7440-41-7	
Boron, Total Recoverable	**1.7**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:50	7440-42-8	
Calcium, Total Recoverable	**526**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:50	7439-92-1	
Lithium	**0.15**	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:50	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	04/21/17 11:35	04/28/17 10:26	7440-36-0	
Arsenic, Total Recoverable	**0.0024**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:26	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:26	7440-43-9	
Cobalt, Total Recoverable	**0.0036**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:26	7440-48-4	
Molybdenum, Total Recoverable	**0.067**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:26	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:26	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:26	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/13/17 08:30	04/13/17 11:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3730**	mg/L	5.0	1		04/13/17 12:53		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.9**	Std. Units	0.10	1		04/17/17 12:42		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**88.9**	mg/L	10.0	10		04/13/17 18:00	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		04/13/17 17:45	16984-48-8	
Sulfate	**2130**	mg/L	200	200		04/13/17 18:15	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-4-041117 **Lab ID: 60241789002** Collected: 04/11/17 09:08 Received: 04/12/17 07:20 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	**0.051**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:54	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:54	7440-41-7	
Boron, Total Recoverable	**0.40**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:54	7440-42-8	
Calcium, Total Recoverable	**223**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:54	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:54	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:54	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:54	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	04/21/17 11:35	04/28/17 10:30	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:30	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:30	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:30	7440-48-4	
Molybdenum, Total Recoverable	**0.0033**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:30	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:30	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:30	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/13/17 08:30	04/13/17 12:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1190**	mg/L	5.0	1		04/14/17 12:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/17/17 12:47		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**84.7**	mg/L	10.0	10		04/13/17 18:44	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	1		04/13/17 18:30	16984-48-8	
Sulfate	**516**	mg/L	50.0	50		04/13/17 18:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-3-041117 **Lab ID: 60241789003** Collected: 04/11/17 10:08 Received: 04/12/17 07:20 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	0.0050	1	04/21/17 11:35	04/24/17 14:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/24/17 14:58	7440-41-7	
Boron, Total Recoverable	**0.93**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:58	7440-42-8	
Calcium, Total Recoverable	**242**	mg/L	0.10	1	04/21/17 11:35	04/24/17 14:58	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:58	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 14:58	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	04/21/17 11:35	04/24/17 14:58	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	04/21/17 11:35	04/28/17 10:45	7440-36-0	
Arsenic, Total Recoverable	**0.0011**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:45	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:45	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:45	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:45	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	05/03/17 14:51	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:45	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/13/17 08:30	04/13/17 12:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1460**	mg/L	5.0	1		04/14/17 12:40		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		04/17/17 12:49		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**82.9**	mg/L	10.0	10		04/13/17 20:14	16887-00-6	
Fluoride	**0.33**	mg/L	0.20	1		04/13/17 19:59	16984-48-8	
Sulfate	**818**	mg/L	50.0	50		04/13/17 19:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-2-041117 **Lab ID: 60241789004** Collected: 04/11/17 11:19 Received: 04/12/17 07:20 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	**0.031**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 15:02	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	04/24/17 15:02	7440-41-7	
Boron, Total Recoverable	**3.1**	mg/L	0.10	1	04/21/17 11:35	04/24/17 15:02	7440-42-8	
Calcium, Total Recoverable	**316**	mg/L	0.10	1	04/21/17 11:35	04/24/17 15:02	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 15:02	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/21/17 11:35	04/24/17 15:02	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	04/21/17 11:35	04/24/17 15:02	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	04/21/17 11:35	04/28/17 10:49	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	05/02/17 12:01	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/21/17 11:35	04/28/17 10:49	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	04/21/17 11:35	05/02/17 12:01	7440-48-4	
Molybdenum, Total Recoverable	**0.18**	mg/L	0.0010	1	04/21/17 11:35	04/28/17 10:49	7439-98-7	
Selenium, Total Recoverable	**0.0061**	mg/L	0.0010	1	04/21/17 11:35	05/03/17 14:53	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/21/17 11:35	05/02/17 12:01	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	04/13/17 08:30	04/13/17 12:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3210**	mg/L	5.0	1		04/14/17 12:41		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		04/17/17 12:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**72.4**	mg/L	5.0	5		04/13/17 20:44	16887-00-6	
Fluoride	**0.84**	mg/L	0.20	1		04/13/17 20:29	16984-48-8	
Sulfate	**2060**	mg/L	200	200		04/13/17 20:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 472511 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

METHOD BLANK: 1934867 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	04/13/17 11:20	

LABORATORY CONTROL SAMPLE: 1934868

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: 1934869 1934870

Parameter	Units	60241856001 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	0.0046	0.0046	92	91	70-130	1	20	

MATRIX SPIKE SAMPLE: 1934871

Parameter	Units	60241857001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.20 ug/L	.005	0.0047	94	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 473694 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

METHOD BLANK: 1939836 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	04/24/17 13:51	
Beryllium	mg/L	<0.0010	0.0010	04/24/17 13:51	
Boron	mg/L	<0.10	0.10	04/24/17 13:51	
Calcium	mg/L	<0.10	0.10	04/24/17 13:51	
Chromium	mg/L	<0.0050	0.0050	04/24/17 13:51	
Lead	mg/L	<0.0050	0.0050	04/24/17 13:51	
Lithium	mg/L	<0.010	0.010	04/24/17 13:51	

LABORATORY CONTROL SAMPLE: 1939839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	103	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10.3	103	85-115	
Chromium	mg/L	1	1.0	103	85-115	
Lead	mg/L	1	1.1	107	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1939840 1939841

Parameter	Units	60241636001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.31	1	1	1.3	1.3	102	102	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	101	70-130	1	20	
Boron	mg/L	<0.10	1	1	1.1	1.1	104	102	70-130	1	20	
Calcium	mg/L	98.2	10	10	106	105	83	71	70-130	1	20	
Chromium	mg/L	<0.0050	1	1	1.0	1.0	102	101	70-130	1	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	102	102	70-130	1	20	
Lithium	mg/L	0.011	1	1	1.0	1.0	102	101	70-130	1	20	

MATRIX SPIKE SAMPLE: 1939842

Parameter	Units	60241636002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.089	1	1.1	103	70-130	
Beryllium	mg/L	<0.0010	1	1.0	101	70-130	
Boron	mg/L	0.22	1	1.3	104	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

MATRIX SPIKE SAMPLE: 1939842

Parameter	Units	60241636002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	150	10	160	96	70-130	
Chromium	mg/L	<0.0050	1	1.0	103	70-130	
Lead	mg/L	<0.0050	1	1.0	103	70-130	
Lithium	mg/L	<0.010	1	1.0	102	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 473696 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

METHOD BLANK: 1939849 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	04/28/17 09:17	
Arsenic	mg/L	<0.0010	0.0010	04/28/17 09:17	
Cadmium	mg/L	<0.00050	0.00050	04/28/17 09:17	
Cobalt	mg/L	<0.0010	0.0010	04/28/17 09:17	
Molybdenum	mg/L	<0.0010	0.0010	04/28/17 09:17	
Selenium	mg/L	<0.0010	0.0010	04/28/17 09:17	
Thallium	mg/L	<0.0010	0.0010	04/28/17 09:17	

LABORATORY CONTROL SAMPLE: 1939851

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	97	85-115	
Arsenic	mg/L	.04	0.037	93	85-115	
Cadmium	mg/L	.04	0.039	97	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.042	106	85-115	
Selenium	mg/L	.04	0.035	88	85-115	
Thallium	mg/L	.04	0.039	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1939852 1939853

Parameter	Units	60241636003 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	0.038	0.038	96	95	70-130	1	20	
Arsenic	mg/L	<0.0010	.04	.04	0.037	0.037	92	90	70-130	3	20	
Cadmium	mg/L	<0.00050	.04	.04	0.037	0.036	92	90	70-130	2	20	
Cobalt	mg/L	<0.0010	.04	.04	0.038	0.037	94	93	70-130	1	20	
Molybdenum	mg/L	0.0058	.04	.04	0.048	0.048	106	104	70-130	2	20	
Selenium	mg/L	<0.0010	.04	.04	0.034	0.034	86	84	70-130	3	20	
Thallium	mg/L	<0.0010	.04	.04	0.042	0.041	106	103	70-130	2	20	

MATRIX SPIKE SAMPLE: 1939854

Parameter	Units	60241636004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.038	95	70-130	
Arsenic	mg/L	<0.0010	.04	0.036	90	70-130	
Cadmium	mg/L	<0.00050	.04	0.036	89	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

MATRIX SPIKE SAMPLE: 1939854

Parameter	Units	60241636004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.037	92	70-130	
Molybdenum	mg/L	0.0039	.04	0.045	103	70-130	
Selenium	mg/L	<0.0010	.04	0.034	84	70-130	
Thallium	mg/L	<0.0010	.04	0.042	106	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 472660 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60241789001

METHOD BLANK: 1935328 Matrix: Water
Associated Lab Samples: 60241789001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/13/17 12:38	

LABORATORY CONTROL SAMPLE: 1935329

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

SAMPLE DUPLICATE: 1935330

Parameter	Units	60241131007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1670	1710	2	10	H3

SAMPLE DUPLICATE: 1935331

Parameter	Units	60241741002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	204	207	1	10	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 472848 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60241789002, 60241789003, 60241789004

METHOD BLANK: 1935989 Matrix: Water
Associated Lab Samples: 60241789002, 60241789003, 60241789004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/14/17 12:38	

LABORATORY CONTROL SAMPLE: 1935990

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	971	97	80-120	

SAMPLE DUPLICATE: 1935991

Parameter	Units	60242027001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1440	1440	0	10	

SAMPLE DUPLICATE: 1935992

Parameter	Units	60241925004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	10100	9770	3	10	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 473026 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

SAMPLE DUPLICATE: 1937171

Parameter	Units	60241131014 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 472609 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

METHOD BLANK: 1935059 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	04/13/17 08:48	
Fluoride	mg/L	<0.20	0.20	04/13/17 08:48	
Sulfate	mg/L	<1.0	1.0	04/13/17 08:48	

LABORATORY CONTROL SAMPLE: 1935060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	95	90-110	
Fluoride	mg/L	2.5	2.3	91	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1935061 1935062

Parameter	Units	60241829001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3030	1250	1250	4300	4400	101	110	80-120	2	15	
Fluoride	mg/L	ND	625	625	653	667	98	101	80-120	2	15	
Sulfate	mg/L	ND	1250	1250	1420	1430	98	100	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-5-041017 **Lab ID: 60241789001** Collected: 04/10/17 15:57 Received: 04/12/17 07:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.668 ± 0.699 (1.10) C:NA T:96%**	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228	EPA 904.0	**0.955 ± 0.417 (0.676) C:74% T:84%**	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.62 ± 1.12 (1.78)**	pCi/L	05/04/17 13:38	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-4-041117 **Lab ID: 60241789002** Collected: 04/11/17 09:08 Received: 04/12/17 07:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.528 ± 0.495 (0.701) C:NA T:97%**	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228	EPA 904.0	**0.432 ± 0.326 (0.639) C:81% T:82%**	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.960 ± 0.821 (1.34)**	pCi/L	05/04/17 13:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-3-041117 **Lab ID: 60241789003** Collected: 04/11/17 10:08 Received: 04/12/17 07:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.495 ± 0.649 (1.08) C:NA T:100%**	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228	EPA 904.0	**-0.124 ± 0.290 (0.703) C:80% T:88%**	pCi/L	04/28/17 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.495 ± 0.939 (1.78)**	pCi/L	05/04/17 13:38	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Sample: FAA-2-041117 **Lab ID: 60241789004** Collected: 04/11/17 11:19 Received: 04/12/17 07:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.433 ± 0.512 (0.804) C:NA T:84%**	pCi/L	04/28/17 21:00	13982-63-3	
Radium-228	EPA 904.0	**0.406 ± 0.388 (0.797) C:74% T:81%**	pCi/L	04/28/17 10:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.839 ± 0.900 (1.60)**	pCi/L	05/04/17 13:38	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 255861 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60241789001, 60241789002, 60241789004

METHOD BLANK: 1260080 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.187 ± 0.333 (0.729) C:79% T:80%	pCi/L	04/28/17 10:43	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 255863 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60241789003

METHOD BLANK: 1260085 Matrix: Water
Associated Lab Samples: 60241789003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.369 ± 0.333 (0.672) C:81% T:76%	pCi/L	04/28/17 11:58	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

QC Batch: 255860 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

METHOD BLANK: 1260077 Matrix: Water
Associated Lab Samples: 60241789001, 60241789002, 60241789003, 60241789004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.221 ± 0.480 (0.886) C:NA T:96%	pCi/L	04/28/17 20:30	

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60241789

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

H3	Sample was received or analysis requested beyond the recognized method holding time.
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: JEC CCR GROUNDWATER
Pace Project No.: 60241789

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60241789001	**FAA-5-041017**	EPA 200.7	473694	EPA 200.7	473746
60241789002	**FAA-4-041117**	EPA 200.7	473694	EPA 200.7	473746
60241789003	**FAA-3-041117**	EPA 200.7	473694	EPA 200.7	473746
60241789004	**FAA-2-041117**	EPA 200.7	473694	EPA 200.7	473746
60241789001	**FAA-5-041017**	EPA 200.8	473696	EPA 200.8	473747
60241789002	**FAA-4-041117**	EPA 200.8	473696	EPA 200.8	473747
60241789003	**FAA-3-041117**	EPA 200.8	473696	EPA 200.8	473747
60241789004	**FAA-2-041117**	EPA 200.8	473696	EPA 200.8	473747
60241789001	**FAA-5-041017**	EPA 245.1	472511	EPA 245.1	472570
60241789002	**FAA-4-041117**	EPA 245.1	472511	EPA 245.1	472570
60241789003	**FAA-3-041117**	EPA 245.1	472511	EPA 245.1	472570
60241789004	**FAA-2-041117**	EPA 245.1	472511	EPA 245.1	472570
60241789001	**FAA-5-041017**	EPA 903.1	255860		
60241789002	**FAA-4-041117**	EPA 903.1	255860		
60241789003	**FAA-3-041117**	EPA 903.1	255860		
60241789004	**FAA-2-041117**	EPA 903.1	255860		
60241789001	**FAA-5-041017**	EPA 904.0	255861		
60241789002	**FAA-4-041117**	EPA 904.0	255861		
60241789003	**FAA-3-041117**	EPA 904.0	255863		
60241789004	**FAA-2-041117**	EPA 904.0	255861		
60241789001	**FAA-5-041017**	Total Radium Calculation	257426		
60241789002	**FAA-4-041117**	Total Radium Calculation	257426		
60241789003	**FAA-3-041117**	Total Radium Calculation	257426		
60241789004	**FAA-2-041117**	Total Radium Calculation	257426		
60241789001	**FAA-5-041017**	SM 2540C	472660		
60241789002	**FAA-4-041117**	SM 2540C	472848		
60241789003	**FAA-3-041117**	SM 2540C	472848		
60241789004	**FAA-2-041117**	SM 2540C	472848		
60241789001	**FAA-5-041017**	SM 4500-H+B	473026		
60241789002	**FAA-4-041117**	SM 4500-H+B	473026		
60241789003	**FAA-3-041117**	SM 4500-H+B	473026		
60241789004	**FAA-2-041117**	SM 4500-H+B	473026		
60241789001	**FAA-5-041017**	EPA 300.0	472609		
60241789002	**FAA-4-041117**	EPA 300.0	472609		
60241789003	**FAA-3-041117**	EPA 300.0	472609		
60241789004	**FAA-2-041117**	EPA 300.0	472609		

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Sample Condition Upon Receipt

WO# : 60241789

60241789

Client Name: Nestar

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 +0.2 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.8 **Corr. Factor** CF +1.5 CF +0.2 **Corrected** 2.3

RB 4/12/17
Date and initials of person examining contents:

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: 4/12/17

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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:	JEC 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 #:	9657, 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. 60241789
1	FAA-5-041017	WT	G			4/10	1557		4	1		3																				RPW RPW 2BPIN 01
2	FAA-4-041117	WT	G			4/11	0908		4	1		3																				02
3	FAA-3-041117	WT	G			4/11	1008		4	1		3																				03
4	FAA-2-041117	WT	G			4/11	1119		4	1		3																				04
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / westar	4/11/17	1300	[signature]	4/12/17	0720	2.3	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): 04/11/17

*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

30216040

Pace Analytical
www.pacelabs.com

Workorder: 60241789 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 4/12/2017 **Results Requested By:** 5/4/2017

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	Radium-228	Radium-226 & Total Radium	LAB USE ONLY
1	FAA-5-041017	PS	4/10/2017 15:57	60241789001	Water	2	X	X	001
2	FAA-4-041117	PS	4/11/2017 09:08	60241789002	Water	2	X	X	002
3	FAA-3-041117	PS	4/11/2017 10:08	60241789003	Water	2	X	X	003
4	FAA-2-041117	PS	4/11/2017 11:19	60241789004	Water	2	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	4/12/17 1100	[signature] Pace	4/13/17
2				
3				

Comments: 0920

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.

WO#:30216040

RTB

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: Pace KS Project # 30216040

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

Tracking #: 7285 6591 5559

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 4/13/17

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:	X			10.
-Pace Containers Used:	X			
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			15. pH<2
				Initial when completed 4/13/17 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: 4/13/17

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

August 22, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on May 31, 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.

Revised Report_rev.1 Per the client's request, the samples 60245348-001 and -005 were re-evaluated down to the MDL.

