HALEY ALDRICH

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2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
FLUE GAS DESULFURIZATION LANDFILL
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

by Haley & Aldrich, Inc.
Cleveland, Ohio

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

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This Annual Groundwater Monitoring and Corrective Action Report documents the groundwater monitoring program for the Jeffrey Energy Center Flue Gas Desulfurization (FGD) Landfill consistent with applicable sections of § 257.90 through 257.98, and describes activities conducted in the prior calendar year (2019) and documents compliance with the United States Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2019 Annual Groundwater Monitoring and Corrective Action Report for the FGD Landfill is, to the best of my knowledge, accurate and complete.

Signed:_____
Professional Geologist

Print Name:	Mark Nicholls
Kansas License No.:	Professional Geologist No. 8
Title:	Technical Expert 2
Company:	Haley & Aldrich, Inc.

1. Introduction

This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) addresses the Flue Gas Desulfurization (FGD) Landfill at the Jeffrey Energy Center (JEC), operated by Evergy Kansas Central, Inc. (Evergy; f/k/a Westar Energy, Inc.). This Annual Report was developed in accordance with the United States Environmental Protection Agency Coal Combustion Residual (CCR) Rule (Rule) effective 19 October 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection § 257.90(e). The Annual Report documents the groundwater monitoring system for the FGD Landfill consistent with applicable sections of § 257.90 through 257.98, and describes activities conducted in the prior calendar year (2019) and documents compliance with the Rule. The specific requirements for the Annual Report listed in § 257.90(e) of the Rule are provided in Section 2 of this Annual Report and are in bold italic font, followed by a narrative describing how each Rule requirement has been met.

2. 40 CFR § 257.90 Applicability

2.1 40 CFR § 257.90(a)

All CCR landfills, CCR surface impoundments, and lateral expansions of CCR units are subject to the groundwater monitoring and corrective action requirements under §257.90 through 257.99, except as provided in paragraph (g) [Suspension of groundwater monitoring requirements] of this section.

Evergy has installed and certified a groundwater monitoring system at the JEC FGD Landfill. The FGD Landfill is subject to the groundwater monitoring and corrective action requirements described under 40 CFR § 257.90 through 257.98. This document addresses the requirement for the Owner/Operator to prepare an Annual Report per § 257.90(e).

2.2 40 CFR § 257.90(e) – SUMMARY

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by §257.105(h)(1).

This Annual Report describes monitoring completed and actions taken for the groundwater monitoring system at the FGD Landfill as required by the Rule. Groundwater sampling and analysis was conducted per the requirements described in § 257.93, and the status of the groundwater monitoring program described in § 257.94 and § 257.95 is also provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2019.

2.2.1 Status of the Groundwater Monitoring Program

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

2.2.2 Key Actions Completed

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

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

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

The groundwater monitoring system was expanded in 2019. The groundwater system certification was updated in December 2019 to include two additional monitor wells, as discussed in Section 2.3.2.

2.2.3 Problems Encountered

The only problems encountered during groundwater monitoring activities in 2019 included laboratory errors that required re-sampling of selected wells. Well MW-FGD-6 was resampled in August 2019 due to the laboratory's inability to accurately analyze the fluoride concentration from the June 2019 sampling event. Radiochemistry was also reanalyzed at MW-FGD-6 in August 2019 due to a suspected erroneous reading in the June 2019 analytical results. These are the only issues that needed to be addressed at the FGD Landfill in 2019.

2.2.4 Actions to Resolve Problems

The resolution to problems encountered in conjunction with groundwater monitoring activities in 2019 include re-sampling of selected wells and additional laboratory analyses as described above. No other problems were encountered at the FGD Landfill in 2019; therefore, no actions to resolve problems were required.

2.2.5 Projected Key Activities for Upcoming Year

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

2.3 40 CFR § 257.90(e) – INFORMATION

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

2.3.1 40 CFR § 257.90(e)(1)

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

As required by § 257.90(e)(1), a map showing the locations of the CCR unit and associated upgradient and downgradient monitoring wells for the FGD Landfill is included in this report as Figure 1.

2.3.2 40 CFR § 257.90(e)(2) – Monitoring System Changes

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No monitoring wells were installed or decommissioned in 2019 for the certified monitor well system.

In 2018 and 2019, Evergy made preparations to expand the FGD Landfill. Upgradient (MW-FGD-6) and downgradient (MW-FGD-9) monitoring wells, installed March 2 and March 1, 2018, respectively, were added to the monitor well system in support of an ongoing expansion of the FGD Landfill. The Groundwater Monitoring Systems Certification was revised in December 2019 to reflect the inclusion of the additional monitoring wells to the FGD Landfill CCR management unit. Baseline sampling of the additional monitoring wells was completed in September 2018 and the monitoring wells were included in the sampling of the system beginning with the September 2019 semi-annual monitoring event. The baseline sampling data for MW-FGD-6 and MW-FGD-9 for 2018 and 2019 are provided in Table I. The September 2019 sampling data for the new wells are provided in Table II.

2.3.3 40 CFR § 257.90(e)(3) – Summary of Sampling Events

In addition to all the monitoring data obtained under §257.90 through §257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

In accordance with § 257.95(b) and § 257.95(d)(1), three independent assessment monitoring samples from each background and downgradient monitoring well were collected in 2019. A summary including sample names, dates of sample collection, field parameters, and monitoring data obtained for the groundwater monitoring program for the JEC FGD Landfill is presented in Table II of this report.

2.3.4 40 CFR § 257.90(e)(4) – Monitoring Transition Narrative

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

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

2.3.5 40 CFR § 257.90(e)(5) – Other Requirements

Other information required to be included in the annual report as specified in §257.90 through §257.98.

This Annual Report documents activities conducted to comply with § 257.90 through 257.95 of the Rule. It is understood that there are supplemental references in § 257.90 through 257.98 that must be placed in the Annual Report. The following requirements include relevant and required information in the Annual Report for activities completed in calendar year 2019.

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

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

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

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

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

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

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

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

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

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

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

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

As discussed in Section 2.3.2, monitoring wells MW-FGD-6 and MW-FGD-9 were not included in the monitoring well network until September 2019; therefore, statistical evaluation was not completed for these monitoring wells in 2019.

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

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

include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

No assessment monitoring alternate source demonstration or certification was required in 2019. The JEC FGD Landfill remained in assessment monitoring during 2019.

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

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

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

TABLES

TABLE I
SUMMARY OF BASELINE ANALYTICAL RESULTS - FGD-6 AND FGD-9
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

Location		Up - Gradient												
		MW-FGD-6												
	Measure Point (TOC)	1277.52												
	Sample Name	FGD-6-041918	FGD-6-051118	FGD-6-053018	DUP-053018	FGD-6-070318	FGD-6-071618	FGD-6-080618	FGD-6-082318	FGD-6-091018	DUP-091018	FGD-6-032619	FGD-6-062319	FGD-6-080719
	Sample Date	4/19/2018	5/11/2018	5/30/2018	5/30/2018	7/3/2018	7/16/2018	8/6/2018	8/23/2018	9/10/2019	9/10/2018	3/26/2019	6/23/2019	8/7/2019
Final Lab Report Date		5/23/2018	6/15/2018	6/19/2018	6/19/2018	7/27/2018	7/26/2018	8/20/2018	9/7/2018	9/21/2018	9/21/2018	4/8/2019	7/5/2019	9/16/2019
Final Lab Report Revision Date		N/A	N/A	N/A	N/A	N/A	N/A	10/8/2018	N/A	N/A	N/A	N/A	9/16/2019	N/A
Final Radiation Lab Report Date		5/23/2018	6/15/2018	6/22/2018	6/22/2018	7/31/2018	8/3/2018	8/21/2018	9/13/2018	9/27/2018	9/27/2018	4/9/2019	7/17/2019	10/15/2019
Final Radiation Lab Report Revision Date		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9/28/2018	9/28/2018	N/A	N/A	N/A
Lab Data Reviewed and Accepted		5/31/2018	6/28/2018	6/29/2018	6/29/2018	8/6/2018	8/11/2018	9/1/2018	9/20/2018	10/3/2018	10/3/2018	4/9/2019	9/17/2019	8/5/2019
Depth to Water (ft btoc)		102.96	102.06	101.95	--	101.90	102.66	102.27	102.41	102.37	--	100.44	99.33	100.80
Temperature (Deg C)		15.67	16.57	16.26	--	18.54	17.88	17.73	15.56	17.17	--	15.2	16.88	17.03
Conductivity (µS/cm)		5630	7330	7770	--	8300	8620	9130	9010	8990	--	9964	1014	9050
Turbidity (NTU)		9.86	0.96	0.37	--	0.4	0.7	0.6	0.2	1.10	--	3.73	0.8	0.46
Boron, Total (mg/L)		**5.5**	**7.0**	**8.1**	**7.5**	**9.1**	**10.0**	**10.3**	**10.6**	**10.6**	**9.7**	**11.0**	--	--
Calcium, Total (mg/L)		**550**	**552**	**585**	**569**	**582**	**598**	**589**	**627**	**587**	**566**	**658**	--	--
Chloride (mg/L)		**657**	**1,330**	**1,770**	**1,180**	**1,640**	**1,690**	**1,940**	**1,910**	**2,120**	**1,700**	**2,110**	--	--
Fluoride (mg/L)		**0.99**	**1.1**	**1.2**	**1.0**	**0.96**	**1.4**	**1.8**	**1.8**	**1.4**	**1.4**	**0.43**	--	--
Sulfate (mg/L)		**1,790**	**2,530**	**3,090**	**2,540**	**2,560**	**3,070**	**2,760**	**2,760**	**3,190**	**2,870**	**2,780**	--	--
pH (su)		**7.4**	**7.5**	**7.4**	**7.4**	**7.2**	**7.1**	**7.5**	**7.3**	**7.3**	**7.2**	**7.3**	--	--
TDS (mg/L)		**3,680**	**8,140**	**6,290**	**5,580**	**7,060**	**7,170**	**7,770**	**7,750**	**7,620**	**6,520**	**6,900**	--	--
Antimony, Total (mg/L)		**0.013**	**0.0073**	**0.0013**	**0.0021**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0050	<0.0010	--
Arsenic (mg/L)		**0.0036**	**0.0082**	**0.016**	**0.011**	**0.016**	**0.017**	**0.016**	**0.015**	**0.014**	**0.014**	**0.0078**	**0.019**	--
Barium, Total (mg/L)		**0.047**	**0.036**	**0.036**	**0.038**	**0.031**	**0.028**	**0.026**	**0.026**	**0.025**	**0.029**	**0.025**	**0.020**	--
Beryllium, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--
Cadmium, Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0025	<0.00050	--
Chromium, Total (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	--
Cobalt, Total (mg/L)		**0.0087**	**0.0062**	**0.0044**	**0.0052**	**0.0036**	**0.0019**	**0.0016**	**0.0014**	**0.0012**	**0.0018**	**0.0011**	**0.0010**	--
Lead, Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--
Lithium, Total (mg/L)		**0.19**	**0.26**	**0.33**	**0.28**	**0.36**	**0.40**	**0.38**	**0.38**	**0.41**	**0.36**	**0.45**	**0.42**	--
Molybdenum, Total (mg/L)		**0.52**	**0.25**	**0.18**	**0.23**	**0.13**	**0.089**	**0.062**	**0.044**	**0.042**	<0.0020	**0.039**	**0.023**	--
Selenium, Total (mg/L)		**0.0046**	**<0.0010**	**<0.0010**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	--
Thallium, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0050	<0.0020	--
Mercury, Total (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	--
Fluoride (mg/L)		**0.99**	**1.10**	**1.2**	**1.0**	**0.96**	**1.4**	**1.8**	**1.8**	**1.4**	**1.4**	**0.43**	**3.4**	**1.6**
Radium-226 & 228 Combined (pCi/L)		**1.34 +/- 0.878 (1.31)**	**4.43 +/- 1.43 (1.32)**	**4.98 +/- 1.60 (1.49)**	**4.38 +/- 1.55 (1.69)**	**6.35 +/- 2.06 (2.19)**	**5.03 +/- 1.65 (1.61)**	**5.90 +/- 2.05 (2.08)**	**7.79 +/- 2.11 (1.53)**	**3.76 +/- 1.56 (1.94)**	**3.35 +/- 1.38 (1.53)**	**4.92 +/- 1.75 (1.94)**	**9.02 +/- 2.38 (1.60)**	**5.00 +/- 1.50 (0.995)**

Notes:

Radiological results are presented as activity plus or minus uncertainty with MDC.

MW-FGD-6 was resampled in August 2019 due to the laboratory's inability to accurately analyze the fluoride concentration from the June 2019 sampling event.

Radiochemistry was also reanalyzed at MW-FGD-6 in August 2019 due to a suspected erroneous reading in the June 2019 analytical results.

Bold value: *Detection above laboratory reporting limit or minimum detectable concentration (MDC)*

µ*S/cm = micro Siemens per centimeter*

ft btoc = feet below top of casing

Deg C = degrees Celsius

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE I
SUMMARY OF BASELINE ANALYTICAL RESULTS - FGD-6 AND FGD-9
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

Location		Down - Gradient									
		MW-FGD-9									
	Measure Point (TOC)	1175.51									
	Sample Name	FGD-9-042018	FGD-9-051118	FGD-9-053018	FGD-9-070318	FGD-9-071618	FGD-9-080618	FGD-9-082318	FGD-9-091118	FGD-9-032719	FGD-9-062319
	Sample Date	4/20/2018	5/11/2018	5/30/2018	7/3/2018	7/16/2018	8/6/2018	8/23/2018	9/11/2018	3/27/2019	6/23/2019
Final Lab Report Date		5/23/2018	6/15/2018	6/19/2018	7/27/2018	7/26/2018	8/21/2018	9/7/2018	9/21/2018	4/8/2019	7/5/2019
Final Lab Report Revision Date		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Radiation Lab Report Date		5/23/2018	6/15/2018	6/22/2018	7/31/2018	8/3/2018	8/20/2018	9/13/2018	9/27/2018	4/9/2019	7/17/2019
Final Radiation Lab Report Revision Date		N/A	N/A	N/A	N/A	N/A	10/8/2018	N/A	9/28/2018	N/A	N/A
Lab Data Reviewed and Accepted		5/31/2018	6/28/2018	6/29/2018	8/6/2018	8/11/2018	9/1/2018	9/20/2018	10/3/2018	4/9/2019	8/5/2019
Depth to Water (ft btoc)		11.52	9.43	9.42	12.70	12.90	13.44	14.86	17.02	8.19	6.26
Temperature (Deg C)		14.55	17.18	17.53	19.55	19.14	19.03	17.56	18.17	13.4	16.48
Conductivity (µS/cm)		866	849	806	788.00	784	826	799.00	827	890	895
Turbidity (NTU)		3.30	0.98	0.69	0.19	0.12	0.03	0.01	0.17	1.56	6.68
Boron, Total (mg/L)		**0.54**	**0.50**	**0.51**	**0.50**	**0.54**	**0.58**	**0.59**	**0.51**	**0.39**	--
Calcium, Total (mg/L)		**113**	**99.6**	**103**	**96.2**	**100**	**94**	**102**	**99.2**	**112**	--
Chloride (mg/L)		**41.3**	**42.5**	**40.6**	**39.7**	**39.8**	**41.5**	**39.5**	**39.9**	**39.1**	--
Fluoride (mg/L)		**0.49**	**0.56**	**0.48**	**0.49**	**0.50**	**0.51**	**0.55**	**0.53**	**0.55**	--
Sulfate (mg/L)		**172**	**179**	**179**	**179**	**168**	**180**	**173**	**171**	**179**	--
pH (su)		**7.3**	**7.4**	**7.4**	**7.6**	**7.2**	**7.4**	**7.3**	**7.3**	**7.5**	--
TDS (mg/L)		**557**	**585**	**558**	**578**	**557**	**582**	**604**	**577**	**666**	--
Antimony, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Arsenic (mg/L)		**0.0032**	**0.0026**	**0.0039**	**0.0035**	**0.0034**	**0.0027**	**0.0035**	**0.0039**	**0.0017**	**0.0020**
Barium, Total (mg/L)		**0.082**	**0.081**	**0.085**	**0.083**	**0.081**	**0.072**	**0.083**	**0.088**	**0.091**	**0.092**
Beryllium, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Cadmium, Total (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chromium, Total (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Cobalt, Total (mg/L)		<0.0010	**0.0011**	**0.0012**	**0.0012**	**0.0011**	**0.0012**	**0.0012**	**0.0010**	<0.0010	<0.0010
Lead, Total (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lithium, Total (mg/L)		**0.014**	**<0.010**	**0.014**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Molybdenum, Total (mg/L)		**0.016**	**0.013**	**0.012**	**0.012**	**0.012**	**0.0110**	**0.011**	**0.0086**	**0.0096**	**0.011**
Selenium, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Thallium, Total (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Mercury, Total (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluoride (mg/L)		**0.49**	**0.56**	**0.48**	**0.49**	**0.50**	**0.51**	**0.55**	**0.53**	**0.55**	**0.53**
Radium-226 & 228 Combined (pCi/L)		0.219 +/- 0.775 (1.62)	0.852 +/- 0.755 (1.35)	0.309 +/- 0.783 (1.60)	**2.14 +/- 1.19 (1.58)**	0.642 +/- 0.809 (1.43)	**4.34 +/- 1.53 (1.74)**	**1.47 +/- 0.888 (0.965)**	1.05 +/- 0.942 (1.50)	0.419 +/- 1.31 (2.65)	0.989 +/- 0.865 (1.13)

Notes:

Radiological results are presented as activity plus or minus uncertainty with MDC.

MW-FGD-6 was resampled in August 2019 due to the laboratory's inability to accurately analyze the fluoride concentration from the June 2019 sampling event.

Radiochemistry was also reanalyzed at MW-FGD-6 in August 2019 due to a suspected erroneous reading in the June 2019 analytical results.

Bold value: *Detection above laboratory reporting limit or minimum detectable concentration (MDC)*

µ*S/cm = micro Siemens per centimeter*

ft btoc = feet below top of casing

Deg C = degrees Celsius

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

TABLE II
SUMMARY OF ANALYTICAL RESULTS - ASSESSMENT MONITORING
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

Location	Upgradient				Downgradient									
	MW-FGD-1			MW-FGD-6	MW-FGD-2			MW-FGD-3			MW-FGD-4			MW-FGD-9
Measure Point (TOC)	1239.05			1277.52	1184.20			1186.26			1188.43			1175.51
Sample Name	FGD-1-032619	FGD-1_062219	MW-FGD-1	MW-FGD-6	FGD-2-032719	FGD-2_062219	MW-FGD-2	FGD-3-032719	FGD-3_062219	MW-FGD-3	FGD-4-032719	FGD-4_062219	MW-FGD-4	MW-FGD-9
Sample Date	3/26/2019	6/22/2019	9/16/2019	9/16/2019	3/27/2019	6/22/2019	9/16/2019	3/27/2019	6/22/2019	9/16/2019	3/27/2019	6/22/2019	9/16/2019	9/16/2019
Final Lab Report Date	4/8/2019	7/5/2019	9/30/2019	9/30/2019	4/8/2019	7/5/2019	9/30/2019	4/8/2019	7/5/2019	9/30/2019	4/8/2019	7/5/2019	9/30/2019	9/30/2019
Final Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Final Radiation Lab Report Date	4/9/2019	7/16/2019	10/11/2019	10/15/2019	4/9/2019	7/16/2019	10/11/2019	4/9/2019	7/16/2019	10/11/2019	4/9/2019	7/16/2019	10/11/2019	10/11/2019
Final Radiation Lab Report Revision Date	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lab Data Reviewed and Accepted	4/9/2019	8/5/2019	10/23/2019	10/23/2019	4/9/2019	8/5/2019	10/23/2019	4/9/2019	8/5/2019	10/23/2019	4/9/2019	8/5/2019	10/23/2019	10/23/2019
Depth to Water (ft btoc)	70.53	68.65	69.41	99.48	20.42	19.31	19.23	21.66	20.39	20.21	30.01	28.98	29.04	6.97
Temperature (Deg C)	14.3	15.33	16.88	14.69	14.8	16.41	16.63	15.5	17.72	16.38	14.7	16.26	17.72	17.29
Conductivity (µS/cm)	884	850	858	9726	1196	1266	1351	1356	1400	1517	1679	1800	1841	966
Turbidity (NTU)	0.37	0.34	0.38	0.54	0.72	0.77	0.31	0.41	1.28	0.06	0.45	0.58	0.36	0.52
Boron, Total (mg/L)	<0.10	--	**0.11**	**9.8**	**0.23**	--	**0.21**	**0.15**	--	**0.15**	**0.28**	--	**0.30**	**0.48**
Calcium, Total (mg/L)	**98.2**	--	**92.2**	**583**	**182**	--	**201**	**192**	--	**197**	**226**	--	**240**	**116**
Chloride (mg/L)	**71.7**	--	**50.8**	**2100**	**54.6**	--	**65.5**	**83.9**	--	**98.0**	**113**	--	**134**	**38.0**
Fluoride (mg/L)	**0.39**	--	**0.25**	**0.91**	**0.39**	--	<0.20	**0.32**	--	<0.20	**0.42**	--	<0.20	**0.42**
Sulfate (mg/L)	**86.8**	--	**99.3**	**2790**	**333**	--	**426**	**380**	--	**419**	**539**	--	**640**	**251**
pH (su)	**7.4**	--	**7.3**	**7.0**	**7.3**	--	**7.2**	**7.2**	--	**7.2**	**7.2**	--	**7.0**	**7.3**
TDS (mg/L)	**539**	--	**524**	**6730**	**869**	--	**1030**	**1000**	--	**1080**	**1230**	--	**1480**	**667**
Antimony, Total (mg/L)	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	--
Arsenic (mg/L)	<0.0010	<0.0010	<0.0010	**0.0047**	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	**0.0025**
Barium, Total (mg/L)	**0.31**	**0.31**	**0.27**	**0.019**	**0.082**	**0.081**	**0.068**	**0.099**	**0.10**	**0.082**	**0.054**	**0.052**	**0.045**	**0.090**
Beryllium, Total (mg/L)	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	--
Cadmium, Total (mg/L)	<0.00050	<0.00050	--	--	<0.00050	<0.00050	--	<0.00050	<0.00050	--	<0.00050	<0.00050	--	--
Chromium, Total (mg/L)	<0.0050	<0.0050	--	--	<0.0050	<0.0050	--	<0.0050	<0.0050	--	<0.0050	<0.0050	--	--
Cobalt, Total (mg/L)	<0.0010	<0.0010	<0.0010	**0.0017**	**0.0017**	**0.0020**	**0.0020**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	**0.0018**
Lead, Total (mg/L)	<0.010	<0.010	--	--	<0.010	<0.010	--	<0.010	<0.010	--	<0.010	<0.010	--	--
Lithium, Total (mg/L)	**0.016**	**0.013**	<0.010	**0.39**	**0.012**	<0.010	<0.010	**0.019**	**0.013**	**0.016**	**0.016**	<0.010	**0.013**	<0.010
Molybdenum, Total (mg/L)	**0.0014**	**0.0014**	**0.0013**	**0.036**	**0.0040**	**0.0041**	**0.0035**	**0.0058**	**0.0059**	**0.0052**	**0.0038**	**0.0038**	**0.0035**	**0.0095**
Selenium, Total (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	**0.0012**	**0.0016**	**0.0015**	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Thallium, Total (mg/L)	<0.0010	<0.0010	--	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	<0.0010	<0.0010	--	--
Mercury, Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Fluoride (mg/L)	**0.39**	**0.36**	**0.25**	**0.91**	**0.39**	**0.35**	<0.20	**0.32**	**0.34**	**<0.20**	**0.42**	**0.38**	<0.20	**0.42**
Radium-226 & 228 Combined (pCi/L)	0.326 +/- 0.924 (1.93)	0.940 +/- 0.883 (1.33)	1.80 +/- 1.51 (2.47)	**6.68 +/- 1.85 (1.43)**	0.446 +/- 0.973 (2.04)	0.880 +/- 0.856 (1.43)	1.18 +/- 1.16 (1.93)	1.20 +/- 1.16 (2.06)	1.03 +/- 0.873 (1.34)	0.403 +/- 1.16 (2.38)	0.898 +/- 1.13 (2.12)	0.443 +/- 0.882 (1.69)	1.11 +/- 1.21 (2.13)	0.786 +/- 0.835 (1.51)

Notes:

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

Radiological results are presented as activity plus or minus uncertainty with MDC.

µS/cm = micro Siemens per centimeter

ft btoc = feet below top of casing

Deg C = degrees Celsius

mg/L = milligrams per liter

NTU = Nephelometric Turbidity Unit

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

TOC = top of casing

Bold value: *Detection above laboratory reporting limit or minimum detectable concentration (MDC).*

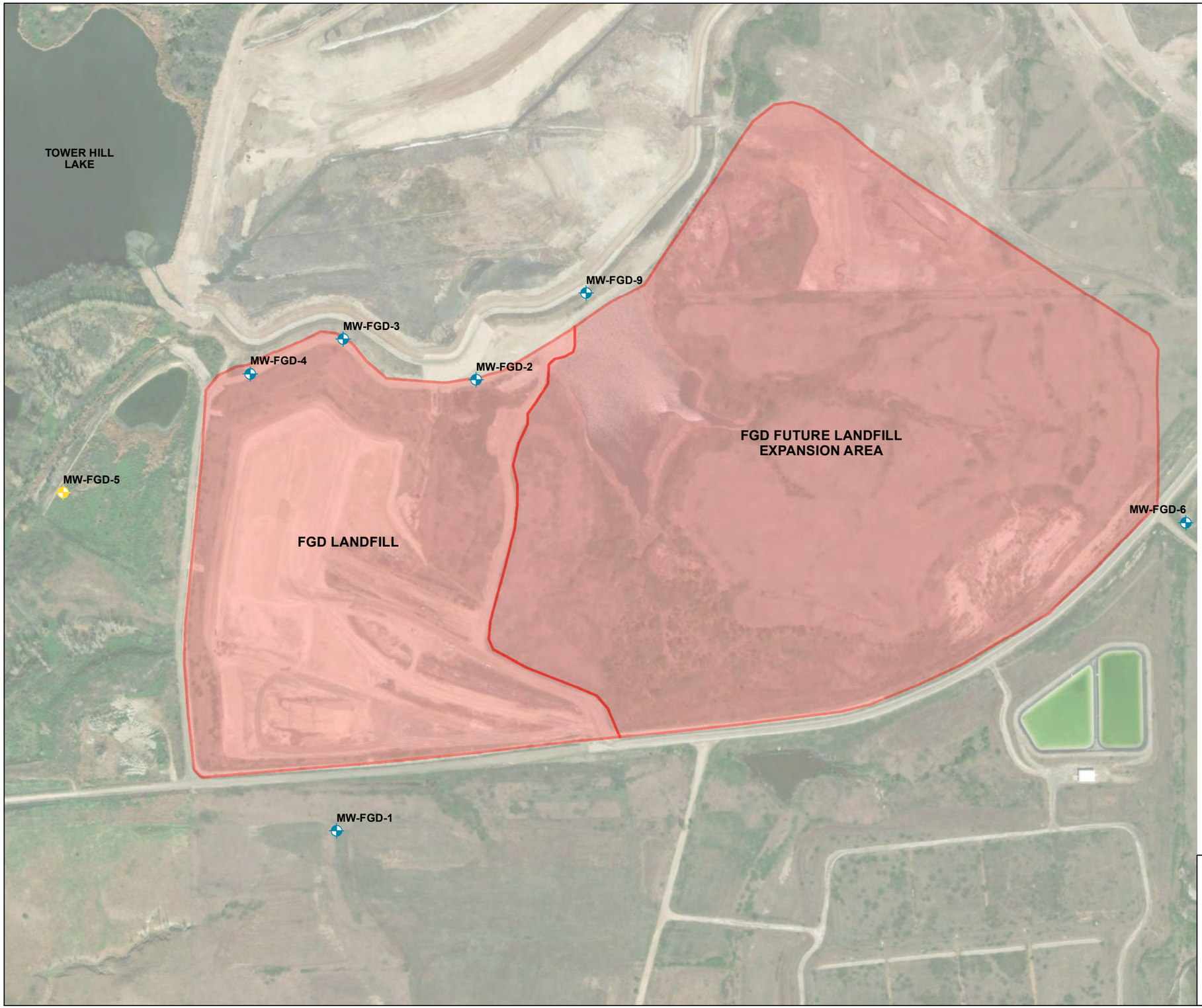
TABLE III
ANNUAL ASSESSMENT GROUNDWATER MONITORING - DETECTED APPENDIX IV GWPS
JUNE 2019 SAMPLING EVENT
JEFFREY ENERGY CENTER
FLUE GAS DESULFURIZATION LANDFILL

Well #	Background Value*	GWPS
CCR Appendix-IV Barium, Total (mg/L)		
MW-FGD-1 (upgradient)	0.316	NA
MW-FGD-2		2
MW-FGD-3		2
MW-FGD-4		2
CCR Appendix-IV Cobalt, Total (mg/L)		
MW-FGD-1 (upgradient)	0.001	NA
MW-FGD-2		0.006
MW-FGD-3		0.006
MW-FGD-4		0.006
CCR Appendix-IV Fluoride, Total (mg/L)		
MW-FGD-1 (upgradient)	0.416	NA
MW-FGD-2		4.0
MW-FGD-3		4.0
MW-FGD-4		4.0
CCR Appendix-IV Lithium, Total (mg/L)		
MW-FGD-1 (upgradient)	0.017	NA
MW-FGD-2		0.040
MW-FGD-3		0.040
MW-FGD-4		0.040
CCR Appendix-IV Molybdenum, Total (mg/L)		
MW-FGD-1 (upgradient)	0.008	NA
MW-FGD-2		0.100
MW-FGD-3		0.100
MW-FGD-4		0.100
CCR Appendix-IV Radium-226 & 228 Combined (pCi/L)		
MW-FGD-1 (upgradient)	0.8	NA
MW-FGD-2		5
MW-FGD-3		5
MW-FGD-4		5
CCR Appendix-IV Selenium, Total (mg/L)		
MW-FGD-1 (upgradient)	0.001	NA
MW-FGD-2		0.05
MW-FGD-3		0.05
MW-FGD-4		0.05

Notes and Abbreviations:

** Background value based on data collected through June 2018*
mg/L = milligrams per Liter
pCi/L = picoCuries per Liter
CCR = Coal Combustion Residuals
MCL = Maximum Contaminant Level
RSL = Regional Screening Level
GWPS = Groundwater Protection Standard
NA = Not Applicable

FIGURE



LEGEND

- MONITORING WELL
- PIEZOMETRIC OBSERVATION ONLY
- FGD LANDFILL LIMITS OF DISPOSAL AREA

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE, 7 MAY 2018.

N

0 400 800
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL MONITORING WELL LOCATION MAP

JANUARY 2020

FIGURE 1

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

November 10, 2022
File No. 129778

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

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

Mark Nicholls Digitally signed by Mark Nicholls Date: 2022.11.10 14:50:19 -07'00'

SUBJECT: 2019 Annual Groundwater Monitoring and Corrective Action Report Addendum
Evergy Kansas Central, Inc.
Jeffrey Energy Center
Flue Gas Desulfurization Landfill

The Evergy Kansas Central, Inc. (Evergy) Flue Gas Desulfurization (FGD) Landfill at the Jeffrey Energy Center (JEC) is subject to the groundwater monitoring and corrective action requirements described under Code of Federal Regulations Title 40 (40 CFR) §257.90 through §257.98 (Rule). An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting the activities completed in 2019 for the FGD Landfill was completed and placed in the facility's operating record on January 31, 2020, as required by the Rule. The Annual GWMCA Report contained the specific information listed in 40 CFR §257.90(e).

This report addendum has been prepared to supplement the operating record in recognition of comments received by Evergy from the U.S. Environmental Protection Agency (USEPA) on January 11, 2022. In addition to the information listed in 40 CFR §257.90(e), the USEPA indicated in their comments that the GWMCA Report should contain:

- Results of laboratory analysis of groundwater or other environmental media samples for the presence of constituents of Appendices III and IV to 40 CFR part 257 (or of other constituents, such as those supporting characterization of site conditions that may ultimately affect a remedy);
- Required statistical analyses performed on those [laboratory analysis] results;
- Measured groundwater elevations; and
- Calculated groundwater flow rate and direction.

While this information is not specifically referred to in 40 CFR §257.90(e) for inclusion in the GWMCA Report, it has been routinely collected and maintained in Evergy's files and is being provided in the attachments to this addendum. The applicable laboratory analysis reports for 2019 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2019 are included in Attachment 2 of this addendum. For each of the 2019 sampling events, the measured groundwater elevations, with calculated groundwater flow rates and directions, have been included in Attachment 3.

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 sampling events below are provided.
  - Monitoring wells MW-FGD-6 (upgradient) and FGD-9 (downgradient) were included in the groundwater monitoring system at the FGD Landfill beginning in September 2019. Laboratory data packages associated with the baseline sampling of these wells (April 2018 – June 2019) are provided in Attachment 1-1.
  - The laboratory data packages for the assessment monitoring compliance sampling events completed in March, June, and September 2019 are provided in Attachment 1-2.
- Attachment 2 – Statistical Analyses: Includes a discussion of the statistical analyses utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against groundwater protection standards), and supporting backup for statistical analyses completed in 2019. Statistical analyses completed in 2019 included:
  - Overview of the January 2019 statistical analyses for data obtained in the September 2018 sampling event; and
  - Overview of the July 2019 statistical analyses for data obtained in the March 2019 sampling events.
- Attachment 3 – Groundwater Potentiometric Maps: Includes the measured groundwater elevations at each well and the generalized groundwater flow direction and calculated flow rate. Maps for the sampling events completed in March, June, and September 2019 are provided.