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: JEC CCR GROUNDWATER
Pace Project No.: 60245348

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: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60245348001	**FAA-5-053017**	Water	05/30/17 07:53	05/31/17 07:40
60245348002	**FAA-4-053017**	Water	05/30/17 09:12	05/31/17 07:40
60245348003	**FAA-3-053017**	Water	05/30/17 10:02	05/31/17 07:40
60245348004	**FAA-2-053017**	Water	05/30/17 11:02	05/31/17 07:40
60245348005	**DUP-053017**	Water	05/30/17 06:00	05/31/17 07:40

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60245348001	**FAA-5-053017**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	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	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
60245348002	**FAA-4-053017**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	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	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
60245348003	**FAA-3-053017**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	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	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245348004	**FAA-2-053017**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	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	CMC	1	PASI-PA
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	RAD	3	PASI-K
60245348005	**DUP-053017**	EPA 200.7	TDS	7	PASI-K

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	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	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
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

QC Batch: 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: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-053017 (Lab ID: 60245348005)
- FAA-2-053017 (Lab ID: 60245348004)
- FAA-3-053017 (Lab ID: 60245348003)
- FAA-4-053017 (Lab ID: 60245348002)
- FAA-5-053017 (Lab ID: 60245348001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 22, 2017

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-5-053017 **Lab ID: 60245348001** Collected: 05/30/17 07:53 Received: 05/31/17 07:40 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.013**	mg/L	0.010	2	06/01/17 09:44	06/08/17 13:09	7440-39-3	
Beryllium, Total Recoverable	**0.00081J**	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:09	7440-41-7	
Boron, Total Recoverable	**0.85**	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:43	7440-42-8	
Calcium, Total Recoverable	**261**	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:09	7440-70-2	
Chromium, Total Recoverable	**<0.00072**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:43	7440-47-3	
Lead, Total Recoverable	**<0.0024**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:43	7439-92-1	
Lithium	**0.061**	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:09	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.00022J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7440-36-0	
Arsenic, Total Recoverable	**0.00081J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7440-38-2	
Cadmium, Total Recoverable	**0.000045J**	mg/L	0.00050	1	06/09/17 16:50	06/14/17 15:40	7440-43-9	
Cobalt, Total Recoverable	**0.00048J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7439-98-7	
Selenium, Total Recoverable	**0.0020**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7782-49-2	
Thallium, Total Recoverable	**0.00014J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 15:40	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.000083**	mg/L	0.00020	1	06/09/17 16:43	06/12/17 12:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1810**	mg/L	5.0	1		06/01/17 11:18		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		06/06/17 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**178**	mg/L	10.0	10		06/01/17 02:53	16887-00-6	
Fluoride	**0.68**	mg/L	0.20	1		06/01/17 03:08	16984-48-8	
Sulfate	**912**	mg/L	100	100		06/01/17 17:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-4-053017 **Lab ID: 60245348002** Collected: 05/30/17 09:12 Received: 05/31/17 07:40 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	**0.050**	mg/L	0.010	2	06/01/17 09:44	06/08/17 13:12	7440-39-3	
Beryllium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:12	7440-41-7	
Boron, Total Recoverable	**0.40**	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:45	7440-42-8	
Calcium, Total Recoverable	**200**	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:12	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:45	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:45	7439-92-1	
Lithium	**<0.020**	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:12	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/09/17 16:50	06/14/17 16:14	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7440-48-4	
Molybdenum, Total Recoverable	**0.0031**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:14	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/09/17 16:43	06/12/17 12:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1140**	mg/L	5.0	1		06/01/17 11:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		06/06/17 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**80.6**	mg/L	10.0	10		06/01/17 03:37	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		06/01/17 03:23	16984-48-8	
Sulfate	**518**	mg/L	50.0	50		06/01/17 03:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-3-053017 **Lab ID: 60245348003** Collected: 05/30/17 10:02 Received: 05/31/17 07:40 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	2	06/01/17 09:44	06/08/17 13:14	7440-39-3	
Beryllium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:14	7440-41-7	
Boron, Total Recoverable	**0.91**	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:48	7440-42-8	
Calcium, Total Recoverable	**208**	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:14	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:48	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:48	7439-92-1	
Lithium	**<0.020**	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:14	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	06/09/17 16:50	06/14/17 16:20	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/09/17 16:50	06/14/17 16:20	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:20	7440-48-4	
Molybdenum, Total Recoverable	**0.013**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:20	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:20	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:20	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/09/17 16:43	06/12/17 12:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1450**	mg/L	5.0	1		06/01/17 11:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		06/07/17 00:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**82.7**	mg/L	10.0	10		06/01/17 04:22	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	1		06/01/17 04:07	16984-48-8	
Sulfate	**778**	mg/L	50.0	50		06/01/17 04:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-2-053017 **Lab ID: 60245348004** Collected: 05/30/17 11:02 Received: 05/31/17 07:40 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	**0.036**	mg/L	0.010	2	06/01/17 09:44	06/08/17 13:16	7440-39-3	
Beryllium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:16	7440-41-7	
Boron, Total Recoverable	**3.7**	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:50	7440-42-8	
Calcium, Total Recoverable	**310**	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:16	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:50	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:50	7439-92-1	
Lithium	**<0.020**	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:16	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	06/09/17 16:50	06/14/17 16:27	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:27	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/09/17 16:50	06/14/17 16:27	7440-43-9	
Cobalt, Total Recoverable	**0.0013**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:27	7440-48-4	
Molybdenum, Total Recoverable	**0.38**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:27	7439-98-7	
Selenium, Total Recoverable	**0.0013**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:27	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:27	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/09/17 16:43	06/12/17 12:05	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3510**	mg/L	5.0	1		06/01/17 11:20		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.8**	Std. Units	0.10	1		06/07/17 00:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.0**	mg/L	5.0	5		06/01/17 05:52	16887-00-6	
Fluoride	**0.61**	mg/L	0.20	1		06/01/17 04:52	16984-48-8	
Sulfate	**2430**	mg/L	200	200		06/01/17 05:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: DUP-053017 **Lab ID: 60245348005** Collected: 05/30/17 06:00 Received: 05/31/17 07:40 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.014**	mg/L	0.010	2	06/01/17 09:44	06/08/17 13:19	7440-39-3	
Beryllium, Total Recoverable	**0.0013J**	mg/L	0.0020	2	06/01/17 09:44	06/08/17 13:19	7440-41-7	
Boron, Total Recoverable	**0.88**	mg/L	0.10	1	06/01/17 09:44	06/08/17 13:52	7440-42-8	
Calcium, Total Recoverable	**251**	mg/L	0.20	2	06/01/17 09:44	06/08/17 13:19	7440-70-2	
Chromium, Total Recoverable	**<0.00072**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:52	7440-47-3	
Lead, Total Recoverable	**<0.0024**	mg/L	0.0050	1	06/01/17 09:44	06/08/17 13:52	7439-92-1	
Lithium	**0.061**	mg/L	0.020	2	06/01/17 09:44	06/08/17 13:19	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.00019J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7440-36-0	
Arsenic, Total Recoverable	**0.00074J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7440-38-2	
Cadmium, Total Recoverable	**0.000041J**	mg/L	0.00050	1	06/09/17 16:50	06/14/17 16:33	7440-43-9	
Cobalt, Total Recoverable	**0.00041J**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7440-48-4	
Molybdenum, Total Recoverable	**0.010**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7439-98-7	
Selenium, Total Recoverable	**0.0020**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7782-49-2	
Thallium, Total Recoverable	**<0.000036**	mg/L	0.0010	1	06/09/17 16:50	06/14/17 16:33	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.000083**	mg/L	0.00020	1	06/09/17 16:43	06/12/17 12:09	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1700**	mg/L	5.0	1		06/01/17 11:20		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		06/06/17 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**177**	mg/L	10.0	10		06/01/17 06:21	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		06/01/17 06:06	16984-48-8	
Sulfate	**827**	mg/L	100	100		06/01/17 06:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479800 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1965095 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000083	0.00020	06/12/17 11:26	

LABORATORY CONTROL SAMPLE: 1965096

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0053	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1965097 1965098

Parameter	Units	60245491002 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	0.0048	0.0050	96	100	70-130	3	20	

MATRIX SPIKE SAMPLE: 1965099

Parameter	Units	60245292001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	.005	0.0049	97	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479127 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1962383 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.00091	0.0050	06/07/17 17:40	
Beryllium	mg/L	0.00038J	0.0010	06/07/17 17:40	
Boron	mg/L	0.016J	0.10	06/07/17 17:40	
Calcium	mg/L	<0.036	0.10	06/07/17 17:40	
Chromium	mg/L	0.00091J	0.0050	06/07/17 17:40	
Lead	mg/L	<0.0024	0.0050	06/07/17 17:40	
Lithium	mg/L	<0.0029	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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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

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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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 480479 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1968228 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.000026	0.0010	06/14/17 15:33	
Arsenic	mg/L	0.000070J	0.0010	06/14/17 15:33	
Cadmium	mg/L	<0.000018	0.00050	06/14/17 15:33	
Cobalt	mg/L	0.000029J	0.0010	06/14/17 15:33	
Molybdenum	mg/L	<0.000058	0.0010	06/14/17 15:33	
Selenium	mg/L	<0.000086	0.0010	06/14/17 15:33	
Thallium	mg/L	0.000054J	0.0010	06/14/17 15:33	

LABORATORY CONTROL SAMPLE: 1968229

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	99	85-115	
Arsenic	mg/L	.04	0.039	98	85-115	
Cadmium	mg/L	.04	0.040	100	85-115	
Cobalt	mg/L	.04	0.041	103	85-115	
Molybdenum	mg/L	.04	0.042	104	85-115	
Selenium	mg/L	.04	0.038	94	85-115	
Thallium	mg/L	.04	0.038	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1968230 1968231

Parameter	Units	60245348001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.00022J	.04	.04	0.039	0.038	97	95	70-130	1	20	
Arsenic	mg/L	0.00081J	.04	.04	0.036	0.036	88	87	70-130	2	20	
Cadmium	mg/L	0.000045J	.04	.04	0.036	0.035	90	88	70-130	2	20	
Cobalt	mg/L	0.00048J	.04	.04	0.037	0.037	91	91	70-130	0	20	
Molybdenum	mg/L	0.012	.04	.04	0.054	0.054	106	105	70-130	1	20	
Selenium	mg/L	0.0020	.04	.04	0.036	0.035	84	84	70-130	1	20	
Thallium	mg/L	0.00014J	.04	.04	0.034	0.034	85	85	70-130	1	20	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479182 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1962626 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	06/01/17 11:17	

LABORATORY CONTROL SAMPLE: 1962627

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	973	97	80-120	

SAMPLE DUPLICATE: 1962628

Parameter	Units	60245348001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1810	1860	3	10	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479836 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60245348001, 60245348002, 60245348005

SAMPLE DUPLICATE: 1965272

Parameter	Units	60245292001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.6	0	5	H6

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479848 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60245348003, 60245348004

SAMPLE DUPLICATE: 1965341

Parameter	Units	60245348003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.3	1	5	H6

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479004 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1961999 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	06/01/17 00:24	
Fluoride	mg/L	<0.10	0.20	06/01/17 00:24	
Sulfate	mg/L	<0.50	1.0	06/01/17 00:24	

LABORATORY CONTROL SAMPLE: 1962000

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	2.6	105	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1962001 1962002

Parameter	Units	60245373001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	327	125	125	463	467	109	112	80-120	1	15	
Fluoride	mg/L	ND	62.5	62.5	60.3	61.0	96	98	80-120	1	15	
Sulfate	mg/L	66.1	125	125	195	198	103	105	80-120	1	15	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 479186 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60245348001

METHOD BLANK: 1962661 Matrix: Water
Associated Lab Samples: 60245348001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<0.50	1.0	06/01/17 09:12	

LABORATORY CONTROL SAMPLE: 1962662

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.2	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1962663 1962664

Parameter	Units	60245358001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	ND	50	50	53.6	53.8	107	108	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-5-053017 **Lab ID: 60245348001** Collected: 05/30/17 07:53 Received: 05/31/17 07:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.10 ± 0.599 (0.657) C:NA T:94%**	pCi/L	06/12/17 22:51	13982-63-3	
Radium-228	EPA 904.0	**0.747 ± 0.378 (0.661) C:79% T:86%**	pCi/L	06/15/17 11:26	15262-20-1	
Total Radium	Total Radium Calculation	**1.85 ± 0.977 (1.32)**	pCi/L	06/20/17 07:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-4-053017 **Lab ID: 60245348002** Collected: 05/30/17 09:12 Received: 05/31/17 07:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.190 ± 0.290 (0.466) C:NA T:97%**	pCi/L	06/12/17 22:51	13982-63-3	
Radium-228	EPA 904.0	**0.502 ± 0.354 (0.690) C:81% T:87%**	pCi/L	06/15/17 11:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.692 ± 0.644 (1.16)**	pCi/L	06/20/17 07:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-3-053017 **Lab ID: 60245348003** Collected: 05/30/17 10:02 Received: 05/31/17 07:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.419 ± 0.435 (0.648) C:NA T:91%**	pCi/L	06/12/17 22:51	13982-63-3	
Radium-228	EPA 904.0	**0.794 ± 0.386 (0.673) C:80% T:89%**	pCi/L	06/15/17 11:22	15262-20-1	
Total Radium	Total Radium Calculation	**1.21 ± 0.821 (1.32)**	pCi/L	06/20/17 07:55	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: FAA-2-053017 **Lab ID: 60245348004** Collected: 05/30/17 11:02 Received: 05/31/17 07:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.379 ± 0.447 (0.703) C:NA T:80%**	pCi/L	06/12/17 23:09	13982-63-3	
Radium-228	EPA 904.0	**1.61 ± 0.511 (0.673) C:80% T:85%**	pCi/L	06/15/17 11:22	15262-20-1	
Total Radium	Total Radium Calculation	**1.99 ± 0.958 (1.38)**	pCi/L	06/20/17 07:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Sample: DUP-053017 **Lab ID: 60245348005** Collected: 05/30/17 06:00 Received: 05/31/17 07:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.188 ± 0.326 (0.582) C:NA T:93%**	pCi/L	06/12/17 23:09	13982-63-3	
Radium-228	EPA 904.0	**1.13 ± 0.429 (0.655) C:80% T:87%**	pCi/L	06/15/17 11:23	15262-20-1	
Total Radium	Total Radium Calculation	**1.32 ± 0.755 (1.24)**	pCi/L	06/20/17 07:55	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 261066 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1285467 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.195 ± 0.278 (0.596) C:78% T:86%	pCi/L	06/15/17 11:24	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

QC Batch: 260857 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

METHOD BLANK: 1284591 Matrix: Water
Associated Lab Samples: 60245348001, 60245348002, 60245348003, 60245348004, 60245348005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.069 ± 0.317 (0.747) C:NA T:95%	pCi/L	06/12/17 22:21	

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

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 (%)

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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: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60245348001	**FAA-5-053017**	EPA 200.7	479127	EPA 200.7	479269
60245348002	**FAA-4-053017**	EPA 200.7	479127	EPA 200.7	479269
60245348003	**FAA-3-053017**	EPA 200.7	479127	EPA 200.7	479269
60245348004	**FAA-2-053017**	EPA 200.7	479127	EPA 200.7	479269
60245348005	**DUP-053017**	EPA 200.7	479127	EPA 200.7	479269
60245348001	**FAA-5-053017**	EPA 200.8	480479	EPA 200.8	480594
60245348002	**FAA-4-053017**	EPA 200.8	480479	EPA 200.8	480594
60245348003	**FAA-3-053017**	EPA 200.8	480479	EPA 200.8	480594
60245348004	**FAA-2-053017**	EPA 200.8	480479	EPA 200.8	480594
60245348005	**DUP-053017**	EPA 200.8	480479	EPA 200.8	480594
60245348001	**FAA-5-053017**	EPA 245.1	479800	EPA 245.1	480611
60245348002	**FAA-4-053017**	EPA 245.1	479800	EPA 245.1	480611
60245348003	**FAA-3-053017**	EPA 245.1	479800	EPA 245.1	480611
60245348004	**FAA-2-053017**	EPA 245.1	479800	EPA 245.1	480611
60245348005	**DUP-053017**	EPA 245.1	479800	EPA 245.1	480611
60245348001	**FAA-5-053017**	EPA 903.1	260857		
60245348002	**FAA-4-053017**	EPA 903.1	260857		
60245348003	**FAA-3-053017**	EPA 903.1	260857		
60245348004	**FAA-2-053017**	EPA 903.1	260857		
60245348005	**DUP-053017**	EPA 903.1	260857		
60245348001	**FAA-5-053017**	EPA 904.0	261066		
60245348002	**FAA-4-053017**	EPA 904.0	261066		
60245348003	**FAA-3-053017**	EPA 904.0	261066		
60245348004	**FAA-2-053017**	EPA 904.0	261066		
60245348005	**DUP-053017**	EPA 904.0	261066		
60245348001	**FAA-5-053017**	Total Radium Calculation	262156		
60245348002	**FAA-4-053017**	Total Radium Calculation	262156		
60245348003	**FAA-3-053017**	Total Radium Calculation	262156		
60245348004	**FAA-2-053017**	Total Radium Calculation	262156		
60245348005	**DUP-053017**	Total Radium Calculation	262156		
60245348001	**FAA-5-053017**	SM 2540C	479182		
60245348002	**FAA-4-053017**	SM 2540C	479182		
60245348003	**FAA-3-053017**	SM 2540C	479182		
60245348004	**FAA-2-053017**	SM 2540C	479182		
60245348005	**DUP-053017**	SM 2540C	479182		
60245348001	**FAA-5-053017**	SM 4500-H+B	479836		
60245348002	**FAA-4-053017**	SM 4500-H+B	479836		
60245348003	**FAA-3-053017**	SM 4500-H+B	479848		
60245348004	**FAA-2-053017**	SM 4500-H+B	479848		
60245348005	**DUP-053017**	SM 4500-H+B	479836		
60245348001	**FAA-5-053017**	EPA 300.0	479004		
60245348001	**FAA-5-053017**	EPA 300.0	479186		
60245348002	**FAA-4-053017**	EPA 300.0	479004		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60245348

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60245348003	**FAA-3-053017**	EPA 300.0	479004		
60245348004	**FAA-2-053017**	EPA 300.0	479004		
60245348005	**DUP-053017**	EPA 300.0	479004		

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Sample Condition Upon Receipt

WO# : 60245348

60245348

Client Name: Westar Energy

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

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

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

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

Thermometer Used: T-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: 05/31/17

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: 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: 5/31/17

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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:	JEC 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 #:	9657, 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	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)	60245348 Pace Project No./ Lab I.D.
1	FA4-5-053017	WT	G			5/30	0753		4	1		3																1BP3N 20 1BPLU 2BPLN 01
2	FA4-4-053017	WT	G			5/30	0912		4	1		3																02
3	FA4-3-053017	WT	G			5/30	1002		4	1		3																03
4	FA4-2-053017	WT	G			5/30	1102		4	1		3																04
5																												
6																												
7																												
8																												
9																												
10																												
11	DUP-053017	WT	G			5/30	0600		4	1		3																05
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	[signature] / Westar	5/30/17	1200	[signature]	5/31/17	0740	4.6	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 05/30/17

*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

30220413

Pace Analytical
www.pacelabs.com

Workorder: 60245348 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 5/31/2017 **Results Requested By:** 6/22/2017

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#: 30220413

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Radium-228	Radium-226 & Total Radium	LAB USE ONLY
1	FAA-5-053017	PS	5/30/2017 07:53	60245348001	Water	2	X	X	001
2	FAA-4-053017	PS	5/30/2017 09:12	60245348002	Water	2	X	X	002
3	FAA-3-053017	PS	5/30/2017 10:02	60245348003	Water	2	X	X	003
4	FAA-2-053017	PS	5/30/2017 11:02	60245348004	Water	2	X	X	004
5	DUP-053017	PS	5/30/2017 06:00	60245348005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] PTB1	5/31/17 1700	Kacie Hill	6/1/17 1020
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 # 30220413 HEJ

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

Tracking #: 7340 7687 1316 6/1/17 KEH

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 6/1/17

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: NA	✓			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: 6/1/17

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 13, 2017

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

RE: Project: JEC CCR Groundwater
Pace Project No.: 60246928

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 20, 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

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

CERTIFICATIONS

Project: JEC CCR Groundwater
Pace Project No.: 60246928

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: JEC CCR Groundwater
Pace Project No.: 60246928

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60246928001	**MW-FAA-6-061717**	Water	06/17/17 10:30	06/20/17 15:25
60246928002	**MW-BAA-7-061717**	Water	06/17/17 14:00	06/20/17 15:25

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

SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60246928001	**MW-FAA-6-061717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	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
60246928002	**MW-BAA-7-061717**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	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

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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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PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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-BAA-7-061717 (Lab ID: 60246928002)
- MW-FAA-6-061717 (Lab ID: 60246928001)

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: JEC CCR Groundwater
Pace Project No.: 60246928

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 13, 2017

General Information:
2 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: JEC CCR Groundwater
Pace Project No.: 60246928

Sample: MW-FAA-6-061717 **Lab ID: 60246928001** Collected: 06/17/17 10:30 Received: 06/20/17 15:25 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	**0.065**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:05	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:05	7440-41-7	
Boron, Total Recoverable	**2.2**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:05	7440-42-8	
Calcium, Total Recoverable	**145**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:05	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:05	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:05	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:05	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	07/03/17 11:47	7440-36-0	
Arsenic, Total Recoverable	**0.0049**	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/03/17 11:47	7440-43-9	
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7440-48-4	
Molybdenum, Total Recoverable	**0.31**	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/03/17 11:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/07/17 14:00	07/10/17 09:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2020**	mg/L	5.0	1		06/21/17 11:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		06/22/17 15:47		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**65.7**	mg/L	10.0	10		06/22/17 16:24	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	1		06/21/17 22:21	16984-48-8	
Sulfate	**1120**	mg/L	100	100		06/21/17 22:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Sample: MW-BAA-7-061717 **Lab ID: 60246928002** Collected: 06/17/17 14:00 Received: 06/20/17 15:25 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	**0.051**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:08	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/10/17 18:08	7440-41-7	
Boron, Total Recoverable	**0.79**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:08	7440-42-8	
Calcium, Total Recoverable	**260**	mg/L	0.10	1	06/30/17 11:00	07/10/17 18:08	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:08	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/30/17 11:00	07/10/17 18:08	7439-92-1	
Lithium	**0.037**	mg/L	0.010	1	06/30/17 11:00	07/10/17 18:08	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/30/17 11:00	07/12/17 12:14	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-48-4	
Molybdenum, Total Recoverable	**0.018**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/30/17 11:00	07/12/17 12:14	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/07/17 14:00	07/10/17 10:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1760**	mg/L	5.0	1		06/21/17 11:58		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		06/22/17 15:49		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**98.5**	mg/L	10.0	10		06/22/17 16:39	16887-00-6	
Fluoride	**0.64**	mg/L	0.20	1		06/21/17 23:06	16984-48-8	
Sulfate	**859**	mg/L	100	100		06/21/17 23:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 484318 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1983721 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/10/17 09:55	

LABORATORY CONTROL SAMPLE: 1983722

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: 1983723 1983724

Parameter	Units	60246928001 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	0.0048	0.0049	97	98	70-130	1	20	

MATRIX SPIKE SAMPLE: 1983725

Parameter	Units	60247606001 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: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 483470
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1980483 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

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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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 483371 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1980101 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

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: JEC CCR Groundwater
Pace Project No.: 60246928

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: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 481991 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974212 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	06/21/17 11:50	

LABORATORY CONTROL SAMPLE: 1974213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	964	96	80-120	

SAMPLE DUPLICATE: 1974214

Parameter	Units	60246884001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2070	2060	0	10	

SAMPLE DUPLICATE: 1974215

Parameter	Units	60246832003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	100	98.5	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 482225 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60246928001, 60246928002

SAMPLE DUPLICATE: 1975265

Parameter	Units	60245949001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	7.1	4	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 482018 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974342 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/21/17 08:21	
Sulfate	mg/L	<1.0	1.0	06/21/17 08:21	

LABORATORY CONTROL SAMPLE: 1974343

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.6	93	90-110	

MATRIX SPIKE SAMPLE: 1974346

Parameter	Units	60246965001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	62.5	63.0	101	80-120	
Sulfate	mg/L	57.1	125	177	96	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

QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 482164 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1974902 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	06/22/17 08:34	

LABORATORY CONTROL SAMPLE: 1974903

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1974904 1974905

Parameter	Units	60247044001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1750	1000	1000	2880	2880	112	113	80-120	0	15	

MATRIX SPIKE SAMPLE: 1974906

Parameter	Units	60246963002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	90.7	50	146	110	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: JEC CCR Groundwater
Pace Project No.: 60246928

Sample: MW-FAA-6-061717 **Lab ID: 60246928001** Collected: 06/17/17 10:30 Received: 06/20/17 15:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.246 ± 0.772 (1.43) C:NA T:93%**	pCi/L	06/30/17 10:16	13982-63-3	
Radium-228	EPA 904.0	**0.401 ± 0.411 (0.840) C:79% T:81%**	pCi/L	07/07/17 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**0.647 ± 1.18 (2.27)**	pCi/L	07/13/17 11:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60246928

Sample: MW-BAA-7-061717 **Lab ID: 60246928002** Collected: 06/17/17 14:00 Received: 06/20/17 15:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.301 ± 0.711 (1.32) C:NA T:84%**	pCi/L	06/30/17 10:16	13982-63-3	
Radium-228	EPA 904.0	**1.00 ± 0.518 (0.900) C:79% T:85%**	pCi/L	07/07/17 15:51	15262-20-1	
Total Radium	Total Radium Calculation	**1.30 ± 1.23 (2.22)**	pCi/L	07/13/17 11:40	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 262895 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1294659 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.162 ± 0.371 (0.598) C:NA T:92%	pCi/L	06/30/17 10:16	

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: JEC CCR Groundwater
Pace Project No.: 60246928

QC Batch: 262906 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60246928001, 60246928002

METHOD BLANK: 1294682 Matrix: Water
Associated Lab Samples: 60246928001, 60246928002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.444 ± 0.415 (0.840) C:79% T:86%	pCi/L	07/07/17 15:51	

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: JEC CCR Groundwater
Pace Project No.: 60246928

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: JEC CCR Groundwater
Pace Project No.: 60246928

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60246928001	**MW-FAA-6-061717**	EPA 200.7	483470	EPA 200.7	483561
60246928002	**MW-BAA-7-061717**	EPA 200.7	483470	EPA 200.7	483561
60246928001	**MW-FAA-6-061717**	EPA 200.8	483371	EPA 200.8	483560
60246928002	**MW-BAA-7-061717**	EPA 200.8	483371	EPA 200.8	483560
60246928001	**MW-FAA-6-061717**	EPA 245.1	484318	EPA 245.1	484436
60246928002	**MW-BAA-7-061717**	EPA 245.1	484318	EPA 245.1	484436
60246928001	**MW-FAA-6-061717**	EPA 903.1	262895		
60246928002	**MW-BAA-7-061717**	EPA 903.1	262895		
60246928001	**MW-FAA-6-061717**	EPA 904.0	262906		
60246928002	**MW-BAA-7-061717**	EPA 904.0	262906		
60246928001	**MW-FAA-6-061717**	Total Radium Calculation	264856		
60246928002	**MW-BAA-7-061717**	Total Radium Calculation	264856		
60246928001	**MW-FAA-6-061717**	SM 2540C	481991		
60246928002	**MW-BAA-7-061717**	SM 2540C	481991		
60246928001	**MW-FAA-6-061717**	SM 4500-H+B	482225		
60246928002	**MW-BAA-7-061717**	SM 4500-H+B	482225		
60246928001	**MW-FAA-6-061717**	EPA 300.0	482018		
60246928001	**MW-FAA-6-061717**	EPA 300.0	482164		
60246928002	**MW-BAA-7-061717**	EPA 300.0	482018		
60246928002	**MW-BAA-7-061717**	EPA 300.0	482164		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60246928

60246928

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** 2.6 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 2.8

Date and initials of person examining contents: JB 6/20/17

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: _____ Date: 6/21/17

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

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

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:	JEC 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 #:	9657, 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-FAA-6-061717	WT	G	6-17-17	1030	—	—		4	X		X													X		60246928 BP1N (3) BP1N 001
2	MW-BAA-7-061717	WT	G	"	1400	—	—		4	X		X													X		BP1N (3) BP1N 002
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	KENDRA FORD / H+A	6-17-17	1520	/ Westar	6/17/17	1520				
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl	/ Westar	6-19-17	0800		6/20/17	1525	2.0	Y	Y	Y
SEE LABELS ON CONTAINERS FOR ANALYSIS										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Kendra Ford

SIGNATURE of SAMPLER: for Kendra Ford DATE Signed (MM/DD/YY): 06/17/17

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.

COC 2 of 2

Chain of Custody

Pace Analytical
www.pacelabs.com

Workorder: 60246928 **Workorder Name:** JEC CCR Groundwater **Owner Received Date:** 6/20/2017 **Results Requested By:** 7/13/2017

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#: 30222311

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-FAA-6-061717	PS	6/17/2017 10:30	60246928001	Water	2	X	X	001
2	MW-BAA-7-061717	PS	6/17/2017 14:00	60246928002	Water	2	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	6/21/17 1710	[signature]	6/21/17 1655
2	[signature]	6-28-17 1655	[signature]	6/28/17 0855
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

30222311

Client Name: PACE - KANSAS Project # 24

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

Tracking #: 783076087763 84

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 6/22/17

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. 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: 6/22/17

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.

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60246928 **Workorder Name:** JEC CCR Groundwater **Owner Received Date:** 6/20/2017 **Results Requested By:** 7/13/2017

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#:30222311

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-FAA-6-061717	PS	6/17/2017 10:30	60246928001	Water	2	X	X	001
2	MW-BAA-7-061717	PS	6/17/2017 14:00	60246928002	Water	2	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] 6/21/17 1700		[illegible]	6/21/17 1705
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

30222311

Pace Analytical

Client Name: PACE - KANSAS Project # 24

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

Tracking #: 783076087 6384

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 6/22/17

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.
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: 6/22/17

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.

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

July 25, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 01, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247862001	**FAA-5-063017**	Water	06/30/17 12:25	07/01/17 09:00
60247862002	**FAA-4-063017**	Water	06/30/17 13:18	07/01/17 09:00

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247862001	**FAA-5-063017**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	SMW	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60247862002	**FAA-4-063017**	EPA 200.7	SMW, TDS	7	PASI-K
		EPA 200.8	SMW	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	JSS	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: 484970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60247861001,60247926002

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

- MS (Lab ID: 1986117)
  - Calcium
- MSD (Lab ID: 1986118)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: 264520

1e: Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below their sample specific MDC or the RL are reportable without qualification.

- BLANK (Lab ID: 1302880)
  - Radium-228

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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.
- FAA-4-063017 (Lab ID: 60247862002)
- FAA-5-063017 (Lab ID: 60247862001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 25, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Sample: FAA-5-063017 **Lab ID: 60247862001** Collected: 06/30/17 12:25 Received: 07/01/17 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:02	7440-39-3	
Beryllium, Total Recoverable	**0.0018**	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:02	7440-41-7	
Boron, Total Recoverable	**1.6**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:02	7440-42-8	
Calcium, Total Recoverable	**446**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:02	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:02	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:02	7439-92-1	
Lithium	**0.14**	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:02	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	07/12/17 16:35	07/16/17 15:13	7440-36-0	
Arsenic, Total Recoverable	**0.0018**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:13	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:13	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:13	7440-48-4	
Molybdenum, Total Recoverable	**0.041**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:13	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:13	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:13	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:25	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3360**	mg/L	5.0	1		07/06/17 16:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		07/05/17 12:23		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**94.0**	mg/L	10.0	10		07/23/17 17:52	16887-00-6	
Fluoride	**0.83**	mg/L	0.20	1		07/22/17 18:28	16984-48-8	
Sulfate	**1970**	mg/L	200	200		07/23/17 18:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Sample: FAA-4-063017 **Lab ID: 60247862002** Collected: 06/30/17 13:18 Received: 07/01/17 09:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.049**	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:38	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 16:38	7440-41-7	
Boron, Total Recoverable	**0.39**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:06	7440-42-8	
Calcium, Total Recoverable	**199**	mg/L	0.10	1	07/12/17 16:35	07/16/17 16:38	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:06	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:06	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/12/17 16:35	07/16/17 16:38	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:17	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7440-48-4	
Molybdenum, Total Recoverable	**0.0027**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:17	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1170**	mg/L	5.0	1		07/06/17 16:28		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		07/05/17 12:27		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**78.5**	mg/L	10.0	10		07/23/17 18:56	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		07/22/17 18:42	16984-48-8	
Sulfate	**486**	mg/L	50.0	50		07/23/17 19:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 485719 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1989430 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/19/17 09:59	

LABORATORY CONTROL SAMPLE: 1989431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0050	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1989432 1989433

Parameter	Units	60248711001 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	0.0050	0.0050	99	101	70-130	2	20	H3

MATRIX SPIKE SAMPLE: 1989434

Parameter	Units	60247863005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	.005	0.0049	98	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: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 484970 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1986115 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/15/17 13:25	
Beryllium	mg/L	<0.0010	0.0010	07/15/17 13:25	
Boron	mg/L	<0.10	0.10	07/15/17 13:25	
Calcium	mg/L	<0.10	0.10	07/15/17 13:25	
Chromium	mg/L	<0.0050	0.0050	07/15/17 13:25	
Lead	mg/L	<0.0050	0.0050	07/15/17 13:25	
Lithium	mg/L	<0.010	0.010	07/15/17 13:25	

LABORATORY CONTROL SAMPLE: 1986116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.96	96	85-115	
Beryllium	mg/L	1	0.94	94	85-115	
Boron	mg/L	1	0.95	95	85-115	
Calcium	mg/L	10	9.3	93	85-115	
Chromium	mg/L	1	0.96	96	85-115	
Lead	mg/L	1	1.0	105	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1986117 1986118

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.29	1	1	1.3	1.2	97	96	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	0.93	0.92	93	92	70-130	1	20	
Boron	mg/L	0.11	1	1	1.1	1.1	99	97	70-130	2	20	
Calcium	mg/L	90.4	10	10	96.4	96.3	60	59	70-130	0	20	M1
Chromium	mg/L	<0.0050	1	1	0.96	0.94	96	94	70-130	2	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	103	101	70-130	2	20	
Lithium	mg/L	0.015	1	1	1.0	1.0	102	100	70-130	1	20	

MATRIX SPIKE SAMPLE: 1986119

Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.032	1	1.1	102	70-130	
Beryllium	mg/L	0.0011	1	0.97	97	70-130	
Boron	mg/L	3.6	1	4.6	98	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

MATRIX SPIKE SAMPLE: 1986119

Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	289	10	302	129	70-130	
Chromium	mg/L	<0.0050	1	0.99	99	70-130	
Lead	mg/L	<0.0050	1	0.94	94	70-130	
Lithium	mg/L	0.015	1	1.1	111	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 484967 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1986099 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/13/17 20:33	
Arsenic	mg/L	<0.0010	0.0010	07/13/17 20:33	
Cadmium	mg/L	<0.00050	0.00050	07/13/17 20:33	
Cobalt	mg/L	<0.0010	0.0010	07/13/17 20:33	
Molybdenum	mg/L	<0.0010	0.0010	07/13/17 20:33	
Selenium	mg/L	<0.0010	0.0010	07/13/17 20:33	
Thallium	mg/L	<0.0010	0.0010	07/13/17 20:33	

LABORATORY CONTROL SAMPLE: 1986100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.040	100	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.038	95	85-115	
Molybdenum	mg/L	.04	0.040	101	85-115	
Selenium	mg/L	.04	0.039	96	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1986101 1986102

Parameter	Units	60248127001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	4.3 ug/L	.04	.04	0.045	0.044	101	100	70-130	1	20	
Arsenic	mg/L	8.5 ug/L	.04	.04	0.047	0.046	96	94	70-130	2	20	
Cadmium	mg/L	<1.0 ug/L	.04	.04	0.034	0.033	86	83	70-130	3	20	
Cobalt	mg/L	<2.0 ug/L	.04	.04	0.036	0.035	89	87	70-130	3	20	
Molybdenum	mg/L	47.9 ug/L	.04	.04	0.090	0.089	104	102	70-130	1	20	
Selenium	mg/L	4.3 ug/L	.04	.04	0.042	0.040	94	90	70-130	4	20	
Thallium	mg/L	<2.0 ug/L	.04	.04	0.037	0.036	91	90	70-130	2	20	

MATRIX SPIKE SAMPLE: 1986103

Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.036	90	70-130	
Arsenic	mg/L	<0.0010	.04	0.038	93	70-130	
Cadmium	mg/L	<0.00050	.04	0.033	83	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

MATRIX SPIKE SAMPLE: 1986103

Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	<0.0010	.04	0.034	83	70-130	
Molybdenum	mg/L	0.011	.04	0.049	96	70-130	
Selenium	mg/L	<0.0010	.04	0.035	88	70-130	
Thallium	mg/L	<0.0010	.04	0.033	83	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 484210 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1983434 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/06/17 16:11	

LABORATORY CONTROL SAMPLE: 1983435

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

SAMPLE DUPLICATE: 1983436

Parameter	Units	60248024001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	440	434	1	10	

SAMPLE DUPLICATE: 1983437

Parameter	Units	60247926001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	688	690	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 483969 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60247862001, 60247862002

SAMPLE DUPLICATE: 1982512

Parameter	Units	60247835001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.2	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 486562 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1992836 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/22/17 15:31	

LABORATORY CONTROL SAMPLE: 1992837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1992838 1992839

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.35	2.5	2.5	3.0	3.0	106	107	80-120	1	15	

MATRIX SPIKE SAMPLE: 1992840

Parameter	Units	60247861002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.31	2.5	2.5	87	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 486575 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1993281 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	07/23/17 12:34	
Sulfate	mg/L	<1.0	1.0	07/23/17 12:34	

LABORATORY CONTROL SAMPLE: 1993282

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1993283 1993284

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	49.7	25	25	76.2	76.5	106	107	80-120	0	15	
Sulfate	mg/L	93.1	25	25	120	120	107	106	80-120	0	15	

MATRIX SPIKE SAMPLE: 1993285

Parameter	Units	60247861002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	35.6	25	61.0	102	80-120	
Sulfate	mg/L	247	100	360	114	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Sample: FAA-5-063017 **Lab ID: 60247862001** Collected: 06/30/17 12:25 Received: 07/01/17 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.31 ± 0.582 (0.169) C:NA T:93%**	pCi/L	07/17/17 12:41	13982-63-3	
Radium-228	EPA 904.0	**0.597 ± 0.505 (1.01) C:76% T:80%**	pCi/L	07/19/17 18:39	15262-20-1	
Total Radium	Total Radium Calculation	**1.91 ± 1.09 (1.18)**	pCi/L	07/20/17 16:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Sample: FAA-4-063017 **Lab ID: 60247862002** Collected: 06/30/17 13:18 Received: 07/01/17 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.859 ± 0.573 (0.737) C:NA T:89%**	pCi/L	07/17/17 12:41	13982-63-3	
Radium-228	EPA 904.0	**0.174 ± 0.377 (0.837) C:76% T:89%**	pCi/L	07/19/17 18:39	15262-20-1	
Total Radium	Total Radium Calculation	**1.03 ± 0.950 (1.57)**	pCi/L	07/20/17 16:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 264358 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1301994 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.062 ± 0.285 (0.671) C:NA T:92%	pCi/L	07/17/17 12:04	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

QC Batch: 264520 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60247862001, 60247862002

METHOD BLANK: 1302880 Matrix: Water
Associated Lab Samples: 60247862001, 60247862002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.14 ± 0.453 (0.704) C:80% T:79%	pCi/L	07/19/17 11:38	1e

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

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

1e	Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below their sample specific MDC or the RL are reportable without qualification.
H3	Sample was received or analysis requested beyond the recognized method holding time.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247862

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247862001	**FAA-5-063017**	EPA 200.7	484970	EPA 200.7	485208
60247862002	**FAA-4-063017**	EPA 200.7	484970	EPA 200.7	485208
60247862001	**FAA-5-063017**	EPA 200.8	484967	EPA 200.8	485209
60247862002	**FAA-4-063017**	EPA 200.8	484967	EPA 200.8	485209
60247862001	**FAA-5-063017**	EPA 245.1	485719	EPA 245.1	485787
60247862002	**FAA-4-063017**	EPA 245.1	485719	EPA 245.1	485787
60247862001	**FAA-5-063017**	EPA 903.1	264358		
60247862002	**FAA-4-063017**	EPA 903.1	264358		
60247862001	**FAA-5-063017**	EPA 904.0	264520		
60247862002	**FAA-4-063017**	EPA 904.0	264520		
60247862001	**FAA-5-063017**	Total Radium Calculation	265757		
60247862002	**FAA-4-063017**	Total Radium Calculation	265757		
60247862001	**FAA-5-063017**	SM 2540C	484210		
60247862002	**FAA-4-063017**	SM 2540C	484210		
60247862001	**FAA-5-063017**	SM 4500-H+B	483969		
60247862002	**FAA-4-063017**	SM 4500-H+B	483969		
60247862001	**FAA-5-063017**	EPA 300.0	486562		
60247862001	**FAA-5-063017**	EPA 300.0	486575		
60247862002	**FAA-4-063017**	EPA 300.0	486562		
60247862002	**FAA-4-063017**	EPA 300.0	486575		

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Sample Condition Upon Receipt

WO# : 60247862

60247862

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 +2.9 / CF +0.2 T-266 / T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.4 **Corr. Factor** CF +2.9 CF +0.2 0 **Corrected** 4.6

Date and initials of person examining contents: pr 7/1/17

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) ☐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: 7/3/17

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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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC CCR Groundwater	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9657, 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	FAA-5-063017	WT	G			6/30	1225		4	1		3														60247862
2	FAA-4-063017	WT	G			6/30	1315		4	1		3														
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

1BP24 3BP1N 001 002

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	6/30/17	1600	FEDEX	7/1/17	0900	4/6	X	X	X
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 06/30/17

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

Pace Analytical®
www.pacelabs.com

Workorder: 60247862 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 7/1/2017 **Results Requested By:** 7/26/2017

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

WO#: 30223452

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	FAA-5-063017	PS	6/30/2017 12:25	60247862001	Water	2	X	X	001
2	FAA-4-063017	PS	6/30/2017 13:18	60247862002	Water	2	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[signature]	7/5/17 1700	Ashley [illegible] / Pace	7-6-17/0950	
2					
3					

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

Pace Analytical

3022345 2

Client Name: Pace, KS Project #

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

Label AM

Tracking #: 7285 0593 7895

LIMS Login AM

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: AMR 7-6-17

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			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.	X			15. PHL2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed AMR 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: AMR Date: 7-6-17

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 1-9
July 2017 Sampling Event
Laboratory Analytical Report

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

August 22, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 04, 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.