ATTACHMENT 1
Laboratory Analytical Reports

ATTACHMENT 1-1
MW-FGD-6 and MW-FGD-8 Baseline Laboratory Analytical Reports

ATTACHMENT 1-1-1
April 2018 Sampling Events
Laboratory Analytical Reports

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

May 23, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60268745

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on April 21, 2018. 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: Andrew Hare, Westar Energy
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60268745

Pennsylvania Certification IDs

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
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 FGD NEW
Pace Project No.: 60268745

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60268745001	**FGD-6-041918**	Water	04/19/18 15:15	04/21/18 08:40
60268745002	**FGD-7-042018**	Water	04/20/18 08:45	04/21/18 08:40
60268745003	**FGD-8-042018**	Water	04/20/18 10:34	04/21/18 08:40
60268745004	**FGD-9-042018**	Water	04/20/18 12:31	04/21/18 08:40
60268745005	**DUP-042018**	Water	04/20/18 06:00	04/21/18 08:40

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60268745

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60268745001	**FGD-6-041918**	EPA 200.7	JRS, TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	OL	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60268745002	**FGD-7-042018**	EPA 200.7	JRS, TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	OL	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60268745003	**FGD-8-042018**	EPA 200.7	JRS, TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	OL	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60268745004	**FGD-9-042018**	EPA 200.7	JRS, TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	OL	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60268745005	**DUP-042018**	EPA 200.7	JRS, TDS	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60268745

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	SMW	1	PASI-K
		EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2540C	OL	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60268745

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: May 23, 2018

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: 523969

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60268859001

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

- MS (Lab ID: 2144953)
  - Calcium
- MSD (Lab ID: 2144955)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60268745

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: May 23, 2018

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60268745

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: May 23, 2018

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-042018 (Lab ID: 60268745005)
- FGD-6-041918 (Lab ID: 60268745001)
- FGD-7-042018 (Lab ID: 60268745002)
- FGD-8-042018 (Lab ID: 60268745003)
- FGD-9-042018 (Lab ID: 60268745004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60268745

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: May 23, 2018

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 FGD NEW
Pace Project No.: 60268745

Sample: FGD-6-041918 **Lab ID: 60268745001** Collected: 04/19/18 15:15 Received: 04/21/18 08:40 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	**0.047**	mg/L	0.0050	1	05/01/18 11:06	05/02/18 19:04	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/02/18 19:04	7440-41-7	
Boron, Total Recoverable	**5.5**	mg/L	0.10	1	05/01/18 11:06	05/02/18 19:04	7440-42-8	
Calcium, Total Recoverable	**550**	mg/L	0.20	1	05/01/18 11:06	05/03/18 20:43	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/01/18 11:06	05/03/18 20:43	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:04	7439-92-1	
Lithium	**0.19**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:04	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.013**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:48	7440-36-0	
Arsenic, Total Recoverable	**0.0036**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:48	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/01/18 11:06	05/22/18 16:48	7440-43-9	
Cobalt, Total Recoverable	**0.0087**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:48	7440-48-4	
Molybdenum, Total Recoverable	**0.52**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:48	7439-98-7	
Selenium, Total Recoverable	**0.0046**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:48	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 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	05/04/18 16:09	05/07/18 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**3680**	mg/L	5.0	1		04/25/18 12:50		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		04/23/18 11:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**657**	mg/L	50.0	50		05/12/18 15:09	16887-00-6	
Fluoride	**0.99**	mg/L	0.20	1		05/11/18 15:46	16984-48-8	
Sulfate	**1790**	mg/L	100	100		05/12/18 15:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-7-042018 **Lab ID: 60268745002** Collected: 04/20/18 08:45 Received: 04/21/18 08:40 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	**0.14**	mg/L	0.0050	1	05/01/18 11:06	05/02/18 19:13	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/02/18 19:13	7440-41-7	
Boron, Total Recoverable	**0.14**	mg/L	0.10	1	05/01/18 11:06	05/02/18 19:13	7440-42-8	
Calcium, Total Recoverable	**114**	mg/L	0.20	1	05/01/18 11:06	05/03/18 20:45	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/01/18 11:06	05/03/18 20:45	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:13	7439-92-1	
Lithium	**0.025**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:13	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	05/01/18 11:06	05/22/18 16:53	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/01/18 11:06	05/22/18 16:53	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:53	7440-48-4	
Molybdenum, Total Recoverable	**0.0048**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:53	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:53	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:53	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	05/04/18 16:09	05/07/18 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**558**	mg/L	5.0	1		04/27/18 11:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/23/18 11:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**53.9**	mg/L	10.0	10		05/12/18 15:36	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	1		05/11/18 16:30	16984-48-8	
Sulfate	**115**	mg/L	10.0	10		05/12/18 15:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-8-042018 **Lab ID: 60268745003** Collected: 04/20/18 10:34 Received: 04/21/18 08:40 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	**0.067**	mg/L	0.0050	1	05/01/18 11:06	05/02/18 19:16	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/02/18 19:16	7440-41-7	
Boron, Total Recoverable	**0.17**	mg/L	0.10	1	05/01/18 11:06	05/02/18 19:16	7440-42-8	
Calcium, Total Recoverable	**121**	mg/L	0.20	1	05/01/18 11:06	05/03/18 20:47	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/01/18 11:06	05/03/18 20:47	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:16	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:16	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	05/01/18 11:06	05/22/18 16:57	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:57	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/01/18 11:06	05/22/18 16:57	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:57	7440-48-4	
Molybdenum, Total Recoverable	**0.0068**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:57	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:57	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 16:57	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	05/04/18 16:09	05/07/18 09:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**560**	mg/L	5.0	1		04/27/18 11:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/23/18 11:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.9**	mg/L	5.0	5		05/12/18 15:49	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	1		05/11/18 17:00	16984-48-8	
Sulfate	**196**	mg/L	20.0	20		05/12/18 16:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-9-042018 **Lab ID: 60268745004** Collected: 04/20/18 12:31 Received: 04/21/18 08:40 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	**0.082**	mg/L	0.0050	1	05/01/18 11:06	05/02/18 19:18	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/02/18 19:18	7440-41-7	
Boron, Total Recoverable	**0.54**	mg/L	0.10	1	05/01/18 11:06	05/02/18 19:18	7440-42-8	
Calcium, Total Recoverable	**113**	mg/L	0.20	1	05/01/18 11:06	05/03/18 20:50	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/01/18 11:06	05/03/18 20:50	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:18	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:18	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	05/01/18 11:06	05/22/18 17:10	7440-36-0	
Arsenic, Total Recoverable	**0.0032**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:10	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/01/18 11:06	05/22/18 17:10	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:10	7440-48-4	
Molybdenum, Total Recoverable	**0.016**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:10	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:10	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:10	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	05/04/18 16:09	05/07/18 10:00	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**557**	mg/L	5.0	1		04/27/18 11:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/23/18 12:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**41.3**	mg/L	5.0	5		05/12/18 16:17	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		05/11/18 17:15	16984-48-8	
Sulfate	**172**	mg/L	20.0	20		05/12/18 16:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: DUP-042018 **Lab ID: 60268745005** Collected: 04/20/18 06:00 Received: 04/21/18 08:40 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	**0.15**	mg/L	0.0050	1	05/01/18 11:06	05/02/18 19:21	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/02/18 19:21	7440-41-7	
Boron, Total Recoverable	**0.13**	mg/L	0.10	1	05/01/18 11:06	05/02/18 19:21	7440-42-8	
Calcium, Total Recoverable	**117**	mg/L	0.20	1	05/01/18 11:06	05/04/18 18:11	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/01/18 11:06	05/04/18 18:11	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:21	7439-92-1	
Lithium	**0.025**	mg/L	0.010	1	05/01/18 11:06	05/02/18 19:21	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	05/01/18 11:06	05/22/18 17:15	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:15	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/01/18 11:06	05/22/18 17:15	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:15	7440-48-4	
Molybdenum, Total Recoverable	**0.0034**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:15	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:15	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/01/18 11:06	05/22/18 17:15	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	05/04/18 16:09	05/07/18 10:02	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**541**	mg/L	5.0	1		04/27/18 11:36		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		04/23/18 11:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**53.6**	mg/L	10.0	10		05/12/18 17:12	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		05/11/18 18:15	16984-48-8	
Sulfate	**114**	mg/L	10.0	10		05/12/18 17:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 524547 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2147603 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	05/07/18 09:31	

LABORATORY CONTROL SAMPLE: 2147604

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0051	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2147605 2147606

Parameter	Units	60268861003 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	0.0048	97	95	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 523969 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2144951 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	05/02/18 18:47	
Beryllium	mg/L	<0.0010	0.0010	05/02/18 18:47	
Boron	mg/L	<0.10	0.10	05/02/18 18:47	
Calcium	mg/L	<0.20	0.20	05/03/18 20:36	
Chromium	mg/L	<0.0050	0.0050	05/03/18 20:36	
Lead	mg/L	<0.010	0.010	05/02/18 18:47	
Lithium	mg/L	<0.010	0.010	05/02/18 18:47	

LABORATORY CONTROL SAMPLE: 2144952

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	102	85-115	
Beryllium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.95	95	85-115	
Calcium	mg/L	10	11.0	110	85-115	
Chromium	mg/L	1	1.1	107	85-115	
Lead	mg/L	1	0.95	95	85-115	
Lithium	mg/L	1	1.0	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2144953 2144955

Parameter	Units	60268859001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	131 ug/L	1	1	1.1	1.1	101	102	70-130	1	20	
Beryllium	mg/L	ND	1	1	0.96	0.97	96	97	70-130	1	20	
Boron	mg/L	550 ug/L	1	1	1.5	1.5	96	96	70-130	0	20	
Calcium	mg/L	55000 ug/L	10	10	77.6	76.0	226	209	70-130	2	20	M1
Chromium	mg/L	ND	1	1	1.0	1.1	103	105	70-130	2	20	
Lead	mg/L	ND	1	1	0.91	0.93	91	93	70-130	2	20	
Lithium	mg/L	ND	1	1	1.0	1.1	103	105	70-130	2	20	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 523942 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2144879 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	05/22/18 16:18	
Arsenic	mg/L	<0.0010	0.0010	05/22/18 16:18	
Cadmium	mg/L	<0.00050	0.00050	05/22/18 16:18	
Cobalt	mg/L	<0.0010	0.0010	05/22/18 16:18	
Molybdenum	mg/L	<0.0010	0.0010	05/22/18 16:18	
Selenium	mg/L	<0.0010	0.0010	05/22/18 16:18	
Thallium	mg/L	<0.0010	0.0010	05/22/18 16:18	

LABORATORY CONTROL SAMPLE: 2144880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.042	106	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.042	105	85-115	
Cobalt	mg/L	.04	0.041	102	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.040	99	85-115	
Thallium	mg/L	.04	0.036	90	85-115	

MATRIX SPIKE SAMPLE: 2144883

Parameter	Units	60268745005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	.04	0.042	105	70-130	
Arsenic	mg/L	<0.0010	.04	0.041	101	70-130	
Cadmium	mg/L	<0.00050	.04	0.041	101	70-130	
Cobalt	mg/L	<0.0010	.04	0.039	97	70-130	
Molybdenum	mg/L	0.0034	.04	0.047	110	70-130	
Selenium	mg/L	<0.0010	.04	0.038	95	70-130	
Thallium	mg/L	<0.0010	.04	0.040	101	70-130	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 523085 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60268745001

METHOD BLANK: 2141358 Matrix: Water
Associated Lab Samples: 60268745001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/25/18 12:50	

LABORATORY CONTROL SAMPLE: 2141359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	989	99	80-120	

SAMPLE DUPLICATE: 2141360

Parameter	Units	60268626001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	514	509	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 523426 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2142987 Matrix: Water
Associated Lab Samples: 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/27/18 11:36	

LABORATORY CONTROL SAMPLE: 2142988

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

SAMPLE DUPLICATE: 2142989

Parameter	Units	60268739001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	879	863	2	10	

SAMPLE DUPLICATE: 2142990

Parameter	Units	60268739002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1700	1720	1	10	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 522685 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

SAMPLE DUPLICATE: 2140191

Parameter	Units	60268727001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.4	6.4	0	5	H6

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 525403 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2151366 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	05/11/18 15:16	

LABORATORY CONTROL SAMPLE: 2151367

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2151368 2151369

Parameter	Units	60268745001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.99	2.5	2.5	3.4	3.4	98	97	80-120	1	15	

MATRIX SPIKE SAMPLE: 2151370

Parameter	Units	60268745002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.41	2.5	3.0	104	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 525556 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 2152430 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	05/12/18 09:33	
Sulfate	mg/L	<1.0	1.0	05/12/18 09:33	

LABORATORY CONTROL SAMPLE: 2152431

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.1	102	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152432 2152433

Parameter	Units	60269102002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	449	250	250	690	684	96	94	80-120	1	15	
Sulfate	mg/L	90.6	250	250	332	327	97	95	80-120	2	15	

MATRIX SPIKE SAMPLE: 2152434

Parameter	Units	60269475001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	25.9	10	37.4	116	80-120	
Sulfate	mg/L	24.9	10	35.7	109	80-120	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-6-041918 **Lab ID: 60268745001** Collected: 04/19/18 15:15 Received: 04/21/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.732 ± 0.485 (0.566) C:NA T:88%**	pCi/L	05/08/18 19:29	13982-63-3	
Radium-228	EPA 904.0	**0.605 ± 0.393 (0.745) C:82% T:79%**	pCi/L	05/11/18 15:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.878 (1.31)**	pCi/L	05/15/18 10:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-7-042018 **Lab ID: 60268745002** Collected: 04/20/18 08:45 Received: 04/21/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.237 ± 0.272 (0.161) C:NA T:85%**	pCi/L	05/08/18 19:29	13982-63-3	
Radium-228	EPA 904.0	**0.858 ± 0.490 (0.914) C:82% T:78%**	pCi/L	05/11/18 15:07	15262-20-1	
Total Radium	Total Radium Calculation	**1.10 ± 0.762 (1.08)**	pCi/L	05/15/18 10:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-8-042018 **Lab ID: 60268745003** Collected: 04/20/18 10:34 Received: 04/21/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.133 ± 0.319 (0.615) C:NA T:91%**	pCi/L	05/08/18 19:43	13982-63-3	
Radium-228	EPA 904.0	**0.0759 ± 0.345 (0.784) C:80% T:84%**	pCi/L	05/11/18 15:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.209 ± 0.664 (1.40)**	pCi/L	05/15/18 10:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: FGD-9-042018 **Lab ID: 60268745004** Collected: 04/20/18 12:31 Received: 04/21/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0630 ± 0.445 (0.888) C:NA T:84%**	pCi/L	05/08/18 19:43	13982-63-3	
Radium-228	EPA 904.0	**0.156 ± 0.330 (0.729) C:83% T:80%**	pCi/L	05/11/18 15:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.219 ± 0.775 (1.62)**	pCi/L	05/15/18 11:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

Sample: DUP-042018 **Lab ID: 60268745005** Collected: 04/20/18 06:00 Received: 04/21/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.700 ± 0.465 (0.542) C:NA T:93%**	pCi/L	05/08/18 19:43	13982-63-3	
Radium-228	EPA 904.0	**0.114 ± 0.321 (0.722) C:82% T:71%**	pCi/L	05/11/18 15:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.814 ± 0.786 (1.26)**	pCi/L	05/15/18 11:07	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 FGD NEW
Pace Project No.: 60268745

QC Batch: 295988 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 1449064 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.168 ± 0.257 (0.413) C:NA T:91%	pCi/L	05/08/18 19:01	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60268745

QC Batch: 296006 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

METHOD BLANK: 1449103 Matrix: Water
Associated Lab Samples: 60268745001, 60268745002, 60268745003, 60268745004, 60268745005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.552 ± 0.409 (0.794) C:82% T:69%	pCi/L	05/11/18 15:09	

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

QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60268745

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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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60268745

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60268745001	**FGD-6-041918**	EPA 200.7	523969	EPA 200.7	523997
60268745002	**FGD-7-042018**	EPA 200.7	523969	EPA 200.7	523997
60268745003	**FGD-8-042018**	EPA 200.7	523969	EPA 200.7	523997
60268745004	**FGD-9-042018**	EPA 200.7	523969	EPA 200.7	523997
60268745005	**DUP-042018**	EPA 200.7	523969	EPA 200.7	523997
60268745001	**FGD-6-041918**	EPA 200.8	523942	EPA 200.8	523999
60268745002	**FGD-7-042018**	EPA 200.8	523942	EPA 200.8	523999
60268745003	**FGD-8-042018**	EPA 200.8	523942	EPA 200.8	523999
60268745004	**FGD-9-042018**	EPA 200.8	523942	EPA 200.8	523999
60268745005	**DUP-042018**	EPA 200.8	523942	EPA 200.8	523999
60268745001	**FGD-6-041918**	EPA 245.1	524547	EPA 245.1	524664
60268745002	**FGD-7-042018**	EPA 245.1	524547	EPA 245.1	524664
60268745003	**FGD-8-042018**	EPA 245.1	524547	EPA 245.1	524664
60268745004	**FGD-9-042018**	EPA 245.1	524547	EPA 245.1	524664
60268745005	**DUP-042018**	EPA 245.1	524547	EPA 245.1	524664
60268745001	**FGD-6-041918**	EPA 903.1	295988		
60268745002	**FGD-7-042018**	EPA 903.1	295988		
60268745003	**FGD-8-042018**	EPA 903.1	295988		
60268745004	**FGD-9-042018**	EPA 903.1	295988		
60268745005	**DUP-042018**	EPA 903.1	295988		
60268745001	**FGD-6-041918**	EPA 904.0	296006		
60268745002	**FGD-7-042018**	EPA 904.0	296006		
60268745003	**FGD-8-042018**	EPA 904.0	296006		
60268745004	**FGD-9-042018**	EPA 904.0	296006		
60268745005	**DUP-042018**	EPA 904.0	296006		
60268745001	**FGD-6-041918**	Total Radium Calculation	298425		
60268745002	**FGD-7-042018**	Total Radium Calculation	298425		
60268745003	**FGD-8-042018**	Total Radium Calculation	298425		
60268745004	**FGD-9-042018**	Total Radium Calculation	298432		
60268745005	**DUP-042018**	Total Radium Calculation	298432		
60268745001	**FGD-6-041918**	SM 2540C	523085		
60268745002	**FGD-7-042018**	SM 2540C	523426		
60268745003	**FGD-8-042018**	SM 2540C	523426		
60268745004	**FGD-9-042018**	SM 2540C	523426		
60268745005	**DUP-042018**	SM 2540C	523426		
60268745001	**FGD-6-041918**	SM 4500-H+B	522685		
60268745002	**FGD-7-042018**	SM 4500-H+B	522685		
60268745003	**FGD-8-042018**	SM 4500-H+B	522685		
60268745004	**FGD-9-042018**	SM 4500-H+B	522685		
60268745005	**DUP-042018**	SM 4500-H+B	522685		
60268745001	**FGD-6-041918**	EPA 300.0	525403		
60268745001	**FGD-6-041918**	EPA 300.0	525556		
60268745002	**FGD-7-042018**	EPA 300.0	525403		

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60268745

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60268745002	**FGD-7-042018**	EPA 300.0	525556		
60268745003	**FGD-8-042018**	EPA 300.0	525403		
60268745003	**FGD-8-042018**	EPA 300.0	525556		
60268745004	**FGD-9-042018**	EPA 300.0	525403		
60268745004	**FGD-9-042018**	EPA 300.0	525556		
60268745005	**DUP-042018**	EPA 300.0	525403		
60268745005	**DUP-042018**	EPA 300.0	525556		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60268745

60268745

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 ☐ zPac

Thermometer Used: T-300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 4.0 **Corr. Factor** +1.2 **Corrected** 5.2

Date and initials of person examining contents: BM 4-21-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: [signature] Date: 4/23/18

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
Purchase Order No.:	
Project Name:	JEC FGD New
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jenalee Converse 913-563-1401
Pace Profile #:	9657

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: 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

Analysis Test: 200.7 Total Metals*; 200.8 Total Metals**; 245.1 Total Hg; 300: Cl, F, SO4; 2540C TDS; 4500 H+B; Ra226/ Ra228; Residual Chlorine (Y/N)

Pace Project No./ Lab I.D.: 60268745

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	Notes	Lab I.D.
1	FGD-6-041918	WT	G			4/19	1515		5	1	4			2-BP1N ↓				~~2-BP1U~~ BM 4-21-18 ~~6-BP1N~~ BM 4-21-18, 4BP1U ↓, 8-BP3N ↓	1-BP1U, 2-BP3N ↓ 001
2	FGD-7-042018	WT	G			4/20	0845		5	1	4								002
3	FGD-8-042018	WT	G			4/20	1034		5	1	4								003
4	FGD-9-042018	WT	G			4/20	1231		5	1	4								004
5																			
6																		BM 4-21-18 ~~3-BP1~~ ~~2-BP1N, 1~~	
7																			
8																			
9	DUP-042018	WT	G			4/20	0600		5	2	3							2-BP2U 2-BP1N, ~~2-BP3U~~ BM 4-21-18, BP2N	005
10																			
11																			
12																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	[signature] / Westar	4/20/18	1345	[signature]		0840	5.2	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, 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): 04/20/18

*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

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS

Pace Analytical® www.pacelabs.com

Workorder: 60268745 **Workorder Name:** JEC FGD NEW **Owner Received Date:** 4/21/2018 **Results Requested By:** 5/15/2018

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# : 30250602

30250602

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Requested Analysis: Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	FGD-6-041918	PS	4/19/2018 15:15	60268745001	Water	2	X	X	001
2	FGD-7-042018	PS	4/20/2018 08:45	60268745002	Water	2	X	X	002
3	FGD-8-042018	PS	4/20/2018 10:34	60268745003	Water	2	X	X	003
4	FGD-9-042018	PS	4/20/2018 12:31	60268745004	Water	2	X	X	004
5	DUP-042018	PS	4/20/2018 06:00	60268745005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1	E Brocklett IPasi	4/20/18 1540	[signature]	4-24-18 1030
2				
3				

Comments

Cooler Temperature on Receipt —°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

Face Analytical

Client Name: Pace KS Project # 30250602

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

Label PS

Tracking #: 4368 7373 8491 LIMS Login PS

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 _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3671 Date and Initials of person examining contents: PS 4-24-18

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. All containers needing preservation are found to be in compliance with EPA recommendation.	✓			16.
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed PS 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: PS Date: 4-24-18

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 1-1-2
May 2018 Sampling Events
Laboratory Analytical Reports

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

June 15, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60270296

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on May 12, 2018. 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: Andrew Hare, Westar Energy
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60270296

Pennsylvania Certification IDs

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

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60270296

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60270296001	**FGD-6-051118**	Water	05/11/18 09:22	05/12/18 08:40
60270296002	**FGD-7-051118**	Water	05/11/18 10:39	05/12/18 08:40
60270296003	**FGD-8-051118**	Water	05/11/18 11:27	05/12/18 08:40
60270296004	**FGD-9-051118**	Water	05/11/18 12:40	05/12/18 08:40
60270296005	**DUP-051118**	Water	05/11/18 08:00	05/12/18 11:17

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60270296

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60270296001	**FGD-6-051118**	EPA 200.7	SMW	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	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60270296002	**FGD-7-051118**	EPA 200.7	SMW	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	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60270296003	**FGD-8-051118**	EPA 200.7	SMW	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	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60270296004	**FGD-9-051118**	EPA 200.7	SMW	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	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60270296005	**DUP-051118**	EPA 200.7	SMW	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60270296

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		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	CMC	1	PASI-PA
		SM 2540C	LDB	1	PASI-K
		SM 4500-H+B	MJK	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60270296

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: June 15, 2018

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: 525717

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60270177002,60270179036

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

- MS (Lab ID: 2152937)
  - Calcium
- MSD (Lab ID: 2152938)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60270296

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: June 15, 2018

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60270296

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: June 15, 2018

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 FGD NEW
Pace Project No.: 60270296

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: June 15, 2018

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 FGD NEW
Pace Project No.: 60270296

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: June 15, 2018

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 FGD NEW
Pace Project No.: 60270296

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: June 15, 2018

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 FGD NEW
Pace Project No.: 60270296

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: June 15, 2018

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.

QC Batch: 526136

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.
- DUP (Lab ID: 2154383)
  - Total Dissolved Solids

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60270296

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: June 15, 2018

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-051118 (Lab ID: 60270296005)
- FGD-6-051118 (Lab ID: 60270296001)
- FGD-7-051118 (Lab ID: 60270296002)
- FGD-8-051118 (Lab ID: 60270296003)
- FGD-9-051118 (Lab ID: 60270296004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60270296

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: June 15, 2018

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

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

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

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

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

QC Batch: 528657

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60270293001,60271564001

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

- MS (Lab ID: 2165649)
  - Chloride
- MSD (Lab ID: 2165650)
  - 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 FGD NEW
Pace Project No.: 60270296

Sample: FGD-6-051118 **Lab ID: 60270296001** Collected: 05/11/18 09:22 Received: 05/12/18 08:40 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	0.0050	1	05/14/18 15:15	05/15/18 13:39	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/14/18 15:15	05/15/18 13:39	7440-41-7	
Boron, Total Recoverable	**7.0**	mg/L	0.10	1	05/14/18 15:15	05/15/18 13:39	7440-42-8	
Calcium, Total Recoverable	**552**	mg/L	0.20	1	05/14/18 15:15	05/15/18 13:39	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:39	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:39	7439-92-1	
Lithium	**0.26**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:39	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.0073**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7440-36-0	
Arsenic, Total Recoverable	**0.0082**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/23/18 09:25	06/14/18 18:39	7440-43-9	
Cobalt, Total Recoverable	**0.0062**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7440-48-4	
Molybdenum, Total Recoverable	**0.25**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:39	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 09:42	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**8140**	mg/L	5.0	1		05/17/18 15:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		05/15/18 09:34		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1330**	mg/L	100	100		06/05/18 14:44	16887-00-6	
Fluoride	**1.1**	mg/L	0.20	1		06/05/18 14:31	16984-48-8	
Sulfate	**2530**	mg/L	200	200		06/05/18 14:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-7-051118 **Lab ID: 60270296002** Collected: 05/11/18 10:39 Received: 05/12/18 08:40 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	**0.15**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:46	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/14/18 15:15	05/15/18 13:46	7440-41-7	
Boron, Total Recoverable	**0.13**	mg/L	0.10	1	05/14/18 15:15	05/15/18 13:46	7440-42-8	
Calcium, Total Recoverable	**98.8**	mg/L	0.20	1	05/14/18 15:15	05/15/18 13:46	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:46	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:46	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	05/14/18 15:15	05/15/18 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	05/23/18 09:25	06/14/18 18:42	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:42	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/23/18 09:25	06/14/18 18:42	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:42	7440-48-4	
Molybdenum, Total Recoverable	**0.0030**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:42	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:42	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:42	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 09:44	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**576**	mg/L	5.0	1		05/17/18 15:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/15/18 09:35		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**55.1**	mg/L	5.0	5		06/05/18 15:25	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	1		06/05/18 15:12	16984-48-8	
Sulfate	**117**	mg/L	10.0	10		06/05/18 15:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-8-051118 **Lab ID: 60270296003** Collected: 05/11/18 11:27 Received: 05/12/18 08:40 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	**0.071**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:48	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/14/18 15:15	05/15/18 13:48	7440-41-7	
Boron, Total Recoverable	**0.16**	mg/L	0.10	1	05/14/18 15:15	05/15/18 13:48	7440-42-8	
Calcium, Total Recoverable	**109**	mg/L	0.20	1	05/14/18 15:15	05/15/18 13:48	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:48	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:48	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:48	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7440-36-0	
Arsenic, Total Recoverable	**0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/23/18 09:25	06/14/18 18:44	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7440-48-4	
Molybdenum, Total Recoverable	**0.0063**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:44	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 09:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**606**	mg/L	5.0	1		05/17/18 15:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/15/18 09:37		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**45.4**	mg/L	5.0	5		06/05/18 16:07	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	1		06/05/18 15:53	16984-48-8	
Sulfate	**208**	mg/L	20.0	20		06/05/18 16:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-9-051118 **Lab ID: 60270296004** Collected: 05/11/18 12:40 Received: 05/12/18 08:40 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	**0.081**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:51	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/14/18 15:15	05/15/18 13:51	7440-41-7	
Boron, Total Recoverable	**0.50**	mg/L	0.10	1	05/14/18 15:15	05/15/18 13:51	7440-42-8	
Calcium, Total Recoverable	**99.6**	mg/L	0.20	1	05/14/18 15:15	05/15/18 13:51	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:51	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:51	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:51	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	05/23/18 09:25	06/14/18 18:47	7440-36-0	
Arsenic, Total Recoverable	**0.0026**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/23/18 09:25	06/14/18 18:47	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:47	7440-48-4	
Molybdenum, Total Recoverable	**0.013**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 09:49	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**585**	mg/L	5.0	1		05/17/18 15:27		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/15/18 09:38		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.5**	mg/L	5.0	5		06/05/18 17:15	16887-00-6	
Fluoride	**0.56**	mg/L	0.20	1		06/05/18 17:01	16984-48-8	
Sulfate	**179**	mg/L	20.0	20		06/05/18 17:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: DUP-051118 **Lab ID: 60270296005** Collected: 05/11/18 08:00 Received: 05/12/18 11:17 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.072**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:53	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/14/18 15:15	05/15/18 13:53	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	05/14/18 15:15	05/15/18 13:53	7440-42-8	
Calcium, Total Recoverable	**106**	mg/L	0.20	1	05/14/18 15:15	05/15/18 13:53	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	05/14/18 15:15	05/15/18 13:53	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:53	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	05/14/18 15:15	05/15/18 13:53	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	05/23/18 09:25	06/14/18 18:50	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7440-48-4	
Molybdenum, Total Recoverable	**0.0061**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	05/23/18 09:25	06/14/18 18:50	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 09:51	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**572**	mg/L	5.0	1		05/17/18 15:27		D6
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/15/18 09:39		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**46.4**	mg/L	5.0	5		06/05/18 17:56	16887-00-6	
Fluoride	**0.52**	mg/L	0.20	1		06/05/18 17:42	16984-48-8	
Sulfate	**207**	mg/L	20.0	20		06/05/18 18:10	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 528689 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 2165763 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	06/06/18 09:31	

LABORATORY CONTROL SAMPLE: 2165764

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: 2165765 2165766

Parameter	Units	60270293001 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	0.0050	0.0049	100	97	70-130	3	20	

MATRIX SPIKE SAMPLE: 2165767

Parameter	Units	60271119002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0048	95	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 525717 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 2152935 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	05/15/18 12:37	
Beryllium	mg/L	<0.0010	0.0010	05/15/18 12:37	
Boron	mg/L	<0.10	0.10	05/15/18 12:37	
Calcium	mg/L	<0.20	0.20	05/15/18 12:37	
Chromium	mg/L	<0.0050	0.0050	05/15/18 12:37	
Lead	mg/L	<0.010	0.010	05/15/18 12:37	
Lithium	mg/L	<0.010	0.010	05/15/18 12:37	

LABORATORY CONTROL SAMPLE: 2152936

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	0.92	92	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.0	104	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2152937 2152938

Parameter	Units	60270177002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	60.7 ug/L	1	1	1.1	1.1	102	103	70-130	1	20	
Beryllium	mg/L	ND	1	1	1.0	1.0	100	100	70-130	1	20	
Boron	mg/L	180 ug/L	1	1	1.1	1.1	95	97	70-130	1	20	
Calcium	mg/L	92900 ug/L	10	10	109	111	162	177	70-130	1	20	M1
Chromium	mg/L	ND	1	1	1.0	1.0	101	103	70-130	1	20	
Lead	mg/L	ND	1	1	1.0	1.0	101	103	70-130	2	20	
Lithium	mg/L	31.1 ug/L	1	1	1.1	1.1	103	103	70-130	0	20	

MATRIX SPIKE SAMPLE: 2152945

Parameter	Units	60270179036 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	157 ug/L	1	1.2	102	70-130	
Beryllium	mg/L	0.23J ug/L	1	0.99	99	70-130	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

MATRIX SPIKE SAMPLE: 2152945

Parameter	Units	60270179036 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	67.5J ug/L	1	1.0	95	70-130	
Calcium	mg/L	69700 ug/L	10	78.2	85	70-130	
Chromium	mg/L	6.5 ug/L	1	1.0	101	70-130	
Lead	mg/L	4.2J ug/L	1	1.0	101	70-130	
Lithium	mg/L	30.7 ug/L	1	1.1	102	70-130	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 526944 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 2158358 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	05/24/18 20:23	
Arsenic	mg/L	<0.0010	0.0010	05/24/18 20:23	
Cadmium	mg/L	<0.00050	0.00050	05/24/18 20:23	
Cobalt	mg/L	<0.0010	0.0010	05/24/18 20:23	
Molybdenum	mg/L	<0.0010	0.0010	05/24/18 20:23	
Selenium	mg/L	<0.0010	0.0010	05/24/18 20:23	
Thallium	mg/L	<0.0010	0.0010	05/24/18 20:23	

LABORATORY CONTROL SAMPLE: 2158359

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.043	106	85-115	
Arsenic	mg/L	.04	0.042	104	85-115	
Cadmium	mg/L	.04	0.039	99	85-115	
Cobalt	mg/L	.04	0.038	95	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.039	98	85-115	
Thallium	mg/L	.04	0.036	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2158360 2158361

Parameter	Units	60270477001 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	0.043	0.043	106	107	70-130	1	20	
Arsenic	mg/L	1.7 ug/L	.04	.04	0.043	0.042	102	100	70-130	2	20	
Cadmium	mg/L	ND	.04	.04	0.037	0.038	93	94	70-130	1	20	
Cobalt	mg/L	1.1 ug/L	.04	.04	0.037	0.037	90	89	70-130	1	20	
Molybdenum	mg/L	5.3 ug/L	.04	.04	0.047	0.047	105	104	70-130	1	20	
Selenium	mg/L	2.0 ug/L	.04	.04	0.037	0.038	89	89	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.038	0.038	96	96	70-130	0	20	

MATRIX SPIKE SAMPLE: 2158362

Parameter	Units	60270478001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	ND	.04	0.043	106	70-130	
Arsenic	mg/L	1.2 ug/L	.04	0.041	99	70-130	
Cadmium	mg/L	ND	.04	0.037	92	70-130	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

MATRIX SPIKE SAMPLE: 2158362

Parameter	Units	60270478001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	ND	.04	0.036	88	70-130	
Molybdenum	mg/L	3.5 ug/L	.04	0.045	103	70-130	
Selenium	mg/L	2.0 ug/L	.04	0.036	86	70-130	
Thallium	mg/L	ND	.04	0.038	94	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 526136 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 2154380 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	05/17/18 15:27	

LABORATORY CONTROL SAMPLE: 2154381

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

SAMPLE DUPLICATE: 2154382

Parameter	Units	60270295004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	824	809	2	10	

SAMPLE DUPLICATE: 2154383

Parameter	Units	60270296005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	572	647	12	10	D6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 525810 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

SAMPLE DUPLICATE: 2153115

Parameter	Units	60270276002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.2	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60270296

QC Batch: 528657 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 2165647 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	06/05/18 11:48	
Fluoride	mg/L	<0.20	0.20	06/05/18 11:48	
Sulfate	mg/L	<1.0	1.0	06/05/18 11:48	

LABORATORY CONTROL SAMPLE: 2165648

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	97	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	5.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2165649 2165650

Parameter	Units	60270293001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	19.3	100	100	105	121	85	102	90-110	15	15	M1
Fluoride	mg/L	0.58	2.5	2.5	3.2	3.1	104	102	90-110	1	15	
Sulfate	mg/L	146	100	100	253	272	107	126	90-110	7	15	M1

MATRIX SPIKE SAMPLE: 2165651

Parameter	Units	60271564001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	8.2	5	13.5	106	90-110	

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REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-6-051118 **Lab ID: 60270296001** Collected: 05/11/18 09:22 Received: 05/12/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**3.47 ± 1.04 (0.720) C:NA T:90%**	pCi/L	06/04/18 19:39	13982-63-3	
Radium-228	EPA 904.0	**0.955 ± 0.389 (0.601) C:82% T:84%**	pCi/L	06/01/18 14:34	15262-20-1	
Total Radium	Total Radium Calculation	**4.43 ± 1.43 (1.32)**	pCi/L	06/05/18 14:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-7-051118 **Lab ID: 60270296002** Collected: 05/11/18 10:39 Received: 05/12/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.596 ± 0.570 (0.868) C:NA T:89%**	pCi/L	06/04/18 19:39	13982-63-3	
Radium-228	EPA 904.0	**0.256 ± 0.301 (0.635) C:85% T:83%**	pCi/L	06/01/18 14:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.852 ± 0.871 (1.50)**	pCi/L	06/05/18 14:09	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60270296