Revised Report_rev.1 Per the client's request, the samples 60247926-001 and -002 were re-evaluated down to the MDL.

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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

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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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60247926001	**FAA-3-070317**	Water	07/03/17 10:46	07/04/17 06:25
60247926002	**FAA-2-070317**	Water	07/03/17 11:55	07/04/17 06:25

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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60247926001	**FAA-3-070317**	EPA 200.7	SMW, TDS	7	PASI-K
		EPA 200.8	SMW	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60247926002	**FAA-2-070317**	EPA 200.7	SMW, TDS	7	PASI-K
		EPA 200.8	JGP, SMW	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: 484970

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60247861001,60247926002

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

- MS (Lab ID: 1986117)
  - Calcium
- MSD (Lab ID: 1986118)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

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

Additional Comments:

Analyte Comments:

QC Batch: 484967

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

- FAA-2-070317 (Lab ID: 60247926002)
  - Thallium, Total Recoverable

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: 264520

1e: Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below their sample specific MDC or the RL are reportable without qualification.

- BLANK (Lab ID: 1302880)
  - Radium-228

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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.
- FAA-2-070317 (Lab ID: 60247926002)
- FAA-3-070317 (Lab ID: 60247926001)

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 22, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Sample: FAA-3-070317 **Lab ID: 60247926001** Collected: 07/03/17 10:46 Received: 07/04/17 06:25 Matrix: Water

Parameters	Results	Units	PQL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.028**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:36	7440-39-3	
Beryllium, Total Recoverable	**0.00079J**	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:36	7440-41-7	
Boron, Total Recoverable	**0.84**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:36	7440-42-8	
Calcium, Total Recoverable	**193**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:36	7440-70-2	
Chromium, Total Recoverable	**<0.00072**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:36	7440-47-3	
Lead, Total Recoverable	**<0.0024**	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:56	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:36	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.000077J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7440-36-0	
Arsenic, Total Recoverable	**0.00098J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7440-38-2	
Cadmium, Total Recoverable	**<0.000018**	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:52	7440-43-9	
Cobalt, Total Recoverable	**0.00052J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7439-98-7	
Selenium, Total Recoverable	**<0.000086**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7782-49-2	
Thallium, Total Recoverable	**0.000057J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:52	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.000024**	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**688**	mg/L	5.0	1		07/06/17 17:17		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		07/06/17 14:59		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**81.3**	mg/L	10.0	10		07/23/17 22:39	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	1		07/22/17 20:40	16984-48-8	
Sulfate	**628**	mg/L	100	100		07/23/17 22:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Sample: FAA-2-070317 **Lab ID: 60247926002** Collected: 07/03/17 11:55 Received: 07/04/17 06:25 Matrix: Water

Parameters	Results	Units	PQL	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	0.0050	1	07/12/17 16:35	07/15/17 14:40	7440-39-3	
Beryllium, Total Recoverable	**0.0011**	mg/L	0.0010	1	07/12/17 16:35	07/15/17 14:40	7440-41-7	
Boron, Total Recoverable	**3.6**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:40	7440-42-8	
Calcium, Total Recoverable	**289**	mg/L	0.10	1	07/12/17 16:35	07/15/17 14:40	7440-70-2	
Chromium, Total Recoverable	**0.00085J**	mg/L	0.0050	1	07/12/17 16:35	07/15/17 14:40	7440-47-3	
Lead, Total Recoverable	**0.0028J**	mg/L	0.0050	1	07/12/17 16:35	07/16/17 16:58	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	07/12/17 16:35	07/15/17 14:40	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.00013J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:57	7440-36-0	
Arsenic, Total Recoverable	**0.00083J**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:57	7440-38-2	
Cadmium, Total Recoverable	**<0.000018**	mg/L	0.00050	1	07/12/17 16:35	07/16/17 15:57	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:57	7440-48-4	
Molybdenum, Total Recoverable	**0.30**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:57	7439-98-7	
Selenium, Total Recoverable	**0.0011**	mg/L	0.0010	1	07/12/17 16:35	07/16/17 15:57	7782-49-2	
Thallium, Total Recoverable	**<0.00018**	mg/L	0.0050	5	07/12/17 16:35	07/21/17 12:35	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.000024**	mg/L	0.00020	1	07/17/17 16:19	07/19/17 10:45	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**271**	mg/L	5.0	1		07/06/17 17:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**6.7**	Std. Units	0.10	1		07/06/17 15:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**61.7**	mg/L	5.0	5		07/23/17 23:10	16887-00-6	
Fluoride	**0.94**	mg/L	0.20	1		07/22/17 20:55	16984-48-8	
Sulfate	**2180**	mg/L	200	200		07/23/17 23:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 485719
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1989430 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000024	0.00020	07/19/17 09:59	

LABORATORY CONTROL SAMPLE: 1989431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0050	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1989432 1989433

Parameter	Units	60248711001 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	0.0050	0.0050	99	101	70-130	2	20	H3

MATRIX SPIKE SAMPLE: 1989434

Parameter	Units	60247863005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.000024	.005	0.0049	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 484970 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1986115 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.00091	0.0050	07/15/17 13:25	
Beryllium	mg/L	0.00048J	0.0010	07/15/17 13:25	
Boron	mg/L	<0.0035	0.10	07/15/17 13:25	
Calcium	mg/L	<0.036	0.10	07/15/17 13:25	
Chromium	mg/L	<0.00072	0.0050	07/15/17 13:25	
Lead	mg/L	<0.0024	0.0050	07/15/17 13:25	
Lithium	mg/L	<0.0029	0.010	07/15/17 13:25	

LABORATORY CONTROL SAMPLE: 1986116

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.96	96	85-115	
Beryllium	mg/L	1	0.94	94	85-115	
Boron	mg/L	1	0.95	95	85-115	
Calcium	mg/L	10	9.3	93	85-115	
Chromium	mg/L	1	0.96	96	85-115	
Lead	mg/L	1	1.0	105	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1986117 1986118

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.29	1	1	1.3	1.2	97	96	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	0.93	0.92	93	92	70-130	1	20	
Boron	mg/L	0.11	1	1	1.1	1.1	99	97	70-130	2	20	
Calcium	mg/L	90.4	10	10	96.4	96.3	60	59	70-130	0	20	M1
Chromium	mg/L	<0.0050	1	1	0.96	0.94	96	94	70-130	2	20	
Lead	mg/L	<0.0050	1	1	1.0	1.0	103	101	70-130	2	20	
Lithium	mg/L	0.015	1	1	1.0	1.0	102	100	70-130	1	20	

MATRIX SPIKE SAMPLE: 1986119

Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.032	1	1.1	102	70-130	
Beryllium	mg/L	0.0011	1	0.97	97	70-130	
Boron	mg/L	3.6	1	4.6	98	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

MATRIX SPIKE SAMPLE: 1986119

Parameter	Units	60247926002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	289	10	302	129	70-130	
Chromium	mg/L	0.00085J	1	0.99	99	70-130	
Lead	mg/L	0.0028J	1	0.94	94	70-130	
Lithium	mg/L	0.015	1	1.1	111	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 484967 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1986099 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.000026	0.0010	07/13/17 20:33	
Arsenic	mg/L	<0.000052	0.0010	07/13/17 20:33	
Cadmium	mg/L	<0.000018	0.00050	07/13/17 20:33	
Cobalt	mg/L	<0.000014	0.0010	07/13/17 20:33	
Molybdenum	mg/L	<0.000058	0.0010	07/13/17 20:33	
Selenium	mg/L	<0.000086	0.0010	07/13/17 20:33	
Thallium	mg/L	0.000047J	0.0010	07/13/17 20:33	

LABORATORY CONTROL SAMPLE: 1986100

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.041	102	85-115	
Arsenic	mg/L	.04	0.040	100	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.038	95	85-115	
Molybdenum	mg/L	.04	0.040	101	85-115	
Selenium	mg/L	.04	0.039	96	85-115	
Thallium	mg/L	.04	0.040	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1986101 1986102

Parameter	Units	60248127001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	4.3 ug/L	.04	.04	0.045	0.044	101	100	70-130	1	20	
Arsenic	mg/L	8.5 ug/L	.04	.04	0.047	0.046	96	94	70-130	2	20	
Cadmium	mg/L	<1.0 ug/L	.04	.04	0.034	0.033	86	83	70-130	3	20	
Cobalt	mg/L	<2.0 ug/L	.04	.04	0.036	0.035	89	87	70-130	3	20	
Molybdenum	mg/L	47.9 ug/L	.04	.04	0.090	0.089	104	102	70-130	1	20	
Selenium	mg/L	4.3 ug/L	.04	.04	0.042	0.040	94	90	70-130	4	20	
Thallium	mg/L	<2.0 ug/L	.04	.04	0.037	0.036	91	90	70-130	2	20	

MATRIX SPIKE SAMPLE: 1986103

Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.000077J	.04	0.036	90	70-130	
Arsenic	mg/L	0.00098J	.04	0.038	93	70-130	
Cadmium	mg/L	<0.000018	.04	0.033	83	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

MATRIX SPIKE SAMPLE: 1986103

Parameter	Units	60247926001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.00052J	.04	0.034	83	70-130	
Molybdenum	mg/L	0.011	.04	0.049	96	70-130	
Selenium	mg/L	<0.000086	.04	0.035	88	70-130	
Thallium	mg/L	0.000057J	.04	0.033	83	70-130	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 484210 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1983434 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/06/17 16:11	

LABORATORY CONTROL SAMPLE: 1983435

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

SAMPLE DUPLICATE: 1983436

Parameter	Units	60248024001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	440	434	1	10	

SAMPLE DUPLICATE: 1983437

Parameter	Units	60247926001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	688	690	0	10	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 484080 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60247926001, 60247926002

SAMPLE DUPLICATE: 1982984

Parameter	Units	60247546002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	0	5	H6

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 486562 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1992836 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.10	0.20	07/22/17 15:31	

LABORATORY CONTROL SAMPLE: 1992837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1992838 1992839

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.35	2.5	2.5	3.0	3.0	106	107	80-120	1	15	

MATRIX SPIKE SAMPLE: 1992840

Parameter	Units	60247861002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.31	2.5	2.5	87	80-120	

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 486575 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1993281 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	1.0	07/23/17 12:34	
Sulfate	mg/L	<0.50	1.0	07/23/17 12:34	

LABORATORY CONTROL SAMPLE: 1993282

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1993283 1993284

Parameter	Units	60247861001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	49.7	25	25	76.2	76.5	106	107	80-120	0	15	
Sulfate	mg/L	93.1	25	25	120	120	107	106	80-120	0	15	

MATRIX SPIKE SAMPLE: 1993285

Parameter	Units	60247861002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	35.6	25	61.0	102	80-120	
Sulfate	mg/L	247	100	360	114	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Sample: FAA-3-070317 **Lab ID: 60247926001** Collected: 07/03/17 10:46 Received: 07/04/17 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0688 ± 0.314 (0.639) C:NA T:86%**	pCi/L	07/17/17 12:41	13982-63-3	
Radium-228	EPA 904.0	**0.222 ± 0.420 (0.922) C:78% T:77%**	pCi/L	07/19/17 18:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.291 ± 0.734 (1.56)**	pCi/L	07/20/17 16:51	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Sample: FAA-2-070317 **Lab ID: 60247926002** Collected: 07/03/17 11:55 Received: 07/04/17 06:25 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0615 ± 0.280 (0.452) C:NA T:96%**	pCi/L	07/17/17 12:41	13982-63-3	
Radium-228	EPA 904.0	**0.887 ± 0.506 (0.919) C:80% T:82%**	pCi/L	07/19/17 18:39	15262-20-1	
Total Radium	Total Radium Calculation	**0.949 ± 0.786 (1.37)**	pCi/L	07/20/17 16:51	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 264358 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1301994 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.062 ± 0.285 (0.671) C:NA T:92%	pCi/L	07/17/17 12:04	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

QC Batch: 264520 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60247926001, 60247926002

METHOD BLANK: 1302880 Matrix: Water
Associated Lab Samples: 60247926001, 60247926002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	1.14 ± 0.453 (0.704) C:80% T:79%	pCi/L	07/19/17 11:38	1e

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

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 (%)

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TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

1e	Ra-228 activity in the MB is greater than the associated MDC and RL of 1.0 pCi/L. Samples with activity results below their sample specific MDC or the RL are reportable without qualification.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H3	Sample was received or analysis requested beyond the recognized method holding time.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60247926

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60247926001	**FAA-3-070317**	EPA 200.7	484970	EPA 200.7	485208
60247926002	**FAA-2-070317**	EPA 200.7	484970	EPA 200.7	485208
60247926001	**FAA-3-070317**	EPA 200.8	484967	EPA 200.8	485209
60247926002	**FAA-2-070317**	EPA 200.8	484967	EPA 200.8	485209
60247926001	**FAA-3-070317**	EPA 245.1	485719	EPA 245.1	485787
60247926002	**FAA-2-070317**	EPA 245.1	485719	EPA 245.1	485787
60247926001	**FAA-3-070317**	EPA 903.1	264358		
60247926002	**FAA-2-070317**	EPA 903.1	264358		
60247926001	**FAA-3-070317**	EPA 904.0	264520		
60247926002	**FAA-2-070317**	EPA 904.0	264520		
60247926001	**FAA-3-070317**	Total Radium Calculation	265757		
60247926002	**FAA-2-070317**	Total Radium Calculation	265757		
60247926001	**FAA-3-070317**	SM 2540C	484210		
60247926002	**FAA-2-070317**	SM 2540C	484210		
60247926001	**FAA-3-070317**	SM 4500-H+B	484080		
60247926002	**FAA-2-070317**	SM 4500-H+B	484080		
60247926001	**FAA-3-070317**	EPA 300.0	486562		
60247926001	**FAA-3-070317**	EPA 300.0	486575		
60247926002	**FAA-2-070317**	EPA 300.0	486562		
60247926002	**FAA-2-070317**	EPA 300.0	486575		

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Sample Condition Upon Receipt

WO# : 60247926

60247926

Client Name: Weston

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

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

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

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

Thermometer Used: CF +2.9 T-266 / CF +0.2 T-239 **Type of Ice:** (Wet) Blue None

BB lot 7/4/17

Cooler Temperature (°C): **As-read** 5.4 **Corr. Factor** CF +2.9 (CF +0.2) **Corrected** 5.6

Date and initials of person examining contents:

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) ☐N/A	☐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: [signature] Date: 7/5/17

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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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC CCR Groundwater	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9657, 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

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	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other
1	FAA-3-070317	WT	G			7/3	1046		4	1		3					
2	FAA-2-070317	WT	G			7/3	1155		4	1		3					
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	

Requested Analysis Filtered (Y/N)

ITEM #	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. 6024 7926
1									BP2N			3BP1N			001
2									↓			2BP1N			BP2N 002
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	[signature] / Westar	7/3/17	1330	[signature]	7/4/17	0625	5.6	Y	Y	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 07/03/17

*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

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Workorder: 60247926 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 7/4/2017 **Results Requested By:** 7/26/2017

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#: 30223453

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	FAA-3-070317	PS	7/3/2017 10:46	60247926001	Water	2	X	X	001
2	FAA-2-070317	PS	7/3/2017 11:55	60247926002	Water	2	X	X	002
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1		7/5/17 1700	Ashley Hall/Pace	7-6-17 0950
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 # 30223453

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

Label AM

Tracking #: 7285 6593 7895

LIMS Login AM

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: AMR 7-6-17

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			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			15. PHL2
				Initial when completed AMR 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: AMR Date: 7-6-17

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.

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

August 10, 2017

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

RE: Project: JEC CCR Groundwater
Pace Project No.: 60248973

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 19, 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

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

CERTIFICATIONS

Project: JEC CCR Groundwater
Pace Project No.: 60248973

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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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60248973001	**FAA-6-071817**	Water	07/18/17 10:43	07/19/17 08:35

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60248973001	**FAA-6-071817**	EPA 200.7	JGP	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 10, 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: 487074

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60248973001

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

- MSD (Lab ID: 1994911)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 10, 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.

QC Batch: 487056

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 7570332001

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

- MSD (Lab ID: 1994804)
  - Molybdenum

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 10, 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.

QC Batch: 486931

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60248730001,60249386003

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

- MS (Lab ID: 1994331)
  - Mercury

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 10, 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: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 10, 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: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 10, 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: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 10, 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.

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 10, 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.
- FAA-6-071817 (Lab ID: 60248973001)

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: JEC CCR Groundwater
Pace Project No.: 60248973

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 10, 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.

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: JEC CCR Groundwater
Pace Project No.: 60248973

Sample: FAA-6-071817 **Lab ID: 60248973001** Collected: 07/18/17 10:43 Received: 07/19/17 08:35 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.067**	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:16	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/26/17 12:10	08/09/17 12:16	7440-41-7	
Boron, Total Recoverable	**2.9**	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:16	7440-42-8	
Calcium, Total Recoverable	**137**	mg/L	0.10	1	07/26/17 12:10	08/09/17 12:16	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:16	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/26/17 12:10	08/09/17 12:16	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	07/26/17 12:10	08/09/17 12:16	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	07/26/17 12:10	08/03/17 16:47	7440-36-0	
Arsenic, Total Recoverable	**0.0056**	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/26/17 12:10	08/03/17 16:47	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:47	7440-48-4	
Molybdenum, Total Recoverable	**0.55**	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/26/17 12:10	08/03/17 16:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/25/17 17:15	07/26/17 16:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2300**	mg/L	5.0	1		07/20/17 13:31		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		07/21/17 17:13		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**64.3**	mg/L	5.0	5		08/05/17 20:25	16887-00-6	
Fluoride	**0.74**	mg/L	0.20	1		08/04/17 20:02	16984-48-8	
Sulfate	**1360**	mg/L	200	200		08/05/17 20:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 486931 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60248973001

METHOD BLANK: 1994327 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/26/17 15:23	

LABORATORY CONTROL SAMPLE: 1994328

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0048	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994329 1994330

Parameter	Units	60248730001 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	0.0049	0.0050	98	100	70-130	2	20	

MATRIX SPIKE SAMPLE: 1994331

Parameter	Units	60249386003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0024	47	70-130	M1

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 487074
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60248973001

METHOD BLANK: 1994908 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/09/17 12:09	
Beryllium	mg/L	<0.0010	0.0010	08/09/17 12:09	
Boron	mg/L	<0.10	0.10	08/09/17 12:09	
Calcium	mg/L	<0.10	0.10	08/09/17 12:09	
Chromium	mg/L	<0.0050	0.0050	08/09/17 12:09	
Lead	mg/L	<0.0050	0.0050	08/09/17 12:09	
Lithium	mg/L	<0.010	0.010	08/09/17 12:09	

LABORATORY CONTROL SAMPLE: 1994909

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.93	93	85-115	
Beryllium	mg/L	1	0.94	94	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.5	95	85-115	
Chromium	mg/L	1	0.95	95	85-115	
Lead	mg/L	1	0.99	99	85-115	
Lithium	mg/L	1	0.96	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994910 1994911

Parameter	Units	60248973001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.067	1	1	1.1	0.99	106	92	70-130	13	20	
Beryllium	mg/L	<0.0010	1	1	1.0	0.95	103	95	70-130	8	20	
Boron	mg/L	2.9	1	1	4.1	3.8	115	85	70-130	8	20	
Calcium	mg/L	137	10	10	144	143	75	57	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.98	0.95	98	95	70-130	3	20	
Lead	mg/L	<0.0050	1	1	0.97	0.93	97	92	70-130	5	20	
Lithium	mg/L	0.012	1	1	1.1	1.0	114	101	70-130	11	20	

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 487056
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60248973001

METHOD BLANK: 1994801 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/28/17 13:09	
Arsenic	mg/L	<0.0010	0.0010	07/28/17 13:09	
Cadmium	mg/L	<0.00050	0.00050	07/28/17 13:09	
Cobalt	mg/L	<0.0010	0.0010	07/28/17 13:09	
Molybdenum	mg/L	<0.0010	0.0010	07/28/17 13:09	
Selenium	mg/L	<0.0010	0.0010	07/28/17 13:09	
Thallium	mg/L	<0.0010	0.0010	07/28/17 13:09	

LABORATORY CONTROL SAMPLE: 1994802

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	96	85-115	
Cobalt	mg/L	.04	0.039	98	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.039	96	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1994803 1994804

Parameter	Units	7570332001 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	0.040	0.040	98	98	70-130	0	20	
Arsenic	mg/L	3.1 ug/L	.04	.04	0.042	0.042	97	97	70-130	0	20	
Cadmium	mg/L	ND	.04	.04	0.035	0.035	88	87	70-130	1	20	
Cobalt	mg/L	79.4 ug/L	.04	.04	0.12	0.12	95	102	70-130	2	20	
Molybdenum	mg/L	919 ug/L	.04	.04	0.95	0.98	80	151	70-130	3	20	M1
Selenium	mg/L	0.024	.04	.04	0.060	0.062	90	94	70-130	3	20	
Thallium	mg/L	ND	.04	.04	0.033	0.033	82	81	70-130	1	20	

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 486350 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60248973001

METHOD BLANK: 1991663 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/20/17 13:28	

LABORATORY CONTROL SAMPLE: 1991664

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	975	97	80-120	

SAMPLE DUPLICATE: 1991665

Parameter	Units	60249032001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	847	822	3	10	

SAMPLE DUPLICATE: 1991667

Parameter	Units	60248961006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	284	268	6	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 486539
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60248973001

SAMPLE DUPLICATE: 1992577

Parameter	Units	60249041003 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: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 488423
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60248973001

METHOD BLANK: 1999945
Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	08/04/17 14:10	

LABORATORY CONTROL SAMPLE: 1999946

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	

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QUALITY CONTROL DATA

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 488537 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60248973001

METHOD BLANK: 2000532 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/05/17 16:58	
Sulfate	mg/L	<1.0	1.0	08/05/17 16:58	

LABORATORY CONTROL SAMPLE: 2000533

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2000534 2000535

Parameter	Units	60249497001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	428	250	250	670	667	97	95	80-120	0	15	

MATRIX SPIKE SAMPLE: 2000536

Parameter	Units	60249555023 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	29.8	25	54.3	98	80-120	
Sulfate	mg/L	38.5	25	62.4	96	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60248973

Sample: FAA-6-071817 **Lab ID: 60248973001** Collected: 07/18/17 10:43 Received: 07/19/17 08:35 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.121 ± 0.375 (0.726) C:NA T:106%**	pCi/L	08/02/17 12:36	13982-63-3	
Radium-228	EPA 904.0	**0.0706 ± 0.309 (0.701) C:81% T:89%**	pCi/L	08/02/17 14:42	15262-20-1	
Total Radium	Total Radium Calculation	**0.192 ± 0.684 (1.43)**	pCi/L	08/04/17 12:01	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 265794 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60248973001

METHOD BLANK: 1308981 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.452 ± 0.339 (0.175) C:NA T:101%	pCi/L	08/02/17 12:36	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR Groundwater
Pace Project No.: 60248973

QC Batch: 265795 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60248973001

METHOD BLANK: 1308982 Matrix: Water
Associated Lab Samples: 60248973001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.00716 ± 0.281 (0.654) C:82% T:89%	pCi/L	08/02/17 11:09	

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QUALIFIERS

Project: JEC CCR Groundwater
Pace Project No.: 60248973

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 (%)

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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: JEC CCR Groundwater
Pace Project No.: 60248973

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60248973001	**FAA-6-071817**	EPA 200.7	487074	EPA 200.7	487127
60248973001	**FAA-6-071817**	EPA 200.8	487056	EPA 200.8	487128
60248973001	**FAA-6-071817**	EPA 245.1	486931	EPA 245.1	487027
60248973001	**FAA-6-071817**	EPA 903.1	265794		
60248973001	**FAA-6-071817**	EPA 904.0	265795		
60248973001	**FAA-6-071817**	Total Radium Calculation	267345		
60248973001	**FAA-6-071817**	SM 2540C	486350		
60248973001	**FAA-6-071817**	SM 4500-H+B	486539		
60248973001	**FAA-6-071817**	EPA 300.0	488423		
60248973001	**FAA-6-071817**	EPA 300.0	488537		

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Sample Condition Upon Receipt

WO# : 60248973

60248973

Client Name: Westar Energy

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

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

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

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

Thermometer Used: T-266 (CF +2.9) / T-239 (CF +0.2) **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.4 **Corr. Factor** CF +2.9 CF +0.2 **Corrected** 3.6

Date and initials of person examining contents: PV 7/19/17

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: 7/19/17

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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:	JEC 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 #:	9657, 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

Requested Analysis Filtered (Y/N)

Pace Project No./ Lab I.D.: 60248973

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	FAA-6-071817	WT	G			7/18	1043		4	1		3																1BP/U 3BP/N2-0/001
2																												
3																												
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	7/18/17	1145	[signature] PASI	7/19/17	0835	3.6	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: [signature] DATE Signed (MM/DD/YY): 07/18/17

*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: 60248973 **Workorder Name:** JEC CCR Groundwater **Owner Received Date:** 7/19/2017 **Results Requested By:** 8/10/2017

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-228	Requested Analysis: Radium-226 & Total Radium	LAB USE ONLY
1	FAA-6-071817	PS	7/18/2017 10:43	60248973001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	7/19/17 1700	[signature]	7/20/17 1005
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.*

WO#:30224688

Sample Condition Upon Receipt Pittsburgh

Face Analytical

30224688

Client Name: PACE, KS Project #

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

Label ZH

LIMS Login AM

Tracking #: 772856594691

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

Thermometer Used Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: ZH 7/20/17

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: 7/20/17

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.

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

August 21, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 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: JEC CCR GROUNDWATER
Pace Project No.: 60249711

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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Lenexa, KS 66219
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SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60249711001	**FAA-6-072717**	Water	07/27/17 15:52	07/28/17 08:00

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60249711001	**FAA-6-072717**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	JMC1	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 21, 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: 487830

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001

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

- MS (Lab ID: 1997598)
  - Calcium
- MSD (Lab ID: 1997599)
  - Calcium

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 21, 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
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 21, 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.

QC Batch: 490179

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001,60249708002

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

- MS (Lab ID: 2006567)
  - Mercury
- MS (Lab ID: 2006569)
  - Mercury
- MSD (Lab ID: 2006568)
  - Mercury

Additional Comments:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 21, 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
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 21, 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: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 21, 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
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 21, 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.

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 21, 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.
- FAA-6-072717 (Lab ID: 60249711001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 21, 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.

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: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Sample: FAA-6-072717 **Lab ID: 60249711001** Collected: 07/27/17 15:52 Received: 07/28/17 08:00 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.059**	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:39	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/31/17 16:51	08/13/17 15:39	7440-41-7	
Boron, Total Recoverable	**2.4**	mg/L	0.10	1	07/31/17 16:51	08/13/17 15:39	7440-42-8	
Calcium, Total Recoverable	**135**	mg/L	0.10	1	07/31/17 16:51	08/13/17 15:39	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:39	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/31/17 16:51	08/13/17 15:39	7439-92-1	
Lithium	**0.011**	mg/L	0.010	1	07/31/17 16:51	08/13/17 15:39	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7440-36-0	
Arsenic, Total Recoverable	**0.0055**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/31/17 10:19	08/03/17 17:32	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7440-48-4	
Molybdenum, Total Recoverable	**0.50**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/31/17 10:19	08/03/17 17:32	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/16/17 19:00	08/17/17 09:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2390**	mg/L	5.0	1		08/02/17 15:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/03/17 11:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**64.8**	mg/L	5.0	5		08/13/17 16:59	16887-00-6	
Fluoride	**0.76**	mg/L	0.20	1		08/12/17 21:17	16984-48-8	
Sulfate	**1320**	mg/L	200	200		08/13/17 17:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 490179 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60249711001

METHOD BLANK: 2006565 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	08/17/17 09:18	

LABORATORY CONTROL SAMPLE: 2006566

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0052	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2006567 2006568

Parameter	Units	60249708001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.000024	.005	.005	0.0027	0.0027	54	54	70-130	1	20	M1

MATRIX SPIKE SAMPLE: 2006569

Parameter	Units	60249708002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.000024	.005	0.0025	50	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.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 487830
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60249711001

METHOD BLANK: 1997596 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/13/17 15:20	
Beryllium	mg/L	<0.0010	0.0010	08/13/17 15:20	
Boron	mg/L	<0.10	0.10	08/13/17 15:20	
Calcium	mg/L	<0.10	0.10	08/13/17 15:20	
Chromium	mg/L	<0.0050	0.0050	08/13/17 15:20	
Lead	mg/L	<0.0050	0.0050	08/13/17 15:20	
Lithium	mg/L	<0.010	0.010	08/13/17 15:20	

LABORATORY CONTROL SAMPLE: 1997597

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Beryllium	mg/L	1	1.0	102	85-115	
Boron	mg/L	1	0.97	97	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	104	85-115	
Lithium	mg/L	1	1.1	108	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1997598 1997599

Parameter	Units	60249708001 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	1.2	100	104	70-130	4	20	
Beryllium	mg/L	<0.00016	1	1	0.98	1.0	98	104	70-130	6	20	
Boron	mg/L	1.8	1	1	2.8	2.8	98	105	70-130	3	20	
Calcium	mg/L	480	10	10	508	587	280	1070	70-130	15	20	M1
Chromium	mg/L	0.0015J	1	1	1.0	1.0	101	103	70-130	1	20	
Lead	mg/L	<0.0048	1	1	0.89	0.90	89	90	70-130	1	20	
Lithium	mg/L	0.42	1	1	1.5	1.5	111	105	70-130	5	20	

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REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 487637
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60249711001

METHOD BLANK: 1997155 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/01/17 10:32	
Arsenic	mg/L	<0.0010	0.0010	08/01/17 10:32	
Cadmium	mg/L	<0.00050	0.00050	08/01/17 10:32	
Cobalt	mg/L	<0.0010	0.0010	08/01/17 10:32	
Molybdenum	mg/L	<0.0010	0.0010	08/01/17 10:32	
Selenium	mg/L	<0.0010	0.0010	08/01/17 10:32	
Thallium	mg/L	<0.0010	0.0010	08/01/17 10:32	

LABORATORY CONTROL SAMPLE: 1997156

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	100	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.040	99	85-115	
Molybdenum	mg/L	.04	0.040	100	85-115	
Selenium	mg/L	.04	0.039	97	85-115	
Thallium	mg/L	.04	0.036	91	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1997157 1997158

Parameter	Units	60249776001 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	0.040	0.040	97	98	70-130	1	20	
Arsenic	mg/L	57.9 ug/L	.04	.04	0.099	0.099	103	102	70-130	1	20	
Cadmium	mg/L	ND	.04	.04	0.038	0.038	95	94	70-130	2	20	
Cobalt	mg/L	7.3 ug/L	.04	.04	0.046	0.046	96	96	70-130	1	20	
Molybdenum	mg/L	ND	.04	.04	0.042	0.042	102	103	70-130	0	20	
Selenium	mg/L	ND	.04	.04	0.038	0.041	94	100	70-130	6	20	
Thallium	mg/L	ND	.04	.04	0.036	0.037	90	91	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 488160 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60249711001

METHOD BLANK: 1998724 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/02/17 15:27	

LABORATORY CONTROL SAMPLE: 1998725

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

SAMPLE DUPLICATE: 1998726

Parameter	Units	60249753001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	686	697	2	10	

SAMPLE DUPLICATE: 1998727

Parameter	Units	60249753005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	666	656	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 488220 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60249711001

SAMPLE DUPLICATE: 1999035

Parameter	Units	60249711001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.5	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 489572 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60249711001

METHOD BLANK: 2004274 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	08/12/17 15:58	

LABORATORY CONTROL SAMPLE: 2004275

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

MATRIX SPIKE SAMPLE: 2004278

Parameter	Units	60250635001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.98	2.5	3.4	96	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 489607
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60249711001

METHOD BLANK: 2004586 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/13/17 14:37	
Sulfate	mg/L	<1.0	1.0	08/13/17 14:37	

LABORATORY CONTROL SAMPLE: 2004587

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	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2004588 2004589

Parameter	Units	60250738001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.4J	10	10	10.8	10.8	94	95	80-120	0	15	
Sulfate	mg/L	32.2	10	10	42.0	41.9	98	97	80-120	0	15	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Sample: FAA-6-072717 **Lab ID: 60249711001** Collected: 07/27/17 15:52 Received: 07/28/17 08:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.599 ± 0.346 (0.135) C:NA T:95%**	pCi/L	08/16/17 10:46	13982-63-3	
Radium-228	EPA 904.0	**-0.0840 ± 0.206 (0.513) C:81% T:86%**	pCi/L	08/11/17 15:22	15262-20-1	
Total Radium	Total Radium Calculation	**0.599 ± 0.552 (0.648)**	pCi/L	08/21/17 12:03	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 267153 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60249711001

METHOD BLANK: 1315208 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.593 ± 0.503 (0.624) C:NA T:95%	pCi/L	08/16/17 10:12	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

QC Batch: 267154 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60249711001

METHOD BLANK: 1315209 Matrix: Water
Associated Lab Samples: 60249711001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.545 ± 0.365 (0.699) C:77% T:82%	pCi/L	08/11/17 15:20	

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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QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

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.

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249711

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60249711001	**FAA-6-072717**	EPA 200.7	487830	EPA 200.7	487911
60249711001	**FAA-6-072717**	EPA 200.8	487637	EPA 200.8	487864
60249711001	**FAA-6-072717**	EPA 245.1	490179	EPA 245.1	490214
60249711001	**FAA-6-072717**	EPA 903.1	267153		
60249711001	**FAA-6-072717**	EPA 904.0	267154		
60249711001	**FAA-6-072717**	Total Radium Calculation	268953		
60249711001	**FAA-6-072717**	SM 2540C	488160		
60249711001	**FAA-6-072717**	SM 4500-H+B	488220		
60249711001	**FAA-6-072717**	EPA 300.0	488540		
60249711001	**FAA-6-072717**	EPA 300.0	489572		
60249711001	**FAA-6-072717**	EPA 300.0	489607		

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Sample Condition Upon Receipt

WO# : 60249711

60249711

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 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 1.4

Date and initials of person examining contents: PW 7/28/17

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	Collection date on containers is 7/27
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: [signature] Date: 7/28/17

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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: JEC 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 #: 9657, 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	FAA-6-072717	WT	G			6/27	1552		4	1		3														60249711
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

1BP1U 3BP1N 2O 001

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	7/27/17	1600		7/28/17	0900	1.4	X	X	X
**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): 07/27/17				

*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
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Workorder: 60249711 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 7/28/2017 **Results Requested By:** 8/21/2017

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#: 30225846

30225846

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	FAA-6-072717	PS	7/27/2017 15:52	60249711001	Water	1	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1		7/31/17 1700		8/1/17 0955
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

30225846

Face Analytical

Client Name: PACE, KS Project #

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

Label ZH
LIMS Login AMC

Tracking #: Born

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals Intact: ☐ yes ☐ no

Thermometer Used Type of Ice: Wet Blue (None)

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and Initials of person examining contents: ZH 8/1/17

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:	✓			5.
-Includes date/time/ID Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered				12.
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: 8/1/17

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 1-10
August 2017 Sampling Event
Laboratory Analytical Report

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

August 23, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 02, 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: JEC CCR GROUNDWATER
Pace Project No.: 60249958

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: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60249958001	**FAA-6-080117**	Water	08/01/17 11:38	08/02/17 08:55

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60249958001	**FAA-6-080117**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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Lenexa, KS 66219
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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 23, 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: 488235

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249958001

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

- MS (Lab ID: 1999072)
  - Calcium

Additional Comments:

Analyte Comments:

QC Batch: 488235

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

- FAA-6-080117 (Lab ID: 60249958001)
  - Beryllium, Total Recoverable
  - Lithium

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 23, 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
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 23, 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.

QC Batch: 490179

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60249708001,60249708002

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

- MS (Lab ID: 2006567)
  - Mercury
- MS (Lab ID: 2006569)
  - Mercury
- MSD (Lab ID: 2006568)
  - Mercury

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 23, 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:

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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 23, 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.
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 23, 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
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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 23, 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.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 23, 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.
- FAA-6-080117 (Lab ID: 60249958001)

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 23, 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.