Sample: FGD-8-051118 **Lab ID: 60270296003** Collected: 05/11/18 11:27 Received: 05/12/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.654 ± 0.540 (0.780) C:NA T:91%**	pCi/L	06/04/18 19:39	13982-63-3	
Radium-228	EPA 904.0	**0.202 ± 0.322 (0.697) C:80% T:80%**	pCi/L	06/01/18 14:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.856 ± 0.862 (1.48)**	pCi/L	06/05/18 14:09	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 FGD NEW
Pace Project No.: 60270296

Sample: FGD-9-051118 **Lab ID: 60270296004** Collected: 05/11/18 12:40 Received: 05/12/18 08:40 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.267 ± 0.371 (0.620) C:NA T:89%**	pCi/L	06/04/18 19:39	13982-63-3	
Radium-228	EPA 904.0	**0.585 ± 0.384 (0.731) C:83% T:77%**	pCi/L	06/01/18 14:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.852 ± 0.755 (1.35)**	pCi/L	06/05/18 14:09	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 FGD NEW
Pace Project No.: 60270296

Sample: DUP-051118 **Lab ID: 60270296005** Collected: 05/11/18 08:00 Received: 05/12/18 11:17 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.195 ± 0.337 (0.603) C:NA T:83%**	pCi/L	06/04/18 19:52	13982-63-3	
Radium-228	EPA 904.0	**0.510 ± 0.342 (0.651) C:83% T:84%**	pCi/L	06/01/18 14:34	15262-20-1	
Total Radium	Total Radium Calculation	**0.705 ± 0.679 (1.25)**	pCi/L	06/05/18 14:09	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 FGD NEW
Pace Project No.: 60270296

QC Batch: 299196 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 1464853 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.197 ± 0.301 (0.484) C:NA T:90%	pCi/L	06/04/18 19:23	

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 FGD NEW
Pace Project No.: 60270296

QC Batch: 299174 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

METHOD BLANK: 1464829 Matrix: Water
Associated Lab Samples: 60270296001, 60270296002, 60270296003, 60270296004, 60270296005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.117 ± 0.310 (0.693) C:81% T:81%	pCi/L	06/01/18 14:32	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60270296

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

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

ANALYTE QUALIFIERS

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60270296

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60270296001	**FGD-6-051118**	EPA 200.7	525717	EPA 200.7	525755
60270296002	**FGD-7-051118**	EPA 200.7	525717	EPA 200.7	525755
60270296003	**FGD-8-051118**	EPA 200.7	525717	EPA 200.7	525755
60270296004	**FGD-9-051118**	EPA 200.7	525717	EPA 200.7	525755
60270296005	**DUP-051118**	EPA 200.7	525717	EPA 200.7	525755
60270296001	**FGD-6-051118**	EPA 200.8	526944	EPA 200.8	526988
60270296002	**FGD-7-051118**	EPA 200.8	526944	EPA 200.8	526988
60270296003	**FGD-8-051118**	EPA 200.8	526944	EPA 200.8	526988
60270296004	**FGD-9-051118**	EPA 200.8	526944	EPA 200.8	526988
60270296005	**DUP-051118**	EPA 200.8	526944	EPA 200.8	526988
60270296001	**FGD-6-051118**	EPA 245.1	528689	EPA 245.1	528707
60270296002	**FGD-7-051118**	EPA 245.1	528689	EPA 245.1	528707
60270296003	**FGD-8-051118**	EPA 245.1	528689	EPA 245.1	528707
60270296004	**FGD-9-051118**	EPA 245.1	528689	EPA 245.1	528707
60270296005	**DUP-051118**	EPA 245.1	528689	EPA 245.1	528707
60270296001	**FGD-6-051118**	EPA 903.1	299196		
60270296002	**FGD-7-051118**	EPA 903.1	299196		
60270296003	**FGD-8-051118**	EPA 903.1	299196		
60270296004	**FGD-9-051118**	EPA 903.1	299196		
60270296005	**DUP-051118**	EPA 903.1	299196		
60270296001	**FGD-6-051118**	EPA 904.0	299174		
60270296002	**FGD-7-051118**	EPA 904.0	299174		
60270296003	**FGD-8-051118**	EPA 904.0	299174		
60270296004	**FGD-9-051118**	EPA 904.0	299174		
60270296005	**DUP-051118**	EPA 904.0	299174		
60270296001	**FGD-6-051118**	Total Radium Calculation	301033		
60270296002	**FGD-7-051118**	Total Radium Calculation	301033		
60270296003	**FGD-8-051118**	Total Radium Calculation	301033		
60270296004	**FGD-9-051118**	Total Radium Calculation	301033		
60270296005	**DUP-051118**	Total Radium Calculation	301033		
60270296001	**FGD-6-051118**	SM 2540C	526136		
60270296002	**FGD-7-051118**	SM 2540C	526136		
60270296003	**FGD-8-051118**	SM 2540C	526136		
60270296004	**FGD-9-051118**	SM 2540C	526136		
60270296005	**DUP-051118**	SM 2540C	526136		
60270296001	**FGD-6-051118**	SM 4500-H+B	525810		
60270296002	**FGD-7-051118**	SM 4500-H+B	525810		
60270296003	**FGD-8-051118**	SM 4500-H+B	525810		
60270296004	**FGD-9-051118**	SM 4500-H+B	525810		
60270296005	**DUP-051118**	SM 4500-H+B	525810		
60270296001	**FGD-6-051118**	EPA 300.0	528657		
60270296002	**FGD-7-051118**	EPA 300.0	528657		
60270296003	**FGD-8-051118**	EPA 300.0	528657		
60270296004	**FGD-9-051118**	EPA 300.0	528657		
60270296005	**DUP-051118**	EPA 300.0	528657		

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 FGD NEW
Pace Project No.: 60270296

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60270296

60270296

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 ☑ EPLC

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.3/1.0 **Corr. Factor** +1.2 **Corrected** 2.5/2.2

Date and initials of person examining contents: JRE 5-12-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: AMW Date: 5/14/18

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
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	Ra226/ Ra228	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-051118	WT	G			5/11	0922		4	1		3													BPIN(3), BPIU		001
2	FGD-7-051118	WT	G			5/11	1039		4	1		3															002
3	FGD-8-051118	WT	G			5/11	1127		4	1		3															003
4	FGD-9-051118	WT	G			5/11	1240		4	1		3															004
5																											
6																											
7																											
8																											
9																											
10																											
11	DUP-051118	WT	G			5/11	0800		4	1		3													BPIN(3) ~~BPIE~~ BPIU		005
12																											

5-12-18

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	Westar	5/11/18	1600	PALE	5-12-18	0840
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl						

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 05/11/18

*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

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS

Workorder: 60270296 **Workorder Name:** JEC FGD NEW

Owner Received Date: 5/12/2018 **Results Requested By:** 6/6/2018

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

WO# : 30253026

30253026

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3	Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	FGD-6-051118	PS	5/11/2018 09:22	60270296001	Water	2	X	X	001
2	FGD-7-051118	PS	5/11/2018 10:39	60270296002	Water	2	X	X	002
3	FGD-8-051118	PS	5/11/2018 11:27	60270296003	Water	2	X	X	003
4	FGD-9-051118	PS	5/11/2018 12:40	60270296004	Water	2	X	X	004
5	DUP-051118	PS	5/11/2018 08:00	60270296005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1		5/14 1700		5/14/18 1245
2				
3				

Comments

Cooler Temperature on Receipt ___ °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

Face Analytical

Client Name: Pace KS

Project # 30253026

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

Label NS

LIMS Login MM

Tracking #: 4368 7275 0761

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 ___ °C Correction Factor: ___ °C Final Temp: ___ °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3671 Date and Initials of person examining contents: NS 5-15-18

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. 2 bottles per sample
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed NS 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: NS Date: 5-15-18

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

June 19, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60271565

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on May 31, 2018. 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: Andrew Hare, Westar Energy
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60271565

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60271565

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271565001	**FGD-7-053018**	Water	05/30/18 11:02	05/31/18 06:50
60271565002	**FGD-6-053018**	Water	05/30/18 09:17	05/31/18 06:50
60271565003	**FGD-8-053018**	Water	05/30/18 11:55	05/31/18 06:50
60271565004	**FGD-9-053018**	Water	05/30/18 12:52	05/31/18 06:50
60271565005	**DUP-053018**	Water	05/30/18 06:00	05/31/18 06:50

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60271565

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271565001	**FGD-7-053018**	EPA 200.7	AGO	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60271565002	**FGD-6-053018**	EPA 200.7	AGO	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60271565003	**FGD-8-053018**	EPA 200.7	AGO	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60271565004	**FGD-9-053018**	EPA 200.7	AGO	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60271565005	**DUP-053018**	EPA 200.7	AGO	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60271565

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: June 19, 2018

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: 528444

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60271565001,60271565005

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

- MS (Lab ID: 2164907)
  - Calcium
- MS (Lab ID: 2164909)
  - Calcium
- MSD (Lab ID: 2164908)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60271565

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: June 19, 2018

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60271565

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: June 19, 2018

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 FGD NEW
Pace Project No.: 60271565

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: June 19, 2018

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 FGD NEW
Pace Project No.: 60271565

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: June 19, 2018

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-053018 (Lab ID: 60271565005)
- FGD-6-053018 (Lab ID: 60271565002)
- FGD-7-053018 (Lab ID: 60271565001)
- FGD-8-053018 (Lab ID: 60271565003)
- FGD-9-053018 (Lab ID: 60271565004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60271565

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: June 19, 2018

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 FGD NEW
Pace Project No.: 60271565

Sample: FGD-7-053018 **Lab ID: 60271565001** Collected: 05/30/18 11:02 Received: 05/31/18 06:50 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	**0.15**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:11	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/04/18 11:40	06/06/18 19:11	7440-41-7	
Boron, Total Recoverable	**0.13**	mg/L	0.10	1	06/04/18 11:40	06/06/18 19:11	7440-42-8	
Calcium, Total Recoverable	**103**	mg/L	0.20	1	06/04/18 11:40	06/06/18 19:11	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:11	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:11	7439-92-1	
Lithium	**0.024**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:11	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	06/05/18 16:00	06/16/18 17:45	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:45	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/05/18 16:00	06/16/18 17:45	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:45	7440-48-4	
Molybdenum, Total Recoverable	**0.0027**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:45	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:45	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/18/18 13:38	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 10:17	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**542**	mg/L	5.0	1		06/05/18 16:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/31/18 16:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**51.5**	mg/L	5.0	5		06/07/18 11:59	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		06/05/18 22:01	16984-48-8	
Sulfate	**110**	mg/L	10.0	10		06/07/18 15:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60271565

Sample: FGD-6-053018 **Lab ID: 60271565002** Collected: 05/30/18 09:17 Received: 05/31/18 06:50 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	**0.036**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:26	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/04/18 11:40	06/06/18 19:26	7440-41-7	
Boron, Total Recoverable	**8.1**	mg/L	0.10	1	06/04/18 11:40	06/06/18 19:26	7440-42-8	
Calcium, Total Recoverable	**585**	mg/L	0.20	1	06/04/18 11:40	06/06/18 19:26	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:26	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:26	7439-92-1	
Lithium	**0.33**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:26	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.0013**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:48	7440-36-0	
Arsenic, Total Recoverable	**0.016**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:48	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/05/18 16:00	06/16/18 17:48	7440-43-9	
Cobalt, Total Recoverable	**0.0044**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:48	7440-48-4	
Molybdenum, Total Recoverable	**0.18**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:48	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:48	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/18/18 13:40	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 10:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**6290**	mg/L	5.0	1		06/05/18 16:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/31/18 16:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1770**	mg/L	200	200		06/07/18 12:28	16887-00-6	
Fluoride	**1.2**	mg/L	0.20	1		06/05/18 22:42	16984-48-8	
Sulfate	**3090**	mg/L	200	200		06/07/18 12:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60271565

Sample: FGD-8-053018 **Lab ID: 60271565003** Collected: 05/30/18 11:55 Received: 05/31/18 06:50 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	**0.070**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:29	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/04/18 11:40	06/06/18 19:29	7440-41-7	
Boron, Total Recoverable	**0.18**	mg/L	0.10	1	06/04/18 11:40	06/06/18 19:29	7440-42-8	
Calcium, Total Recoverable	**109**	mg/L	0.20	1	06/04/18 11:40	06/06/18 19:29	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:29	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:29	7439-92-1	
Lithium	**0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:29	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	06/05/18 16:00	06/16/18 17:59	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:59	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/05/18 16:00	06/16/18 17:59	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:59	7440-48-4	
Molybdenum, Total Recoverable	**0.0058**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:59	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 17:59	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/18/18 13:43	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 10:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**573**	mg/L	5.0	1		06/05/18 16:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/31/18 16:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**44.8**	mg/L	5.0	5		06/07/18 15:45	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		06/07/18 12:43	16984-48-8	
Sulfate	**203**	mg/L	20.0	20		06/07/18 16:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60271565

Sample: FGD-9-053018 **Lab ID: 60271565004** Collected: 05/30/18 12:52 Received: 05/31/18 06:50 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	**0.085**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:32	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/04/18 11:40	06/06/18 19:32	7440-41-7	
Boron, Total Recoverable	**0.51**	mg/L	0.10	1	06/04/18 11:40	06/06/18 19:32	7440-42-8	
Calcium, Total Recoverable	**103**	mg/L	0.20	1	06/04/18 11:40	06/06/18 19:32	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:32	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:32	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:32	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	06/05/18 16:00	06/16/18 18:02	7440-36-0	
Arsenic, Total Recoverable	**0.0039**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:02	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/05/18 16:00	06/16/18 18:02	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:02	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:02	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:02	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/18/18 13:46	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 10:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**558**	mg/L	5.0	1		06/05/18 16:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/31/18 16:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**40.6**	mg/L	5.0	5		06/07/18 16:15	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		06/07/18 12:58	16984-48-8	
Sulfate	**179**	mg/L	20.0	20		06/07/18 16:30	14808-79-8	B

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60271565

Sample: DUP-053018 **Lab ID: 60271565005** Collected: 05/30/18 06:00 Received: 05/31/18 06:50 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	**0.038**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:36	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/04/18 11:40	06/06/18 19:36	7440-41-7	
Boron, Total Recoverable	**7.5**	mg/L	0.10	1	06/04/18 11:40	06/06/18 19:36	7440-42-8	
Calcium, Total Recoverable	**569**	mg/L	0.20	1	06/04/18 11:40	06/06/18 19:36	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	06/04/18 11:40	06/06/18 19:36	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:36	7439-92-1	
Lithium	**0.28**	mg/L	0.010	1	06/04/18 11:40	06/06/18 19:36	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**0.0021**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:05	7440-36-0	
Arsenic, Total Recoverable	**0.011**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:05	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	06/05/18 16:00	06/16/18 18:05	7440-43-9	
Cobalt, Total Recoverable	**0.0052**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:05	7440-48-4	
Molybdenum, Total Recoverable	**0.23**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:05	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/16/18 18:05	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	06/05/18 16:00	06/18/18 13:48	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	06/05/18 13:55	06/06/18 10:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**5580**	mg/L	5.0	1		06/05/18 16:24		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		05/31/18 16:55		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1180**	mg/L	100	100		06/07/18 16:45	16887-00-6	
Fluoride	**1.0**	mg/L	0.20	1		06/07/18 13:13	16984-48-8	
Sulfate	**2540**	mg/L	200	200		06/07/18 17:00	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 FGD NEW
Pace Project No.: 60271565

QC Batch: 528689 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

METHOD BLANK: 2165763 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	06/06/18 09:31	

LABORATORY CONTROL SAMPLE: 2165764

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: 2165765 2165766

Parameter	Units	60270293001 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	0.0050	0.0049	100	97	70-130	3	20	

MATRIX SPIKE SAMPLE: 2165767

Parameter	Units	60271119002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0048	95	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528444 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

METHOD BLANK: 2164905 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	06/06/18 18:50	
Beryllium	mg/L	<0.0010	0.0010	06/06/18 18:50	
Boron	mg/L	<0.10	0.10	06/06/18 18:50	
Calcium	mg/L	<0.20	0.20	06/06/18 18:50	
Chromium	mg/L	<0.0050	0.0050	06/06/18 18:50	
Lead	mg/L	<0.010	0.010	06/06/18 18:50	
Lithium	mg/L	<0.010	0.010	06/06/18 18:50	

LABORATORY CONTROL SAMPLE: 2164906

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.1	105	85-115	
Beryllium	mg/L	1	1.0	101	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10.2	102	85-115	
Chromium	mg/L	1	1.1	106	85-115	
Lead	mg/L	1	1.0	104	85-115	
Lithium	mg/L	1	1.0	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2164907 2164908

Parameter	Units	60271565001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.15	1	1	1.1	1.0	91	90	70-130	1	20	
Beryllium	mg/L	<0.0010	1	1	1.0	0.97	100	97	70-130	2	20	
Boron	mg/L	0.13	1	1	1.3	1.3	118	116	70-130	2	20	
Calcium	mg/L	103	10	10	216	212	1140	1100	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	1.0	1.0	104	102	70-130	2	20	
Lead	mg/L	<0.010	1	1	1.0	0.98	100	97	70-130	2	20	
Lithium	mg/L	0.024	1	1	1.0	1.0	102	101	70-130	1	20	

MATRIX SPIKE SAMPLE: 2164909

Parameter	Units	60271565005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.038	1	1.0	100	70-130	
Beryllium	mg/L	<0.0010	1	0.94	94	70-130	
Boron	mg/L	7.5	1	8.2	74	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 FGD NEW
Pace Project No.: 60271565

MATRIX SPIKE SAMPLE: 2164909

Parameter	Units	60271565005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	569	10	561	-82	70-130	M1
Chromium	mg/L	<0.0050	1	0.99	99	70-130	
Lead	mg/L	<0.010	1	0.91	91	70-130	
Lithium	mg/L	0.28	1	1.3	103	70-130	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528635 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

METHOD BLANK: 2165561 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	06/16/18 16:36	
Arsenic	mg/L	<0.0010	0.0010	06/16/18 16:36	
Cadmium	mg/L	<0.00050	0.00050	06/16/18 16:36	
Cobalt	mg/L	<0.0010	0.0010	06/16/18 16:36	
Molybdenum	mg/L	<0.0010	0.0010	06/16/18 16:36	
Selenium	mg/L	<0.0010	0.0010	06/16/18 16:36	
Thallium	mg/L	<0.0010	0.0010	06/18/18 13:27	

LABORATORY CONTROL SAMPLE: 2165562

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.042	106	85-115	
Arsenic	mg/L	.04	0.042	104	85-115	
Cadmium	mg/L	.04	0.043	106	85-115	
Cobalt	mg/L	.04	0.040	101	85-115	
Molybdenum	mg/L	.04	0.042	105	85-115	
Selenium	mg/L	.04	0.042	104	85-115	
Thallium	mg/L	.04	0.042	105	85-115	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528696 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

METHOD BLANK: 2165812 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	06/05/18 16:24	

LABORATORY CONTROL SAMPLE: 2165813

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

SAMPLE DUPLICATE: 2165814

Parameter	Units	60271565001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	542	544	0	10	

SAMPLE DUPLICATE: 2165815

Parameter	Units	60271727001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	614	608	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528163 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

SAMPLE DUPLICATE: 2163432

Parameter	Units	60271565005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528657 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60271565001, 60271565002

METHOD BLANK: 2165647 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	06/05/18 11:48	

LABORATORY CONTROL SAMPLE: 2165648

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: 2165649 2165650

Parameter	Units	60270293001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.58	2.5	2.5	3.2	3.1	104	102	90-110	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60271565

QC Batch: 528825 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

METHOD BLANK: 2166340 Matrix: Water
Associated Lab Samples: 60271565001, 60271565002, 60271565003, 60271565004, 60271565005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	06/07/18 09:29	
Fluoride	mg/L	<0.20	0.20	06/07/18 09:29	
Sulfate	mg/L	<1.0	1.0	06/07/18 09:29	

LABORATORY CONTROL SAMPLE: 2166341

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2166342 2166343

Parameter	Units	60271564003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	<23.1	250	250	252	252	92	92	90-110	0	15	
Fluoride	mg/L	<3.1	125	125	124	125	99	100	90-110	1	15	
Sulfate	mg/L	383	250	250	654	641	109	103	90-110	2	15	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60271565

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
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 FGD NEW
Pace Project No.: 60271565

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271565001	**FGD-7-053018**	EPA 200.7	528444	EPA 200.7	528564
60271565002	**FGD-6-053018**	EPA 200.7	528444	EPA 200.7	528564
60271565003	**FGD-8-053018**	EPA 200.7	528444	EPA 200.7	528564
60271565004	**FGD-9-053018**	EPA 200.7	528444	EPA 200.7	528564
60271565005	**DUP-053018**	EPA 200.7	528444	EPA 200.7	528564
60271565001	**FGD-7-053018**	EPA 200.8	528635	EPA 200.8	528663
60271565002	**FGD-6-053018**	EPA 200.8	528635	EPA 200.8	528663
60271565003	**FGD-8-053018**	EPA 200.8	528635	EPA 200.8	528663
60271565004	**FGD-9-053018**	EPA 200.8	528635	EPA 200.8	528663
60271565005	**DUP-053018**	EPA 200.8	528635	EPA 200.8	528663
60271565001	**FGD-7-053018**	EPA 245.1	528689	EPA 245.1	528707
60271565002	**FGD-6-053018**	EPA 245.1	528689	EPA 245.1	528707
60271565003	**FGD-8-053018**	EPA 245.1	528689	EPA 245.1	528707
60271565004	**FGD-9-053018**	EPA 245.1	528689	EPA 245.1	528707
60271565005	**DUP-053018**	EPA 245.1	528689	EPA 245.1	528707
60271565001	**FGD-7-053018**	SM 2540C	528696		
60271565002	**FGD-6-053018**	SM 2540C	528696		
60271565003	**FGD-8-053018**	SM 2540C	528696		
60271565004	**FGD-9-053018**	SM 2540C	528696		
60271565005	**DUP-053018**	SM 2540C	528696		
60271565001	**FGD-7-053018**	SM 4500-H+B	528163		
60271565002	**FGD-6-053018**	SM 4500-H+B	528163		
60271565003	**FGD-8-053018**	SM 4500-H+B	528163		
60271565004	**FGD-9-053018**	SM 4500-H+B	528163		
60271565005	**DUP-053018**	SM 4500-H+B	528163		
60271565001	**FGD-7-053018**	EPA 300.0	528657		
60271565001	**FGD-7-053018**	EPA 300.0	528825		
60271565002	**FGD-6-053018**	EPA 300.0	528657		
60271565002	**FGD-6-053018**	EPA 300.0	528825		
60271565003	**FGD-8-053018**	EPA 300.0	528825		
60271565004	**FGD-9-053018**	EPA 300.0	528825		
60271565005	**DUP-053018**	EPA 300.0	528825		

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Sample Condition Upon Receipt

WO#: 60271565

60271565

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 ☒ Zip IC

Thermometer Used: T300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.8 **Corr. Factor** +1.2 **Corrected** 2.0

Date and initials of person examining contents: HW 5/31/18

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☒N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: REVIEWED By hwilson at 3:49 pm, 5/31/18 Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

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Page: 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
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
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)

Pace Project No./ Lab I.D.: 6027565

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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	~~Ra226/Ra228~~ (DMW 5/31/18)			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-7-053018	WT	G			5/30	1102		2	1		1							BPIN,					BPIO					001
2	FGD-6-053018	WT	G			5/30	0917		2	1		1																	002
3	FGD-8-053018	WT	G			5/30	1155		2	1		1																	003
4	FGD-9-053018	WT	G			5/30	1252		2	1		1																	004
5																													
6																													
7																													
8																													
9																													
10																													
11	DUP-053018	WT	G			5/30	0600		2	1		1																	005
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	BJJ / Westar	5/30/18	1400	UZ ipf / Pace	5/31/18	0650	2.0	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, 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: BJJ   DATE Signed (MM/DD/YY): 05/30/18

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

June 22, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60271691

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on June 01, 2018. 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: Andrew Hare, Westar Energy
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, WESTAR ENERGY
Melissa Michels, Westar Energy

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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60271691

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60271691

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60271691001	**FGD-7-053018**	Water	05/30/18 11:02	06/01/18 11:00
60271691002	**FGD-6-053018**	Water	05/30/18 09:17	06/01/18 11:00
60271691003	**FGD-8-053018**	Water	05/30/18 11:55	06/01/18 11:00
60271691004	**FGD-9-053018**	Water	05/30/18 12:52	06/01/18 11:00
60271691005	**DUP-053018**	Water	05/30/18 06:00	06/01/18 11:00

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60271691

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60271691001	**FGD-7-053018**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271691002	**FGD-6-053018**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271691003	**FGD-8-053018**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271691004	**FGD-9-053018**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60271691005	**DUP-053018**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60271691

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: June 22, 2018

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 FGD NEW
Pace Project No.: 60271691

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: June 22, 2018

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 FGD NEW
Pace Project No.: 60271691

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: June 22, 2018

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

Sample: FGD-7-053018 **Lab ID: 60271691001** Collected: 05/30/18 11:02 Received: 06/01/18 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.623 ± 0.407 (0.417) C:NA T:89%**	pCi/L	06/21/18 12:44	13982-63-3	
Radium-228	EPA 904.0	**0.181 ± 0.333 (0.730) C:74% T:88%**	pCi/L	06/21/18 12:07	15262-20-1	
Total Radium	Total Radium Calculation	**0.804 ± 0.740 (1.15)**	pCi/L	06/22/18 13:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

Sample: FGD-6-053018 **Lab ID: 60271691002** Collected: 05/30/18 09:17 Received: 06/01/18 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**4.13 ± 1.11 (0.626) C:NA T:87%**	pCi/L	06/21/18 12:44	13982-63-3	
Radium-228	EPA 904.0	**0.850 ± 0.486 (0.868) C:78% T:82%**	pCi/L	06/21/18 15:26	15262-20-1	
Total Radium	Total Radium Calculation	**4.98 ± 1.60 (1.49)**	pCi/L	06/22/18 13:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

Sample: FGD-8-053018 **Lab ID: 60271691003** Collected: 05/30/18 11:55 Received: 06/01/18 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.671 ± 0.438 (0.449) C:NA T:85%**	pCi/L	06/21/18 12:44	13982-63-3	
Radium-228	EPA 904.0	**0.832 ± 0.474 (0.847) C:78% T:88%**	pCi/L	06/21/18 15:26	15262-20-1	
Total Radium	Total Radium Calculation	**1.50 ± 0.912 (1.30)**	pCi/L	06/22/18 13:41	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

Sample: FGD-9-053018 **Lab ID: 60271691004** Collected: 05/30/18 12:52 Received: 06/01/18 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.204 ± 0.401 (0.733) C:NA T:70%**	pCi/L	06/21/18 12:44	13982-63-3	
Radium-228	EPA 904.0	**0.105 ± 0.382 (0.870) C:76% T:86%**	pCi/L	06/21/18 15:26	15262-20-1	
Total Radium	Total Radium Calculation	**0.309 ± 0.783 (1.60)**	pCi/L	06/22/18 13:41	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

Sample: DUP-053018 **Lab ID: 60271691005** Collected: 05/30/18 06:00 Received: 06/01/18 11:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.74 ± 0.969 (0.880) C:NA T:85%**	pCi/L	06/20/18 19:32	13982-63-3	
Radium-228	EPA 904.0	**1.64 ± 0.581 (0.806) C:76% T:84%**	pCi/L	06/20/18 16:30	15262-20-1	
Total Radium	Total Radium Calculation	**4.38 ± 1.55 (1.69)**	pCi/L	06/22/18 13:41	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 FGD NEW
Pace Project No.: 60271691

QC Batch: 301381 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60271691001, 60271691002, 60271691003, 60271691004

METHOD BLANK: 1474541 Matrix: Water
Associated Lab Samples: 60271691001, 60271691002, 60271691003, 60271691004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.432 ± 0.329 (0.638) C:77% T:77%	pCi/L	06/21/18 12:07	

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

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

QC Batch: 301384 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60271691005

METHOD BLANK: 1474543 Matrix: Water
Associated Lab Samples: 60271691005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.630 ± 0.424 (0.810) C:72% T:77%	pCi/L	06/20/18 14:24	

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 FGD NEW
Pace Project No.: 60271691

QC Batch: 301355 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60271691001, 60271691002, 60271691003, 60271691004

METHOD BLANK: 1474501 Matrix: Water
Associated Lab Samples: 60271691001, 60271691002, 60271691003, 60271691004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.158 ± 0.344 (0.634) C:NA T:90%	pCi/L	06/21/18 12:00	

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

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60271691

QC Batch: 301356
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60271691005

METHOD BLANK: 1474502
Matrix: Water
Associated Lab Samples: 60271691005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.303 ± 0.396 (0.653) C:NA T:83%	pCi/L	06/20/18 19:16	

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

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60271691

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60271691

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60271691001	**FGD-7-053018**	EPA 903.1	301355		
60271691002	**FGD-6-053018**	EPA 903.1	301355		
60271691003	**FGD-8-053018**	EPA 903.1	301355		
60271691004	**FGD-9-053018**	EPA 903.1	301355		
60271691005	**DUP-053018**	EPA 903.1	301356		
60271691001	**FGD-7-053018**	EPA 904.0	301381		
60271691002	**FGD-6-053018**	EPA 904.0	301381		
60271691003	**FGD-8-053018**	EPA 904.0	301381		
60271691004	**FGD-9-053018**	EPA 904.0	301381		
60271691005	**DUP-053018**	EPA 904.0	301384		
60271691001	**FGD-7-053018**	Total Radium Calculation	303289		
60271691002	**FGD-6-053018**	Total Radium Calculation	303289		
60271691003	**FGD-8-053018**	Total Radium Calculation	303289		
60271691004	**FGD-9-053018**	Total Radium Calculation	303289		
60271691005	**DUP-053018**	Total Radium Calculation	303289		

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: 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.:	10JEC-00000 33150
Project Name:	JEC ~~GCR Groundwater~~ FGD New
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, F, SO_4	4500 H^+ B	2540C TDS	Radium 226	Radium 228			Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-7-053018	WT	G			5/30	1102		2			2																
2	FGD-6-053018	WT	G			5/30	0917		2			2																
3	FGD-8-053018	WT	G			5/30	1155		2			2																
4	FGD-9-053018	WT	G			5/30	1252		2			2																
5																													
6																													
7																													
8																													
9																													
10																													
11	DUP-053018	WT	G			5/30	0600		2			2																
12																													

Requested Analysis Filtered (Y/N)

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	BJF / Westar	5/31/18	0815		6-1-18	1100	4.9	Y	N	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Brandon Griffin		
SIGNATURE of SAMPLER:	BJF	DATE Signed (MM/DD/YY):	05/30/18

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.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Westar Energy Project # _____

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

Label _____
LIMS Login

Tracking #: 4368 7275 5708

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

Thermometer Used 7 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 5 °C Correction Factor: -0.1 °C Final Temp: 4.9 °C

Temp should be above freezing to 6°C

pH paper Lot# 111D3611 Date and Initials of person examining contents: BXH 6-1-18

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed BXH 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: BXH Date: 6-1-18

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

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS

Pace Analytical® www.pacelabs.com

Workorder: 60271691 **Workorder Name:** JEC FGD NEW

Owner Received Date: 6/1/2018 **Results Requested By:** 6/22/2018

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# : 30254723

30254723

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Radium-226 & Total Radium	Requested Analysis: Radium-228	LAB USE ONLY
1	FGD-7-053018	PS	5/30/2018 11:02	60271691001	Water	2	X	X	001
2	FGD-6-053018	PS	5/30/2018 09:17	60271691002	Water	2	X	X	002
3	FGD-8-053018	PS	5/30/2018 11:55	60271691003	Water	2	X	X	003
4	FGD-9-053018	PS	5/30/2018 12:52	60271691004	Water	2	X	X	004
5	DUP-053018	PS	5/30/2018 06:00	60271691005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	6-1-18 1100
2				
3				

Comments

Cooler Temperature on Receipt 4.9 °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.*

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: 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.:	(0JEC-00000 33,450
Project Name:	JEC ~~CCR Groundwater~~ FGD New
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, SO_4	4500 H+B	2540C TDS	Radium 226	Radium 228	30254723	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-7-053018	WT	G			5/30	1102		2			2															
2	FGD-6-053018	WT	G			5/30	0917		2			2															
3	FGD-8-053018	WT	G			5/30	1155		2			2															
4	FGD-9-053018	WT	G			5/30	1252		2			2															
5																											
6																											
7																											
8																											
9																											
10																											
11	DUP-053018	WT	G			5/30	0600		2			2															
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	BJF / Westar	5/31/18	0815		6-1-18	1110	4.9	Y	N	Y
**200.8 Total Metals: Co, As, Se, Mo, Cd, Sb, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BJF DATE Signed (MM/DD/YY): 05/30/18

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.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Westar Energy Project # 30254723

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

Label BXH
LIMS Login BXH

Tracking #: 4368 7275 5708

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

Thermometer Used 7 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 5 °C Correction Factor: -0.1 °C Final Temp: 4.9 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 1103671 / Date and Initials of person examining contents: BXH 6-1-18
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed BXH / 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: BXH Date: 6-1-18

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 1-1-3
July 2018 Sampling Events
Laboratory Analytical Reports

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

July 27, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60274226

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 06, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60274226

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60274226

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60274226001	**FGD-6-070318**	Water	07/03/18 09:15	07/06/18 06:30
60274226002	**FGD-7-070318**	Water	07/03/18 10:32	07/06/18 06:30
60274226003	**FGD-8-070318**	Water	07/03/18 11:21	07/06/18 06:30
60274226004	**FGD-9-070318**	Water	07/03/18 12:39	07/06/18 06:30
60274226005	**DUP-070318**	Water	07/03/18 06:00	07/06/18 06:30

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60274226

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60274226001	**FGD-6-070318**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LMB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60274226002	**FGD-7-070318**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LMB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60274226003	**FGD-8-070318**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LMB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60274226004	**FGD-9-070318**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LMB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60274226005	**DUP-070318**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LMB	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274226

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 27, 2018

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: 533255

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60274227003,60274227004

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

- MS (Lab ID: 2183990)
  - Calcium
- MSD (Lab ID: 2183989)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274226

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 27, 2018

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274226

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 27, 2018

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:

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274226

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: July 27, 2018

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:

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274226

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 27, 2018

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-070318 (Lab ID: 60274226005)
- FGD-6-070318 (Lab ID: 60274226001)
- FGD-7-070318 (Lab ID: 60274226002)
- FGD-8-070318 (Lab ID: 60274226003)
- FGD-9-070318 (Lab ID: 60274226004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60274226

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 27, 2018

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

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

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

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

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

QC Batch: 534413

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60274281001

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

- MS (Lab ID: 2188755)
  - Fluoride

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 FGD NEW
Pace Project No.: 60274226

Sample: FGD-6-070318 **Lab ID: 60274226001** Collected: 07/03/18 09:15 Received: 07/06/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.031**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/16/18 12:22	7440-41-7	
Boron, Total Recoverable	**9.1**	mg/L	0.10	1	07/06/18 16:30	07/16/18 12:22	7440-42-8	
Calcium, Total Recoverable	**582**	mg/L	0.20	1	07/06/18 16:30	07/16/18 12:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:22	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:22	7439-92-1	
Lithium	**0.36**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:22	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	07/06/18 16:30	07/13/18 01:10	7440-36-0	
Arsenic, Total Recoverable	**0.016**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:10	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/06/18 16:30	07/13/18 01:10	7440-43-9	
Cobalt, Total Recoverable	**0.0036**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:10	7440-48-4	
Molybdenum, Total Recoverable	**0.13**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:10	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:10	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:10	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/16/18 10:20	07/16/18 16:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**7060**	mg/L	5.0	1		07/09/18 11:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		07/09/18 18:03		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1640**	mg/L	200	200		07/15/18 20:51	16887-00-6	
Fluoride	**0.96**	mg/L	0.20	1		07/14/18 14:21	16984-48-8	
Sulfate	**2560**	mg/L	200	200		07/15/18 20:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60274226

Sample: FGD-7-070318 **Lab ID: 60274226002** Collected: 07/03/18 10:32 Received: 07/06/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.15**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/16/18 12:24	7440-41-7	
Boron, Total Recoverable	**0.16**	mg/L	0.10	1	07/06/18 16:30	07/16/18 12:24	7440-42-8	
Calcium, Total Recoverable	**99.6**	mg/L	0.20	1	07/06/18 16:30	07/16/18 12:24	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:24	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:24	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:24	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/06/18 16:30	07/13/18 01:13	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7440-48-4	
Molybdenum, Total Recoverable	**0.0032**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:13	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/16/18 10:20	07/16/18 16:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**544**	mg/L	5.0	1		07/09/18 11:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		07/09/18 18:05		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**48.6**	mg/L	10.0	10		07/15/18 21:06	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		07/14/18 14:35	16984-48-8	
Sulfate	**109**	mg/L	10.0	10		07/15/18 21:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60274226

Sample: FGD-8-070318 **Lab ID: 60274226003** Collected: 07/03/18 11:21 Received: 07/06/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.058**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:26	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/16/18 12:26	7440-41-7	
Boron, Total Recoverable	**0.19**	mg/L	0.10	1	07/06/18 16:30	07/16/18 12:26	7440-42-8	
Calcium, Total Recoverable	**108**	mg/L	0.20	1	07/06/18 16:30	07/16/18 12:26	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:26	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:26	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:26	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7440-36-0	
Arsenic, Total Recoverable	**0.0012**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/06/18 16:30	07/13/18 01:15	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7440-48-4	
Molybdenum, Total Recoverable	**0.0064**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:15	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/16/18 10:20	07/16/18 16:38	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**594**	mg/L	5.0	1		07/09/18 11:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		07/09/18 18:07		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**41.0**	mg/L	5.0	5		07/15/18 21:21	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		07/14/18 14:50	16984-48-8	
Sulfate	**185**	mg/L	20.0	20		07/15/18 21:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60274226

Sample: FGD-9-070318 **Lab ID: 60274226004** Collected: 07/03/18 12:39 Received: 07/06/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.083**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:28	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/16/18 12:28	7440-41-7	
Boron, Total Recoverable	**0.50**	mg/L	0.10	1	07/06/18 16:30	07/16/18 12:28	7440-42-8	
Calcium, Total Recoverable	**96.2**	mg/L	0.20	1	07/06/18 16:30	07/16/18 12:28	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:28	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:28	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 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	07/06/18 16:30	07/13/18 01:18	7440-36-0	
Arsenic, Total Recoverable	**0.0035**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:18	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/06/18 16:30	07/13/18 01:18	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:18	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:18	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:18	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:18	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/16/18 10:20	07/16/18 16:40	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**578**	mg/L	5.0	1		07/09/18 11:21		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		07/09/18 18:10		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.7**	mg/L	5.0	5		07/15/18 21:51	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		07/14/18 15:04	16984-48-8	
Sulfate	**179**	mg/L	20.0	20		07/15/18 22:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60274226

Sample: DUP-070318 **Lab ID: 60274226005** Collected: 07/03/18 06:00 Received: 07/06/18 06:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.065**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:31	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/16/18 12:31	7440-41-7	
Boron, Total Recoverable	**0.18**	mg/L	0.10	1	07/06/18 16:30	07/16/18 12:31	7440-42-8	
Calcium, Total Recoverable	**107**	mg/L	0.20	1	07/06/18 16:30	07/16/18 12:31	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/06/18 16:30	07/16/18 12:31	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:31	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/06/18 16:30	07/16/18 12:31	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/06/18 16:30	07/13/18 01:20	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7440-48-4	
Molybdenum, Total Recoverable	**0.0062**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/06/18 16:30	07/13/18 01:20	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/16/18 10:20	07/16/18 16:47	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**578**	mg/L	5.0	1		07/10/18 13:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		07/09/18 17:54		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**43.0**	mg/L	5.0	5		07/15/18 22:21	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		07/14/18 15:18	16984-48-8	
Sulfate	**185**	mg/L	20.0	20		07/15/18 22:36	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

QC Batch: 534454 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

METHOD BLANK: 2189250 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/16/18 16:20	

LABORATORY CONTROL SAMPLE: 2189251

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0055	109	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2189252 2189253

Parameter	Units	60273843001 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	101	101	70-130	0	20	

MATRIX SPIKE SAMPLE: 2189254

Parameter	Units	60274221001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.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 FGD NEW
Pace Project No.: 60274226

QC Batch: 533255 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

METHOD BLANK: 2183986 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/16/18 12:20	
Beryllium	mg/L	<0.0010	0.0010	07/16/18 12:20	
Boron	mg/L	<0.10	0.10	07/16/18 12:20	
Calcium	mg/L	<0.20	0.20	07/16/18 12:20	
Chromium	mg/L	<0.0050	0.0050	07/16/18 12:20	
Lead	mg/L	<0.010	0.010	07/16/18 12:20	
Lithium	mg/L	<0.010	0.010	07/16/18 12:20	

LABORATORY CONTROL SAMPLE: 2183987

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	0.98	98	85-115	
Calcium	mg/L	10	9.6	96	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2183988 2183989

Parameter	Units	60274227003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.034	1	1	1.0	0.99	98	96	70-130	2	20	
Beryllium	mg/L	<0.0010	1	1	0.97	0.95	97	95	70-130	2	20	
Boron	mg/L	0.20	1	1	1.2	1.2	100	97	70-130	3	20	
Calcium	mg/L	204	10	10	213	210	85	59	70-130	1	20	M1
Chromium	mg/L	<0.0050	1	1	0.98	0.97	98	97	70-130	1	20	
Lead	mg/L	<0.010	1	1	0.97	0.95	97	94	70-130	2	20	
Lithium	mg/L	0.019	1	1	1.1	1.0	104	102	70-130	2	20	

MATRIX SPIKE SAMPLE: 2183990

Parameter	Units	60274227004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.033	1	1.0	98	70-130	
Beryllium	mg/L	<0.0010	1	0.98	98	70-130	
Boron	mg/L	0.37	1	1.4	100	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

MATRIX SPIKE SAMPLE: 2183990

Parameter	Units	60274227004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	296	10	313	173	70-130	M1
Chromium	mg/L	<0.0050	1	1.0	100	70-130	
Lead	mg/L	<0.010	1	0.96	96	70-130	
Lithium	mg/L	0.015	1	1.1	104	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 FGD NEW
Pace Project No.: 60274226

QC Batch: 533254 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

METHOD BLANK: 2183980 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/12/18 14:24	
Arsenic	mg/L	<0.0010	0.0010	07/12/18 14:24	
Cadmium	mg/L	<0.00050	0.00050	07/12/18 14:24	
Cobalt	mg/L	<0.0010	0.0010	07/12/18 14:24	
Molybdenum	mg/L	<0.0010	0.0010	07/12/18 14:24	
Selenium	mg/L	<0.0010	0.0010	07/12/18 14:24	
Thallium	mg/L	<0.0010	0.0010	07/12/18 14:24	

LABORATORY CONTROL SAMPLE: 2183981

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	102	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.039	97	85-115	
Molybdenum	mg/L	.04	0.040	100	85-115	
Selenium	mg/L	.04	0.040	99	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2183982 2183983

Parameter	Units	60274190001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<5.0 ug/L	.04	.04	0.043	0.043	98	98	70-130	0	20	
Arsenic	mg/L	5.6 ug/L	.04	.04	0.046	0.046	101	102	70-130	1	20	
Cadmium	mg/L	<2.5 ug/L	.04	.04	0.037	0.036	90	88	70-130	2	20	
Cobalt	mg/L	<5.0 ug/L	.04	.04	0.038	0.038	89	89	70-130	0	20	
Molybdenum	mg/L	131 ug/L	.04	.04	0.17	0.17	88	84	70-130	1	20	
Selenium	mg/L	80.2 ug/L	.04	.04	0.12	0.12	104	107	70-130	1	20	
Thallium	mg/L	<5.0 ug/L	.04	.04	0.034	0.034	85	85	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 FGD NEW
Pace Project No.: 60274226

QC Batch: 533427 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004

METHOD BLANK: 2184817 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/09/18 11:21	

LABORATORY CONTROL SAMPLE: 2184818

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

SAMPLE DUPLICATE: 2184819

Parameter	Units	60274099003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	894	893	0	10	

SAMPLE DUPLICATE: 2184820

Parameter	Units	60274126003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	414	410	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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(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

QC Batch: 533628 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60274226005

METHOD BLANK: 2185372 Matrix: Water
Associated Lab Samples: 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/10/18 13:07	

LABORATORY CONTROL SAMPLE: 2185373

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

SAMPLE DUPLICATE: 2185374

Parameter	Units	60274226005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	578	567	2	10	

SAMPLE DUPLICATE: 2185375

Parameter	Units	60274277002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2120	2200	3	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

QC Batch: 533489 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

SAMPLE DUPLICATE: 2184986

Parameter	Units	60274082007 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	1	5	H6

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

QC Batch: 534413 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

METHOD BLANK: 2188753 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/14/18 08:50	

LABORATORY CONTROL SAMPLE: 2188754

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: 2188755 2188756

Parameter	Units	60274281001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	88.7	500	500	522	579	87	98	90-110	10	15	M1

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REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60274226

QC Batch: 534436 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

METHOD BLANK: 2189075 Matrix: Water
Associated Lab Samples: 60274226001, 60274226002, 60274226003, 60274226004, 60274226005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	07/15/18 14:50	
Sulfate	mg/L	<1.0	1.0	07/15/18 14:50	

LABORATORY CONTROL SAMPLE: 2189076

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Sulfate	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2189077 2189078

Parameter	Units	60274189001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	693	500	500	1170	1190	94	99	90-110	2	15	

MATRIX SPIKE SAMPLE: 2189079

Parameter	Units	60274190001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	2070	1000	3080	100	90-110	
Sulfate	mg/L	1920	1000	2890	97	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60274226

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

SAMPLE QUALIFIERS

Sample: 60274226001
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226002
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226003
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226004
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226005
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

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.

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 FGD NEW
Pace Project No.: 60274226

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60274226001	**FGD-6-070318**	EPA 200.7	533255	EPA 200.7	533285
60274226002	**FGD-7-070318**	EPA 200.7	533255	EPA 200.7	533285
60274226003	**FGD-8-070318**	EPA 200.7	533255	EPA 200.7	533285
60274226004	**FGD-9-070318**	EPA 200.7	533255	EPA 200.7	533285
60274226005	**DUP-070318**	EPA 200.7	533255	EPA 200.7	533285
60274226001	**FGD-6-070318**	EPA 200.8	533254	EPA 200.8	533287
60274226002	**FGD-7-070318**	EPA 200.8	533254	EPA 200.8	533287
60274226003	**FGD-8-070318**	EPA 200.8	533254	EPA 200.8	533287
60274226004	**FGD-9-070318**	EPA 200.8	533254	EPA 200.8	533287
60274226005	**DUP-070318**	EPA 200.8	533254	EPA 200.8	533287
60274226001	**FGD-6-070318**	EPA 245.1	534454	EPA 245.1	534552
60274226002	**FGD-7-070318**	EPA 245.1	534454	EPA 245.1	534552
60274226003	**FGD-8-070318**	EPA 245.1	534454	EPA 245.1	534552
60274226004	**FGD-9-070318**	EPA 245.1	534454	EPA 245.1	534552
60274226005	**DUP-070318**	EPA 245.1	534454	EPA 245.1	534552
60274226001	**FGD-6-070318**	SM 2540C	533427		
60274226002	**FGD-7-070318**	SM 2540C	533427		
60274226003	**FGD-8-070318**	SM 2540C	533427		
60274226004	**FGD-9-070318**	SM 2540C	533427		
60274226005	**DUP-070318**	SM 2540C	533628		
60274226001	**FGD-6-070318**	SM 4500-H+B	533489		
60274226002	**FGD-7-070318**	SM 4500-H+B	533489		
60274226003	**FGD-8-070318**	SM 4500-H+B	533489		
60274226004	**FGD-9-070318**	SM 4500-H+B	533489		
60274226005	**DUP-070318**	SM 4500-H+B	533489		
60274226001	**FGD-6-070318**	EPA 300.0	534413		
60274226001	**FGD-6-070318**	EPA 300.0	534436		
60274226002	**FGD-7-070318**	EPA 300.0	534413		
60274226002	**FGD-7-070318**	EPA 300.0	534436		
60274226003	**FGD-8-070318**	EPA 300.0	534413		
60274226003	**FGD-8-070318**	EPA 300.0	534436		
60274226004	**FGD-9-070318**	EPA 300.0	534413		
60274226004	**FGD-9-070318**	EPA 300.0	534436		
60274226005	**DUP-070318**	EPA 300.0	534413		
60274226005	**DUP-070318**	EPA 300.0	534436		

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Sample Condition Upon Receipt

WO# : 60274226

60274226

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: T298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 8.2 **Corr. Factor** +1.1 **Corrected** 9.3

HW
Date and initials of person examining contents: SK 7-6-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	OUT OF TEMP
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume: SK 7-6-18	☐Yes ☑No ☐N/A	INSUFFICIENT VOL. FOR METALS + RADIUM
Correct containers used:	☑Yes ☐No ☐N/A	ANALYSES
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: Brandon Griffin Date/Time: 7-6-18

Comments/ Resolution: Per client - analyze even though out of temp. SK

Project Manager Review: MJW for HMW Date: 7/6/18

F-KS-C-003-Rev.11, February 28, 2018

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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:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000033150	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW	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

Requested Analysis Filtered (Y/N)

ITEM #	Section D Required Client Information — SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	Valid Matrix Codes: MATRIX / CODE — DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WIPE WP; AIR AR; OTHER OT; TISSUE TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	Ra226/ Ra228		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																														60274220
1	FGD-6-070318		WT	G			7/3	0915		2	1	1	1															BP1N	BP1U		006
2	FGD-7-070318		WT	G			7/3	1032		2	1		1																		005
3	FGD-8-070318		WT	G			7/3	1121		2	1		1																		003
4	FGD-9-070318		WT	G			7/3	1239		2	1		1																		004
5																															
6																															
7																															
8																															
9																															
10																															
11	DUP-070318		WT	G			7/3	0600		2	1		1								X	X	X	X	X	X	X	BP1N	BP1U		005
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	Westar	7/5/18	1400	PACE	7-6-18	0630	93	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 07/03/18

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

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

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

July 31, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60274378

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 09, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revision 1 - This report replaces the July 30, 2018 report. This report has been reissued on July 31, 2018 to correct the sample IDs.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60274378

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60274378

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60274378001	**DUP-070318**	Water	07/02/18 06:00	07/09/18 09:30
60274226006	**FGD-6-070318**	Water	07/02/18 09:15	07/09/18 09:30
60274226007	**FGD-7-070318**	Water	07/02/18 10:32	07/09/18 09:30
60274226008	**FGD-8-070318**	Water	07/02/18 11:21	07/09/18 09:30
60274226009	**FGD-9-070318**	Water	07/02/18 12:39	07/09/18 09:30

Pace Analytical Services, LLC
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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60274378

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60274378001	**DUP-070318**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60274226006	**FGD-6-070318**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60274226007	**FGD-7-070318**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60274226008	**FGD-8-070318**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60274226009	**FGD-9-070318**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274378

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 31, 2018

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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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60274378

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 31, 2018

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 FGD NEW
Pace Project No.: 60274378

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 31, 2018

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

Sample: DUP-070318 **Lab ID: 60274378001** Collected: 07/02/18 06:00 Received: 07/09/18 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.612 ± 0.632 (0.959) C:NA T:88%**	pCi/L	07/20/18 10:20	13982-63-3	
Radium-228	EPA 904.0	**0.636 ± 0.469 (0.932) C:69% T:85%**	pCi/L	07/26/18 12:31	15262-20-1	
Total Radium	Total Radium Calculation	**1.25 ± 1.10 (1.89)**	pCi/L	07/27/18 14:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Lenexa, KS 66219
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

Sample: FGD-6-070318 **Lab ID: 60274226006** Collected: 07/02/18 09:15 Received: 07/09/18 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**4.49 ± 1.35 (1.04) C:NA T:86%**	pCi/L	07/20/18 10:36	13982-63-3	
Radium-228	EPA 904.0	**1.86 ± 0.710 (1.15) C:71% T:77%**	pCi/L	07/26/18 12:31	15262-20-1	
Total Radium	Total Radium Calculation	**6.35 ± 2.06 (2.19)**	pCi/L	07/27/18 14:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

Sample: FGD-7-070318 **Lab ID: 60274226007** Collected: 07/02/18 10:32 Received: 07/09/18 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.506 ± 0.528 (0.789) C:NA T:90%**	pCi/L	07/20/18 10:36	13982-63-3	
Radium-228	EPA 904.0	**-0.152 ± 0.441 (1.04) C:73% T:80%**	pCi/L	07/26/18 12:31	15262-20-1	
Total Radium	Total Radium Calculation	**0.506 ± 0.969 (1.83)**	pCi/L	07/27/18 14:50	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

Sample: FGD-8-070318 **Lab ID: 60274226008** Collected: 07/02/18 11:21 Received: 07/09/18 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.273 ± 0.530 (0.925) C:NA T:73%**	pCi/L	07/20/18 10:36	13982-63-3	
Radium-228	EPA 904.0	**0.470 ± 0.515 (1.09) C:73% T:85%**	pCi/L	07/26/18 12:31	15262-20-1	
Total Radium	Total Radium Calculation	**0.743 ± 1.05 (2.02)**	pCi/L	07/27/18 14:56	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

Sample: FGD-9-070318 **Lab ID: 60274226009** Collected: 07/02/18 12:39 Received: 07/09/18 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.67 ± 0.738 (0.648) C:NA T:90%**	pCi/L	07/20/18 10:36	13982-63-3	
Radium-228	EPA 904.0	**0.467 ± 0.453 (0.934) C:72% T:75%**	pCi/L	07/26/18 12:33	15262-20-1	
Total Radium	Total Radium Calculation	**2.14 ± 1.19 (1.58)**	pCi/L	07/27/18 14:56	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

QC Batch: 305487 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60274226006, 60274226007, 60274226008, 60274226009, 60274378001

METHOD BLANK: 1494000 Matrix: Water
Associated Lab Samples: 60274226006, 60274226007, 60274226008, 60274226009, 60274378001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.102 ± 0.350 (0.725) C:NA T:86%	pCi/L	07/20/18 10:20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60274378

QC Batch: 305494 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60274226006, 60274226007, 60274226008, 60274226009, 60274378001

METHOD BLANK: 1494007 Matrix: Water
Associated Lab Samples: 60274226006, 60274226007, 60274226008, 60274226009, 60274378001

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.597 ± 0.421 (0.814) C:76% T:76%	pCi/L	07/26/18 11:15	

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

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60274378

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

SAMPLE QUALIFIERS

Sample: 60274226006
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226007
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226008
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

Sample: 60274226009
[1] Samples requiring thermal preservation were received outside of recommended temperature limits of 0-6 degrees Celsius.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60274378

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60274226006	**FGD-6-070318**	EPA 903.1	305487		
60274226007	**FGD-7-070318**	EPA 903.1	305487		
60274226008	**FGD-8-070318**	EPA 903.1	305487		
60274226009	**FGD-9-070318**	EPA 903.1	305487		
60274378001	**DUP-070318**	EPA 903.1	305487		
60274226006	**FGD-6-070318**	EPA 904.0	305494		
60274226007	**FGD-7-070318**	EPA 904.0	305494		
60274226008	**FGD-8-070318**	EPA 904.0	305494		
60274226009	**FGD-9-070318**	EPA 904.0	305494		
60274378001	**DUP-070318**	EPA 904.0	305494		
60274226006	**FGD-6-070318**	Total Radium Calculation	307481		
60274226007	**FGD-7-070318**	Total Radium Calculation	307481		
60274226008	**FGD-8-070318**	Total Radium Calculation	307486		
60274226009	**FGD-9-070318**	Total Radium Calculation	307486		
60274378001	**DUP-070318**	Total Radium Calculation	307481		

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar Energy

WO# : 60274378

60274378

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

Tracking #: 4368 7276 9510

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

Thermometer Used DT 4 JVB Type of Ice: (Wet) Blue None melted

Cooler Temperature Observed Temp 12.3 °C Correction Factor: +0.1 °C Final Temp: 12.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D3671 Date and Initials of person examining contents: 7/9/18 JVB

Comments:	Yes	No	N/A
Chain of Custody Present:	✓		
Chain of Custody Filled Out:	✓		
Chain of Custody Relinquished:	✓		
Sampler Name & Signature on COC:	✓		
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓		
Samples Arrived within Hold Time:	✓		
Short Hold Time Analysis (<72hr remaining):		✓	
Rush Turn Around Time Requested:		✓	
Sufficient Volume:	✓		
Correct Containers Used: -Pace Containers Used:	✓		
Containers Intact:	✓		
Orthophosphate field filtered			✓
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓
Organic Samples checked for dechlorination:			✓
Filtered volume received for Dissolved tests			✓
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	✓		
Headspace in VOA Vials (>6mm):			✓
Trip Blank Present:		✓	
Trip Blank Custody Seals Present			✓
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓	

1.
2.
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14.
15.
16. pH<2

Initial when completed JVB Date/time of preservation

Lot # of added preservative

17.
18.

Initial when completed: JVB Date: 7/9/18

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.

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000033150	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	15 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

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	Requested Analysis Filtered (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-070318	WT	G			7/2	0915		2			2											60274776 60274378
2	FGD-7-070318	WT	G			7/2	1032		2			2											
3	FGD-8-070318	WT	G			7/2	1121		2			2											
4	FGD-9-070318	WT	G			7/2	1239		2			2											
5																							
6																							
7																							
8																							
9																							
10																							
11	DUP-070318	WT	G			7/2	0600		2			2								X	X	X		
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Brandon Griffin / Westar	7/5/18	1500	[signature] PACE	7/9/18	0930	12.4	Y	N	Y

SAMPLER NAME AND SIGNATURE				
PRINT Name of SAMPLER:	Brandon Griffin	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 07/03/18				

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

State Of Origin: KS

Workorder: 60274378 **Workorder Name:** JEC FGD NEW. **Owner Received Date:** 7/9/2018 **Results Requested By:** 7/31/2018

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# : 30258580

30258580

						Preserved Containers						Requested Analysis												
Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	HNO3						Combined Radium	Radium 226/ 228											LAB USE ONLY
1	FGD-6-070318	PS	7/2/2018 09:15	60274226006	Water	2						X	X											001
2	FGD-7-070318	PS	7/2/2018 10:32	60274226007	Water	2						X	X											002
3	FGD-8-070318	PS	7/2/2018 11:21	60274226008	Water	2						X	X											003
4	FGD-9-070318	PS	7/2/2018 12:39	60274226009	Water	2						X	X											004
5	DUP-070318	PS	7/2/2018 06:00	60274378001	Water	2						X	X											005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature] PACE	7/9/18 0930
2				
3				

Comments

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

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30258580

Page: 1 of 1

Section A — Required Client Information:

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

Section B — Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-070318	WT	G			7/2	0915		2			2											
2	FGD-7-070318	WT	G			7/2	1032		2			2											
3	FGD-8-070318	WT	G			7/2	1121		2			2											
4	FGD-9-070318	WT	G			7/2	1239		2			2											
5																							
6																							
7																							
8																							
9																							
10																							
11	DUP-070318	WT	G			7/2	0600		2			2								X	X	X		
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Brandon Griffin / Westar	7/5/18	1500	PACE	7/9/18	0930	12.4	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 07/03/18

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Westar Energy Project # 30258580

Label: JLB
LIMS Login: CAF

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

Tracking #: 4368 7276 9510

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

Thermometer Used: ~~AT~~ 6 7/9/18 JLB Type of Ice: (Wet) Blue None melted

Cooler Temperature: Observed Temp 12.3 °C Correction Factor: +0.1 °C Final Temp: 12.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2671 Date and Initials of person examining contents: 7/9/18 JLB

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2
				Initial when completed: JLB 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: JLB Date: 7/9/18

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 26, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60275027

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 17, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60275027

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60275027

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60275027001	**FGD-6-071618**	Water	07/16/18 09:55	07/17/18 15:55
60275027002	**FGD-7-071718**	Water	07/16/18 11:06	07/17/18 15:55
60275027003	**FGD-8-071618**	Water	07/16/18 11:58	07/17/18 15:55
60275027004	**FGD-9-071618**	Water	07/16/18 13:06	07/17/18 15:55
60275027005	**DUP-071618**	Water	07/16/18 06:00	07/17/18 15:55

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60275027

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60275027001	**FGD-6-071618**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS1	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60275027002	**FGD-7-071718**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS1	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60275027003	**FGD-8-071618**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS1	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60275027004	**FGD-9-071618**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS1	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60275027005	**DUP-071618**	EPA 200.7	SMW	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CRN	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	CMS1	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60275027

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 26, 2018

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: 534930

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60275027001

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

- MS (Lab ID: 2190905)
  - Calcium
- MSD (Lab ID: 2190906)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60275027

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 26, 2018

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60275027

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 26, 2018

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 FGD NEW
Pace Project No.: 60275027

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: July 26, 2018

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 FGD NEW
Pace Project No.: 60275027

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: July 26, 2018

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-071618 (Lab ID: 60275027005)
- FGD-6-071618 (Lab ID: 60275027001)
- FGD-7-071718 (Lab ID: 60275027002)
- FGD-8-071618 (Lab ID: 60275027003)
- FGD-9-071618 (Lab ID: 60275027004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60275027

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 26, 2018

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

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

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

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

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

QC Batch: 535485

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60274996004,60275027001

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

- MS (Lab ID: 2194261)
  - Chloride

Additional Comments:

Analyte Comments:

QC Batch: 535485

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

- MS (Lab ID: 2194261)
  - Chloride

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

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60275027

Sample: FGD-6-071618 **Lab ID: 60275027001** Collected: 07/16/18 09:55 Received: 07/17/18 15:55 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	**0.028**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:27	7440-41-7	
Boron, Total Recoverable	**10.0**	mg/L	0.10	1	07/18/18 09:45	07/23/18 14:27	7440-42-8	
Calcium, Total Recoverable	**598**	mg/L	0.20	1	07/18/18 09:45	07/23/18 14:27	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:27	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:27	7439-92-1	
Lithium	**0.40**	mg/L	0.010	1	07/18/18 09:45	07/23/18 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	07/18/18 09:45	07/23/18 14:38	7440-36-0	
Arsenic, Total Recoverable	**0.017**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:38	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/18/18 09:45	07/23/18 14:38	7440-43-9	
Cobalt, Total Recoverable	**0.0019**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:38	7440-48-4	
Molybdenum, Total Recoverable	**0.089**	mg/L	0.0010	1	07/18/18 09:45	07/24/18 09:43	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:38	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:38	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/25/18 11:15	07/26/18 12:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**7170**	mg/L	5.0	1		07/20/18 08:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.1**	Std. Units	0.10	1		07/18/18 10:31		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1690**	mg/L	100	100		07/21/18 20:48	16887-00-6	M1
Fluoride	**1.4**	mg/L	0.20	1		07/21/18 01:59	16984-48-8	
Sulfate	**3070**	mg/L	200	200		07/23/18 13:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60275027

Sample: FGD-7-071718 **Lab ID: 60275027002** Collected: 07/16/18 11:06 Received: 07/17/18 15:55 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	**0.15**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:34	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:34	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	07/18/18 09:45	07/23/18 14:34	7440-42-8	
Calcium, Total Recoverable	**102**	mg/L	0.20	1	07/18/18 09:45	07/23/18 14:34	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:34	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:34	7439-92-1	
Lithium	**0.018**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:34	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:43	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:43	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/18/18 09:45	07/23/18 14:43	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:43	7440-48-4	
Molybdenum, Total Recoverable	**0.0023**	mg/L	0.0010	1	07/18/18 09:45	07/24/18 09:45	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:43	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:43	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/25/18 11:15	07/26/18 12:32	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**552**	mg/L	5.0	1		07/20/18 08:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		07/18/18 10:36		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**50.0**	mg/L	5.0	5		07/21/18 21:17	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	1		07/21/18 02:12	16984-48-8	
Sulfate	**112**	mg/L	10.0	10		07/23/18 13:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60275027

Sample: FGD-8-071618 **Lab ID: 60275027003** Collected: 07/16/18 11:58 Received: 07/17/18 15:55 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	07/18/18 09:45	07/23/18 14:37	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:37	7440-41-7	
Boron, Total Recoverable	**0.19**	mg/L	0.10	1	07/18/18 09:45	07/23/18 14:37	7440-42-8	
Calcium, Total Recoverable	**108**	mg/L	0.20	1	07/18/18 09:45	07/23/18 14:37	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:37	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:37	7439-92-1	
Lithium	**0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:37	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	07/18/18 09:45	07/23/18 15:03	7440-36-0	
Arsenic, Total Recoverable	**0.0015**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:03	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/18/18 09:45	07/23/18 15:03	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:03	7440-48-4	
Molybdenum, Total Recoverable	**0.0061**	mg/L	0.0010	1	07/18/18 09:45	07/24/18 09:54	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:03	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:03	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/25/18 11:15	07/26/18 12:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**576**	mg/L	5.0	1		07/20/18 08:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		07/18/18 10:38		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**41.2**	mg/L	5.0	5		07/21/18 21:31	16887-00-6	
Fluoride	**0.45**	mg/L	0.20	1		07/21/18 02:37	16984-48-8	
Sulfate	**192**	mg/L	20.0	20		07/23/18 14:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60275027

Sample: FGD-9-071618 **Lab ID: 60275027004** Collected: 07/16/18 13:06 Received: 07/17/18 15:55 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	**0.081**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:39	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:39	7440-41-7	
Boron, Total Recoverable	**0.54**	mg/L	0.10	1	07/18/18 09:45	07/23/18 14:39	7440-42-8	
Calcium, Total Recoverable	**100**	mg/L	0.20	1	07/18/18 09:45	07/23/18 14:39	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:39	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:39	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:39	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	07/18/18 09:45	07/23/18 15:08	7440-36-0	
Arsenic, Total Recoverable	**0.0034**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:08	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/18/18 09:45	07/23/18 15:08	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:08	7440-48-4	
Molybdenum, Total Recoverable	**0.012**	mg/L	0.0010	1	07/18/18 09:45	07/24/18 09:56	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:08	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:08	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	07/25/18 11:15	07/26/18 12:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**557**	mg/L	5.0	1		07/20/18 08:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		07/18/18 10:41		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.8**	mg/L	5.0	5		07/21/18 21:45	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		07/20/18 14:57	16984-48-8	
Sulfate	**168**	mg/L	20.0	20		07/23/18 14:24	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60275027

Sample: DUP-071618 **Lab ID: 60275027005** Collected: 07/16/18 06:00 Received: 07/17/18 15:55 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	**0.063**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:41	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 14:41	7440-41-7	
Boron, Total Recoverable	**0.18**	mg/L	0.10	1	07/18/18 09:45	07/23/18 14:41	7440-42-8	
Calcium, Total Recoverable	**110**	mg/L	0.20	1	07/18/18 09:45	07/23/18 14:41	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/18/18 09:45	07/23/18 14:41	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:41	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/18/18 09:45	07/23/18 14:41	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:13	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:13	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/18/18 09:45	07/23/18 15:13	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:13	7440-48-4	
Molybdenum, Total Recoverable	**0.0060**	mg/L	0.0010	1	07/18/18 09:45	07/24/18 09:58	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 15:13	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/18/18 09:45	07/23/18 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	07/25/18 11:15	07/26/18 12:43	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**575**	mg/L	5.0	1		07/20/18 08:56		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		07/18/18 10:29		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.9**	mg/L	5.0	5		07/21/18 22:00	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	1		07/20/18 15:10	16984-48-8	
Sulfate	**197**	mg/L	20.0	20		07/23/18 15:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 536011 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2195631 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	07/26/18 12:17	

LABORATORY CONTROL SAMPLE: 2195632

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0047	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2195633 2195634

Parameter	Units	60274852001 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	0.0049	94	97	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 534930 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2190903 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/23/18 14:23	
Beryllium	mg/L	<0.0010	0.0010	07/23/18 14:23	
Boron	mg/L	<0.10	0.10	07/23/18 14:23	
Calcium	mg/L	<0.20	0.20	07/23/18 14:23	
Chromium	mg/L	<0.0050	0.0050	07/23/18 14:23	
Lead	mg/L	<0.010	0.010	07/23/18 14:23	
Lithium	mg/L	<0.010	0.010	07/23/18 14:23	

LABORATORY CONTROL SAMPLE: 2190904

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.99	99	85-115	
Beryllium	mg/L	1	1.0	100	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10	100	85-115	
Chromium	mg/L	1	0.99	99	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: 2190905 2190906

Parameter	Units	60275027001 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	99	100	70-130	0	20	
Beryllium	mg/L	<0.0010	1	1	0.96	0.95	96	95	70-130	0	20	
Boron	mg/L	10.0	1	1	11.0	11.0	91	90	70-130	0	20	
Calcium	mg/L	598	10	10	602	589	47	-82	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	0.95	0.96	95	96	70-130	1	20	
Lead	mg/L	<0.010	1	1	0.88	0.90	88	89	70-130	1	20	
Lithium	mg/L	0.40	1	1	1.5	1.5	110	110	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 534935 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2190920 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/23/18 14:34	
Arsenic	mg/L	<0.0010	0.0010	07/23/18 14:34	
Cadmium	mg/L	<0.00050	0.00050	07/23/18 14:34	
Cobalt	mg/L	<0.0010	0.0010	07/23/18 14:34	
Molybdenum	mg/L	<0.0010	0.0010	07/24/18 09:41	
Selenium	mg/L	<0.0010	0.0010	07/23/18 14:34	
Thallium	mg/L	<0.0010	0.0010	07/23/18 14:34	