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: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Sample: FAA-6-080117 **Lab ID: 60249958001** Collected: 08/01/17 11:38 Received: 08/02/17 08:55 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	0.010	2	08/03/17 09:59	08/22/17 16:11	7440-39-3	
Beryllium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	08/03/17 09:59	08/22/17 16:11	7440-41-7	D3
Boron, Total Recoverable	**3.0**	mg/L	0.10	1	08/03/17 09:59	08/13/17 15:48	7440-42-8	
Calcium, Total Recoverable	**141**	mg/L	0.20	2	08/03/17 09:59	08/22/17 16:11	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/03/17 09:59	08/13/17 15:48	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/03/17 09:59	08/13/17 15:48	7439-92-1	
Lithium	**<0.020**	mg/L	0.020	2	08/03/17 09:59	08/22/17 16:11	7439-93-2	D3
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7440-36-0	
Arsenic, Total Recoverable	**0.0060**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/03/17 09:59	08/08/17 10:47	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7440-48-4	
Molybdenum, Total Recoverable	**0.59**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/03/17 09:59	08/08/17 10:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/16/17 19:00	08/17/17 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2370**	mg/L	5.0	1		08/07/17 14:11		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		08/07/17 08:04		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**63.6**	mg/L	5.0	5		08/07/17 00:07	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	1		08/06/17 00:00	16984-48-8	
Sulfate	**1400**	mg/L	200	200		08/07/17 00:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 490179
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 60249958001

METHOD BLANK: 2006565 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	08/17/17 09:18	

LABORATORY CONTROL SAMPLE: 2006566

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0052	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2006567 2006568

Parameter	Units	60249708001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.000024	.005	.005	0.0027	0.0027	54	54	70-130	1	20	M1

MATRIX SPIKE SAMPLE: 2006569

Parameter	Units	60249708002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.000024	.005	0.0025	50	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
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488235
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60249958001

METHOD BLANK: 1999070
Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/13/17 15:44	
Beryllium	mg/L	<0.0010	0.0010	08/13/17 15:44	
Boron	mg/L	<0.10	0.10	08/13/17 15:44	
Calcium	mg/L	<0.10	0.10	08/13/17 15:44	
Chromium	mg/L	<0.0050	0.0050	08/13/17 15:44	
Lead	mg/L	<0.0050	0.0050	08/13/17 15:44	
Lithium	mg/L	<0.010	0.010	08/13/17 15:44	

LABORATORY CONTROL SAMPLE: 1999071

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.97	97	85-115	
Beryllium	mg/L	1	1.1	107	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.8	98	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	1.1	106	85-115	
Lithium	mg/L	1	1.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1999072 1999073

Parameter	Units	60249958001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.066	1	1	1.1	1.1	103	101	70-130	1	20	
Beryllium	mg/L	<0.0020	1	1	1.1	1.0	105	104	70-130	1	20	
Boron	mg/L	3.0	1	1	3.8	3.8	82	82	70-130	0	20	
Calcium	mg/L	141	10	10	154	151	133	103	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	1.1	1.0	110	101	70-130	8	20	
Lead	mg/L	<0.0050	1	1	0.96	0.94	96	94	70-130	1	20	
Lithium	mg/L	<0.020	1	1	1.1	1.0	105	103	70-130	1	20	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488237
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60249958001

METHOD BLANK: 1999079 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/08/17 10:40	
Arsenic	mg/L	<0.0010	0.0010	08/08/17 10:40	
Cadmium	mg/L	<0.00050	0.00050	08/08/17 10:40	
Cobalt	mg/L	<0.0010	0.0010	08/08/17 10:40	
Molybdenum	mg/L	<0.0010	0.0010	08/08/17 10:40	
Selenium	mg/L	<0.0010	0.0010	08/08/17 10:40	
Thallium	mg/L	<0.0010	0.0010	08/08/17 10:40	

LABORATORY CONTROL SAMPLE: 1999080

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.040	99	85-115	
Cadmium	mg/L	.04	0.040	99	85-115	
Cobalt	mg/L	.04	0.040	100	85-115	
Molybdenum	mg/L	.04	0.041	102	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1999081 1999082

Parameter	Units	60249985001 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	0.038	96	96	70-130	0	20	
Arsenic	mg/L	<0.0010	.04	.04	0.041	0.041	100	100	70-130	0	20	
Cadmium	mg/L	<0.00050	.04	.04	0.036	0.036	90	89	70-130	0	20	
Cobalt	mg/L	0.0013	.04	.04	0.039	0.039	95	94	70-130	1	20	
Molybdenum	mg/L	0.071	.04	.04	0.11	0.11	110	110	70-130	0	20	
Selenium	mg/L	<0.0010	.04	.04	0.036	0.037	90	91	70-130	1	20	
Thallium	mg/L	<0.0010	.04	.04	0.043	0.043	106	106	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

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488701 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60249958001

METHOD BLANK: 2000988 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/07/17 14:08	

LABORATORY CONTROL SAMPLE: 2000989

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

SAMPLE DUPLICATE: 2000990

Parameter	Units	60250086001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	469	480	2	10	

SAMPLE DUPLICATE: 2000991

Parameter	Units	60250164001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	831	825	1	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
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488359
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60249958001

SAMPLE DUPLICATE: 1999600

Parameter	Units	60250049002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	7.9	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

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488540 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60249958001

METHOD BLANK: 2000546 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	08/05/17 17:38	

LABORATORY CONTROL SAMPLE: 2000547

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 488592 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60249958001

METHOD BLANK: 2000742 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/06/17 20:14	
Sulfate	mg/L	<1.0	1.0	08/06/17 20:14	

LABORATORY CONTROL SAMPLE: 2000743

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: 2000744 2000745

Parameter	Units	60249708001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	14300	5000	5000	20000	19800	115	111	80-120	1	15	
Sulfate	mg/L	619	500	500	1070	1080	90	93	80-120	1	15	

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

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Sample: FAA-6-080117 **Lab ID: 60249958001** Collected: 08/01/17 11:38 Received: 08/02/17 08:55 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0604 ± 0.276 (0.445) C:NA T:97%**	pCi/L	08/15/17 22:50	13982-63-3	
Radium-228	EPA 904.0	**0.0678 ± 0.487 (1.11) C:80% T:87%**	pCi/L	08/16/17 15:49	15262-20-1	
Total Radium	Total Radium Calculation	**0.128 ± 0.763 (1.56)**	pCi/L	08/23/17 11:20	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 267280 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60249958001

METHOD BLANK: 1315748 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.340 ± 0.313 (0.184) C:NA T:93%	pCi/L	08/15/17 22:33	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

QC Batch: 267282 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60249958001

METHOD BLANK: 1315755 Matrix: Water
Associated Lab Samples: 60249958001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.892 ± 0.367 (0.576) C:77% T:96%	pCi/L	08/16/17 11:37	

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

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

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

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60249958

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60249958001	**FAA-6-080117**	EPA 200.7	488235	EPA 200.7	488322
60249958001	**FAA-6-080117**	EPA 200.8	488237	EPA 200.8	488321
60249958001	**FAA-6-080117**	EPA 245.1	490179	EPA 245.1	490214
60249958001	**FAA-6-080117**	EPA 903.1	267280		
60249958001	**FAA-6-080117**	EPA 904.0	267282		
60249958001	**FAA-6-080117**	Total Radium Calculation	269244		
60249958001	**FAA-6-080117**	SM 2540C	488701		
60249958001	**FAA-6-080117**	SM 4500-H+B	488359		
60249958001	**FAA-6-080117**	EPA 300.0	488540		
60249958001	**FAA-6-080117**	EPA 300.0	488592		

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www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60249958

60249958

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 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 5.0 **Corr. Factor** (CF 0.0) CF +0.3 **Corrected** 5.0

Date and initials of person examining contents: 8/2/17 TJ

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	HNO3
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	
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: 8/2/17

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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC CCR Groundwater	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9657, 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

ITEM #	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	FAA-6-080117	WT	G			8/1	1138		4	1		3														60249958 3BP1N 3P1U 001
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*200.7 Total Metals: Ba, Be, B, Ca, Cr, Pb, Li	Westar	8/1/17	1300	Jamie Burrell pace	8/2/17	0855	5.0	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):	08/01/17				

*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: 60249958 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 8/2/2017 **Results Requested By:** 8/24/2017

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-228	Requested Analysis: Radium-226 & Total Radium	LAB USE ONLY
1	FAA-6-080117	PS	8/1/2017 11:38	60249958001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] 8/2/17	1700	[signature]	8/3/17 0955
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.*

WO#:30226151

30226151

Sample Condition Upon Receipt Pittsburgh

30226151

Pace Analytical

Client Name: PACE, KS Project #

Courier: ~~Fed Ex~~ UPS USPS Client Commercial Pace Other

Label 2.H

Tracking #: 772856951421

LIMS Login AMV

Custody Seal on Cooler/Box Present: yes ~~no~~ Seals Intact: ~~yes~~ no

Thermometer Used Type of Ice: Wet Blue None

Cooler Temperature Observed Temp — °C Correction Factor: — °C Final Temp: — °C

Temp should be above freezing to 6°C

Date and initials of person examining contents: ZH 8/3/17

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:	✓			5.
-Includes date/time/ID Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered				12.
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: 8/3/17

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.

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

August 31, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

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: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60250360001	**FAA-6-080717**	Water	08/07/17 13:55	08/08/17 07:20

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SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60250360001	**FAA-6-080717**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	JMC1	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: August 31, 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: 490028

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60250784001

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

- MS (Lab ID: 2005870)
  - Calcium
- MSD (Lab ID: 2005871)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: August 31, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: August 31, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 31, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 31, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 31, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: August 31, 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.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: August 31, 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.
- FAA-6-080717 (Lab ID: 60250360001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: August 31, 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.

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Sample: FAA-6-080717 **Lab ID: 60250360001** Collected: 08/07/17 13:55 Received: 08/08/17 07:20 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	**0.067**	mg/L	0.0050	1	08/16/17 09:53	08/17/17 17:25	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/16/17 09:53	08/17/17 17:25	7440-41-7	
Boron, Total Recoverable	**3.1**	mg/L	0.10	1	08/16/17 09:53	08/17/17 17:25	7440-42-8	
Calcium, Total Recoverable	**140**	mg/L	0.10	1	08/16/17 09:53	08/17/17 17:25	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/16/17 09:53	08/17/17 17:25	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/16/17 09:53	08/17/17 17:25	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	08/16/17 09:53	08/17/17 17:25	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	08/09/17 17:03	08/10/17 16:10	7440-36-0	
Arsenic, Total Recoverable	**0.0060**	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:10	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/09/17 17:03	08/10/17 16:10	7440-43-9	
Cobalt, Total Recoverable	**0.0015**	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:10	7440-48-4	
Molybdenum, Total Recoverable	**0.58**	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:10	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:10	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/09/17 17:03	08/10/17 16:10	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/17 11:40	08/29/17 16:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2390**	mg/L	5.0	1		08/09/17 14:47		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/09/17 09:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.0**	mg/L	5.0	5		08/30/17 14:01	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	1		08/29/17 23:17	16984-48-8	
Sulfate	**1380**	mg/L	250	250		08/30/17 15:17	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 491873 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60250360001

METHOD BLANK: 2013080 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	08/29/17 16:08	

LABORATORY CONTROL SAMPLE: 2013081

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: 2013082 2013083

Parameter	Units	60251349001 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	0.0051	0.0052	102	103	70-130	2	20	

MATRIX SPIKE SAMPLE: 2013084

Parameter	Units	60251349002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0052	104	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 490028
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60250360001

METHOD BLANK: 2005868
Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/17/17 17:13	
Beryllium	mg/L	<0.0010	0.0010	08/17/17 17:13	
Boron	mg/L	<0.10	0.10	08/17/17 17:13	
Calcium	mg/L	<0.10	0.10	08/17/17 17:13	
Chromium	mg/L	<0.0050	0.0050	08/17/17 17:13	
Lead	mg/L	<0.0050	0.0050	08/17/17 17:13	
Lithium	mg/L	<0.010	0.010	08/17/17 17:13	

LABORATORY CONTROL SAMPLE: 2005869

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	1.0	101	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2005870 2005871

Parameter	Units	60250784001 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	103	70-130	2	20	
Beryllium	mg/L	<0.00016	1	1	0.99	1.0	99	101	70-130	2	20	
Boron	mg/L	1.9	1	1	2.9	2.9	98	95	70-130	1	20	
Calcium	mg/L	532	10	10	524	516	-81	-160	70-130	2	20	M1
Chromium	mg/L	<0.0014	1	1	1.0	1.0	101	103	70-130	2	20	
Lead	mg/L	0.0050J	1	1	0.90	0.90	89	90	70-130	0	20	
Lithium	mg/L	0.43	1	1	1.6	1.6	112	113	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 489217
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60250360001

METHOD BLANK: 2002653 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/10/17 14:24	
Arsenic	mg/L	<0.0010	0.0010	08/10/17 14:24	
Cadmium	mg/L	<0.00050	0.00050	08/10/17 14:24	
Cobalt	mg/L	<0.0010	0.0010	08/10/17 14:24	
Molybdenum	mg/L	<0.0010	0.0010	08/10/17 14:24	
Selenium	mg/L	<0.0010	0.0010	08/10/17 14:24	
Thallium	mg/L	<0.0010	0.0010	08/10/17 14:24	

LABORATORY CONTROL SAMPLE: 2002654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.039	99	85-115	
Cobalt	mg/L	.04	0.041	101	85-115	
Molybdenum	mg/L	.04	0.041	104	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.041	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2002655 2002656

Parameter	Units	60250510001 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	0.040	98	99	70-130	2	20	
Arsenic	mg/L	11.4 ug/L	.04	.04	0.052	0.053	102	104	70-130	2	20	
Cadmium	mg/L	ND	.04	.04	0.039	0.039	98	98	70-130	0	20	
Cobalt	mg/L	ND	.04	.04	0.043	0.043	100	100	70-130	0	20	
Molybdenum	mg/L	ND	.04	.04	0.042	0.042	104	104	70-130	0	20	
Selenium	mg/L	ND	.04	.04	0.040	0.040	98	98	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.039	0.040	96	98	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 489132 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60250360001

METHOD BLANK: 2002352 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/09/17 14:36	

LABORATORY CONTROL SAMPLE: 2002353

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

SAMPLE DUPLICATE: 2002354

Parameter	Units	60250346001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	851	868	2	10	

SAMPLE DUPLICATE: 2002355

Parameter	Units	60250343001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	880	860	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 489010
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60250360001

SAMPLE DUPLICATE: 2001784

Parameter	Units	60250317001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.5	6.5	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 491643
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60250360001

METHOD BLANK: 2012453 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/29/17 22:16	
Fluoride	mg/L	<0.20	0.20	08/29/17 22:16	
Sulfate	mg/L	<1.0	1.0	08/29/17 22:16	

LABORATORY CONTROL SAMPLE: 2012454

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.7	108	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2012455 2012456

Parameter	Units	60250360001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	66.0	25	25	95.2	95.1	117	116	80-120	0	15	
Fluoride	mg/L	0.81	2.5	2.5	3.3	3.4	100	103	80-120	2	15	
Sulfate	mg/L	1380	1250	1250	2610	2610	99	99	80-120	0	15	

MATRIX SPIKE SAMPLE: 2012457

Parameter	Units	2059121002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	2.5	2.8	112	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: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Sample: FAA-6-080717 **Lab ID: 60250360001** Collected: 08/07/17 13:55 Received: 08/08/17 07:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.130 ± 0.404 (0.783) C:NA T:102%**	pCi/L	08/19/17 13:08	13982-63-3	
Radium-228	EPA 904.0	**0.235 ± 0.311 (0.662) C:75% T:89%**	pCi/L	08/21/17 11:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.365 ± 0.715 (1.45)**	pCi/L	08/23/17 15:26	7440-14-4	

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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 267988 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60250360001

METHOD BLANK: 1318833 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.617 ± 0.409 (0.788) C:79% T:80%	pCi/L	08/21/17 11:40	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

QC Batch: 267982 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60250360001

METHOD BLANK: 1318829 Matrix: Water
Associated Lab Samples: 60250360001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0630 ± 0.371 (0.757) C:NA T:107%	pCi/L	08/19/17 12:14	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60250360

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60250360001	**FAA-6-080717**	EPA 200.7	490028	EPA 200.7	490117
60250360001	**FAA-6-080717**	EPA 200.8	489217	EPA 200.8	489263
60250360001	**FAA-6-080717**	EPA 245.1	491873	EPA 245.1	492022
60250360001	**FAA-6-080717**	EPA 903.1	267982		
60250360001	**FAA-6-080717**	EPA 904.0	267988		
60250360001	**FAA-6-080717**	Total Radium Calculation	269344		
60250360001	**FAA-6-080717**	SM 2540C	489132		
60250360001	**FAA-6-080717**	SM 4500-H+B	489010		
60250360001	**FAA-6-080717**	EPA 300.0	491643		

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60250360

60250360

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 0.0 / CF +0.3 T-266 / T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 0.1 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 0.1

Date and initials of person examining contents: PVG 8/8/17

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	pH
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	~~excessive volume received; entire 1L for in-house metals analyses.~~ - not excessive volume AMW 8/8/17
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: ~~soil~~ WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? PVG 8/8/17 (HNO3, H2SO4, 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: 8/8/17

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:	JEC 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 #:	9657, 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 #	Section D Required Client Information (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	FAA-6-080717	WT	G			8/7	1355		4	1		3														60250360
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

Pace Project No./ Lab I.D.: IBP14 3BP1N 20 ml

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	BJJ / Westar	8/7/17	1600		8/8/17	0720	0.1	Y	X	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: BJJ

DATE Signed (MM/DD/YY): 08/07/17

*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.

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60250360 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 8/8/2017 **Results Requested By:** 8/30/2017

Report To

Heather Wilson
Pace Analytical Kansas
9608 Loiret Blvd.
Lenexa, KS 66219
Phone 1(913)563-1407

Subcontract To

Pace Analytical Pittsburgh
1638 Roseytown Road
Suites 2,3, & 4
Greensburg, PA 15601
Phone (724)850-5600

Requested Analysis

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Radium-228	Radium-226 & Total Radium	LAB USE ONLY
1	FAA-6-080717	PS	8/7/2017 13:55	60250360001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	8/8/17 1700	[signature]	8/9/17 0955
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.

WO#:30226674

Sample Condition Upon Receipt Pittsburgh

Face Analytical

Client Name: PACE, KS

Project # 30226674

Label GPC
LIMS Login AMV

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

Tracking #: 772856595419 7

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 8/9/17

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: 8/9/17

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.