LABORATORY CONTROL SAMPLE: 2190921

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	101	85-115	
Arsenic	mg/L	.04	0.040	101	85-115	
Cadmium	mg/L	.04	0.040	101	85-115	
Cobalt	mg/L	.04	0.037	92	85-115	
Molybdenum	mg/L	.04	0.040	100	85-115	
Selenium	mg/L	.04	0.041	101	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2190922 2190923

Parameter	Units	60275027002 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	98	70-130	1	20	
Arsenic	mg/L	<0.0010	.04	.04	0.040	0.039	98	97	70-130	1	20	
Cadmium	mg/L	<0.00050	.04	.04	0.038	0.037	94	93	70-130	1	20	
Cobalt	mg/L	<0.0010	.04	.04	0.033	0.033	83	82	70-130	1	20	
Molybdenum	mg/L	0.0023	.04	.04	0.044	0.044	104	104	70-130	0	20	
Selenium	mg/L	<0.0010	.04	.04	0.039	0.039	98	96	70-130	2	20	
Thallium	mg/L	<0.0010	.04	.04	0.034	0.034	86	86	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 535263 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2192700 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	07/20/18 08:56	

LABORATORY CONTROL SAMPLE: 2192701

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

SAMPLE DUPLICATE: 2192702

Parameter	Units	60275027001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	7170	7000	2	10	

SAMPLE DUPLICATE: 2192703

Parameter	Units	60275062004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	198	194	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 534890 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

SAMPLE DUPLICATE: 2190741

Parameter	Units	60274902001 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 FGD NEW
Pace Project No.: 60275027

QC Batch: 535312 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2192940 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/20/18 10:37	

LABORATORY CONTROL SAMPLE: 2192941

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

MATRIX SPIKE SAMPLE: 2192944

Parameter	Units	60275027002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.44	2.5	3.0	102	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 535485 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2194276 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	07/21/18 17:00	

LABORATORY CONTROL SAMPLE: 2194258

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

MATRIX SPIKE SAMPLE: 2194260

Parameter	Units	60274996004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1040	500	1500	93	90-110	

MATRIX SPIKE SAMPLE: 2194261

Parameter	Units	60275027001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1690	500	2330	128	90-110	E,M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60275027

QC Batch: 535578 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

METHOD BLANK: 2194322 Matrix: Water
Associated Lab Samples: 60275027001, 60275027002, 60275027003, 60275027004, 60275027005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	1.0	07/23/18 19:51	

LABORATORY CONTROL SAMPLE: 2194323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2194324 2194325

Parameter	Units	60274758002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	18200	10000	10000	28400	29100	102	109	90-110	2	15	

MATRIX SPIKE SAMPLE: 2194326

Parameter	Units	60274777001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	23.0	10	33.2	102	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60275027

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60275027

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60275027001	**FGD-6-071618**	EPA 200.7	534930	EPA 200.7	534959
60275027002	**FGD-7-071718**	EPA 200.7	534930	EPA 200.7	534959
60275027003	**FGD-8-071618**	EPA 200.7	534930	EPA 200.7	534959
60275027004	**FGD-9-071618**	EPA 200.7	534930	EPA 200.7	534959
60275027005	**DUP-071618**	EPA 200.7	534930	EPA 200.7	534959
60275027001	**FGD-6-071618**	EPA 200.8	534935	EPA 200.8	534960
60275027002	**FGD-7-071718**	EPA 200.8	534935	EPA 200.8	534960
60275027003	**FGD-8-071618**	EPA 200.8	534935	EPA 200.8	534960
60275027004	**FGD-9-071618**	EPA 200.8	534935	EPA 200.8	534960
60275027005	**DUP-071618**	EPA 200.8	534935	EPA 200.8	534960
60275027001	**FGD-6-071618**	EPA 245.1	536011	EPA 245.1	536105
60275027002	**FGD-7-071718**	EPA 245.1	536011	EPA 245.1	536105
60275027003	**FGD-8-071618**	EPA 245.1	536011	EPA 245.1	536105
60275027004	**FGD-9-071618**	EPA 245.1	536011	EPA 245.1	536105
60275027005	**DUP-071618**	EPA 245.1	536011	EPA 245.1	536105
60275027001	**FGD-6-071618**	SM 2540C	535263		
60275027002	**FGD-7-071718**	SM 2540C	535263		
60275027003	**FGD-8-071618**	SM 2540C	535263		
60275027004	**FGD-9-071618**	SM 2540C	535263		
60275027005	**DUP-071618**	SM 2540C	535263		
60275027001	**FGD-6-071618**	SM 4500-H+B	534890		
60275027002	**FGD-7-071718**	SM 4500-H+B	534890		
60275027003	**FGD-8-071618**	SM 4500-H+B	534890		
60275027004	**FGD-9-071618**	SM 4500-H+B	534890		
60275027005	**DUP-071618**	SM 4500-H+B	534890		
60275027001	**FGD-6-071618**	EPA 300.0	535312		
60275027001	**FGD-6-071618**	EPA 300.0	535485		
60275027001	**FGD-6-071618**	EPA 300.0	535578		
60275027002	**FGD-7-071718**	EPA 300.0	535312		
60275027002	**FGD-7-071718**	EPA 300.0	535485		
60275027002	**FGD-7-071718**	EPA 300.0	535578		
60275027003	**FGD-8-071618**	EPA 300.0	535312		
60275027003	**FGD-8-071618**	EPA 300.0	535485		
60275027003	**FGD-8-071618**	EPA 300.0	535578		
60275027004	**FGD-9-071618**	EPA 300.0	535312		
60275027004	**FGD-9-071618**	EPA 300.0	535485		
60275027004	**FGD-9-071618**	EPA 300.0	535578		
60275027005	**DUP-071618**	EPA 300.0	535312		
60275027005	**DUP-071618**	EPA 300.0	535485		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60275027

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60275027005	**DUP-071618**	EPA 300.0	535578		

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Sample Condition Upon Receipt

WO# : 60275027

60275027

Client Name: WCS Lar Energy

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

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

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

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

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

Cooler Temperature (°C): **As-read** 0.6 **Corr. Factor** +1.1 **Corrected** 1.7

Date and initials of person examining contents: PW 7/17/18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

HWW

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A
Required Client Information:

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

Section B
Required Project Information:

Report To: Brandon Griffin
Copy To: Jared Morrison
Purchase Order No.: 10JEC-0000033150
Project Name: JEC FGD NEW
Project Number:

Section C
Invoice Information:

Attention:
Company Name:
Address:
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)

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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B						Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60275027
1	FGD-6-071618	WT	G			7/16	0955		2	1		1							|	|	|	|	|	|							BPLM ~~3B~~ BPIN 7/17 001
2	FGD-7-071618	WT	G			7/16	1106		2	1		1							|	|	|	|	|	|							002
3	FGD-8-071618	WT	G			7/16	1158		2	1		1							|	|	|	|	|	|							003
4	FGD-9-071618	WT	G			7/16	1306		2	1		1							|	|	|	|	|	|							004
5																															
6																															
7																															
8																															
9																															
10	DUP-071618	WT	G			7/16	0600		2	1		1							X	X	X	X	X	X							005
11																															
12																															

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	[signature] / Westar	7/17/18	0900	[signature] / PASI	7/17/18	1555	1.7	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, 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): 07/17/18

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

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

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(913)599-5665

August 03, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60275186

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on July 18, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60275186

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60275186

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60275186001	**FGD-6-071618**	Water	07/16/18 09:55	07/18/18 10:10
60275186002	**FGD-7-071618**	Water	07/16/18 11:06	07/18/18 10:10
60275186003	**FGD-8-071618**	Water	07/16/18 11:58	07/18/18 10:10
60275186004	**FGD-9-071618**	Water	07/16/18 13:06	07/18/18 10:10
60275186005	**DUP-071618**	Water	07/16/18 06:00	07/18/18 10:10

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60275186

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60275186001	**FGD-6-071618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60275186002	**FGD-7-071618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60275186003	**FGD-8-071618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60275186004	**FGD-9-071618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60275186005	**DUP-071618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60275186

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 03, 2018

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 FGD NEW
Pace Project No.: 60275186

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 03, 2018

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 FGD NEW
Pace Project No.: 60275186

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 03, 2018

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

Sample: FGD-6-071618 **Lab ID: 60275186001** Collected: 07/16/18 09:55 Received: 07/18/18 10:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**3.02 ± 0.981 (0.692) C:NA T:90%**	pCi/L	08/01/18 11:19	13982-63-3	
Radium-228	EPA 904.0	**2.01 ± 0.673 (0.917) C:68% T:75%**	pCi/L	08/02/18 11:59	15262-20-1	
Total Radium	Total Radium Calculation	**5.03 ± 1.65 (1.61)**	pCi/L	08/03/18 15:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

Sample: FGD-7-071618 **Lab ID: 60275186002** Collected: 07/16/18 11:06 Received: 07/18/18 10:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.411 ± 0.467 (0.737) C:NA T:87%**	pCi/L	08/01/18 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.455 ± 0.466 (0.967) C:67% T:79%**	pCi/L	08/02/18 11:59	15262-20-1	
Total Radium	Total Radium Calculation	**0.866 ± 0.933 (1.70)**	pCi/L	08/03/18 15:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

Sample: FGD-8-071618 **Lab ID: 60275186003** Collected: 07/16/18 11:58 Received: 07/18/18 10:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.615 ± 0.643 (1.01) C:NA T:76%**	pCi/L	08/01/18 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.626 ± 0.447 (0.870) C:67% T:83%**	pCi/L	08/02/18 11:59	15262-20-1	
Total Radium	Total Radium Calculation	**1.24 ± 1.09 (1.88)**	pCi/L	08/03/18 15:07	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

Sample: FGD-9-071618 **Lab ID: 60275186004** Collected: 07/16/18 13:06 Received: 07/18/18 10:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.507 ± 0.434 (0.589) C:NA T:88%**	pCi/L	08/01/18 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.135 ± 0.375 (0.840) C:64% T:85%**	pCi/L	08/02/18 11:59	15262-20-1	
Total Radium	Total Radium Calculation	**0.642 ± 0.809 (1.43)**	pCi/L	08/03/18 15:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

Sample: DUP-071618 **Lab ID: 60275186005** Collected: 07/16/18 06:00 Received: 07/18/18 10:10 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.448 ± 0.455 (0.689) C:NA T:92%**	pCi/L	08/01/18 11:35	13982-63-3	
Radium-228	EPA 904.0	**0.158 ± 0.455 (1.02) C:69% T:80%**	pCi/L	08/02/18 12:00	15262-20-1	
Total Radium	Total Radium Calculation	**0.606 ± 0.910 (1.71)**	pCi/L	08/03/18 15:07	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60275186

QC Batch: 306843 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60275186001, 60275186002, 60275186003, 60275186004, 60275186005

METHOD BLANK: 1500265 Matrix: Water
Associated Lab Samples: 60275186001, 60275186002, 60275186003, 60275186004, 60275186005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.335 (0.540) C:NA T:80%	pCi/L	08/01/18 10:48	

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 FGD NEW
Pace Project No.: 60275186

QC Batch: 306844 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60275186001, 60275186002, 60275186003, 60275186004, 60275186005

METHOD BLANK: 1500268 Matrix: Water
Associated Lab Samples: 60275186001, 60275186002, 60275186003, 60275186004, 60275186005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.688 ± 0.421 (0.782) C:73% T:79%	pCi/L	08/02/18 11:57	

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 FGD NEW
Pace Project No.: 60275186

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60275186

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60275186001	**FGD-6-071618**	EPA 903.1	306843		
60275186002	**FGD-7-071618**	EPA 903.1	306843		
60275186003	**FGD-8-071618**	EPA 903.1	306843		
60275186004	**FGD-9-071618**	EPA 903.1	306843		
60275186005	**DUP-071618**	EPA 903.1	306843		
60275186001	**FGD-6-071618**	EPA 904.0	306844		
60275186002	**FGD-7-071618**	EPA 904.0	306844		
60275186003	**FGD-8-071618**	EPA 904.0	306844		
60275186004	**FGD-9-071618**	EPA 904.0	306844		
60275186005	**DUP-071618**	EPA 904.0	306844		
60275186001	**FGD-6-071618**	Total Radium Calculation	308377		
60275186002	**FGD-7-071618**	Total Radium Calculation	308377		
60275186003	**FGD-8-071618**	Total Radium Calculation	308377		
60275186004	**FGD-9-071618**	Total Radium Calculation	308377		
60275186005	**DUP-071618**	Total Radium Calculation	308377		

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: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Requested Analysis Filtered (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-071618	WT	G			7/16	0955		2			2											
2	FGD-7-071618	WT	G			7/16	1106		2			2											
3	FGD-8-071618	WT	G			7/16	1158		2			2											
4	FGD-9-071618	WT	G			7/16	1306		2			2											
5																							
6																							
7																							
8																							
9																							
10	DUP-071618	WT	G			7/16	0600		2			2								X	X	X		
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Westar	7/17/18	0900	PACE	7/18/18	1010	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 07/17/18

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.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Westar Energy Project # _____

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

Label _____

LIMS Login

Tracking #: 436872781922

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

Thermometer Used 7 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 1.6 °C Correction Factor: -0.1 °C Final Temp: 1.5 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D367 / Date and Initials of person examining contents: 7/18/18 JDB
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed JDB Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: Trip Blank Custody Seals Present		✓	✓	18.
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: JDB Date: 7/18/18

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.

30259739

Chain of Custody

Pace Analytical®
www.pacelabs.com

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS

Workorder: 60275186 **Workorder Name:** JEC FGD NEW **Owner Received Date:** 7/18/2018 **Results Requested By:** 8/8/2018

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: Other	Requested Analysis: Radium-226 & Total Radium	Requested Analysis: Radium-228	LAB USE ONLY
1	FGD-6-071618	PS	7/16/2018 09:55	60275186001	Water	2	X	X	001
2	FGD-7-071618	PS	7/16/2018 11:06	60275186002	Water	2	X	X	002
3	FGD-8-071618	PS	7/16/2018 11:58	60275186003	Water	2	X	X	003
4	FGD-9-071618	PS	7/16/2018 13:06	60275186004	Water	2	X	X	004
5	DUP-071618	PS	7/16/2018 06:00	60275186005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			Alyma B Mulchorey Pace	7/18/18 10:10
2				
3				

Comments

Cooler Temperature on Receipt 1.5 °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# : 30259739

30259739

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical   Client Name: Westar Energy   Project # 30259739

Label	
LIMS Login	[illegible]

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

Tracking #: 436872781922

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

Thermometer Used 7   **Type of Ice:** (Wet) Blue None

Cooler Temperature Observed Temp 1.6 °C   Correction Factor: -0.1 °C   Final Temp: 1.5 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D367	Date and Initials of person examining contents: 7/18/18 JJB
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. 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 JJB	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: JJB	Date: 7/18/18

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
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: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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: 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	Requested Analysis Filtered (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-071618	WT	G			7/16	0955		2			2											
2	FGD-7-071618	WT	G			7/16	1106		2			2											
3	FGD-8-071618	WT	G			7/16	1158		2			2											
4	FGD-9-071618	WT	G			7/16	1306		2			2											
5																							
6																							
7																							
8																							
9																							
10	DUP-071618	WT	G			7/16	0600		2			2								X	X	X		
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Westar	7/17/18	0900	PACE	7/18/18	1010	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY): 07/17/18

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

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

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

ATTACHMENT 1-1-4
August 2018 Sampling Events
Laboratory Analytical Reports

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

August 21, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60276898

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 07, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60276898

Pennsylvania Certification IDs

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

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60276898

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60276898001	**FGD-6-080618**	Water	08/06/18 10:02	08/07/18 09:50
60276898002	**FGD-7-080618**	Water	08/06/18 11:25	08/07/18 09:50
60276898003	**FGD-8-080618**	Water	08/06/18 12:44	08/07/18 09:50
60276898004	**FGD-9-080618**	Water	08/06/18 14:10	08/07/18 09:50
60276898005	**DUP-080618**	Water	08/06/18 06:00	08/07/18 09:50

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60276898

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60276898001	**FGD-6-080618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276898002	**FGD-7-080618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276898003	**FGD-8-080618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276898004	**FGD-9-080618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60276898005	**DUP-080618**	EPA 903.1	KAC	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60276898

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: August 21, 2018

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:

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60276898

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: August 21, 2018

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:

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

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60276898

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: August 21, 2018

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

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

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

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

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

Additional Comments:

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

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60276898

Sample: FGD-6-080618 **Lab ID: 60276898001** Collected: 08/06/18 10:02 Received: 08/07/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**4.63 ± 1.51 (1.21) C:NA T:80%**	pCi/L	08/17/18 19:23	13982-63-3	
Radium-228	EPA 904.0	**1.27 ± 0.536 (0.870) C:71% T:81%**	pCi/L	08/15/18 11:40	15262-20-1	
Total Radium	Total Radium Calculation	**5.90 ± 2.05 (2.08)**	pCi/L	08/21/18 15:36	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 FGD NEW
Pace Project No.: 60276898

Sample: FGD-7-080618 **Lab ID: 60276898002** Collected: 08/06/18 11:25 Received: 08/07/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**-0.078 ± 0.355 (0.836) C:NA T:94%**	pCi/L	08/17/18 19:23	13982-63-3	
Radium-228	EPA 904.0	**0.0786 ± 0.398 (0.899) C:76% T:92%**	pCi/L	08/15/18 11:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.0786 ± 0.753 (1.74)**	pCi/L	08/21/18 15:36	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 FGD NEW
Pace Project No.: 60276898

Sample: FGD-8-080618 **Lab ID: 60276898003** Collected: 08/06/18 12:44 Received: 08/07/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.232 ± 0.456 (0.833) C:NA T:89%**	pCi/L	08/17/18 19:23	13982-63-3	
Radium-228	EPA 904.0	**0.653 ± 0.432 (0.819) C:71% T:85%**	pCi/L	08/15/18 11:40	15262-20-1	
Total Radium	Total Radium Calculation	**0.885 ± 0.888 (1.65)**	pCi/L	08/21/18 15:36	7440-14-4	

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60276898

Sample: FGD-9-080618 **Lab ID: 60276898004** Collected: 08/06/18 14:10 Received: 08/07/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.566 ± 0.617 (0.971) C:NA T:85%**	pCi/L	08/17/18 19:38	13982-63-3	
Radium-228	EPA 904.0	**3.77 ± 0.914 (0.768) C:71% T:85%**	pCi/L	08/15/18 11:40	15262-20-1	
Total Radium	Total Radium Calculation	**4.34 ± 1.53 (1.74)**	pCi/L	08/21/18 15:36	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 FGD NEW
Pace Project No.: 60276898

Sample: DUP-080618 **Lab ID: 60276898005** Collected: 08/06/18 06:00 Received: 08/07/18 09:50 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.489 ± 0.745 (1.28) C:NA T:76%**	pCi/L	08/17/18 19:38	13982-63-3	
Radium-228	EPA 904.0	**0.504 ± 0.460 (0.942) C:70% T:83%**	pCi/L	08/15/18 11:41	15262-20-1	
Total Radium	Total Radium Calculation	**0.993 ± 1.21 (2.22)**	pCi/L	08/21/18 15:36	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 FGD NEW
Pace Project No.: 60276898

QC Batch: 309046 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60276898001, 60276898002, 60276898003, 60276898004, 60276898005

METHOD BLANK: 1509950 Matrix: Water
Associated Lab Samples: 60276898001, 60276898002, 60276898003, 60276898004, 60276898005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.154 ± 0.352 (0.567) C:NA T:94%	pCi/L	08/17/18 19:23	

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 FGD NEW
Pace Project No.: 60276898

QC Batch: 309047 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60276898001, 60276898002, 60276898003, 60276898004, 60276898005

METHOD BLANK: 1509951 Matrix: Water
Associated Lab Samples: 60276898001, 60276898002, 60276898003, 60276898004, 60276898005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.579 ± 0.421 (0.822) C:77% T:77%	pCi/L	08/15/18 11:39	

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 FGD NEW
Pace Project No.: 60276898

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60276898

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60276898001	**FGD-6-080618**	EPA 903.1	309046		
60276898002	**FGD-7-080618**	EPA 903.1	309046		
60276898003	**FGD-8-080618**	EPA 903.1	309046		
60276898004	**FGD-9-080618**	EPA 903.1	309046		
60276898005	**DUP-080618**	EPA 903.1	309046		
60276898001	**FGD-6-080618**	EPA 904.0	309047		
60276898002	**FGD-7-080618**	EPA 904.0	309047		
60276898003	**FGD-8-080618**	EPA 904.0	309047		
60276898004	**FGD-9-080618**	EPA 904.0	309047		
60276898005	**DUP-080618**	EPA 904.0	309047		
60276898001	**FGD-6-080618**	Total Radium Calculation	310399		
60276898002	**FGD-7-080618**	Total Radium Calculation	310399		
60276898003	**FGD-8-080618**	Total Radium Calculation	310399		
60276898004	**FGD-9-080618**	Total Radium Calculation	310399		
60276898005	**DUP-080618**	Total Radium Calculation	310399		

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:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000033150	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	15 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

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	Requested Analysis Filtered (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-080618	WT	G			8/6	1002		2			2											
2	FGD-7-080618	WT	G			8/6	1125		2			2											
3	FGD-8-080618	WT	G			8/6	1244		2			2											
4	FGD-9-080618	WT	G			8/6	1410		2			2											
5																							
6																							
7																							
8																							
9																							
10	DUP-080618	WT	G			8/6	0600		2			2								X	X	X		
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Westar	8/7/18	0815		8-7-18	0950	3.4	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/07/18

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.

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: Pace KS Project # _____

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

Label _____
LIMS Login

Tracking #: 454227791371

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

Thermometer Used 7 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 3.5 °C Correction Factor: -0.1 °C Final Temp: 3.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D2071 Date and Initials of person examining contents: MJS 8-8-18

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed MJS Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed: MJS Date: 8-8-18

Client Notification/ Resolution:

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

Comments/ Resolution: _____

REVIEWED
By hwilson at 10:48 am, 8/8/18

☐ **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

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS

Pace Analytical® www.pacelabs.com

Workorder: 60276898 **Workorder Name:** JEC FGD NEW

Owner Received Date: 8/7/2018 **Results Requested By:** 8/28/2018

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# : 30261587

30261587

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	FGD-6-080618	PS	8/6/2018 10:02	60276898001	Water	1	X	X	001
2	FGD-7-080618	PS	8/6/2018 11:25	60276898002	Water	1	X	X	002
3	FGD-8-080618	PS	8/6/2018 12:44	60276898003	Water	1	X	X	003
4	FGD-9-080618	PS	8/6/2018 14:10	60276898004	Water	1	X	X	004
5	DUP-080618	PS	8/6/2018 06:00	60276898005	Water	1	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	8/8/18 950
2				
3				

Comments

Cooler Temperature on Receipt 3.4 °C **Custody Seal** Y or (N) **Received on Ice** (Y) or N **Samples Intact** (Y) or N

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

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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:	15 day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Requested Analysis Filtered (Y/N): Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 30261587
1	FGD-6-080618	WT	G			08/06	1002		2			2											
2	FGD-7-080618	WT	G			8/6	1125		2			2											
3	FGD-8-080618	WT	G			8/6	1244		2			2											
4	FGD-9-080618	WT	G			8/6	1410		2			2											
5																							
6																							
7																							
8																							
9																							
10	DUP-080618	WT	G			8/6	0600		2			2								XXX			
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Westar	8/7/18	0815		8-7-18	0950	3.4	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/07/18

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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # 30261587

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

Label ET

LIMS Login BMH

Tracking #: 454227791371

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

Thermometer Used 7 Type of Ice: Wet Blue None

Cooler Temperature Observed Temp 3.5 °C Correction Factor: -0.1 °C Final Temp: 3.4 °C

Temp should be above freezing to 6°C

pH paper Lot# 109071 Date and Initials of person examining contents: MDS 8-8-18

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: WC	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓			16. pH<2
				Initial when completed MDS 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: MDS Date: 8-8-18

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

October 08, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60277217

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 09, 2018. 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

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60277217

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60277217

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60277217001	**FGD-6- 080618**	Water	08/06/18 10:02	08/09/18 16:05
60277217002	**FGD-7- 080618**	Water	08/06/18 11:25	08/09/18 16:05
60277217003	**FGD-8- 080618**	Water	08/06/18 12:44	08/09/18 16:05
60277217004	**FGD-9- 080618**	Water	08/06/18 14:10	08/09/18 16:05
60277217005	**DUP- 080618**	Water	08/06/18 06:00	08/09/18 16:05

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60277217

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60277217001	**FGD-6- 080618**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60277217002	**FGD-7- 080618**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60277217003	**FGD-8- 080618**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60277217004	**FGD-9- 080618**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60277217005	**DUP- 080618**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60277217

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: October 08, 2018

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: 539246

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60276144001,60276931002

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

- MS (Lab ID: 2209276)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60277217

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: October 08, 2018

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60277217

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: October 08, 2018

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.

QC Batch: 539388

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60275557019,60276820001

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

- MS (Lab ID: 2209828)
  - Mercury

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60277217

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: October 08, 2018

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 FGD NEW
Pace Project No.: 60277217

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: October 08, 2018

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- 080618 (Lab ID: 60277217005)
- FGD-6- 080618 (Lab ID: 60277217001)
- FGD-7- 080618 (Lab ID: 60277217002)
- FGD-8- 080618 (Lab ID: 60277217003)
- FGD-9- 080618 (Lab ID: 60277217004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60277217

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: October 08, 2018

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 FGD NEW
Pace Project No.: 60277217

Sample: FGD-6- 080618 **Lab ID: 60277217001** Collected: 08/06/18 10:02 Received: 08/09/18 16:05 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	**0.026**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 14:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 14:58	7440-41-7	
Boron, Total Recoverable	**10.3**	mg/L	0.10	1	08/14/18 09:10	08/15/18 14:58	7440-42-8	
Calcium, Total Recoverable	**589**	mg/L	0.20	1	08/14/18 09:10	08/15/18 14:58	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 14:58	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 14:58	7439-92-1	
Lithium	**0.38**	mg/L	0.010	1	08/14/18 09:10	08/15/18 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	08/14/18 09:10	08/15/18 15:38	7440-36-0	
Arsenic, Total Recoverable	**0.016**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:38	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/14/18 09:10	08/15/18 15:38	7440-43-9	
Cobalt, Total Recoverable	**0.0016**	mg/L	0.0010	1	08/14/18 09:10	08/16/18 10:55	7440-48-4	
Molybdenum, Total Recoverable	**0.062**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:38	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:38	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:38	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/14/18 18:20	08/15/18 11:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**7770**	mg/L	5.0	1		08/13/18 14:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		08/14/18 10:54		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1940**	mg/L	200	200		08/17/18 17:31	16887-00-6	
Fluoride	**1.8**	mg/L	0.20	1		08/16/18 07:44	16984-48-8	
Sulfate	**2760**	mg/L	200	200		08/17/18 17:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60277217

Sample: FGD-7- 080618 **Lab ID: 60277217002** Collected: 08/06/18 11:25 Received: 08/09/18 16:05 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	**0.14**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:01	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:01	7440-41-7	
Boron, Total Recoverable	**0.17**	mg/L	0.10	1	08/14/18 09:10	08/15/18 15:01	7440-42-8	
Calcium, Total Recoverable	**97.3**	mg/L	0.20	1	08/14/18 09:10	08/15/18 15:01	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:01	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:01	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:01	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	08/14/18 09:10	08/15/18 15:43	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:43	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/14/18 09:10	08/15/18 15:43	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/16/18 10:57	7440-48-4	
Molybdenum, Total Recoverable	**0.0021**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:43	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:43	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:43	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/14/18 18:20	08/15/18 11:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**563**	mg/L	5.0	1		08/13/18 14:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.6**	Std. Units	0.10	1		08/14/18 10:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**49.8**	mg/L	10.0	10		08/17/18 17:46	16887-00-6	
Fluoride	**0.49**	mg/L	0.20	1		08/16/18 08:13	16984-48-8	
Sulfate	**110**	mg/L	10.0	10		08/17/18 17:46	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60277217

Sample: FGD-8- 080618 **Lab ID: 60277217003** Collected: 08/06/18 12:44 Received: 08/09/18 16:05 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	**0.070**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:03	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:03	7440-41-7	
Boron, Total Recoverable	**0.20**	mg/L	0.10	1	08/14/18 09:10	08/15/18 15:03	7440-42-8	
Calcium, Total Recoverable	**110**	mg/L	0.20	1	08/14/18 09:10	08/15/18 15:03	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:03	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:03	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:03	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	08/14/18 09:10	08/15/18 15:47	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/14/18 09:10	08/15/18 15:47	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/16/18 10:59	7440-48-4	
Molybdenum, Total Recoverable	**0.0058**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/14/18 18:20	08/15/18 11:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**601**	mg/L	5.0	1		08/13/18 14:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		08/14/18 10:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**43.9**	mg/L	5.0	5		08/17/18 18:00	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		08/16/18 08:41	16984-48-8	
Sulfate	**192**	mg/L	10.0	10		08/17/18 18:14	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60277217

Sample: FGD-9- 080618 **Lab ID: 60277217004** Collected: 08/06/18 14:10 Received: 08/09/18 16:05 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	**0.072**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:05	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:05	7440-41-7	
Boron, Total Recoverable	**0.58**	mg/L	0.10	1	08/14/18 09:10	08/15/18 15:05	7440-42-8	
Calcium, Total Recoverable	**94.0**	mg/L	0.20	1	08/14/18 09:10	08/15/18 15:05	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:05	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:05	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:05	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	08/14/18 09:10	08/15/18 15:52	7440-36-0	
Arsenic, Total Recoverable	**0.0027**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:52	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/14/18 09:10	08/15/18 15:52	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	08/14/18 09:10	08/16/18 11:00	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:52	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:52	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:52	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/14/18 18:20	08/15/18 11:34	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**582**	mg/L	5.0	1		08/13/18 14:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/14/18 10:59		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**41.5**	mg/L	5.0	5		08/17/18 18:28	16887-00-6	
Fluoride	**0.51**	mg/L	0.20	1		08/16/18 09:10	16984-48-8	
Sulfate	**180**	mg/L	10.0	10		08/16/18 09:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60277217

Sample: DUP- 080618 **Lab ID: 60277217005** Collected: 08/06/18 06:00 Received: 08/09/18 16:05 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	**0.14**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:07	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:07	7440-41-7	
Boron, Total Recoverable	**0.14**	mg/L	0.10	1	08/14/18 09:10	08/15/18 15:07	7440-42-8	
Calcium, Total Recoverable	**97.4**	mg/L	0.20	1	08/14/18 09:10	08/15/18 15:07	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/14/18 09:10	08/15/18 15:07	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:07	7439-92-1	
Lithium	**0.015**	mg/L	0.010	1	08/14/18 09:10	08/15/18 15:07	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:56	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:56	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/14/18 09:10	08/15/18 15:56	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/16/18 11:02	7440-48-4	
Molybdenum, Total Recoverable	**0.0020**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:56	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:56	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/14/18 09:10	08/15/18 15:56	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/14/18 18:20	08/15/18 11:36	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**561**	mg/L	5.0	1		08/13/18 14:00		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		08/14/18 10:51		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**49.7**	mg/L	5.0	5		08/20/18 12:33	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		08/20/18 10:40	16984-48-8	
Sulfate	**112**	mg/L	10.0	10		08/20/18 10:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539388 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

METHOD BLANK: 2209826 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	08/15/18 10:50	

LABORATORY CONTROL SAMPLE: 2209827

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0044	87	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2209828 2209829

Parameter	Units	60275557019 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	4.6 ug/L	.005	.005	0.0077	0.0089	62	85	70-130	14	20	M1

MATRIX SPIKE SAMPLE: 2209830

Parameter	Units	60276820001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	ND	.005	0.0042	85	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539246 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

METHOD BLANK: 2209274 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/15/18 14:36	
Beryllium	mg/L	<0.0010	0.0010	08/15/18 14:36	
Boron	mg/L	<0.10	0.10	08/15/18 14:36	
Calcium	mg/L	<0.20	0.20	08/15/18 14:36	
Chromium	mg/L	<0.0050	0.0050	08/15/18 14:36	
Lead	mg/L	<0.010	0.010	08/15/18 14:36	
Lithium	mg/L	<0.010	0.010	08/15/18 14:36	

LABORATORY CONTROL SAMPLE: 2209275

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.95	95	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	1.0	104	85-115	
Calcium	mg/L	10	9.7	97	85-115	
Chromium	mg/L	1	0.97	97	85-115	
Lead	mg/L	1	1.0	100	85-115	
Lithium	mg/L	1	0.95	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2209276 2209277

Parameter	Units	60276144001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	184 ug/L	1	1	1.1	1.1	96	96	70-130	0	20	
Beryllium	mg/L	0.22J ug/L	1	1	0.98	0.99	98	99	70-130	1	20	
Boron	mg/L	134 ug/L	1	1	1.2	1.2	102	103	70-130	1	20	
Calcium	mg/L	176000 ug/L	10	10	189	187	131	115	70-130	1	20	M1
Chromium	mg/L	<1.1 ug/L	1	1	0.96	0.97	96	97	70-130	1	20	
Lead	mg/L	3.8J ug/L	1	1	0.97	0.97	96	97	70-130	0	20	
Lithium	mg/L	4.8J ug/L	1	1	0.97	0.98	96	97	70-130	1	20	

MATRIX SPIKE SAMPLE: 2209278

Parameter	Units	60276931002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	50.6 ug/L	1	1.0	96	70-130	
Beryllium	mg/L	ND	1	0.99	99	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

MATRIX SPIKE SAMPLE: 2209278

Parameter	Units	60276931002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	215 ug/L	1	1.2	100	70-130	
Calcium	mg/L	58000 ug/L	10	68.6	106	70-130	
Chromium	mg/L	ND	1	0.98	98	70-130	
Lead	mg/L	ND	1	0.98	97	70-130	
Lithium	mg/L	ND	1	0.96	96	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539247 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

METHOD BLANK: 2209279 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/15/18 15:12	
Arsenic	mg/L	<0.0010	0.0010	08/15/18 15:12	
Cadmium	mg/L	<0.00050	0.00050	08/15/18 15:12	
Cobalt	mg/L	<0.0010	0.0010	08/15/18 15:12	
Molybdenum	mg/L	<0.0010	0.0010	08/15/18 15:12	
Selenium	mg/L	<0.0010	0.0010	08/15/18 15:12	
Thallium	mg/L	<0.0010	0.0010	08/15/18 15:12	

LABORATORY CONTROL SAMPLE: 2209280

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	97	85-115	
Cadmium	mg/L	.04	0.039	98	85-115	
Cobalt	mg/L	.04	0.035	88	85-115	
Molybdenum	mg/L	.04	0.038	96	85-115	
Selenium	mg/L	.04	0.040	101	85-115	
Thallium	mg/L	.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2209281 2209282