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

September 11, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 17, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

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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(913)599-5665

SAMPLE SUMMARY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251119001	**FAA-6-081617**	Water	08/16/17 14:22	08/17/17 07:50
60251119002	**DUP-081617**	Water	08/16/17 06:00	08/17/17 07:50

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251119001	**FAA-6-081617**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60251119002	**DUP-081617**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	NSM	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	HMM	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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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-081617 (Lab ID: 60251119002)
- FAA-6-081617 (Lab ID: 60251119001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 11, 2017

General Information:
2 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: 493302

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251775001

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

- MS (Lab ID: 2018407)
  - Sulfate

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Sample: FAA-6-081617 **Lab ID: 60251119001** Collected: 08/16/17 14:22 Received: 08/17/17 07:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.065**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 18:09	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/25/17 12:14	08/28/17 18:09	7440-41-7	
Boron, Total Recoverable	**2.9**	mg/L	0.10	1	08/25/17 12:14	08/28/17 18:09	7440-42-8	
Calcium, Total Recoverable	**141**	mg/L	0.10	1	08/25/17 12:14	08/28/17 18:09	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 18:09	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 18:09	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	08/25/17 12:14	08/28/17 18:09	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	08/23/17 15:28	08/28/17 16:59	7440-36-0	
Arsenic, Total Recoverable	**0.0059**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 16:59	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/23/17 15:28	08/28/17 16:59	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 16:59	7440-48-4	
Molybdenum, Total Recoverable	**0.57**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 16:59	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 16:59	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 16:59	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/06/17 16:45	09/07/17 12:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2330**	mg/L	5.0	1		08/18/17 09:09		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/18/17 12:47		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**69.0**	mg/L	5.0	5		09/08/17 09:22	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	1		09/06/17 19:22	16984-48-8	
Sulfate	**1450**	mg/L	200	200		09/08/17 09:37	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Sample: DUP-081617 **Lab ID: 60251119002** Collected: 08/16/17 06:00 Received: 08/17/17 07:50 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.061**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:21	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/25/17 12:14	08/28/17 17:21	7440-41-7	
Boron, Total Recoverable	**3.1**	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:21	7440-42-8	
Calcium, Total Recoverable	**139**	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:21	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:21	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:21	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	08/25/17 12:14	08/28/17 17:21	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7440-36-0	
Arsenic, Total Recoverable	**0.0065**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/23/17 15:28	08/28/17 17:06	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7440-48-4	
Molybdenum, Total Recoverable	**0.62**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/23/17 15:28	08/28/17 17:06	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/06/17 16:45	09/07/17 13:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2330**	mg/L	5.0	1		08/18/17 09:10		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/18/17 12:48		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**67.9**	mg/L	5.0	5		09/08/17 09:52	16887-00-6	
Fluoride	**0.89**	mg/L	0.20	1		09/06/17 19:37	16984-48-8	
Sulfate	**1530**	mg/L	200	200		09/08/17 10:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 492993 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 2017225 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/07/17 12:52	

LABORATORY CONTROL SAMPLE: 2017226

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2017227 2017228

Parameter	Units	60251119001 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	0.0049	0.0048	97	95	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 491466
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60251119002

METHOD BLANK: 2011490 Matrix: Water
Associated Lab Samples: 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/28/17 17:03	
Beryllium	mg/L	<0.0010	0.0010	08/28/17 17:03	
Boron	mg/L	<0.10	0.10	08/28/17 17:03	
Calcium	mg/L	<0.10	0.10	08/28/17 17:03	
Chromium	mg/L	<0.0050	0.0050	08/28/17 17:03	
Lead	mg/L	<0.0050	0.0050	08/28/17 17:03	
Lithium	mg/L	<0.010	0.010	08/28/17 17:03	

LABORATORY CONTROL SAMPLE: 2011491

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	100	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	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: 2011492 2011493

Parameter	Units	60250872002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	244 ug/L	1	1	1.3	1.3	106	102	70-130	3	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Boron	mg/L	484 ug/L	1	1	1.5	1.5	104	100	70-130	3	20	
Calcium	mg/L	54900 ug/L	10	10	67.7	65.9	127	110	70-130	3	20	
Chromium	mg/L	ND	1	1	1.0	0.99	102	98	70-130	4	20	
Lead	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Lithium	mg/L	21.7 ug/L	1	1	1.1	1.0	103	101	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 491467
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60251119001

METHOD BLANK: 2011494 Matrix: Water
Associated Lab Samples: 60251119001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/28/17 17:47	
Beryllium	mg/L	<0.0010	0.0010	08/28/17 17:47	
Boron	mg/L	<0.10	0.10	08/28/17 17:47	
Calcium	mg/L	<0.10	0.10	08/28/17 17:47	
Chromium	mg/L	<0.0050	0.0050	08/28/17 17:47	
Lead	mg/L	<0.0050	0.0050	08/28/17 17:47	
Lithium	mg/L	<0.010	0.010	08/28/17 17:47	

LABORATORY CONTROL SAMPLE: 2011495

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	100	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.5	95	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2011496 2011497

Parameter	Units	60250975002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	5.9 ug/L	1	1	1.0	1.0	102	103	70-130	1	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	100	101	70-130	1	20	
Boron	mg/L	136 ug/L	1	1	1.1	1.1	101	98	70-130	2	20	
Calcium	mg/L	16500 ug/L	10	10	26.3	26.7	98	102	70-130	1	20	
Chromium	mg/L	ND	1	1	1.0	1.0	102	100	70-130	2	20	
Lead	mg/L	ND	1	1	1.0	1.0	101	101	70-130	1	20	
Lithium	mg/L	ND	1	1	1.0	1.0	101	102	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 491169
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 2010358 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/28/17 15:43	
Arsenic	mg/L	<0.0010	0.0010	08/28/17 15:43	
Cadmium	mg/L	<0.00050	0.00050	08/28/17 15:43	
Cobalt	mg/L	<0.0010	0.0010	08/28/17 15:43	
Molybdenum	mg/L	<0.0010	0.0010	08/28/17 15:43	
Selenium	mg/L	<0.0010	0.0010	08/28/17 15:43	
Thallium	mg/L	<0.0010	0.0010	08/28/17 15:43	

LABORATORY CONTROL SAMPLE: 2010359

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2010360 2010361

Parameter	Units	60250784001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.00013	.04	.04	0.037	0.036	91	89	70-130	3	20	
Arsenic	mg/L	0.00092J	.04	.04	0.036	0.036	88	87	70-130	1	20	
Cadmium	mg/L	<0.000089	.04	.04	0.032	0.031	80	79	70-130	2	20	
Cobalt	mg/L	0.0038J	.04	.04	0.039	0.038	87	86	70-130	1	20	
Molybdenum	mg/L	0.0048J	.04	.04	0.048	0.048	109	107	70-130	1	20	
Selenium	mg/L	<0.00043	.04	.04	0.030	0.031	75	77	70-130	4	20	
Thallium	mg/L	<0.00018	.04	.04	0.033	0.033	83	81	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 490385 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 2007444 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/18/17 08:57	

LABORATORY CONTROL SAMPLE: 2007445

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	988	99	80-120	

SAMPLE DUPLICATE: 2007446

Parameter	Units	60251157001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	621	599	4	10	

SAMPLE DUPLICATE: 2007447

Parameter	Units	60251157015 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	371	375	1	10	

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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: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 490368 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60251119001, 60251119002

SAMPLE DUPLICATE: 2007330

Parameter	Units	60251056001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.7	8.7	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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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 492909 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 2016940 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/06/17 18:51	

LABORATORY CONTROL SAMPLE: 2016941

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE SAMPLE: 2016944

Parameter	Units	60251775002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.52	2.5	3.1	105	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

QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 493302 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 2018405 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/08/17 08:52	
Sulfate	mg/L	<1.0	1.0	09/08/17 08:52	

LABORATORY CONTROL SAMPLE: 2018406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2018407 2018408

Parameter	Units	60251775001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	31.7	50	50	82.5	81.3	102	99	80-120	2	15	
Sulfate	mg/L	142	50	50	203	197	121	110	80-120	3	15	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.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Sample: FAA-6-081617 **Lab ID: 60251119001** Collected: 08/16/17 14:22 Received: 08/17/17 07:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.529 ± 0.522 (0.794) C:NA T:82%**	pCi/L	08/29/17 20:47	13982-63-3	
Radium-228	EPA 904.0	**0.401 ± 0.374 (0.760) C:75% T:77%**	pCi/L	08/31/17 16:19	15262-20-1	
Total Radium	Total Radium Calculation	**0.930 ± 0.896 (1.55)**	pCi/L	09/05/17 12:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Sample: DUP-081617 **Lab ID: 60251119002** Collected: 08/16/17 06:00 Received: 08/17/17 07:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.428 ± 0.551 (0.917) C:NA T:89%**	pCi/L	08/29/17 20:47	13982-63-3	
Radium-228	EPA 904.0	**0.617 ± 0.373 (0.689) C:75% T:86%**	pCi/L	08/31/17 16:19	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 0.924 (1.61)**	pCi/L	09/05/17 12:59	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 269145 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 1324788 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.560 ± 0.480 (0.650) C:NA T:80%	pCi/L	08/29/17 20:30	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

QC Batch: 269257 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60251119001, 60251119002

METHOD BLANK: 1325053 Matrix: Water
Associated Lab Samples: 60251119001, 60251119002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.427 ± 0.337 (0.668) C:79% T:86%	pCi/L	08/31/17 16:17	

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

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(913)599-5665

QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251119

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251119001	**FAA-6-081617**	EPA 200.7	491467	EPA 200.7	491544
60251119002	**DUP-081617**	EPA 200.7	491466	EPA 200.7	491538
60251119001	**FAA-6-081617**	EPA 200.8	491169	EPA 200.8	491198
60251119002	**DUP-081617**	EPA 200.8	491169	EPA 200.8	491198
60251119001	**FAA-6-081617**	EPA 245.1	492993	EPA 245.1	493149
60251119002	**DUP-081617**	EPA 245.1	492993	EPA 245.1	493149
60251119001	**FAA-6-081617**	EPA 903.1	269145		
60251119002	**DUP-081617**	EPA 903.1	269145		
60251119001	**FAA-6-081617**	EPA 904.0	269257		
60251119002	**DUP-081617**	EPA 904.0	269257		
60251119001	**FAA-6-081617**	Total Radium Calculation	270486		
60251119002	**DUP-081617**	Total Radium Calculation	270486		
60251119001	**FAA-6-081617**	SM 2540C	490385		
60251119002	**DUP-081617**	SM 2540C	490385		
60251119001	**FAA-6-081617**	SM 4500-H+B	490368		
60251119002	**DUP-081617**	SM 4500-H+B	490368		
60251119001	**FAA-6-081617**	EPA 300.0	492909		
60251119001	**FAA-6-081617**	EPA 300.0	493302		
60251119002	**DUP-081617**	EPA 300.0	492909		
60251119002	**DUP-081617**	EPA 300.0	493302		

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60251119

60251119

Client Name: WR Star 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 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 3.6 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 3.0

Temperature should be above freezing to 6°C

Date and initials of person examining contents: PVS 8/17/17

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: 8/17/17

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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:	JEC 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 #:	9657, 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 #	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	WT	G			8/16	1422		4	1		3															60251119 1BPH4 3BPINZO A1
2																										
3	WT	G			8/16	0600		4	1		3															" " A2
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	BJJ / Westar	8/16/17	1600		8/17	0750	3-0	Y	Y	X
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BJJ

DATE Signed (MM/DD/YY): 08/16/17

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

Pace Analytical®
www.pacelabs.com

Workorder: 60251119 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 8/17/2017 **Results Requested By:** 9/11/2017

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-228	Requested Analysis: Radium-226 & Total Radium										LAB USE ONLY
1	FAA-6-081617	PS	8/16/2017 14:22	60251119001	Water	2						X	X										001
2	DUP-081617	PS	8/16/2017 06:00	60251119002	Water	2						X	X										002
3																							
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	8/17/17 1250	[signature]	8/17/17 1000
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.

WO#:30227610

30227610

Sample Condition Upon Receipt Pittsburgh

Pace Analytical

Client Name: PACE, KS Project #

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

Label ANL

Tracking #: 772856595896 LIMS Login ANL

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 8/18/17

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: 8/18/17

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.

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

September 18, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

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: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251634001	**FAA-6-082317**	Water	08/23/17 13:13	08/24/17 07:09

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

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251634001	**FAA-6-082317**	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	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 18, 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.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 18, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 18, 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.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 18, 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.
- FAA-6-082317 (Lab ID: 60251634001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 18, 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.

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Sample: FAA-6-082317 **Lab ID: 60251634001** Collected: 08/23/17 13:13 Received: 08/24/17 07:09 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	**0.065**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:32	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/25/17 12:14	08/28/17 17:32	7440-41-7	
Boron, Total Recoverable	**2.9**	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:32	7440-42-8	
Calcium, Total Recoverable	**143**	mg/L	0.10	1	08/25/17 12:14	08/28/17 17:32	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:32	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/25/17 12:14	08/28/17 17:32	7439-92-1	
Lithium	**0.011**	mg/L	0.010	1	08/25/17 12:14	08/28/17 17:32	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	08/26/17 10:43	08/28/17 17:57	7440-36-0	
Arsenic, Total Recoverable	**0.0054**	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:57	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/26/17 10:43	08/28/17 17:57	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:57	7440-48-4	
Molybdenum, Total Recoverable	**0.53**	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:57	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:57	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/26/17 10:43	08/28/17 17:57	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/13/17 16:05	09/14/17 12:18	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2330**	mg/L	5.0	1		08/26/17 15:34		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		08/26/17 14:44		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.2**	mg/L	5.0	5		09/13/17 12:57	16887-00-6	
Fluoride	**0.81**	mg/L	0.20	1		09/12/17 18:52	16984-48-8	
Sulfate	**1350**	mg/L	100	100		09/13/17 13:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 494071 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60251634001

METHOD BLANK: 2021073 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/14/17 12:07	

LABORATORY CONTROL SAMPLE: 2021074

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0051	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2021075 2021076

Parameter	Units	60251633001 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	0.0042	0.0044	85	88	70-130	4	20	

MATRIX SPIKE SAMPLE: 2021077

Parameter	Units	60252592002 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: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 491466
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60251634001

METHOD BLANK: 2011490 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/28/17 17:03	
Beryllium	mg/L	<0.0010	0.0010	08/28/17 17:03	
Boron	mg/L	<0.10	0.10	08/28/17 17:03	
Calcium	mg/L	<0.10	0.10	08/28/17 17:03	
Chromium	mg/L	<0.0050	0.0050	08/28/17 17:03	
Lead	mg/L	<0.0050	0.0050	08/28/17 17:03	
Lithium	mg/L	<0.010	0.010	08/28/17 17:03	

LABORATORY CONTROL SAMPLE: 2011491

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	100	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.98	98	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: 2011492 2011493

Parameter	Units	60250872002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	244 ug/L	1	1	1.3	1.3	106	102	70-130	3	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Boron	mg/L	484 ug/L	1	1	1.5	1.5	104	100	70-130	3	20	
Calcium	mg/L	54900 ug/L	10	10	67.7	65.9	127	110	70-130	3	20	
Chromium	mg/L	ND	1	1	1.0	0.99	102	98	70-130	4	20	
Lead	mg/L	ND	1	1	1.0	1.0	103	100	70-130	3	20	
Lithium	mg/L	21.7 ug/L	1	1	1.1	1.0	103	101	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 491610
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60251634001

METHOD BLANK: 2012290 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/28/17 17:32	
Arsenic	mg/L	<0.0010	0.0010	08/28/17 17:32	
Cadmium	mg/L	<0.00050	0.00050	08/28/17 17:32	
Cobalt	mg/L	<0.0010	0.0010	08/28/17 17:32	
Molybdenum	mg/L	<0.0010	0.0010	08/28/17 17:32	
Selenium	mg/L	<0.0010	0.0010	08/28/17 17:32	
Thallium	mg/L	<0.0010	0.0010	08/28/17 17:32	

LABORATORY CONTROL SAMPLE: 2012291

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2012292 2012293

Parameter	Units	60251633001 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	0.038	93	94	70-130	1	20	
Arsenic	mg/L	<0.0010	.04	.04	0.040	0.040	97	98	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.035	0.035	86	87	70-130	1	20	
Cobalt	mg/L	0.0013	.04	.04	0.037	0.038	90	91	70-130	1	20	
Molybdenum	mg/L	0.074	.04	.04	0.12	0.12	108	111	70-130	1	20	
Selenium	mg/L	<0.0010	.04	.04	0.037	0.037	91	92	70-130	0	20	
Thallium	mg/L	<0.0010	.04	.04	0.035	0.035	88	88	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 491618 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60251634001

METHOD BLANK: 2012388 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/26/17 15:28	

LABORATORY CONTROL SAMPLE: 2012389

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	984	98	80-120	

SAMPLE DUPLICATE: 2012392

Parameter	Units	60251710001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	15700	16000	2	10	

SAMPLE DUPLICATE: 2012393

Parameter	Units	60251710004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	19000	19000	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 491501 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60251634001

SAMPLE DUPLICATE: 2011638

Parameter	Units	60251559001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.8	5.8	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 493864 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251634001

METHOD BLANK: 2020308 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/12/17 15:38	

LABORATORY CONTROL SAMPLE: 2020309

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.3	91	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2020310 2020311

Parameter	Units	60252175001 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	125	125	129	125	103	100	80-120	3	15	

MATRIX SPIKE SAMPLE: 2020312

Parameter	Units	60252175002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	125	127	101	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 493957 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251634001

METHOD BLANK: 2020640 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/13/17 11:43	
Sulfate	mg/L	<1.0	1.0	09/13/17 11:43	

LABORATORY CONTROL SAMPLE: 2020641

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2020642 2020643

Parameter	Units	60252145005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.4	25	25	28.9	29.0	94	95	80-120	0	15	
Sulfate	mg/L	38.3	25	25	64.0	63.8	103	102	80-120	0	15	

MATRIX SPIKE SAMPLE: 2020644

Parameter	Units	60252145006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	17.6	10	27.7	100	80-120	
Sulfate	mg/L	20.1	10	30.8	107	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: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Sample: FAA-6-082317 **Lab ID: 60251634001** Collected: 08/23/17 13:13 Received: 08/24/17 07:09 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.358 ± 0.703 (1.26) C:NA T:71%**	pCi/L	09/05/17 22:30	13982-63-3	
Radium-228	EPA 904.0	**0.222 ± 0.384 (0.837) C:75% T:67%**	pCi/L	09/07/17 15:58	15262-20-1	
Total Radium	Total Radium Calculation	**0.580 ± 1.09 (2.10)**	pCi/L	09/10/17 12:52	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 269996 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60251634001

METHOD BLANK: 1328673 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.209 ± 0.410 (0.750) C:NA T:87%	pCi/L	09/05/17 21:41	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

QC Batch: 270008 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60251634001

METHOD BLANK: 1328710 Matrix: Water
Associated Lab Samples: 60251634001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.475 ± 0.397 (0.799) C:78% T:78%	pCi/L	09/07/17 15:57	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251634

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: JEC CCR GROUNDWATER
Pace Project No.: 60251634

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251634001	**FAA-6-082317**	EPA 200.7	491466	EPA 200.7	491538
60251634001	**FAA-6-082317**	EPA 200.8	491610	EPA 200.8	491629
60251634001	**FAA-6-082317**	EPA 245.1	494071	EPA 245.1	494160
60251634001	**FAA-6-082317**	EPA 903.1	269996		
60251634001	**FAA-6-082317**	EPA 904.0	270008		
60251634001	**FAA-6-082317**	Total Radium Calculation	271118		
60251634001	**FAA-6-082317**	SM 2540C	491618		
60251634001	**FAA-6-082317**	SM 4500-H+B	491501		
60251634001	**FAA-6-082317**	EPA 300.0	493864		
60251634001	**FAA-6-082317**	EPA 300.0	493957		

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Sample Condition Upon Receipt

WO# : 60251634

60251634

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 0.0) T-266 / CF +0.3 T-239 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.8 **Corr. Factor** (CF 0.0) CF +0.3 **Corrected** 1.8

Date and initials of person examining contents: pv 8/24/17

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): pv 8/24	☑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? (HNO3, H2SO4, 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: 8/24/17

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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	Jared Morrison
Address:	818 Kansas Ave	Copy To:	Jared Morrison, Heath Hornya	Company Name:	WESTAR ENERGY
	Topeka, KS 66612			Address:	SEE SECTION A
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC CCR Groundwater	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	7 DAY	Project Number:		Pace Profile #:	9657, 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 #	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	Y/N	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.
1	WT	G			8/23	1313		4	1		3															60251634
2																										
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

1BP1U 3BP1N a1

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	8/23/17	1415		8/24/17	0709	1-8	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): 08/23/17

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

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

Chain of Custody

Pace Analytical®
www.pacelabs.com

Workorder: 60251634 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 8/24/2017 **Results Requested By:** 9/18/2017

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#:30228488

30228488

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	FAA-6-082317	PS	8/23/2017 13:13	60251634001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	8/24/17 1700	[signature]	8/24/17 1030
2				
3				

Comments

Cooler Temperature on Receipt 2.1A °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.*

Pittsburgh Lab Sample Condition Upon Receipt

30228488

Pace Analytical

Client Name: PACE, IKS Project # _____

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

Label ZH
LIMS Login AMV

Tracking #: 772856596198?