Parameter	Units	60277071002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	0.53J ug/L	.04	.04	0.040	0.040	99	99	70-130	0	20	
Arsenic	mg/L	1.9 ug/L	.04	.04	0.039	0.039	94	94	70-130	0	20	
Cadmium	mg/L	ND	.04	.04	0.037	0.037	92	92	70-130	0	20	
Cobalt	mg/L	0.21J ug/L	.04	.04	0.036	0.035	89	88	70-130	1	20	
Molybdenum	mg/L	3.0 ug/L	.04	.04	0.043	0.042	99	98	70-130	1	20	
Selenium	mg/L	0.58J ug/L	.04	.04	0.037	0.037	91	91	70-130	1	20	
Thallium	mg/L	ND	.04	.04	0.036	0.036	91	91	70-130	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 538993 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

METHOD BLANK: 2208621 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/13/18 14:00	

LABORATORY CONTROL SAMPLE: 2208622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	997	100	80-120	

SAMPLE DUPLICATE: 2208623

Parameter	Units	60276986001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	338	334	1	10	

SAMPLE DUPLICATE: 2208624

Parameter	Units	60277217002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	563	559	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539264 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004, 60277217005

SAMPLE DUPLICATE: 2209328

Parameter	Units	60277217005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539538 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004

METHOD BLANK: 2210407 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	08/16/18 01:19	
Sulfate	mg/L	<1.0	1.0	08/16/18 01:19	

LABORATORY CONTROL SAMPLE: 2210408

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	103	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 539845 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004

METHOD BLANK: 2211829 Matrix: Water
Associated Lab Samples: 60277217001, 60277217002, 60277217003, 60277217004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/17/18 18:57	
Sulfate	mg/L	<1.0	1.0	08/17/18 18:57	

LABORATORY CONTROL SAMPLE: 2211830

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE SAMPLE: 2211833

Parameter	Units	60276909001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	138	50	188	100	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60277217

QC Batch: 540223
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60277217005

METHOD BLANK: 2213735 Matrix: Water
Associated Lab Samples: 60277217005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	08/20/18 09:12	
Fluoride	mg/L	<0.20	0.20	08/20/18 09:12	
Sulfate	mg/L	<1.0	1.0	08/20/18 09:12	

LABORATORY CONTROL SAMPLE: 2213736

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.5	100	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2213737 2213738

Parameter	Units	2081649002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	<20.0	250	250	258	265	103	106	90-110	3	15	
Sulfate	mg/L	922	500	500	1460	1470	108	109	90-110	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60277217

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60277217

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60277217001	**FGD-6- 080618**	EPA 200.7	539246	EPA 200.7	539285
60277217002	**FGD-7- 080618**	EPA 200.7	539246	EPA 200.7	539285
60277217003	**FGD-8- 080618**	EPA 200.7	539246	EPA 200.7	539285
60277217004	**FGD-9- 080618**	EPA 200.7	539246	EPA 200.7	539285
60277217005	**DUP- 080618**	EPA 200.7	539246	EPA 200.7	539285
60277217001	**FGD-6- 080618**	EPA 200.8	539247	EPA 200.8	539286
60277217002	**FGD-7- 080618**	EPA 200.8	539247	EPA 200.8	539286
60277217003	**FGD-8- 080618**	EPA 200.8	539247	EPA 200.8	539286
60277217004	**FGD-9- 080618**	EPA 200.8	539247	EPA 200.8	539286
60277217005	**DUP- 080618**	EPA 200.8	539247	EPA 200.8	539286
60277217001	**FGD-6- 080618**	EPA 245.1	539388	EPA 245.1	539428
60277217002	**FGD-7- 080618**	EPA 245.1	539388	EPA 245.1	539428
60277217003	**FGD-8- 080618**	EPA 245.1	539388	EPA 245.1	539428
60277217004	**FGD-9- 080618**	EPA 245.1	539388	EPA 245.1	539428
60277217005	**DUP- 080618**	EPA 245.1	539388	EPA 245.1	539428
60277217001	**FGD-6- 080618**	SM 2540C	538993		
60277217002	**FGD-7- 080618**	SM 2540C	538993		
60277217003	**FGD-8- 080618**	SM 2540C	538993		
60277217004	**FGD-9- 080618**	SM 2540C	538993		
60277217005	**DUP- 080618**	SM 2540C	538993		
60277217001	**FGD-6- 080618**	SM 4500-H+B	539264		
60277217002	**FGD-7- 080618**	SM 4500-H+B	539264		
60277217003	**FGD-8- 080618**	SM 4500-H+B	539264		
60277217004	**FGD-9- 080618**	SM 4500-H+B	539264		
60277217005	**DUP- 080618**	SM 4500-H+B	539264		
60277217001	**FGD-6- 080618**	EPA 300.0	539538		
60277217001	**FGD-6- 080618**	EPA 300.0	539845		
60277217002	**FGD-7- 080618**	EPA 300.0	539538		
60277217002	**FGD-7- 080618**	EPA 300.0	539845		
60277217003	**FGD-8- 080618**	EPA 300.0	539538		
60277217003	**FGD-8- 080618**	EPA 300.0	539845		
60277217004	**FGD-9- 080618**	EPA 300.0	539538		
60277217004	**FGD-9- 080618**	EPA 300.0	539845		
60277217005	**DUP- 080618**	EPA 300.0	540223		

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Sample Condition Upon Receipt

WO# : 60277217

60277217

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 ☒ Zplc

Thermometer Used: T300 Type of Ice: (Wet) Blue None

Cooler Temperature (°C): As-read 1.1 Corr. Factor +1.2 Corrected 2.3

HW

Date and initials of person examining contents: 8/9/18 WE

Temperature should be above freezing to 6°C

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

REVIEWED
By hwilson at 3:53 pm, 8/10/18

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
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B				Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																												6027727
1	FGD-6-080618	WT	G			8/6	1002		2	1		1							1	1	1	1	1	1	BPIU, BPIN			N	001
2	FGD-7-080618	WT	G			8/6	1125		2	1		1																	002
3	FGD-8-080618	WT	G			8/6	1244		2	1		1																	003
4	FGD-9-080618	WT	G			8/6	1410		2	1		1																	004
5																													
6																													
7																													
8																													
9																													
10	DUP-080618	WT	G			8/6	0600		2	1		1								X	X	X	X	X	X	BPIU, BPIN				005
11																													
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	/Westar	8/7/18	0815	UPS / Pasi	8/9/18	1605	2-3	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE			Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Brandon Griffin					
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY): 08/07/18				

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

September 07, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60278707

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 24, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60278707

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60278707

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60278707001	**FGD-6-082318**	Water	08/23/18 09:13	08/24/18 16:15
60278707002	**FGD-7-082318**	Water	08/23/18 11:05	08/24/18 16:15
60278707003	**FGD-8-082318**	Water	08/23/18 12:46	08/24/18 16:15
60278707004	**FGD-9-082318**	Water	08/23/18 14:00	08/24/18 16:15
60278707005	**DUP-082318**	Water	08/23/18 06:00	08/24/18 16:15

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60278707

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60278707001	**FGD-6-082318**	EPA 200.7	OL	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60278707002	**FGD-7-082318**	EPA 200.7	OL	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60278707003	**FGD-8-082318**	EPA 200.7	OL	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60278707004	**FGD-9-082318**	EPA 200.7	OL	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K
60278707005	**DUP-082318**	EPA 200.7	OL	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	EMR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	OL	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60278707

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 07, 2018

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

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60278707

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 07, 2018

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:

Analyte Comments:

QC Batch: 541576

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

- FGD-6-082318 (Lab ID: 60278707001)
  - Thallium, Total Recoverable

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60278707

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 07, 2018

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 FGD NEW
Pace Project No.: 60278707

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 07, 2018

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 FGD NEW
Pace Project No.: 60278707

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 07, 2018

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-082318 (Lab ID: 60278707005)
- FGD-6-082318 (Lab ID: 60278707001)
- FGD-7-082318 (Lab ID: 60278707002)
- FGD-8-082318 (Lab ID: 60278707003)
- FGD-9-082318 (Lab ID: 60278707004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60278707

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 07, 2018

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 FGD NEW
Pace Project No.: 60278707

Sample: FGD-6-082318 **Lab ID: 60278707001** Collected: 08/23/18 09:13 Received: 08/24/18 16:15 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	**0.026**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:32	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/29/18 13:32	7440-41-7	
Boron, Total Recoverable	**10.6**	mg/L	0.10	1	08/28/18 14:05	08/29/18 13:32	7440-42-8	
Calcium, Total Recoverable	**627**	mg/L	0.20	1	08/28/18 14:05	08/29/18 13:32	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:32	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:32	7439-92-1	
Lithium	**0.38**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:32	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	08/28/18 14:05	09/06/18 16:53	7440-36-0	
Arsenic, Total Recoverable	**0.015**	mg/L	0.0010	1	08/28/18 14:05	09/06/18 16:53	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/28/18 14:05	09/06/18 16:53	7440-43-9	
Cobalt, Total Recoverable	**0.0014**	mg/L	0.0010	1	08/28/18 14:05	09/06/18 16:53	7440-48-4	
Molybdenum, Total Recoverable	**0.044**	mg/L	0.0010	1	08/28/18 14:05	09/06/18 16:53	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	09/06/18 16:53	7782-49-2	
Thallium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	08/28/18 14:05	09/06/18 17:00	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/18 08:55	08/29/18 15:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**7750**	mg/L	5.0	1		08/28/18 13:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		08/28/18 10:06		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1910**	mg/L	200	200		09/02/18 15:56	16887-00-6	
Fluoride	**1.8**	mg/L	0.20	1		09/01/18 20:03	16984-48-8	
Sulfate	**2760**	mg/L	200	200		09/02/18 15:56	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60278707

Sample: FGD-7-082318 **Lab ID: 60278707002** Collected: 08/23/18 11:05 Received: 08/24/18 16:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.13**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:35	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/29/18 13:35	7440-41-7	
Boron, Total Recoverable	**0.31**	mg/L	0.10	1	08/28/18 14:05	08/29/18 13:35	7440-42-8	
Calcium, Total Recoverable	**123**	mg/L	0.20	1	08/28/18 14:05	08/29/18 13:35	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:35	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:35	7439-92-1	
Lithium	**0.021**	mg/L	0.010	1	08/28/18 14:05	08/29/18 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	08/28/18 14:05	08/31/18 12:16	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:16	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/28/18 14:05	08/31/18 12:16	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:16	7440-48-4	
Molybdenum, Total Recoverable	**0.0023**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:16	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:16	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:16	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/18 08:55	08/29/18 15:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**723**	mg/L	5.0	1		08/29/18 17:55		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		08/28/18 10:14		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**69.3**	mg/L	5.0	5		09/02/18 16:24	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		09/01/18 20:17	16984-48-8	
Sulfate	**205**	mg/L	20.0	20		09/02/18 16:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60278707

Sample: FGD-8-082318 **Lab ID: 60278707003** Collected: 08/23/18 12:46 Received: 08/24/18 16:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.073**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:37	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/29/18 13:37	7440-41-7	
Boron, Total Recoverable	**0.20**	mg/L	0.10	1	08/28/18 14:05	08/29/18 13:37	7440-42-8	
Calcium, Total Recoverable	**108**	mg/L	0.20	1	08/28/18 14:05	08/29/18 13:37	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:37	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:37	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:37	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	08/28/18 14:05	08/31/18 12:20	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:20	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/28/18 14:05	08/31/18 12:20	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:20	7440-48-4	
Molybdenum, Total Recoverable	**0.0056**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:20	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:20	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:20	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/18 08:55	08/29/18 15:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**605**	mg/L	5.0	1		08/28/18 13:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		08/28/18 12:30		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.9**	mg/L	5.0	5		09/02/18 16:52	16887-00-6	
Fluoride	**0.48**	mg/L	0.20	1		09/01/18 20:31	16984-48-8	
Sulfate	**180**	mg/L	20.0	20		09/02/18 17:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60278707

Sample: FGD-9-082318 **Lab ID: 60278707004** Collected: 08/23/18 14:00 Received: 08/24/18 16:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.083**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:39	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/29/18 13:39	7440-41-7	
Boron, Total Recoverable	**0.59**	mg/L	0.10	1	08/28/18 14:05	08/29/18 13:39	7440-42-8	
Calcium, Total Recoverable	**102**	mg/L	0.20	1	08/28/18 14:05	08/29/18 13:39	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:39	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:39	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:39	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	08/28/18 14:05	08/31/18 12:24	7440-36-0	
Arsenic, Total Recoverable	**0.0035**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:24	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/28/18 14:05	08/31/18 12:24	7440-43-9	
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:24	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:24	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:24	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:24	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/18 08:55	08/29/18 15:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**604**	mg/L	5.0	1		08/28/18 13:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		08/28/18 12:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.5**	mg/L	5.0	5		09/02/18 17:48	16887-00-6	
Fluoride	**0.55**	mg/L	0.20	1		09/01/18 20:44	16984-48-8	
Sulfate	**173**	mg/L	20.0	20		09/02/18 18:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60278707

Sample: DUP-082318 **Lab ID: 60278707005** Collected: 08/23/18 06:00 Received: 08/24/18 16:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.13**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:41	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/29/18 13:41	7440-41-7	
Boron, Total Recoverable	**0.27**	mg/L	0.10	1	08/28/18 14:05	08/29/18 13:41	7440-42-8	
Calcium, Total Recoverable	**123**	mg/L	0.20	1	08/28/18 14:05	08/29/18 13:41	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	08/28/18 14:05	08/29/18 13:41	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:41	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	08/28/18 14:05	08/29/18 13:41	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	08/28/18 14:05	08/31/18 12:28	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7440-48-4	
Molybdenum, Total Recoverable	**0.0022**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	08/28/18 14:05	08/31/18 12:28	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	08/29/18 08:55	08/29/18 15:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**743**	mg/L	5.0	1		08/28/18 13:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		08/28/18 09:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**69.2**	mg/L	5.0	5		09/02/18 18:17	16887-00-6	
Fluoride	**0.44**	mg/L	0.20	1		09/01/18 20:58	16984-48-8	
Sulfate	**199**	mg/L	20.0	20		09/02/18 18:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541914 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2220823 Matrix: Water
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	08/29/18 15:06	

LABORATORY CONTROL SAMPLE: 2220824

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: 2220825 2220826

Parameter	Units	60278421001 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	0.0047	0.0045	92	89	70-130	4	20	

MATRIX SPIKE SAMPLE: 2220827

Parameter	Units	60278782002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.23 ug/L	.005	0.0049	94	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541571 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2219448 Matrix: Water
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	08/29/18 12:47	
Beryllium	mg/L	<0.0010	0.0010	08/29/18 12:47	
Boron	mg/L	<0.10	0.10	08/29/18 12:47	
Calcium	mg/L	<0.20	0.20	08/29/18 12:47	
Chromium	mg/L	<0.0050	0.0050	08/29/18 12:47	
Lead	mg/L	<0.010	0.010	08/29/18 12:47	
Lithium	mg/L	<0.010	0.010	08/29/18 12:47	

LABORATORY CONTROL SAMPLE: 2219449

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.95	95	85-115	
Beryllium	mg/L	1	0.98	98	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10.1	101	85-115	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	0.98	98	85-115	
Lithium	mg/L	1	0.96	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2219450 2219451

Parameter	Units	60278679001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	29.3 ug/L	1	1	0.93	0.94	90	91	70-130	1	20	
Beryllium	mg/L	ND	1	1	0.96	0.97	96	97	70-130	1	20	
Boron	mg/L	754 ug/L	1	1	1.8	1.8	100	100	70-130	0	20	
Calcium	mg/L	41300 ug/L	10	10	51.2	52.6	100	113	70-130	3	20	
Chromium	mg/L	12.6 ug/L	1	1	0.99	0.99	98	98	70-130	0	20	
Lead	mg/L	78.0 ug/L	1	1	0.95	0.94	87	86	70-130	0	20	
Lithium	mg/L	44.8 ug/L	1	1	0.94	0.95	89	90	70-130	1	20	

MATRIX SPIKE SAMPLE: 2219452

Parameter	Units	60278575001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.019	1	0.96	95	70-130	
Beryllium	mg/L	ND	1	0.97	97	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

MATRIX SPIKE SAMPLE: 2219452

Parameter	Units	60278575001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1.9	1	2.8	94	70-130	
Calcium	mg/L	53.4	10	61.5	82	70-130	
Chromium	mg/L	ND	1	0.97	96	70-130	
Lead	mg/L	ND	1	0.91	91	70-130	
Lithium	mg/L	0.24	1	1.2	97	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541576 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2219458 Matrix: Water
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	08/30/18 16:07	
Arsenic	mg/L	<0.0010	0.0010	08/30/18 16:07	
Cadmium	mg/L	<0.00050	0.00050	08/30/18 16:07	
Cobalt	mg/L	<0.0010	0.0010	08/30/18 16:07	
Molybdenum	mg/L	<0.0010	0.0010	08/30/18 16:07	
Selenium	mg/L	<0.0010	0.0010	08/30/18 16:07	
Thallium	mg/L	<0.0010	0.0010	08/30/18 16:07	

LABORATORY CONTROL SAMPLE: 2219459

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.040	100	85-115	
Arsenic	mg/L	.04	0.039	96	85-115	
Cadmium	mg/L	.04	0.038	96	85-115	
Cobalt	mg/L	.04	0.036	90	85-115	
Molybdenum	mg/L	.04	0.039	98	85-115	
Selenium	mg/L	.04	0.039	98	85-115	
Thallium	mg/L	.04	0.036	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2219460 2219461

Parameter	Units	60278727001 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	0.041	0.041	103	102	70-130	1	20	
Arsenic	mg/L	0.25J ug/L	.04	.04	0.039	0.039	98	97	70-130	1	20	
Cadmium	mg/L	0.11J ug/L	.04	.04	0.039	0.038	97	95	70-130	2	20	
Cobalt	mg/L	1.9 ug/L	.04	.04	0.039	0.039	92	92	70-130	0	20	
Molybdenum	mg/L	0.14J ug/L	.04	.04	0.041	0.040	102	101	70-130	1	20	
Selenium	mg/L	0.31J ug/L	.04	.04	0.038	0.037	95	93	70-130	2	20	
Thallium	mg/L	ND	.04	.04	0.037	0.036	92	90	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541805 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60278707001, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2220306 Matrix: Water
Associated Lab Samples: 60278707001, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/28/18 13:49	

LABORATORY CONTROL SAMPLE: 2220307

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

SAMPLE DUPLICATE: 2220308

Parameter	Units	60278782001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3420	3480	2	10	

SAMPLE DUPLICATE: 2220309

Parameter	Units	60278707005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	743	747	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 542143
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60278707002

METHOD BLANK: 2221466 Matrix: Water
Associated Lab Samples: 60278707002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	08/29/18 17:55	

LABORATORY CONTROL SAMPLE: 2221467

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	996	100	80-120	

SAMPLE DUPLICATE: 2221468

Parameter	Units	60278782002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	14600	14900	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541706 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60278707001, 60278707002, 60278707005

SAMPLE DUPLICATE: 2219926

Parameter	Units	60278591006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.1	7.1	0	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 541777 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60278707003, 60278707004

SAMPLE DUPLICATE: 2220173

Parameter	Units	60278691002 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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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 542689 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2223718 Matrix: Water
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/01/18 18:14	

LABORATORY CONTROL SAMPLE: 2223719

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.6	104	90-110	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60278707

QC Batch: 542712 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

METHOD BLANK: 2224022 Matrix: Water
Associated Lab Samples: 60278707001, 60278707002, 60278707003, 60278707004, 60278707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/02/18 10:05	
Sulfate	mg/L	<1.0	1.0	09/02/18 10:05	

LABORATORY CONTROL SAMPLE: 2224023

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: 2224024 2224025

Parameter	Units	60278347010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1270	500	500	1780	1770	102	100	90-110	1	15	
Sulfate	mg/L	105	500	500	596	600	98	99	90-110	1	15	

MATRIX SPIKE SAMPLE: 2224026

Parameter	Units	60278347011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	45000	25000	69500	98	90-110	
Sulfate	mg/L	ND	25000	27800	99	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.
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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60278707

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60278707

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278707001	**FGD-6-082318**	EPA 200.7	541571	EPA 200.7	541635
60278707002	**FGD-7-082318**	EPA 200.7	541571	EPA 200.7	541635
60278707003	**FGD-8-082318**	EPA 200.7	541571	EPA 200.7	541635
60278707004	**FGD-9-082318**	EPA 200.7	541571	EPA 200.7	541635
60278707005	**DUP-082318**	EPA 200.7	541571	EPA 200.7	541635
60278707001	**FGD-6-082318**	EPA 200.8	541576	EPA 200.8	541637
60278707002	**FGD-7-082318**	EPA 200.8	541576	EPA 200.8	541637
60278707003	**FGD-8-082318**	EPA 200.8	541576	EPA 200.8	541637
60278707004	**FGD-9-082318**	EPA 200.8	541576	EPA 200.8	541637
60278707005	**DUP-082318**	EPA 200.8	541576	EPA 200.8	541637
60278707001	**FGD-6-082318**	EPA 245.1	541914	EPA 245.1	541956
60278707002	**FGD-7-082318**	EPA 245.1	541914	EPA 245.1	541956
60278707003	**FGD-8-082318**	EPA 245.1	541914	EPA 245.1	541956
60278707004	**FGD-9-082318**	EPA 245.1	541914	EPA 245.1	541956
60278707005	**DUP-082318**	EPA 245.1	541914	EPA 245.1	541956
60278707001	**FGD-6-082318**	SM 2540C	541805		
60278707002	**FGD-7-082318**	SM 2540C	542143		
60278707003	**FGD-8-082318**	SM 2540C	541805		
60278707004	**FGD-9-082318**	SM 2540C	541805		
60278707005	**DUP-082318**	SM 2540C	541805		
60278707001	**FGD-6-082318**	SM 4500-H+B	541706		
60278707002	**FGD-7-082318**	SM 4500-H+B	541706		
60278707003	**FGD-8-082318**	SM 4500-H+B	541777		
60278707004	**FGD-9-082318**	SM 4500-H+B	541777		
60278707005	**DUP-082318**	SM 4500-H+B	541706		
60278707001	**FGD-6-082318**	EPA 300.0	542689		
60278707001	**FGD-6-082318**	EPA 300.0	542712		
60278707002	**FGD-7-082318**	EPA 300.0	542689		
60278707002	**FGD-7-082318**	EPA 300.0	542712		
60278707003	**FGD-8-082318**	EPA 300.0	542689		
60278707003	**FGD-8-082318**	EPA 300.0	542712		
60278707004	**FGD-9-082318**	EPA 300.0	542689		
60278707004	**FGD-9-082318**	EPA 300.0	542712		
60278707005	**DUP-082318**	EPA 300.0	542689		
60278707005	**DUP-082318**	EPA 300.0	542712		

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Sample Condition Upon Receipt

WO# : 60278707

60278707

Client Name: Westar Energy

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

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

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

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

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

Cooler Temperature (°C): **As-read** 2.5 **Corr. Factor** 0.0 **Corrected** 2.5

Date and initials of person examining contents: PW 8/24/18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Hmw

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 9:36 am, 8/27/18

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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
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO_4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	60278707 Pace Project No./ Lab I.D.
1	FGD-6-082318	WT	G			8/23	0913		2	1		1														BPLU
2	FGD-7-082318	WT	G			8/23	1105		2	1		1														BPLN
3	FGD-8-082318	WT	G			8/23	1246		2	1		1														
4	FGD-9-082318	WT	G			8/23	1400		2	1		1														
5																										
6																										
7																										
8																										
9	DUP-082318	WT	G			8/23	0600		2	1		1														
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	BJF / Westar	8/23/18	0830	[signature]	8/24	1615	2.5	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BJF

DATE Signed (MM/DD/YY): 08/23/18

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

Pace Analytical Services, LLC
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September 13, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60278829

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60278829

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60278829

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60278829001	**FGD-6-082318**	Water	08/23/18 09:13	08/27/18 09:20
60278829002	**FGD-7-082318**	Water	08/23/18 11:05	08/27/18 09:20
60278829003	**FGD-8-082318**	Water	08/23/18 12:46	08/27/18 09:20
60278829004	**FGD-9-082318**	Water	08/23/18 14:00	08/27/18 09:20
60278829005	**DUP-082318**	Water	08/23/18 06:00	08/27/18 09:20

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60278829

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60278829001	**FGD-6-082318**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60278829002	**FGD-7-082318**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60278829003	**FGD-8-082318**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60278829004	**FGD-9-082318**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60278829005	**DUP-082318**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60278829

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 13, 2018

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 FGD NEW
Pace Project No.: 60278829

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 13, 2018

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 FGD NEW
Pace Project No.: 60278829

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 13, 2018

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

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

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

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

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

Additional Comments:

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

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60278829

Sample: FGD-6-082318 **Lab ID: 60278829001** Collected: 08/23/18 09:13 Received: 08/27/18 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	**6.17 ± 1.53 (0.682) C:NA T:80%**	pCi/L	09/11/18 20:33	13982-63-3	
Radium-228	EPA 904.0	**1.62 ± 0.576 (0.843) C:73% T:82%**	pCi/L	09/07/18 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**7.79 ± 2.11 (1.53)**	pCi/L	09/12/18 14:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60278829

Sample: FGD-7-082318 **Lab ID: 60278829002** Collected: 08/23/18 11:05 Received: 08/27/18 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	**0.442 ± 0.414 (0.587) C:NA T:88%**	pCi/L	09/11/18 20:33	13982-63-3	
Radium-228	EPA 904.0	**0.348 ± 0.375 (0.782) C:72% T:90%**	pCi/L	09/07/18 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**0.790 ± 0.789 (1.37)**	pCi/L	09/12/18 14:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60278829

Sample: FGD-8-082318 **Lab ID: 60278829003** Collected: 08/23/18 12:46 Received: 08/27/18 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	**0.724 ± 0.450 (0.444) C:NA T:97%**	pCi/L	09/11/18 20:33	13982-63-3	
Radium-228	EPA 904.0	**0.889 ± 0.440 (0.763) C:75% T:84%**	pCi/L	09/07/18 11:46	15262-20-1	
Total Radium	Total Radium Calculation	**1.61 ± 0.890 (1.21)**	pCi/L	09/12/18 14:51	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 FGD NEW
Pace Project No.: 60278829

Sample: FGD-9-082318 **Lab ID: 60278829004** Collected: 08/23/18 14:00 Received: 08/27/18 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	**1.03 ± 0.491 (0.155) C:NA T:95%**	pCi/L	09/11/18 20:33	13982-63-3	
Radium-228	EPA 904.0	**0.436 ± 0.397 (0.810) C:75% T:84%**	pCi/L	09/07/18 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.47 ± 0.888 (0.965)**	pCi/L	09/12/18 14:51	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 FGD NEW
Pace Project No.: 60278829

Sample: DUP-082318 **Lab ID: 60278829005** Collected: 08/23/18 06:00 Received: 08/27/18 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	**0.825 ± 0.522 (0.590) C:NA T:87%**	pCi/L	09/11/18 20:33	13982-63-3	
Radium-228	EPA 904.0	**0.512 ± 0.417 (0.829) C:69% T:81%**	pCi/L	09/07/18 11:47	15262-20-1	
Total Radium	Total Radium Calculation	**1.34 ± 0.939 (1.42)**	pCi/L	09/12/18 16:07	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 FGD NEW
Pace Project No.: 60278829

QC Batch: 311611 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60278829001, 60278829002, 60278829003, 60278829004, 60278829005

METHOD BLANK: 1521801 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.366 ± 0.422 (0.886) C:73% T:77%	pCi/L	09/07/18 11:45	

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 FGD NEW
Pace Project No.: 60278829

QC Batch: 311608 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60278829001, 60278829002, 60278829003, 60278829004, 60278829005

METHOD BLANK: 1521798 Matrix: Water
Associated Lab Samples:

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.348 ± 0.363 (0.512) C:NA T:84%	pCi/L	09/11/18 20:03	

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 FGD NEW
Pace Project No.: 60278829

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60278829

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60278829001	**FGD-6-082318**	EPA 903.1	311608		
60278829002	**FGD-7-082318**	EPA 903.1	311608		
60278829003	**FGD-8-082318**	EPA 903.1	311608		
60278829004	**FGD-9-082318**	EPA 903.1	311608		
60278829005	**DUP-082318**	EPA 903.1	311608		
60278829001	**FGD-6-082318**	EPA 904.0	311611		
60278829002	**FGD-7-082318**	EPA 904.0	311611		
60278829003	**FGD-8-082318**	EPA 904.0	311611		
60278829004	**FGD-9-082318**	EPA 904.0	311611		
60278829005	**DUP-082318**	EPA 904.0	311611		
60278829001	**FGD-6-082318**	Total Radium Calculation	312765		
60278829002	**FGD-7-082318**	Total Radium Calculation	312765		
60278829003	**FGD-8-082318**	Total Radium Calculation	312765		
60278829004	**FGD-9-082318**	Total Radium Calculation	312765		
60278829005	**DUP-082318**	Total Radium Calculation	312778		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: / of /

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000033150	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	15 day	Project Number:		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

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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-082318	WT	G			8/23	0913		2			2											
2	FGD-7-082318	WT	G			8/23	1109		2			2											
3	FGD-8-082318	WT	G			8/23	1246		2			2											
4	FGD-9-082318	WT	G			8/23	1400		2			2											
5																							
6																							
7																							
8	DUP-082318	WT	G			8/23	0600		2			2											
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)
	Westar	8/24/18	0830		8/27/18	920	15.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/23/18

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: pace KS (Westar) Project # _____

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

Label _____
LIMS Login

Tracking #: 4542 2780 0976

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

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

Cooler Temperature Observed Temp 15.6 °C Correction Factor: +0.0 °C Final Temp: 15.6 °C

Temp should be above freezing to 6°C

pH paper Lot# 10D4071

Date and Initials of person examining contents: BMH 8/27/18

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed BMH 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: BMH Date: 8/27/18

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

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

State Of Origin: KS

Workorder: 60278829 **Workorder Name:** JEC FGD NEW

Owner Received Date: 8/27/2018 **Results Requested By:** 9/18/2018

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# : 30263723

30263723

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Radium-226 & Total Radium	Requested Analysis: Radium-228	LAB USE ONLY
1	FGD-6-082318	PS	8/23/2018 09:13	60278829001	Water	2	X	X	001
2	FGD-7-082318	PS	8/23/2018 11:05	60278829002	Water	2	X	X	002
3	FGD-8-082318	PS	8/23/2018 12:46	60278829003	Water	2	X	X	003
4	FGD-9-082318	PS	8/23/2018 14:00	60278829004	Water	2	X	X	004
5	DUP-082318	PS	8/23/2018 06:00	60278829005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1				8/27/18 920
2				
3				

Comments: BBH 8/30/18

Cooler Temperature on Receipt 15.1 °C | **Custody Seal** Y or (N) | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

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

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:	15 day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-082318	WT	G			8/23	0913		2			2											
2	FGD-7-082318	WT	G			8/23	1109		2			2											
3	FGD-8-082318	WT	G			8/23	1246		2			2											
4	FGD-9-082318	WT	G			8/23	1400		2			2											
5																							
6																							
7																							
8	DUP-082318	WT	G			8/23	0600		2			2											
9																							
10																							
11																							
12																							

3026723

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)
	Westar	8/24/18	0830		8/27/18	920	15.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 08/23/18

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

Pittsburgh Lab Sample Condition Upon Receipt

Face Analytical

Client Name: pace KS (Westar) Project # 30263723

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

Label MJ5
LIMS Login BMH

Tracking #: 4542 2780 0976

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

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

Cooler Temperature Observed Temp 15.1 °C Correction Factor: +0.0 °C Final Temp: 15.1 °C

Temp should be above freezing to 6°C

pH paper Lot# 10546711

Date and Initials of person examining contents: BMH 8/27/18

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed BMH 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: BMH Date: 8/27/18

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 1-1-5
September 2018 Sampling Events
Laboratory Analytical Reports

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

September 21, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60280382

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 12, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60280382

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
Arkansas Drinking Water
WY STR Certification #: 2456.01
Arkansas Certification #: 18-016-0
Arkansas Drinking Water
Illinois Certification #: 004455
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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

SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60280382

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60280382001	**FGD-6-091018**	Water	09/10/18 13:36	09/12/18 15:30
60280382002	**FGD-7-091118**	Water	09/11/18 10:50	09/12/18 15:30
60280382003	**FGD-8-091118**	Water	09/11/18 11:35	09/12/18 15:30
60280382004	**FGD-9-091118**	Water	09/11/18 12:33	09/12/18 15:30
60280382005	**DUP-091018**	Water	09/10/18 06:00	09/12/18 15:30

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60280382

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60280382001	**FGD-6-091018**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60280382002	**FGD-7-091118**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60280382003	**FGD-8-091118**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60280382004	**FGD-9-091118**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K
60280382005	**DUP-091018**	EPA 200.7	TDS	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	CTR	1	PASI-K
		SM 2540C	JDA	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	WNM	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280382

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: September 21, 2018

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: 544570

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60280261001,60280261010

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

- MSD (Lab ID: 2231359)
  - Calcium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280382

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: September 21, 2018

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:

Analyte Comments:

QC Batch: 544573

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

- DUP-091018 (Lab ID: 60280382005)
  - Cadmium, Total Recoverable
  - Molybdenum, Total Recoverable
  - Antimony, Total Recoverable
  - Thallium, Total Recoverable
- FGD-6-091018 (Lab ID: 60280382001)
  - Cadmium, Total Recoverable
  - Antimony, Total Recoverable
  - Thallium, Total Recoverable

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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280382

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: September 21, 2018

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 FGD NEW
Pace Project No.: 60280382

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: September 21, 2018

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 FGD NEW
Pace Project No.: 60280382

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: September 21, 2018

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-091018 (Lab ID: 60280382005)
- FGD-6-091018 (Lab ID: 60280382001)
- FGD-7-091118 (Lab ID: 60280382002)
- FGD-8-091118 (Lab ID: 60280382003)
- FGD-9-091118 (Lab ID: 60280382004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW
Pace Project No.: 60280382

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 21, 2018

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

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

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

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

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

QC Batch: 545242

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60279983002

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

- MS (Lab ID: 2234231)
  - 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 FGD NEW
Pace Project No.: 60280382

Sample: FGD-6-091018 **Lab ID: 60280382001** Collected: 09/10/18 13:36 Received: 09/12/18 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.025**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:08	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/18/18 12:08	7440-41-7	
Boron, Total Recoverable	**10.6**	mg/L	0.10	1	09/14/18 10:00	09/18/18 12:08	7440-42-8	
Calcium, Total Recoverable	**587**	mg/L	0.20	1	09/14/18 10:00	09/18/18 12:08	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:08	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:08	7439-92-1	
Lithium	**0.41**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:08	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0020**	mg/L	0.0020	2	09/14/18 10:00	09/18/18 11:30	7440-36-0	D3
Arsenic, Total Recoverable	**0.014**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:15	7440-38-2	
Cadmium, Total Recoverable	**<0.0010**	mg/L	0.0010	2	09/14/18 10:00	09/18/18 11:30	7440-43-9	D3
Cobalt, Total Recoverable	**0.0012**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:15	7440-48-4	
Molybdenum, Total Recoverable	**0.042**	mg/L	0.0020	2	09/14/18 10:00	09/18/18 11:30	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:15	7782-49-2	
Thallium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	09/14/18 10:00	09/18/18 11:30	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/14/18 13:55	09/17/18 14:21	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**7620**	mg/L	5.0	1		09/17/18 10:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/13/18 10:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**2120**	mg/L	200	200		09/20/18 21:49	16887-00-6	
Fluoride	**1.4**	mg/L	0.20	1		09/19/18 22:16	16984-48-8	
Sulfate	**3190**	mg/L	200	200		09/20/18 21:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60280382