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 8/29/17

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.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16. 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):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: ZH; Date: 8/29/17

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.

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

September 21, 2017

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

RE: Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 29, 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

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

CERTIFICATIONS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

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: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60251947001	**FAA-6-082817**	Water	08/28/17 14:48	08/29/17 07:05

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60251947001	**FAA-6-082817**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	JRS	1	PASI-K
		EPA 903.1	WRR	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	RMK	1	PASI-PA
		SM 2540C	JSS	1	PASI-K
		SM 4500-H+B	HMM	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 21, 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: 491981

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251805001

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

- MS (Lab ID: 2013432)
  - Calcium
- MSD (Lab ID: 2013433)
  - Calcium

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 21, 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.

QC Batch: 491980

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60251805002

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

- MS (Lab ID: 2013426)
  - Antimony
  - Arsenic
  - Cadmium
  - Cobalt
  - Selenium
- MSD (Lab ID: 2013427)
  - Antimony
  - Arsenic
  - Cadmium
  - Cobalt
  - Selenium

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 21, 2017

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 21, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 21, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 21, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 21, 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:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 21, 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.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 21, 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.
- FAA-6-082817 (Lab ID: 60251947001)

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: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 21, 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.

Additional Comments:

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

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ANALYTICAL RESULTS

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Sample: FAA-6-082817 **Lab ID: 60251947001** Collected: 08/28/17 14:48 Received: 08/29/17 07:05 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	**0.065**	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/29/17 12:19	08/30/17 14:27	7440-41-7	
Boron, Total Recoverable	**2.6**	mg/L	0.10	1	08/29/17 12:19	08/30/17 14:27	7440-42-8	
Calcium, Total Recoverable	**136**	mg/L	0.10	1	08/29/17 12:19	08/30/17 14:27	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:27	7440-47-3	
Lead, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/29/17 12:19	08/30/17 14:27	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	08/29/17 12:19	08/30/17 14:27	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7440-36-0	
Arsenic, Total Recoverable	**0.0051**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/29/17 12:19	09/05/17 11:49	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7440-48-4	
Molybdenum, Total Recoverable	**0.48**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7439-98-7	
Selenium, Total Recoverable	**0.0011**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/29/17 12:19	09/05/17 11:49	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/18/17 12:44	09/18/17 16:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2340**	mg/L	5.0	1		08/29/17 10:51		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/30/17 12:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**66.8**	mg/L	5.0	5		09/20/17 11:00	16887-00-6	
Fluoride	**0.80**	mg/L	0.20	1		09/19/17 16:09	16984-48-8	
Sulfate	**1390**	mg/L	100	100		09/20/17 11:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 494528
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 60251947001

METHOD BLANK: 2023233 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/18/17 15:57	

LABORATORY CONTROL SAMPLE: 2023234

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0054	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2023235 2023236

Parameter	Units	60251947001 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	0.0049	0.0051	98	101	70-130	3	20	

MATRIX SPIKE SAMPLE: 2023237

Parameter	Units	60253227001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0051	100	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 491981
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60251947001

METHOD BLANK: 2013430 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/30/17 14:00	
Beryllium	mg/L	<0.0010	0.0010	08/30/17 14:00	
Boron	mg/L	<0.10	0.10	08/30/17 14:00	
Calcium	mg/L	<0.10	0.10	08/30/17 14:00	
Chromium	mg/L	<0.0050	0.0050	08/30/17 14:00	
Lead	mg/L	<0.0050	0.0050	08/30/17 14:00	
Lithium	mg/L	<0.010	0.010	08/30/17 14:00	

LABORATORY CONTROL SAMPLE: 2013431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.99	99	85-115	
Beryllium	mg/L	1	0.99	99	85-115	
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	0.98	98	85-115	
Lead	mg/L	1	1.0	103	85-115	
Lithium	mg/L	1	0.99	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2013432 2013433

Parameter	Units	60251805001 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	1.2	1.2	106	105	70-130	1	20	
Beryllium	mg/L	<0.00033	1	1	1.0	1.0	104	102	70-130	2	20	
Boron	mg/L	1.8	1	1	2.9	2.8	109	98	70-130	4	20	
Calcium	mg/L	537	10	10	539	528	24	-87	70-130	2	20	M1
Chromium	mg/L	<0.0014	1	1	1.0	0.98	103	98	70-130	5	20	
Lead	mg/L	0.0028J	1	1	0.89	0.91	89	91	70-130	2	20	
Lithium	mg/L	0.54	1	1	1.8	1.7	124	119	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 491980
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 60251947001

METHOD BLANK: 2013424 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	09/05/17 11:42	
Arsenic	mg/L	<0.0010	0.0010	09/05/17 11:42	
Cadmium	mg/L	<0.00050	0.00050	09/05/17 11:42	
Cobalt	mg/L	<0.0010	0.0010	09/05/17 11:42	
Molybdenum	mg/L	<0.0010	0.0010	09/05/17 11:42	
Selenium	mg/L	<0.0010	0.0010	09/05/17 11:42	
Thallium	mg/L	<0.0010	0.0010	09/05/17 11:42	

LABORATORY CONTROL SAMPLE: 2013425

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2013426 2013427

Parameter	Units	60251805002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.00011J	.04	.04	0.027	0.027	67	67	70-130	0	20	M1
Arsenic	mg/L	0.0022	.04	.04	0.027	0.027	63	63	70-130	1	20	M1
Cadmium	mg/L	<0.000018	.04	.04	0.022	0.022	55	55	70-130	0	20	M1
Cobalt	mg/L	0.0072	.04	.04	0.034	0.034	67	67	70-130	0	20	M1
Molybdenum	mg/L	0.0074	.04	.04	0.042	0.041	86	84	70-130	2	20	
Selenium	mg/L	<0.000086	.04	.04	0.022	0.022	55	55	70-130	1	20	M1
Thallium	mg/L	<0.00018	.04	.04	0.035	0.035	87	88	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 491906 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60251947001

METHOD BLANK: 2013226 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/29/17 09:32	

LABORATORY CONTROL SAMPLE: 2013227

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	977	98	80-120	

SAMPLE DUPLICATE: 2013228

Parameter	Units	60251761003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	468	467	0	10	

SAMPLE DUPLICATE: 2013229

Parameter	Units	60251856007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	159	162	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 492191
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60251947001

SAMPLE DUPLICATE: 2014091

Parameter	Units	60251920001 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: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 494740 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251947001

METHOD BLANK: 2023778 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/19/17 15:40	

LABORATORY CONTROL SAMPLE: 2023779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.3	93	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 494891 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60251947001

METHOD BLANK: 2024673 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/20/17 10:02	
Sulfate	mg/L	<1.0	1.0	09/20/17 10:02	

LABORATORY CONTROL SAMPLE: 2024674

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2024675 2024676

Parameter	Units	7573568001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	17.8	10	10	27.5	27.5	98	97	80-120	0	15	

MATRIX SPIKE SAMPLE: 2024677

Parameter	Units	60252961001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	802	500	1340	108	80-120	
Sulfate	mg/L	1430	500	2000	115	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Sample: FAA-6-082817 **Lab ID: 60251947001** Collected: 08/28/17 14:48 Received: 08/29/17 07:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.162 ± 0.382 (0.707) C:NA T:88%**	pCi/L	09/11/17 13:00	13982-63-3	
Radium-228	EPA 904.0	**0.710 ± 0.431 (0.798) C:72% T:85%**	pCi/L	09/13/17 14:57	15262-20-1	
Total Radium	Total Radium Calculation	**0.872 ± 0.813 (1.51)**	pCi/L	09/19/17 17:10	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 270146 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60251947001

METHOD BLANK: 1329311 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.456 ± 0.437 (0.897) C:77% T:69%	pCi/L	09/13/17 14:56	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

QC Batch: 270142 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60251947001

METHOD BLANK: 1329307 Matrix: Water
Associated Lab Samples: 60251947001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.475 ± 0.377 (0.490) C:NA T:89%	pCi/L	09/11/17 12:19	

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: JEC CCR GROUNDWATER
Pace Project No.: 60251947

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.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC CCR GROUNDWATER
Pace Project No.: 60251947

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60251947001	**FAA-6-082817**	EPA 200.7	491981	EPA 200.7	492041
60251947001	**FAA-6-082817**	EPA 200.8	491980	EPA 200.8	492040
60251947001	**FAA-6-082817**	EPA 245.1	494528	EPA 245.1	494640
60251947001	**FAA-6-082817**	EPA 903.1	270142		
60251947001	**FAA-6-082817**	EPA 904.0	270146		
60251947001	**FAA-6-082817**	Total Radium Calculation	272308		
60251947001	**FAA-6-082817**	SM 2540C	491906		
60251947001	**FAA-6-082817**	SM 4500-H+B	492191		
60251947001	**FAA-6-082817**	EPA 300.0	494740		
60251947001	**FAA-6-082817**	EPA 300.0	494891		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60251947

60251947

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 0.0 T-266 / CF +0.3 T-239 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.7 **Corr. Factor** CF 0.0 CF +0.3 **Corrected** 1.7

Date and initials of person examining contents: PS 8/29/17

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: [signature] Date: 8/29/17

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:	JEC 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 #:	9657, 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	FAA-6-082817	WT	G			8/28	1448		4	1		3															60251947
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

Pace Project No./ Lab I.D. (row 1): 1BAN 3BAN20 01

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	8/28/17	1600		8/29	0705	1.7	X	X	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): 08/28/17

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

Pace Analytical®
www.pacelabs.com

Workorder: 60251947 **Workorder Name:** JEC CCR GROUNDWATER **Owner Received Date:** 8/29/2017 **Results Requested By:** 9/21/2017

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

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	FAA-6-082817	PS	8/28/2017 14:48	60251947001	Water	2	X	X	001
2									
3									
4									
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1		8/29 1600		8/30/17 0950
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.*

WO#:30228604

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PACE, KS Project # 30228604

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

Label ZH
LIMS Login AMV

Tracking #: 728563963973

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 8/30/17

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:	✓			5.
-Includes date/time/ID Matrix: WT				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation.	✓			16.
All containers needing preservation are found to be in compliance with EPA recommendation.	✓			pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed: ZH Date/time of preservation
				Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		initial when completed: ZH Date: 8/30/17

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
Groundwater Potentiometric Maps

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), AUGUST 2016

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 19 AUGUST 2016.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 19 AUGUST 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP AUGUST 19, 2016

evergy

NOVEMBER 2022

FIGURE 2

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2016

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 21 SEPTEMBER 2016.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 21 SEPTEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 21, 2016

evergy

NOVEMBER 2022

FIGURE 3

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), NOVEMBER 2016

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 02 NOVEMBER 2016.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 02 NOVEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP NOVEMBER 2, 2016

evergy

NOVEMBER 2022

FIGURE 4

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), DECEMBER 2016

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 DECEMBER 2016.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 14 DECEMBER 2016 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP DECEMBER 14, 2016

evergy

NOVEMBER 2022

FIGURE 5

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), FEBRUARY 2017

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 08 FEBRUARY 2017.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 08 FEBRUARY 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

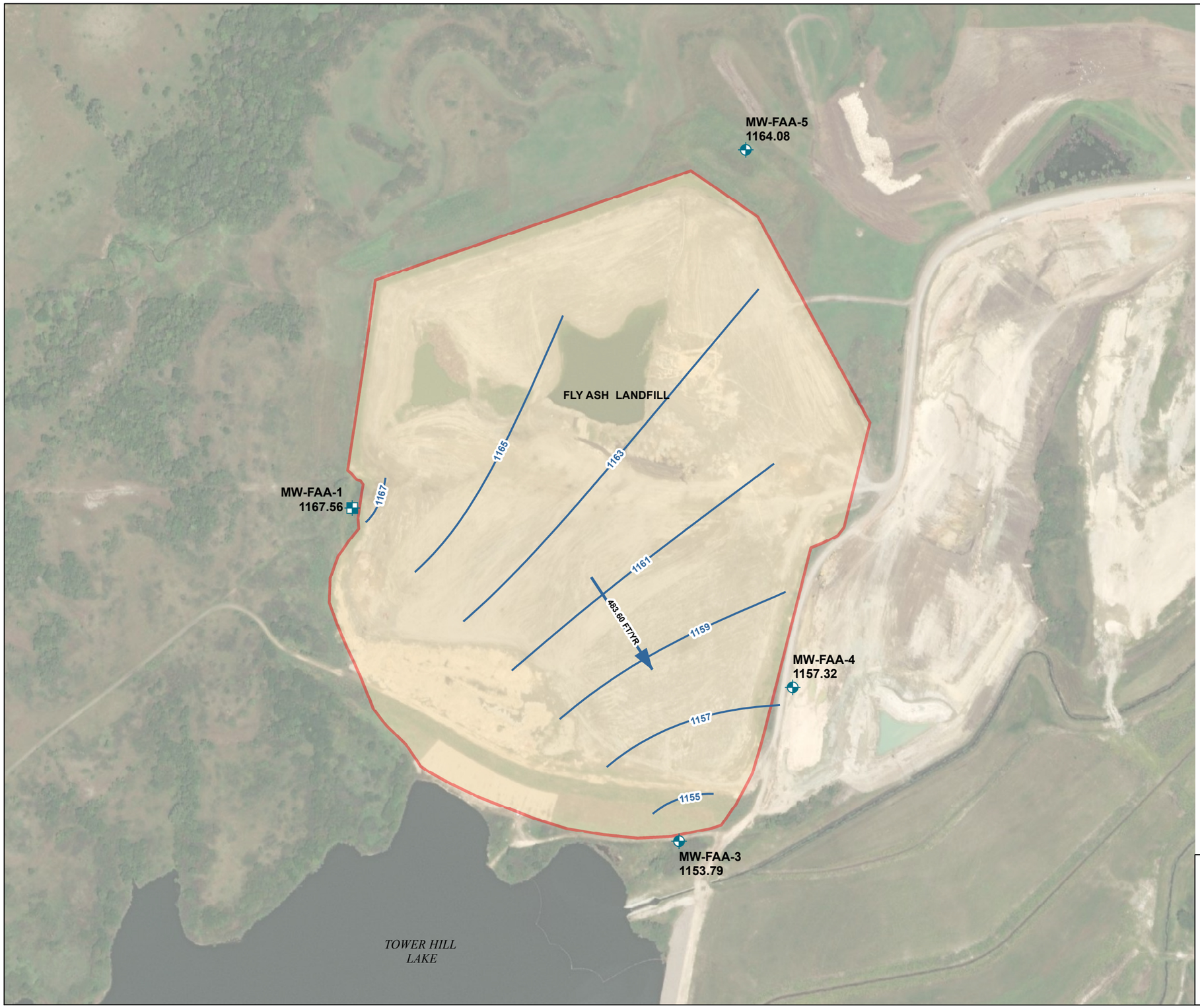
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP FEBRUARY 8, 2017

evergy

NOVEMBER 2022

FIGURE 6



LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), APRIL 2017

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 07 APRIL 2017.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 07 APRIL 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP APRIL 7, 2017

evergy

NOVEMBER 2022

FIGURE 7

LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MAY 2017

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 25 MAY 2017.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 25 MAY 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

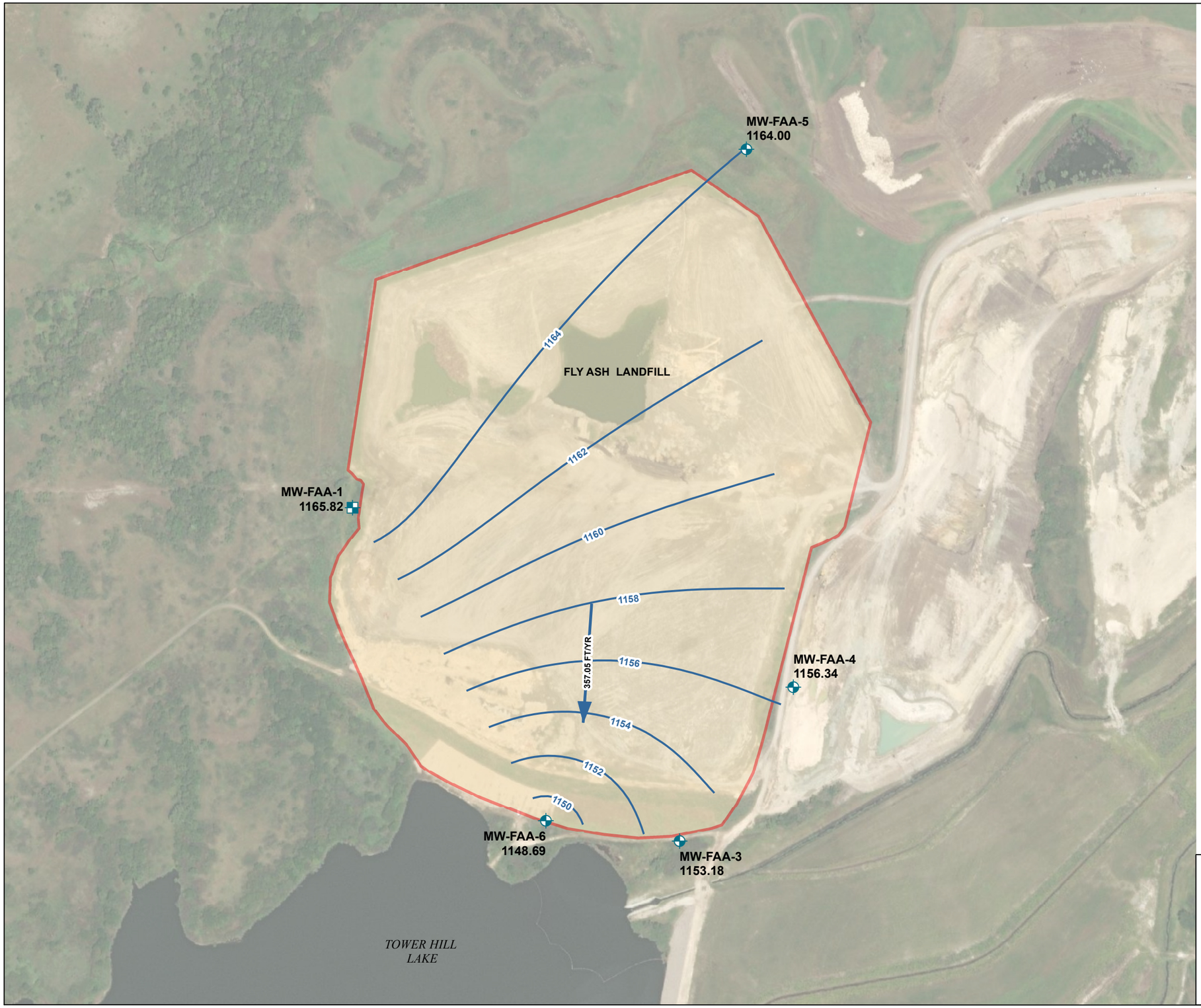
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MAY 25, 2017

evergy

NOVEMBER 2022

FIGURE 8



LEGEND

MW-FAA-4
1167.47 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), JUNE 2017

PIEZOMETER OBSERVATION ONLY

MONITORING WELL

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

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

FLY ASH LANDFILL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 17 JUNE 2017.

3. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 17 JUNE 2017 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

4. AERIAL IMAGERY SOURCE: ESRI, 3 SEPTEMBER 2019

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FLY ASH LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 17, 2017

evergy

NOVEMBER 2022

FIGURE 9