Sample: FGD-7-091118 **Lab ID: 60280382002** Collected: 09/11/18 10:50 Received: 09/12/18 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.12**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/18/18 12:22	7440-41-7	
Boron, Total Recoverable	**0.27**	mg/L	0.10	1	09/14/18 10:00	09/18/18 12:22	7440-42-8	
Calcium, Total Recoverable	**115**	mg/L	0.20	1	09/14/18 10:00	09/18/18 12:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:22	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:22	7439-92-1	
Lithium	**0.021**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:22	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/14/18 10:00	09/17/18 14:17	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7440-48-4	
Molybdenum, Total Recoverable	**0.0023**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:17	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/14/18 13:55	09/17/18 14:24	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**658**	mg/L	5.0	1		09/17/18 10:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/13/18 10:13		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**65.1**	mg/L	10.0	10		09/19/18 23:13	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		09/19/18 22:58	16984-48-8	
Sulfate	**188**	mg/L	10.0	10		09/19/18 23:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60280382

Sample: FGD-8-091118 **Lab ID: 60280382003** Collected: 09/11/18 11:35 Received: 09/12/18 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.073**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:24	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/18/18 12:24	7440-41-7	
Boron, Total Recoverable	**0.21**	mg/L	0.10	1	09/14/18 10:00	09/18/18 12:24	7440-42-8	
Calcium, Total Recoverable	**108**	mg/L	0.20	1	09/14/18 10:00	09/18/18 12:24	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:24	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:24	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:24	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	09/14/18 10:00	09/17/18 14:19	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:19	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/14/18 10:00	09/17/18 14:19	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:19	7440-48-4	
Molybdenum, Total Recoverable	**0.0055**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:19	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:19	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:19	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/14/18 13:55	09/17/18 14:26	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**577**	mg/L	5.0	1		09/17/18 10:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/13/18 10:16		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**42.3**	mg/L	10.0	10		09/19/18 23:55	16887-00-6	
Fluoride	**0.50**	mg/L	0.20	1		09/19/18 23:41	16984-48-8	
Sulfate	**177**	mg/L	10.0	10		09/19/18 23:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60280382

Sample: FGD-9-091118 **Lab ID: 60280382004** Collected: 09/11/18 12:33 Received: 09/12/18 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.088**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:27	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/18/18 12:27	7440-41-7	
Boron, Total Recoverable	**0.51**	mg/L	0.10	1	09/14/18 10:00	09/18/18 12:27	7440-42-8	
Calcium, Total Recoverable	**99.2**	mg/L	0.20	1	09/14/18 10:00	09/18/18 12:27	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:27	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:27	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:27	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	09/14/18 10:00	09/17/18 14:28	7440-36-0	
Arsenic, Total Recoverable	**0.0039**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:28	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	09/14/18 10:00	09/17/18 14:28	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:28	7440-48-4	
Molybdenum, Total Recoverable	**0.0086**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:28	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:28	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:28	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/14/18 13:55	09/17/18 14:28	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**577**	mg/L	5.0	1		09/17/18 10:19		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/13/18 10:17		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.9**	mg/L	10.0	10		09/20/18 01:06	16887-00-6	
Fluoride	**0.53**	mg/L	0.20	1		09/20/18 00:52	16984-48-8	
Sulfate	**171**	mg/L	10.0	10		09/20/18 01:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW
Pace Project No.: 60280382

Sample: DUP-091018 **Lab ID: 60280382005** Collected: 09/10/18 06:00 Received: 09/12/18 15:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.029**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:33	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/18/18 12:33	7440-41-7	
Boron, Total Recoverable	**9.7**	mg/L	0.10	1	09/14/18 10:00	09/18/18 12:33	7440-42-8	
Calcium, Total Recoverable	**566**	mg/L	0.20	1	09/14/18 10:00	09/18/18 12:33	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	09/14/18 10:00	09/18/18 12:33	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:33	7439-92-1	
Lithium	**0.36**	mg/L	0.010	1	09/14/18 10:00	09/18/18 12:33	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0020**	mg/L	0.0020	2	09/14/18 10:00	09/17/18 14:36	7440-36-0	D3
Arsenic, Total Recoverable	**0.014**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:30	7440-38-2	
Cadmium, Total Recoverable	**<0.0010**	mg/L	0.0010	2	09/14/18 10:00	09/17/18 14:36	7440-43-9	D3
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:30	7440-48-4	
Molybdenum, Total Recoverable	**<0.0020**	mg/L	0.0020	2	09/14/18 10:00	09/17/18 14:36	7439-98-7	D3
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/14/18 10:00	09/17/18 14:30	7782-49-2	
Thallium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	09/14/18 10:00	09/17/18 14:36	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	09/14/18 13:55	09/17/18 14:30	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**6520**	mg/L	5.0	1		09/14/18 16:30		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/13/18 10:11		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**1700**	mg/L	100	100		09/20/18 02:03	16887-00-6	
Fluoride	**1.4**	mg/L	0.20	1		09/20/18 01:35	16984-48-8	
Sulfate	**2870**	mg/L	200	200		09/20/18 22:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544652 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

METHOD BLANK: 2231810 Matrix: Water
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	09/17/18 14:12	

LABORATORY CONTROL SAMPLE: 2231811

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: 2231812 2231813

Parameter	Units	60280255001 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	0.0050	102	100	70-130	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544570 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

METHOD BLANK: 2231356 Matrix: Water
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/18/18 12:13	
Beryllium	mg/L	<0.0010	0.0010	09/18/18 12:13	
Boron	mg/L	<0.10	0.10	09/18/18 12:13	
Calcium	mg/L	<0.20	0.20	09/18/18 12:13	
Chromium	mg/L	<0.0050	0.0050	09/18/18 12:13	
Lead	mg/L	<0.010	0.010	09/18/18 12:13	
Lithium	mg/L	<0.010	0.010	09/18/18 12:13	

LABORATORY CONTROL SAMPLE: 2231357

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2231358 2231359

Parameter	Units	60280261001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.15	1	1	1.1	1.2	97	104	70-130	6	20	
Beryllium	mg/L	ND	1	1	0.93	0.94	93	94	70-130	1	20	
Boron	mg/L	1.9	1	1	2.9	2.9	98	97	70-130	0	20	
Calcium	mg/L	29.3	10	10	41.6	43.2	122	139	70-130	4	20	M1
Chromium	mg/L	0.12	1	1	1.1	1.1	94	94	70-130	0	20	
Lead	mg/L	ND	1	1	0.86	0.85	85	84	70-130	1	20	
Lithium	mg/L	0.031	1	1	1.0	1.1	101	102	70-130	1	20	

MATRIX SPIKE SAMPLE: 2231360

Parameter	Units	60280261010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.050	1	0.99	94	70-130	
Beryllium	mg/L	ND	1	0.95	95	70-130	
Boron	mg/L	0.11	1	1.0	92	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

MATRIX SPIKE SAMPLE: 2231360

Parameter	Units	60280261010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	0.35	10	9.8	95	70-130	
Chromium	mg/L	ND	1	0.95	95	70-130	
Lead	mg/L	ND	1	0.96	96	70-130	
Lithium	mg/L	ND	1	0.96	96	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544573 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

METHOD BLANK: 2231371 Matrix: Water
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	09/17/18 14:02	
Arsenic	mg/L	<0.0010	0.0010	09/17/18 14:02	
Cadmium	mg/L	<0.00050	0.00050	09/17/18 14:02	
Cobalt	mg/L	<0.0010	0.0010	09/17/18 14:02	
Molybdenum	mg/L	<0.0010	0.0010	09/17/18 14:02	
Selenium	mg/L	<0.0010	0.0010	09/17/18 14:02	
Thallium	mg/L	<0.0010	0.0010	09/17/18 14:02	

LABORATORY CONTROL SAMPLE: 2231372

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	.04	0.039	99	85-115	
Arsenic	mg/L	.04	0.040	99	85-115	
Cadmium	mg/L	.04	0.039	99	85-115	
Cobalt	mg/L	.04	0.038	96	85-115	
Molybdenum	mg/L	.04	0.040	99	85-115	
Selenium	mg/L	.04	0.038	95	85-115	
Thallium	mg/L	.04	0.037	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2231373 2231374

Parameter	Units	60280294001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.15 ug/L	.04	.04	0.036	0.036	91	89	70-130	2	20	
Arsenic	mg/L	0.44J ug/L	.04	.04	0.039	0.038	95	94	70-130	1	20	
Cadmium	mg/L	0.62 ug/L	.04	.04	0.036	0.036	88	87	70-130	1	20	
Cobalt	mg/L	<0.15 ug/L	.04	.04	0.037	0.038	94	94	70-130	0	20	
Molybdenum	mg/L	0.21J ug/L	.04	.04	0.040	0.040	100	99	70-130	1	20	
Selenium	mg/L	<0.16 ug/L	.04	.04	0.039	0.039	98	97	70-130	1	20	
Thallium	mg/L	1.4 ug/L	.04	.04	0.034	0.034	81	80	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544614
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60280382005

METHOD BLANK: 2231620 Matrix: Water
Associated Lab Samples: 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/14/18 16:30	

LABORATORY CONTROL SAMPLE: 2231621

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

SAMPLE DUPLICATE: 2231622

Parameter	Units	60280382005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	6520	6660	2	10	

SAMPLE DUPLICATE: 2231627

Parameter	Units	60280236002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	859	871	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544790 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004

METHOD BLANK: 2232779 Matrix: Water
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/17/18 10:19	

LABORATORY CONTROL SAMPLE: 2232780

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

SAMPLE DUPLICATE: 2232781

Parameter	Units	60280382001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	7620	7420	3	10	

SAMPLE DUPLICATE: 2232782

Parameter	Units	60280434001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	439	427	3	10	

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 544326 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

SAMPLE DUPLICATE: 2230252

Parameter	Units	60280382002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.3	0	5	H6

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 545242 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

METHOD BLANK: 2234227 Matrix: Water
Associated Lab Samples: 60280382001, 60280382002, 60280382003, 60280382004, 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/19/18 21:00	
Fluoride	mg/L	<0.20	0.20	09/19/18 21:00	
Sulfate	mg/L	<1.0	1.0	09/19/18 21:00	

LABORATORY CONTROL SAMPLE: 2234228

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	2.5	99	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE SAMPLE: 2234231

Parameter	Units	60279983002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	79.4	50	136	113	90-110	M1

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW
Pace Project No.: 60280382

QC Batch: 545587 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60280382001, 60280382005

METHOD BLANK: 2235857 Matrix: Water
Associated Lab Samples: 60280382001, 60280382005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/20/18 19:19	
Sulfate	mg/L	<1.0	1.0	09/20/18 19:19	

LABORATORY CONTROL SAMPLE: 2235858

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Sulfate	mg/L	5	5.1	103	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD NEW
Pace Project No.: 60280382

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60280382

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60280382001	**FGD-6-091018**	EPA 200.7	544570	EPA 200.7	544693
60280382002	**FGD-7-091118**	EPA 200.7	544570	EPA 200.7	544693
60280382003	**FGD-8-091118**	EPA 200.7	544570	EPA 200.7	544693
60280382004	**FGD-9-091118**	EPA 200.7	544570	EPA 200.7	544693
60280382005	**DUP-091018**	EPA 200.7	544570	EPA 200.7	544693
60280382001	**FGD-6-091018**	EPA 200.8	544573	EPA 200.8	544696
60280382002	**FGD-7-091118**	EPA 200.8	544573	EPA 200.8	544696
60280382003	**FGD-8-091118**	EPA 200.8	544573	EPA 200.8	544696
60280382004	**FGD-9-091118**	EPA 200.8	544573	EPA 200.8	544696
60280382005	**DUP-091018**	EPA 200.8	544573	EPA 200.8	544696
60280382001	**FGD-6-091018**	EPA 245.1	544652	EPA 245.1	544686
60280382002	**FGD-7-091118**	EPA 245.1	544652	EPA 245.1	544686
60280382003	**FGD-8-091118**	EPA 245.1	544652	EPA 245.1	544686
60280382004	**FGD-9-091118**	EPA 245.1	544652	EPA 245.1	544686
60280382005	**DUP-091018**	EPA 245.1	544652	EPA 245.1	544686
60280382001	**FGD-6-091018**	SM 2540C	544790		
60280382002	**FGD-7-091118**	SM 2540C	544790		
60280382003	**FGD-8-091118**	SM 2540C	544790		
60280382004	**FGD-9-091118**	SM 2540C	544790		
60280382005	**DUP-091018**	SM 2540C	544614		
60280382001	**FGD-6-091018**	SM 4500-H+B	544326		
60280382002	**FGD-7-091118**	SM 4500-H+B	544326		
60280382003	**FGD-8-091118**	SM 4500-H+B	544326		
60280382004	**FGD-9-091118**	SM 4500-H+B	544326		
60280382005	**DUP-091018**	SM 4500-H+B	544326		
60280382001	**FGD-6-091018**	EPA 300.0	545242		
60280382001	**FGD-6-091018**	EPA 300.0	545587		
60280382002	**FGD-7-091118**	EPA 300.0	545242		
60280382003	**FGD-8-091118**	EPA 300.0	545242		
60280382004	**FGD-9-091118**	EPA 300.0	545242		
60280382005	**DUP-091018**	EPA 300.0	545242		
60280382005	**DUP-091018**	EPA 300.0	545587		

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Sample Condition Upon Receipt

WO# : 60280382

60280382

Client Name: Westar Energy

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

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

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

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

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

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** 0.0 **Corrected** 1.1

Date and initials of person examining contents: PW 9/12/18

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	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	HMW

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 Nolie Wood at 5:11 pm, 9/13/18

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
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-091018	WT	G			9/10	1336		2	1		1													60280382 001
2	FGD-7-091118	WT	G			9/11	1050		2	1		1													002
3	FGD-8-091118	WT	G			9/11	1135		2	1		1													003
4	FGD-9-091118	WT	G			9/11	1233		2	1		1													004
5																									
6																									
7																									
8																									
9																									
10	DUP-091018	WT	G			9/10	0600		2	1		1													005
11																									
12																									

Requested Analysis Filtered (Y/N)

Pace Project No./ Lab I.D.: 60280382

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	Westar	9/12/18	0900		9/12/18	1530	1.1	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER:

DATE Signed (MM/DD/YY): 09/11/18

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

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

September 28, 2018

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

RE: Project: JEC FGD NEW
Pace Project No.: 60280642

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on September 13, 2018. 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 The sample ID on 60280642002 was corrected from FGD-6-091118 to FGD-7-091118 to match the chain of custody.

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

Sincerely,

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

Enclosures

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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: JEC FGD NEW
Pace Project No.: 60280642

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW
Pace Project No.: 60280642

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60280642001	**FGD-6-091018**	Water	09/10/18 13:36	09/13/18 10:00
60280642002	**FGD-7-091118**	Water	09/11/18 10:50	09/13/18 10:00
60280642003	**FGD-8-091118**	Water	09/11/18 11:35	09/13/18 10:00
60280642004	**FGD-9-091118**	Water	09/11/18 12:33	09/13/18 10:00
60280642005	**DUP-091018**	Water	09/10/18 06:00	09/13/18 10:00

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW
Pace Project No.: 60280642

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60280642001	**FGD-6-091018**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280642002	**FGD-7-091118**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280642003	**FGD-8-091118**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280642004	**FGD-9-091118**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60280642005	**DUP-091018**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280642

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: September 28, 2018

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:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280642

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: September 28, 2018

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:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: JEC FGD NEW
Pace Project No.: 60280642

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: September 28, 2018

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60280642

Sample: FGD-6-091018 **Lab ID: 60280642001** Collected: 09/10/18 13:36 Received: 09/13/18 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.34 ± 1.02 (1.13) C:NA T:90%**	pCi/L	09/25/18 11:56	13982-63-3	
Radium-228	EPA 904.0	**1.42 ± 0.537 (0.813) C:67% T:83%**	pCi/L	09/25/18 10:53	15262-20-1	
Total Radium	Total Radium Calculation	**3.76 ± 1.56 (1.94)**	pCi/L	09/27/18 14:44	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 FGD NEW
Pace Project No.: 60280642

Sample: FGD-7-091118 **Lab ID: 60280642002** Collected: 09/11/18 10:50 Received: 09/13/18 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.754 ± 0.614 (0.836) C:NA T:85%**	pCi/L	09/25/18 11:56	13982-63-3	
Radium-228	EPA 904.0	**0.318 ± 0.317 (0.649) C:74% T:80%**	pCi/L	09/25/18 10:53	15262-20-1	
Total Radium	Total Radium Calculation	**1.07 ± 0.931 (1.49)**	pCi/L	09/27/18 14:44	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 FGD NEW
Pace Project No.: 60280642

Sample: FGD-8-091118 **Lab ID: 60280642003** Collected: 09/11/18 11:35 Received: 09/13/18 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0615 ± 0.615 (1.17) C:NA T:81%**	pCi/L	09/25/18 11:56	13982-63-3	
Radium-228	EPA 904.0	**0.344 ± 0.361 (0.753) C:78% T:86%**	pCi/L	09/25/18 10:53	15262-20-1	
Total Radium	Total Radium Calculation	**0.406 ± 0.976 (1.92)**	pCi/L	09/27/18 14:44	7440-14-4	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60280642

Sample: FGD-9-091118 **Lab ID: 60280642004** Collected: 09/11/18 12:33 Received: 09/13/18 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.828 ± 0.633 (0.838) C:NA T:85%**	pCi/L	09/25/18 12:14	13982-63-3	
Radium-228	EPA 904.0	**0.219 ± 0.309 (0.663) C:76% T:85%**	pCi/L	09/25/18 10:53	15262-20-1	
Total Radium	Total Radium Calculation	**1.05 ± 0.942 (1.50)**	pCi/L	09/27/18 14:44	7440-14-4	

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(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW
Pace Project No.: 60280642

Sample: DUP-091018 **Lab ID: 60280642005** Collected: 09/10/18 06:00 Received: 09/13/18 10:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.56 ± 0.995 (0.859) C:NA T:84%**	pCi/L	09/25/18 12:14	13982-63-3	
Radium-228	EPA 904.0	**0.785 ± 0.387 (0.675) C:76% T:91%**	pCi/L	09/25/18 10:53	15262-20-1	
Total Radium	Total Radium Calculation	**3.35 ± 1.38 (1.53)**	pCi/L	09/27/18 14:44	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 FGD NEW
Pace Project No.: 60280642

QC Batch: 313329 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60280642001, 60280642002, 60280642003, 60280642004, 60280642005

METHOD BLANK: 1529952 Matrix: Water
Associated Lab Samples: 60280642001, 60280642002, 60280642003, 60280642004, 60280642005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.105 ± 0.337 (0.758) C:71% T:83%	pCi/L	09/25/18 10:52	

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 FGD NEW
Pace Project No.: 60280642

QC Batch: 313598 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60280642001, 60280642002, 60280642003, 60280642004, 60280642005

METHOD BLANK: 1530996 Matrix: Water
Associated Lab Samples: 60280642001, 60280642002, 60280642003, 60280642004, 60280642005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.182 ± 0.478 (0.874) C:NA T:84%	pCi/L	09/25/18 11:38	

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 FGD NEW
Pace Project No.: 60280642

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW
Pace Project No.: 60280642

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60280642001	**FGD-6-091018**	EPA 903.1	313598		
60280642002	**FGD-7-091118**	EPA 903.1	313598		
60280642003	**FGD-8-091118**	EPA 903.1	313598		
60280642004	**FGD-9-091118**	EPA 903.1	313598		
60280642005	**DUP-091018**	EPA 903.1	313598		
60280642001	**FGD-6-091018**	EPA 904.0	313329		
60280642002	**FGD-7-091118**	EPA 904.0	313329		
60280642003	**FGD-8-091118**	EPA 904.0	313329		
60280642004	**FGD-9-091118**	EPA 904.0	313329		
60280642005	**DUP-091018**	EPA 904.0	313329		
60280642001	**FGD-6-091018**	Total Radium Calculation	314658		
60280642002	**FGD-7-091118**	Total Radium Calculation	314658		
60280642003	**FGD-8-091118**	Total Radium Calculation	314658		
60280642004	**FGD-9-091118**	Total Radium Calculation	314658		
60280642005	**DUP-091018**	Total Radium Calculation	314658		

WO# : 60280642

60280642

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS

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

Label _____

LIMS Login

Tracking #: 454122780 8050

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

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

Cooler Temperature Observed Temp 2.9 °C Correction Factor: 0 °C Final Temp: 2.9 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D4671 / Date and Initials of person examining contents: MJS 9-13-18
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed MJS / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed MJS Date: 9-13-18

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
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:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000033150	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	15 day	Project Number:		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

ITEM #	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-091018	WT	G			9/10	1336		2			2											01
2	FGD-7-091118	WT	G			9/10	1050		2			2											02
3	FGD-8-091118	WT	G			9/11	1135		2			2											03
4	FGD-9-091118	WT	G			9/11	1238		2			2											04
5																							
6																							
7																							
8																							
9																							
10																							
11	DUP-091018	WT	G			9/10	0600		2			2								X	X	X		05
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Westar	09/12/18	0900		9/13/18	1000	2	9	N	Y

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Brandon Griffin		
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	09/11/18

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

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

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

Pace Analytical®
www.pacelabs.com

Workorder: 60280642 **Workorder Name:** JEC FGD NEW

Owner Received Date: 9/13/2018 Results Requested By: 10/4/2018

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# : 30265269

30265269

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Radium 226 & Total Radium	Radium 228	LAB USE ONLY
1	FGD-6-091018	PS	9/10/2018 13:36	60280642001	Water	1	X	X	001
2	FGD-6-091118	PS	9/11/2018 10:50	60280642002	Water	1	X	X	002
3	FGD-8-091118	PS	9/11/2018 11:35	60280642003	Water	1	X	X	003
4	FGD-9-091118	PS	9/11/2018 12:33	60280642004	Water	1	X	X	004
5	DUP-091018	PS	9/10/2018 06:00	60280642005	Water	1	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			FedEx	9/13/18 1000
2				
3				

Comments

Cooler Temperature on Receipt 2.9 °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.

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:	15 day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000033150
Project Name:	JEC FGD NEW
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-091018	WT	G			9/10	1536		2			2											# 30265269
2	FGD-7-091118	WT	G			9/10	1050		2			2											
3	FGD-8-091118	WT	G			9/11	1135		2			2											
4	FGD-9-091118	WT	G			9/11	1233		2			2											
5																							
6																							
7																							
8																							
9																							
10																							
11	DUP-091018	WT	G			9/10	0600		2			2								XXX			
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Westar	09/12/18	0900		9-13-18	1000	2.9	Y	N	Y

	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): 09/11/18

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace KS Project # # 30265269

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

Label BSH

Tracking #: 454227808050 LIMS Login BSH

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

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

Cooler Temperature Observed Temp 2.9 °C Correction Factor: 0 °C Final Temp: 2.9 °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10D4671 / Date and Initials of person examining contents: MDS 9-13-18
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: WG	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous Compliance/NPDES sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. All containers needing preservation are found to be in compliance with EPA recommendation.	✓			16. pH<2
exceptions: VOA, coliform, TOC, O&G, Phenolics				Initial when completed MDS / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present: / Trip Blank Custody Seals Present			✓	18.
Rad Aqueous Samples Screened > 0.5 mrem/hr		✓		Initial when completed MDS / Date: 9-13-18

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 1-1-6
March 2019 Sampling Events
Laboratory Analytical Reports

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

April 09, 2019

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

RE: Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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Lenexa, KS 66219
(913)599-5665

CERTIFICATIONS

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60298143001	**FGD-6-032619**	Water	03/26/19 15:35	03/28/19 09:30
60298143002	**FGD-7-032619**	Water	03/26/19 16:52	03/28/19 09:30
60298143003	**FGD-8-032719**	Water	03/27/19 09:27	03/28/19 09:30
60298143004	**FGD-9-032719**	Water	03/27/19 10:35	03/28/19 09:30
60298143005	**DUP-032619**	Water	03/26/19 06:00	03/28/19 09:30

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60298143001	**FGD-6-032619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298143002	**FGD-7-032619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298143003	**FGD-8-032719**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298143004	**FGD-9-032719**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298143005	**DUP-032619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Sample: FGD-6-032619 **Lab ID: 60298143001** Collected: 03/26/19 15:35 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.71 ± 1.05 (0.985) C:NA T:86%**	pCi/L	04/08/19 20:29	13982-63-3	
Radium-228	EPA 904.0	**2.21 ± 0.696 (0.950) C:73% T:80%**	pCi/L	04/08/19 13:01	15262-20-1	
Total Radium	Total Radium Calculation	**4.92 ± 1.75 (1.94)**	pCi/L	04/09/19 12:30	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 FGD NEW CCR
Pace Project No.: 60298143

Sample: FGD-7-032619 **Lab ID: 60298143002** Collected: 03/26/19 16:52 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.194 ± 0.458 (0.849) C:NA T:91%**	pCi/L	04/08/19 20:29	13982-63-3	
Radium-228	EPA 904.0	**0.472 ± 0.547 (1.15) C:77% T:81%**	pCi/L	04/08/19 16:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.666 ± 1.01 (2.00)**	pCi/L	04/09/19 12:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Sample: FGD-8-032719 **Lab ID: 60298143003** Collected: 03/27/19 09:27 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.162 ± 0.502 (0.972) C:NA T:83%**	pCi/L	04/08/19 20:42	13982-63-3	
Radium-228	EPA 904.0	**0.355 ± 0.501 (1.08) C:74% T:88%**	pCi/L	04/08/19 16:21	15262-20-1	
Total Radium	Total Radium Calculation	**0.517 ± 1.00 (2.05)**	pCi/L	04/09/19 12:30	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 FGD NEW CCR
Pace Project No.: 60298143

Sample: FGD-9-032719 **Lab ID: 60298143004** Collected: 03/27/19 10:35 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.419 ± 0.679 (1.18) C:NA T:77%**	pCi/L	04/08/19 20:42	13982-63-3	
Radium-228	EPA 904.0	**-0.0273 ± 0.633 (1.47) C:68% T:76%**	pCi/L	04/08/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.419 ± 1.31 (2.65)**	pCi/L	04/09/19 12:30	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 FGD NEW CCR
Pace Project No.: 60298143

Sample: DUP-032619 **Lab ID: 60298143005** Collected: 03/26/19 06:00 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.263 ± 0.448 (0.791) C:NA T:94%**	pCi/L	04/08/19 20:42	13982-63-3	
Radium-228	EPA 904.0	**0.503 ± 0.654 (1.39) C:69% T:79%**	pCi/L	04/08/19 18:47	15262-20-1	
Total Radium	Total Radium Calculation	**0.766 ± 1.10 (2.18)**	pCi/L	04/09/19 12:30	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 FGD NEW CCR
Pace Project No.: 60298143

QC Batch: 336663 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60298143004, 60298143005

METHOD BLANK: 1638239 Matrix: Water
Associated Lab Samples: 60298143004, 60298143005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0797 ± 0.337 (0.805) C:75% T:79%	pCi/L	04/08/19 12:08	

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 FGD NEW CCR
Pace Project No.: 60298143

QC Batch: 336385 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60298143001, 60298143002, 60298143003, 60298143004, 60298143005

METHOD BLANK: 1637112 Matrix: Water
Associated Lab Samples: 60298143001, 60298143002, 60298143003, 60298143004, 60298143005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0717 ± 0.327 (0.666) C:NA T:90%	pCi/L	04/08/19 20:01	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

QC Batch: 336387 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60298143001, 60298143002, 60298143003

METHOD BLANK: 1637113 Matrix: Water
Associated Lab Samples: 60298143001, 60298143002, 60298143003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.400 ± 0.325 (0.647) C:76% T:89%	pCi/L	04/08/19 12:59	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW CCR
Pace Project No.: 60298143

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60298143001	**FGD-6-032619**	EPA 903.1	336385		
60298143002	**FGD-7-032619**	EPA 903.1	336385		
60298143003	**FGD-8-032719**	EPA 903.1	336385		
60298143004	**FGD-9-032719**	EPA 903.1	336385		
60298143005	**DUP-032619**	EPA 903.1	336385		
60298143001	**FGD-6-032619**	EPA 904.0	336387		
60298143002	**FGD-7-032619**	EPA 904.0	336387		
60298143003	**FGD-8-032719**	EPA 904.0	336387		
60298143004	**FGD-9-032719**	EPA 904.0	336663		
60298143005	**DUP-032619**	EPA 904.0	336663		
60298143001	**FGD-6-032619**	Total Radium Calculation	337506		
60298143002	**FGD-7-032619**	Total Radium Calculation	337506		
60298143003	**FGD-8-032719**	Total Radium Calculation	337506		
60298143004	**FGD-9-032719**	Total Radium Calculation	337506		
60298143005	**DUP-032619**	Total Radium Calculation	337506		

Chain of Custody

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

State Of Origin: KS

Cert. Needed: [X] Yes [ ] No

Pace Analytical®
www.pacelabs.com

Workorder: 60298143 **Workorder Name:** JEC FGD NEW CCR **Owner Received Date:** 3/28/2019 **Results Requested By:** 4/11/2019

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	FGD-6-032619	PS	3/26/2019 15:35	60298143001	Water	1	X	X	001
2	FGD-7-032619	PS	3/26/2019 16:52	60298143002	Water	1	X	X	002
3	FGD-8-032719	PS	3/27/2019 09:27	60298143003	Water	1	X	X	003
4	FGD-9-032719	PS	3/27/2019 10:35	60298143004	Water	1	X	X	004
5	DUP-032619	PS	3/26/2019 06:00	60298143005	Water	1	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			[signature]	3-28-19 0930
2				
3				

Comments

Cooler Temperature on Receipt .9 °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# : 30286515

30286515

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RUSH

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: (of)

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000040819	Pace Quote Reference:	
Phone:	785-575-8135 Fax:	Project Name:	JEC FGD NEW CCR	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	~~10 day~~ 4/12/19	Project Number:		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

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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-032619	WT	G			3/26	1535		2			2						X	X	X		
2	FGD-7-032619	WT	G			3/26	1652		2			2										
3	FGD-8-032719	WT	G			3/27	0927		2			2										
4	FGD-9-032719	WT	G			3/27	1035		2			2										
5																						
6																						
7																						
8																						
9																						
10	DUP-032619	WT	G			3/26	0600		2			2						X	X	X		
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	BFV / Westar	3/27	1400		3/27	1430	1.9	4	4	4

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: BFV DATE Signed (MM/DD/YY): 03/27/19

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

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

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: WeStar Energy Project # 30286515

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

Label MJ
LIMS Login MJ

Tracking #: 474687425326 MD53879

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

Thermometer Used 10 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 1.9 °C Correction Factor: +0.0 °C Final Temp: 1.9 °C

Temp should be above freezing to 6°C

pH paper Lot# MD53-2879 10152981 Date and Initials of person examining contents: MD53-2879

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. All containers needing preservation are found to be in compliance with EPA recommendation. exceptions: VOA, coliform, TOC, O&G, Phenolics	✓ ✓			16. pH<2 Initial when completed MD Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MD Date: 3-28-19

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

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

April 08, 2019

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

RE: Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

Pace Analytical Services, LLC
9608 Loiret Blvd.
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CERTIFICATIONS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Kansas Certification IDs

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

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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60298157001	**FGD-6-032619**	Water	03/26/19 15:35	03/28/19 06:15
60298157002	**FGD-7-032619**	Water	03/26/19 16:52	03/28/19 06:15
60298157003	**FGD-8-032719**	Water	03/27/19 09:27	03/28/19 06:15
60298157004	**FGD-9-032719**	Water	03/27/19 10:35	03/28/19 06:15
60298157005	**DUP-032619**	Water	03/26/19 06:00	03/28/19 06:15

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60298157001	**FGD-6-032619**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS, WNM	3	PASI-K
60298157002	**FGD-7-032619**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS, WNM	3	PASI-K
60298157003	**FGD-8-032719**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60298157004	**FGD-9-032719**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60298157005	**DUP-032619**	EPA 200.7	EMR	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

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

Additional Comments:

Analyte Comments:

QC Batch: 576613

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

- FGD-6-032619 (Lab ID: 60298157001)
  - Cadmium, Total Recoverable
  - Antimony, Total Recoverable
  - Thallium, Total Recoverable

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- DUP-032619 (Lab ID: 60298157005)
- FGD-6-032619 (Lab ID: 60298157001)
- FGD-7-032619 (Lab ID: 60298157002)
- FGD-8-032719 (Lab ID: 60298157003)
- FGD-9-032719 (Lab ID: 60298157004)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW CCR
Pace Project No.: 60298157

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

QC Batch: 577497

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60298149001,60298156005

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

- MS (Lab ID: 2369588)
  - Chloride
  - Sulfate

QC Batch: 577678

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60298156001,60298258008

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

- MS (Lab ID: 2370637)
  - Chloride
- MSD (Lab ID: 2370638)
  - Chloride

Additional Comments:

Analyte Comments:

QC Batch: 577497

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

- MSD (Lab ID: 2369589)
  - Sulfate

QC Batch: 577678

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

- MS (Lab ID: 2370637)
  - Chloride

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

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Sample: FGD-6-032619 **Lab ID: 60298157001** Collected: 03/26/19 15:35 Received: 03/28/19 06:15 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	**0.025**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:15	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 10:11	04/04/19 10:15	7440-41-7	
Boron, Total Recoverable	**11.0**	mg/L	0.10	1	04/03/19 10:11	04/04/19 10:15	7440-42-8	
Calcium, Total Recoverable	**658**	mg/L	0.20	1	04/03/19 10:11	04/04/19 10:15	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:15	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:15	7439-92-1	
Lithium	**0.45**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:15	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0050**	mg/L	0.0050	5	04/02/19 10:53	04/05/19 10:08	7440-36-0	D3
Arsenic, Total Recoverable	**0.0078**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:10	7440-38-2	
Cadmium, Total Recoverable	**<0.0025**	mg/L	0.0025	5	04/02/19 10:53	04/05/19 10:08	7440-43-9	D3
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:10	7440-48-4	
Molybdenum, Total Recoverable	**0.039**	mg/L	0.0050	5	04/02/19 10:53	04/05/19 10:08	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:10	7782-49-2	
Thallium, Total Recoverable	**<0.0050**	mg/L	0.0050	5	04/02/19 10:53	04/05/19 10:08	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:56	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**6900**	mg/L	5.0	1		04/01/19 11:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/04/19 10:13		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**2110**	mg/L	200	200		04/06/19 15:02	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	1		04/06/19 00:57	16984-48-8	
Sulfate	**2780**	mg/L	200	200		04/06/19 15:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Sample: FGD-7-032619 **Lab ID: 60298157002** Collected: 03/26/19 16:52 Received: 03/28/19 06:15 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	**0.15**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:18	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 10:11	04/04/19 10:18	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	04/03/19 10:11	04/04/19 10:18	7440-42-8	
Calcium, Total Recoverable	**108**	mg/L	0.20	1	04/03/19 10:11	04/04/19 10:18	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:18	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:18	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:18	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	04/02/19 10:53	04/04/19 16:16	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:16	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 16:16	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:16	7440-48-4	
Molybdenum, Total Recoverable	**0.0019**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:16	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:16	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:16	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**537**	mg/L	5.0	1		04/01/19 11:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		04/04/19 10:15		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**51.9**	mg/L	10.0	10		04/06/19 02:00	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		04/06/19 01:44	16984-48-8	
Sulfate	**110**	mg/L	10.0	10		04/06/19 02:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Sample: FGD-8-032719 **Lab ID: 60298157003** Collected: 03/27/19 09:27 Received: 03/28/19 06:15 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	**0.086**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:20	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 10:11	04/04/19 10:20	7440-41-7	
Boron, Total Recoverable	**0.18**	mg/L	0.10	1	04/03/19 10:11	04/04/19 10:20	7440-42-8	
Calcium, Total Recoverable	**127**	mg/L	0.20	1	04/03/19 10:11	04/04/19 10:20	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:20	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:20	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:20	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	04/02/19 10:53	04/04/19 16:19	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:19	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 16:19	7440-43-9	
Cobalt, Total Recoverable	**0.0011**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:19	7440-48-4	
Molybdenum, Total Recoverable	**0.0048**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:19	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:19	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:19	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 10:01	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**594**	mg/L	5.0	1		04/01/19 11:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/04/19 10:17		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**35.7**	mg/L	10.0	10		04/06/19 03:20	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	1		04/06/19 03:04	16984-48-8	
Sulfate	**157**	mg/L	10.0	10		04/06/19 03:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Sample: FGD-9-032719 **Lab ID: 60298157004** Collected: 03/27/19 10:35 Received: 03/28/19 06:15 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	**0.091**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:22	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 10:11	04/04/19 10:22	7440-41-7	
Boron, Total Recoverable	**0.39**	mg/L	0.10	1	04/03/19 10:11	04/04/19 10:22	7440-42-8	
Calcium, Total Recoverable	**112**	mg/L	0.20	1	04/03/19 10:11	04/04/19 10:22	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:22	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:22	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:22	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	04/02/19 10:53	04/04/19 16:25	7440-36-0	
Arsenic, Total Recoverable	**0.0017**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:25	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 16:25	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:25	7440-48-4	
Molybdenum, Total Recoverable	**0.0096**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:25	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:25	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:25	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 10:03	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**666**	mg/L	5.0	1		04/01/19 11:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		04/05/19 14:43		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**39.1**	mg/L	10.0	10		04/06/19 04:07	16887-00-6	
Fluoride	**0.55**	mg/L	0.20	1		04/06/19 03:51	16984-48-8	
Sulfate	**179**	mg/L	10.0	10		04/06/19 04:07	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Sample: DUP-032619 **Lab ID: 60298157005** Collected: 03/26/19 06:00 Received: 03/28/19 06:15 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	**0.15**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:29	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 10:11	04/04/19 10:29	7440-41-7	
Boron, Total Recoverable	**0.14**	mg/L	0.10	1	04/03/19 10:11	04/04/19 10:29	7440-42-8	
Calcium, Total Recoverable	**107**	mg/L	0.20	1	04/03/19 10:11	04/04/19 10:29	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 10:11	04/04/19 10:29	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:29	7439-92-1	
Lithium	**0.017**	mg/L	0.010	1	04/03/19 10:11	04/04/19 10:29	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	04/02/19 10:53	04/04/19 16:28	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:28	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 16:28	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:28	7440-48-4	
Molybdenum, Total Recoverable	**0.0019**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:28	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:28	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 16:28	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 10:10	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**557**	mg/L	5.0	1		04/01/19 11:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.5**	Std. Units	0.10	1		04/04/19 09:56		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**52.4**	mg/L	10.0	10		04/06/19 04:55	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	1		04/06/19 04:39	16984-48-8	
Sulfate	**112**	mg/L	10.0	10		04/06/19 04:55	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 576269 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004

METHOD BLANK: 2364311 Matrix: Water
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	04/01/19 08:59	

LABORATORY CONTROL SAMPLE: 2364312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0047	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2364313 2364314

Parameter	Units	60297908001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.005	0.005	0.0045	0.0045	88	88	70-130	1	20	

MATRIX SPIKE SAMPLE: 2364315

Parameter	Units	60298156002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	0.005	0.0046	90	70-130	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 576271
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 60298157005

METHOD BLANK: 2364322 Matrix: Water
Associated Lab Samples: 60298157005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	04/01/19 10:06	

LABORATORY CONTROL SAMPLE: 2364323

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0050	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2364324 2364325

Parameter	Units	60298157005 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	0.005	0.005	0.0047	0.0045	93	88	70-130	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 576952 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

METHOD BLANK: 2367278 Matrix: Water
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	04/04/19 10:08	
Beryllium	mg/L	<0.0010	0.0010	04/04/19 10:08	
Boron	mg/L	<0.10	0.10	04/04/19 10:08	
Calcium	mg/L	<0.20	0.20	04/04/19 10:08	
Chromium	mg/L	<0.0050	0.0050	04/04/19 10:08	
Lead	mg/L	<0.010	0.010	04/04/19 10:08	
Lithium	mg/L	<0.010	0.010	04/04/19 10:08	

LABORATORY CONTROL SAMPLE: 2367279

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	105	85-115	
Beryllium	mg/L	1	1.1	105	85-115	
Boron	mg/L	1	0.99	99	85-115	
Calcium	mg/L	10	10.7	107	85-115	
Chromium	mg/L	1	1.0	102	85-115	
Lead	mg/L	1	1.0	102	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2367280 2367281

Parameter	Units	60298157004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.091	1	1	1.1	1.1	102	105	70-130	2	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	105	70-130	2	20	
Boron	mg/L	0.39	1	1	1.4	1.4	99	102	70-130	3	20	
Calcium	mg/L	112	10	10	122	125	97	123	70-130	2	20	
Chromium	mg/L	<0.0050	1	1	0.98	1.0	98	101	70-130	2	20	
Lead	mg/L	<0.010	1	1	0.96	0.98	96	98	70-130	2	20	
Lithium	mg/L	<0.010	1	1	1.0	1.0	101	104	70-130	2	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 576613 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

METHOD BLANK: 2366050 Matrix: Water
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	04/04/19 15:20	
Arsenic	mg/L	<0.0010	0.0010	04/04/19 15:20	
Cadmium	mg/L	<0.00050	0.00050	04/04/19 15:20	
Cobalt	mg/L	<0.0010	0.0010	04/04/19 15:20	
Molybdenum	mg/L	<0.0010	0.0010	04/04/19 15:20	
Selenium	mg/L	<0.0010	0.0010	04/04/19 15:20	
Thallium	mg/L	<0.0010	0.0010	04/04/19 15:20	

LABORATORY CONTROL SAMPLE: 2366051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.039	98	85-115	
Arsenic	mg/L	0.04	0.038	95	85-115	
Cadmium	mg/L	0.04	0.039	97	85-115	
Cobalt	mg/L	0.04	0.040	99	85-115	
Molybdenum	mg/L	0.04	0.037	92	85-115	
Selenium	mg/L	0.04	0.037	93	85-115	
Thallium	mg/L	0.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2366052 2366053

Parameter	Units	60298155003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.037	0.038	92	94	70-130	1	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.037	0.037	92	92	70-130	1	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.035	0.036	88	90	70-130	2	20	
Cobalt	mg/L	<0.0010	0.04	0.04	0.036	0.036	90	91	70-130	1	20	
Molybdenum	mg/L	0.0038	0.04	0.04	0.042	0.042	94	95	70-130	1	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.034	0.034	84	85	70-130	0	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.035	0.035	86	87	70-130	1	20	

MATRIX SPIKE SAMPLE: 2366054

Parameter	Units	60298157003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.037	93	70-130	
Arsenic	mg/L	<0.0010	0.04	0.037	91	70-130	
Cadmium	mg/L	<0.00050	0.04	0.036	90	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

MATRIX SPIKE SAMPLE: 2366054

Parameter	Units	60298157003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0011	0.04	0.037	90	70-130	
Molybdenum	mg/L	0.0048	0.04	0.041	91	70-130	
Selenium	mg/L	<0.0010	0.04	0.035	88	70-130	
Thallium	mg/L	<0.0010	0.04	0.034	86	70-130	

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REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 576564 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

METHOD BLANK: 2365975 Matrix: Water
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/01/19 11:06	

LABORATORY CONTROL SAMPLE: 2365976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1060	106	80-120	

SAMPLE DUPLICATE: 2365977

Parameter	Units	60298071006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3680	3820	4	10	

SAMPLE DUPLICATE: 2365978

Parameter	Units	60298176004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1560	1650	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 577185 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157005

SAMPLE DUPLICATE: 2368168

Parameter	Units	60298156001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.6	6.6	1	5	H6

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 577565
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60298157004

SAMPLE DUPLICATE: 2369938

Parameter	Units	60298339002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.1	8.1	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 FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 577497 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

METHOD BLANK: 2369586 Matrix: Water
Associated Lab Samples: 60298157001, 60298157002, 60298157003, 60298157004, 60298157005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	04/05/19 18:04	
Fluoride	mg/L	<0.20	0.20	04/05/19 18:04	
Sulfate	mg/L	<1.0	1.0	04/05/19 18:04	

LABORATORY CONTROL SAMPLE: 2369587

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	2.4	97	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2369588 2369589

Parameter	Units	60298149001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1300	500	500	1740	1750	87	90	90-110	1	15	M1
Sulfate	mg/L	1550	500	500	1990	2020	88	93	90-110	1	15	E,M1

MATRIX SPIKE SAMPLE: 2369590

Parameter	Units	60298156005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	96.9	50	146	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

QC Batch: 577678
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60298157001

METHOD BLANK: 2370635 Matrix: Water
Associated Lab Samples: 60298157001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	04/06/19 10:51	
Sulfate	mg/L	<1.0	1.0	04/06/19 10:51	

LABORATORY CONTROL SAMPLE: 2370636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	95	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2370637 2370638

Parameter	Units	60298156001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	70000	25000	25000	101000	91400	123	86	90-110	10	15	E,M1

MATRIX SPIKE SAMPLE: 2370639

Parameter	Units	60298258008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	ND	5	5.3	93	90-110	
Sulfate	mg/L	ND	5	5.5	110	90-110	

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REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW CCR
Pace Project No.: 60298157

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60298157001	**FGD-6-032619**	EPA 200.7	576952	EPA 200.7	577108
60298157002	**FGD-7-032619**	EPA 200.7	576952	EPA 200.7	577108
60298157003	**FGD-8-032719**	EPA 200.7	576952	EPA 200.7	577108
60298157004	**FGD-9-032719**	EPA 200.7	576952	EPA 200.7	577108
60298157005	**DUP-032619**	EPA 200.7	576952	EPA 200.7	577108
60298157001	**FGD-6-032619**	EPA 200.8	576613	EPA 200.8	576897
60298157002	**FGD-7-032619**	EPA 200.8	576613	EPA 200.8	576897
60298157003	**FGD-8-032719**	EPA 200.8	576613	EPA 200.8	576897
60298157004	**FGD-9-032719**	EPA 200.8	576613	EPA 200.8	576897
60298157005	**DUP-032619**	EPA 200.8	576613	EPA 200.8	576897
60298157001	**FGD-6-032619**	EPA 245.1	576269	EPA 245.1	576457
60298157002	**FGD-7-032619**	EPA 245.1	576269	EPA 245.1	576457
60298157003	**FGD-8-032719**	EPA 245.1	576269	EPA 245.1	576457
60298157004	**FGD-9-032719**	EPA 245.1	576269	EPA 245.1	576457
60298157005	**DUP-032619**	EPA 245.1	576271	EPA 245.1	576458
60298157001	**FGD-6-032619**	SM 2540C	576564		
60298157002	**FGD-7-032619**	SM 2540C	576564		
60298157003	**FGD-8-032719**	SM 2540C	576564		
60298157004	**FGD-9-032719**	SM 2540C	576564		
60298157005	**DUP-032619**	SM 2540C	576564		
60298157001	**FGD-6-032619**	SM 4500-H+B	577185		
60298157002	**FGD-7-032619**	SM 4500-H+B	577185		
60298157003	**FGD-8-032719**	SM 4500-H+B	577185		
60298157004	**FGD-9-032719**	SM 4500-H+B	577565		
60298157005	**DUP-032619**	SM 4500-H+B	577185		
60298157001	**FGD-6-032619**	EPA 300.0	577497		
60298157001	**FGD-6-032619**	EPA 300.0	577678		
60298157002	**FGD-7-032619**	EPA 300.0	577497		
60298157003	**FGD-8-032719**	EPA 300.0	577497		
60298157004	**FGD-9-032719**	EPA 300.0	577497		
60298157005	**DUP-032619**	EPA 300.0	577497		

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Sample Condition Upon Receipt

WO# : 60298157

60298157

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-29 **Type of Ice:** Wet Blue None

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

Date and initials of person examining contents: 3/28/19 AT

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

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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
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-032619	WT	G			3/26	1535		2	1		1							X	X	X	X	X	X	N	60298157 001
2	FGD-7-032619	WT	G			3/26	1652		2	1		1							X	X	X	X	X	X	N	002
3	FGD-8-032719	WT	G			3/27	0927		2	1		1							X	X	X	X	X	X	N	003
4	FGD-9-032719	WT	G			3/27	1035		2	1		1							X	X	X	X	X	X	N	004
5																										
6																										
7																										
8																										
9																										
10	DUP-032619	WT	G			3/26	0600		2	1		1							X	X	X	X	X	X	N	005
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	Westar	3/27	1400	Pace	3/25/19	0915	2.0	X	X	X
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/27/19

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

ATTACHMENT 1-1-7
June 2019 Sampling Events
Laboratory Analytical Reports

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

July 05, 2019

JD Schlegel
KCP&L & Westar
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Kansas Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60306866001	**FGD-8-062319**	Water	06/23/19 12:16	06/25/19 12:25
60306866002	**DUP-062319**	Water	06/23/19 12:21	06/25/19 12:25
60306866003	**FGD-7-062319**	Water	06/23/19 13:35	06/25/19 12:25
60306866004	**FGD-6-062319**	Water	06/23/19 16:34	06/25/19 12:25
60306866005	**FGD-9-062319**	Water	06/23/19 11:10	06/25/19 12:25

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SAMPLE ANALYTE COUNT

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60306866001	**FGD-8-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306866002	**DUP-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306866003	**FGD-7-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306866004	**FGD-6-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306866005	**FGD-9-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K

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PROJECT NARRATIVE

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

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

QC Batch: 593775

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60306862002,60306864002

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

- MS (Lab ID: 2434174)
  - Molybdenum
  - Selenium

Additional Comments:

Analyte Comments:

QC Batch: 593775

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

- FGD-6-062319 (Lab ID: 60306866004)
  - Thallium, Total Recoverable

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

QC Batch: 594228

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60306862001,60306864004

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

- MS (Lab ID: 2435440)
  - Fluoride

R1: RPD value was outside control limits.

- MSD (Lab ID: 2435441)
  - Fluoride

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 FDG NEW CCR
Pace Project No.: 60306866

Sample: FGD-8-062319 **Lab ID: 60306866001** Collected: 06/23/19 12:16 Received: 06/25/19 12:25 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	**0.076**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:56	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:56	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:56	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:56	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:56	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:54	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7440-48-4	
Molybdenum, Total Recoverable	**0.0051**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:54	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 14:57	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.45**	mg/L	0.20	1		07/03/19 20:20	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Sample: DUP-062319 **Lab ID: 60306866002** Collected: 06/23/19 12:21 Received: 06/25/19 12:25 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	**0.079**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:58	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:58	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:58	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:58	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:58	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:57	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7440-48-4	
Molybdenum, Total Recoverable	**0.0051**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:57	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:00	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.44**	mg/L	0.20	1		07/03/19 20:34	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Sample: FGD-7-062319 **Lab ID: 60306866003** Collected: 06/23/19 13:35 Received: 06/25/19 12:25 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	**0.15**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:06	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 19:06	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:06	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:06	7439-92-1	
Lithium	**0.014**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:06	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	07/01/19 12:18	07/02/19 13:01	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:01	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 13:01	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:01	7440-48-4	
Molybdenum, Total Recoverable	**0.0021**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:01	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:01	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:01	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:02	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.47**	mg/L	0.20	1		07/03/19 20:49	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Sample: FGD-6-062319 **Lab ID: 60306866004** Collected: 06/23/19 16:34 Received: 06/25/19 12:25 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	**0.020**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:08	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 19:08	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:08	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:08	7439-92-1	
Lithium	**0.42**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:08	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	07/01/19 12:18	07/02/19 13:04	7440-36-0	
Arsenic, Total Recoverable	**0.019**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:04	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 13:04	7440-43-9	
Cobalt, Total Recoverable	**0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:04	7440-48-4	
Molybdenum, Total Recoverable	**0.023**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:04	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:04	7782-49-2	
Thallium, Total Recoverable	**<0.0020**	mg/L	0.0020	2	07/01/19 12:18	07/02/19 14:27	7440-28-0	D3
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:04	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**3.4**	mg/L	0.20	1		07/03/19 21:04	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Sample: FGD-9-062319 **Lab ID: 60306866005** Collected: 06/23/19 11:10 Received: 06/25/19 12:25 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	**0.092**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:11	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 19:11	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 19:11	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:11	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 19:11	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	07/01/19 12:18	07/02/19 13:08	7440-36-0	
Arsenic, Total Recoverable	**0.0020**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:08	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 13:08	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:08	7440-48-4	
Molybdenum, Total Recoverable	**0.011**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:08	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:08	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 13:08	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 15:11	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.53**	mg/L	0.20	1		07/03/19 21:19	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

QC Batch: 594114 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

METHOD BLANK: 2435087 Matrix: Water
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	07/05/19 14:16	

LABORATORY CONTROL SAMPLE: 2435088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2435089 2435090

Parameter	Units	60306905001 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	4.7	96	93	70-130	3	20	

MATRIX SPIKE SAMPLE: 2435091

Parameter	Units	60306862001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	4.2	83	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 FDG NEW CCR
Pace Project No.: 60306866

QC Batch: 593768 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

METHOD BLANK: 2434147 Matrix: Water
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/01/19 18:15	
Beryllium	mg/L	<0.0010	0.0010	07/01/19 18:15	
Chromium	mg/L	<0.0050	0.0050	07/01/19 18:15	
Lead	mg/L	<0.010	0.010	07/01/19 18:15	
Lithium	mg/L	<0.010	0.010	07/01/19 18:15	

LABORATORY CONTROL SAMPLE: 2434148

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	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	0.97	97	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2434149 2434150

Parameter	Units	60306862004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.0072	1	1	0.99	1.0	98	101	70-130	3	20	
Beryllium	mg/L	<0.0010	1	1	0.99	1.0	99	102	70-130	4	20	
Chromium	mg/L	<0.0050	1	1	0.99	0.99	99	99	70-130	0	20	
Lead	mg/L	<0.010	1	1	0.91	0.92	91	92	70-130	1	20	
Lithium	mg/L	0.11	1	1	1.2	1.2	110	113	70-130	3	20	

MATRIX SPIKE SAMPLE: 2434151

Parameter	Units	60306864004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.31	1	1.3	101	70-130	
Beryllium	mg/L	<0.0010	1	0.95	95	70-130	
Chromium	mg/L	<0.0050	1	1.0	102	70-130	
Lead	mg/L	<0.010	1	0.94	94	70-130	
Lithium	mg/L	0.013	1	1.1	110	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

QC Batch: 593775 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

METHOD BLANK: 2434170 Matrix: Water
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/02/19 11:14	
Arsenic	mg/L	<0.0010	0.0010	07/02/19 11:14	
Cadmium	mg/L	<0.00050	0.00050	07/02/19 11:14	
Cobalt	mg/L	<0.0010	0.0010	07/02/19 11:14	
Molybdenum	mg/L	<0.0010	0.0010	07/02/19 11:14	
Selenium	mg/L	<0.0010	0.0010	07/02/19 11:14	
Thallium	mg/L	<0.0010	0.0010	07/02/19 11:14	

LABORATORY CONTROL SAMPLE: 2434171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.040	100	85-115	
Arsenic	mg/L	0.04	0.039	97	85-115	
Cadmium	mg/L	0.04	0.041	101	85-115	
Cobalt	mg/L	0.04	0.041	102	85-115	
Molybdenum	mg/L	0.04	0.038	94	85-115	
Selenium	mg/L	0.04	0.039	98	85-115	
Thallium	mg/L	0.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2434172 2434173

Parameter	Units	60306864002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.039	0.039	97	97	70-130	0	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.042	0.042	102	103	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.037	0.038	94	95	70-130	1	20	
Cobalt	mg/L	<0.0010	0.04	0.04	0.043	0.044	108	109	70-130	0	20	
Molybdenum	mg/L	0.0059	0.04	0.04	0.047	0.047	102	103	70-130	1	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.038	0.039	94	96	70-130	2	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.037	0.037	93	93	70-130	0	20	

MATRIX SPIKE SAMPLE: 2434174

Parameter	Units	60306862002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.039	96	70-130	
Arsenic	mg/L	0.0043	0.04	0.040	90	70-130	
Cadmium	mg/L	<0.00050	0.04	0.038	95	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

MATRIX SPIKE SAMPLE: 2434174

Parameter	Units	60306862002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0012	0.04	0.043	104	70-130	
Molybdenum	mg/L	0.34	0.04	0.045	-739	70-130	M1
Selenium	mg/L	0.014	0.04	0.038	60	70-130	M1
Thallium	mg/L	<0.0010	0.04	0.038	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

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

QUALITY CONTROL DATA

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

QC Batch: 594228 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

METHOD BLANK: 2435438 Matrix: Water
Associated Lab Samples: 60306866001, 60306866002, 60306866003, 60306866004, 60306866005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/03/19 12:31	

LABORATORY CONTROL SAMPLE: 2435439

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: 2435440 2435441

Parameter	Units	60306862001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.43	2.5	2.5	2.1	3.1	67	108	80-120	40	15	M1,R1

MATRIX SPIKE SAMPLE: 2435442

Parameter	Units	60306864004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.36	2.5	3.0	104	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG NEW CCR
Pace Project No.: 60306866

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60306866001	**FGD-8-062319**	EPA 200.7	593768	EPA 200.7	594015
60306866002	**DUP-062319**	EPA 200.7	593768	EPA 200.7	594015
60306866003	**FGD-7-062319**	EPA 200.7	593768	EPA 200.7	594015
60306866004	**FGD-6-062319**	EPA 200.7	593768	EPA 200.7	594015
60306866005	**FGD-9-062319**	EPA 200.7	593768	EPA 200.7	594015
60306866001	**FGD-8-062319**	EPA 200.8	593775	EPA 200.8	593896
60306866002	**DUP-062319**	EPA 200.8	593775	EPA 200.8	593896
60306866003	**FGD-7-062319**	EPA 200.8	593775	EPA 200.8	593896
60306866004	**FGD-6-062319**	EPA 200.8	593775	EPA 200.8	593896
60306866005	**FGD-9-062319**	EPA 200.8	593775	EPA 200.8	593896
60306866001	**FGD-8-062319**	EPA 245.1	594114	EPA 245.1	594130
60306866002	**DUP-062319**	EPA 245.1	594114	EPA 245.1	594130
60306866003	**FGD-7-062319**	EPA 245.1	594114	EPA 245.1	594130
60306866004	**FGD-6-062319**	EPA 245.1	594114	EPA 245.1	594130
60306866005	**FGD-9-062319**	EPA 245.1	594114	EPA 245.1	594130
60306866001	**FGD-8-062319**	EPA 300.0	594228		
60306866002	**DUP-062319**	EPA 300.0	594228		
60306866003	**FGD-7-062319**	EPA 300.0	594228		
60306866004	**FGD-6-062319**	EPA 300.0	594228		
60306866005	**FGD-9-062319**	EPA 300.0	594228		

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Sample Condition Upon Receipt

WO# : 60306866

60306866

Client Name: Waters

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

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

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

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

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

Cooler Temperature (°C): As-read 2.4 **Corr. Factor** 1.0 **Corrected** 1.4

Date and initials of person examining contents: 6/25/19 A

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: Due to an IT glitch with our bottle order system, the updated COC didn't get sent with the bottles. Please see the attached COC for the correct analyses. HMW 6/27/19

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG ~~CCR~~ New CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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.: 60306866

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	200.7 Total Metals*	200.8 Total Metals**	245.1 Total Hg	300: Cl, F, SO4	2540C TDS	4500 H+B		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-8-062319	WT	G			06/23	1216		2										X	X	X	X	X	X	BP1N, BP3L		001
2	DUP-062319	WT	G			06/23	1221		2										X	X	X	X	X	X	↓		002
3	FGD-7-062319	WT	G			06/23	1335		2										X	X	X	X	X	X	↓		003
4	~~FGD-[illegible]-062319~~	~~WT~~	~~G~~			~~06/23~~	~~1445~~												~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	EF		
5	FGD-6-062319	WT	G			06/23	1634		2										X	X	X	X	X	X	BP1N, BP3L		004
6	FGD-9-062319	WT	G			06/23	1110		2										X	X	X	X	X	X	↓		005
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	[signature] HBA	6/25/19	0500	[signature]	6-25	9:00				
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl				[signature]	6/25/19	2225	2.4	Y	Y	Y
							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: Paul Kroger

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 6/25/19

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

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

CHAIN-OF-CUSTODY / Analytical Request Document

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

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Page: **of**

Section A **Required** Client Information:		**Section B** **Required** Project Information:		**Section C** Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000040819	Pace Quote Reference:	
Phone: 785-575-8135	Fax:	Project Name:	JEC FGD NEW CCR	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	7 day	Project Number:		Pace Profile #:	9657, 2

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	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Y/N	Analysis Test: 200.7 Total Metals*	Analysis Test: 200.8 Total Metals**	Analysis Test: 245.1 Total Hg	Analysis Test: 300: Fluoride	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

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

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

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

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

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

July 17, 2019

JD Schlegel
KCP&L & Westar
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on July 03, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Pennsylvania Certification IDs

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

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

SAMPLE SUMMARY

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307729001	**FGD-8_062319**	Water	06/23/19 12:16	07/03/19 11:11
60307729002	**DUP-062319**	Water	06/23/19 12:21	07/03/19 11:11
60307729003	**FGD-7-062319**	Water	06/23/19 13:35	07/03/19 11:11
60307729004	**FGD-6-062319**	Water	06/23/19 16:34	07/03/19 11:11
60307729005	**FGD-9-062319**	Water	06/23/19 11:10	07/03/19 11:11

Pace Analytical Services, LLC
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(913)599-5665

SAMPLE ANALYTE COUNT

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307729001	**FGD-8_062319**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307729002	**DUP-062319**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307729003	**FGD-7-062319**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307729004	**FGD-6-062319**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307729005	**FGD-9-062319**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

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

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

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

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

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

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

Additional Comments:

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

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

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

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

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

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

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

Additional Comments:

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(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 17, 2019

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

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

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

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

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

Additional Comments:

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

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Sample: FGD-8_062319 **Lab ID: 60307729001** Collected: 06/23/19 12:16 Received: 07/03/19 11:11 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.378 ± 0.348 (0.205) C:NA T:96%**	pCi/L	07/15/19 14:49	13982-63-3	
Radium-228	EPA 904.0	**0.740 ± 0.351 (0.584) C:84% T:81%**	pCi/L	07/15/19 12:40	15262-20-1	
Total Radium	Total Radium Calculation	**1.12 ± 0.699 (0.789)**	pCi/L	07/16/19 13:14	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 FGD NEW CCR
Pace Project No.: 60307729

Sample: DUP-062319 **Lab ID: 60307729002** Collected: 06/23/19 12:21 Received: 07/03/19 11:11 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.818 ± 0.564 (0.602) C:NA T:93%**	pCi/L	07/15/19 14:49	13982-63-3	
Radium-228	EPA 904.0	**0.237 ± 0.460 (1.01) C:83% T:77%**	pCi/L	07/15/19 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.06 ± 1.02 (1.61)**	pCi/L	07/16/19 13:14	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 FGD NEW CCR
Pace Project No.: 60307729

Sample: FGD-7-062319 **Lab ID: 60307729003** Collected: 06/23/19 13:35 Received: 07/03/19 11:11 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.05 ± 0.600 (0.552) C:NA T:92%**	pCi/L	07/15/19 14:49	13982-63-3	
Radium-228	EPA 904.0	**0.534 ± 0.413 (0.826) C:82% T:79%**	pCi/L	07/15/19 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**1.58 ± 1.01 (1.38)**	pCi/L	07/16/19 13:14	7440-14-4	

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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Sample: FGD-6-062319 **Lab ID: 60307729004** Collected: 06/23/19 16:34 Received: 07/03/19 11:11 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**7.66 ± 1.88 (0.827) C:NA T:87%**	pCi/L	07/15/19 14:49	13982-63-3	
Radium-228	EPA 904.0	**1.36 ± 0.496 (0.773) C:87% T:87%**	pCi/L	07/15/19 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**9.02 ± 2.38 (1.60)**	pCi/L	07/16/19 13:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Sample: FGD-9-062319 **Lab ID: 60307729005** Collected: 06/23/19 11:10 Received: 07/03/19 11:11 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.612 ± 0.430 (0.207) C:NA T:96%**	pCi/L	07/15/19 14:49	13982-63-3	
Radium-228	EPA 904.0	**0.377 ± 0.435 (0.921) C:82% T:83%**	pCi/L	07/15/19 12:45	15262-20-1	
Total Radium	Total Radium Calculation	**0.989 ± 0.865 (1.13)**	pCi/L	07/16/19 13:14	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 FGD NEW CCR
Pace Project No.: 60307729

QC Batch: 350866 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60307729001, 60307729002, 60307729003, 60307729004, 60307729005

METHOD BLANK: 1705168 Matrix: Water
Associated Lab Samples: 60307729001, 60307729002, 60307729003, 60307729004, 60307729005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.205 ± 0.288 (0.617) C:79% T:83%	pCi/L	07/15/19 12:40	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

QC Batch: 350862 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60307729001, 60307729002, 60307729003, 60307729004, 60307729005

METHOD BLANK: 1705164 Matrix: Water
Associated Lab Samples: 60307729001, 60307729002, 60307729003, 60307729004, 60307729005

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.474 ± 0.402 (0.498) C:NA T:85%	pCi/L	07/15/19 14:49	

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

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW CCR
Pace Project No.: 60307729

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307729001	**FGD-8_062319**	EPA 903.1	350862		
60307729002	**DUP-062319**	EPA 903.1	350862		
60307729003	**FGD-7-062319**	EPA 903.1	350862		
60307729004	**FGD-6-062319**	EPA 903.1	350862		
60307729005	**FGD-9-062319**	EPA 903.1	350862		
60307729001	**FGD-8_062319**	EPA 904.0	350866		
60307729002	**DUP-062319**	EPA 904.0	350866		
60307729003	**FGD-7-062319**	EPA 904.0	350866		
60307729004	**FGD-6-062319**	EPA 904.0	350866		
60307729005	**FGD-9-062319**	EPA 904.0	350866		
60307729001	**FGD-8_062319**	Total Radium Calculation	352006		
60307729002	**DUP-062319**	Total Radium Calculation	352006		
60307729003	**FGD-7-062319**	Total Radium Calculation	352006		
60307729004	**FGD-6-062319**	Total Radium Calculation	352006		
60307729005	**FGD-9-062319**	Total Radium Calculation	352006		

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: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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)

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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-8_062319	WT	G			06/23	1216		2										X	X	X		001
2	DUP-062319	WT	G			06/23	1221		2										X	X	X		002
3	FGD-7_062319	WT	G			06/23	1335		2										X	X	X		003
4	~~FGD-1_062319~~	~~WT~~	~~G~~			~~06/23~~	~~1445~~												~~X~~	~~X~~	~~X~~ EF		
5	FGD-6_062319	WT	G			06/23	1634		2										X	X	X		004
6	FGD-9_062319	WT	G			06/23	1110		2										X	X	X		005
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eli Fredrickson	06/25	900	[signature]	6/25	9:00				
				[signature] Pace	062719	930	NA	N	Y	Y
							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: Eli Fredrickson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/25/19

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

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: PMC - KS Project #

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

Label
LIMS Login

Tracking #: 1007 8250 1447

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 °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10094281 / Date and Initials of person examining contents: MG 6/27/19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -Includes date/time/ID Matrix: NT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH < 2
All containers meet method preservation requirements.	✓			Initial when completed MG / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 6/27/19

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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State Of Origin: KS
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 7/3/2019 **Results Requested By:** 7/15/2019

Workorder: 60307729 **Workorder Name:** JEC FGD NEW CCR

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# : 30312265

30312265

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Radium 226, 228	Requested Analysis: Total Radium	LAB USE ONLY
1	FGD-8_062319	PS	6/23/2019 12:16	60307729001	Water	2	X	X	001
2	DUP-062319	PS	6/23/2019 12:21	60307729002	Water	2	X	X	002
3	FGD-7-062319	PS	6/23/2019 13:35	60307729003	Water	2	X	X	003
4	FGD-6-062319	PS	6/23/2019 16:34	60307729004	Water	2	X	X	004
5	FGD-9-062319	PS	6/23/2019 11:10	60307729005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			DATE	06/27/19 0930
2				DB 07/05/19
3				

Comments

Cooler Temperature on Receipt ____ °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.*

CHAIN-OF-CUSTODY / Analytical Request Document

Pace Analytical™ www.pacelabs.com

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

Page: of

Section A
Required Client Information:

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

Section B
Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Knedlik
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
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)

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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-8_062319	WT	G			06/23	1216		2										X	X	X		001
2	DUP-062319	WT	G			06/23	1221		2										X	X	X		002
3	FGD-7_062319	WT	G			06/23	1335		2										X	X	X		003
4	~~FGD-1_062319~~	~~WT~~	~~G~~			~~06/23~~	~~1445~~												~~X~~	~~X~~	~~X~~ EF		
5	FGD-6_062319	WT	G			06/23	1634		2										X	X	X		004
6	FGD-9_062319	WT	G			06/23	1110		2										X	X	X		005
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eli Fredrickson	06/25	900	[signature]	6/25	9:00				
				[signature] Pace	062719	930	NA	N	Y	Y
							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: Eli Fredrickson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/25/19

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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State Of Origin: KS
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 7/3/2019 **Results Requested By:** 7/15/2019

Workorder: 60307729 **Workorder Name:** JEC FGD NEW CCR

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# : 30312265

30312265

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Unpreserved	Requested Analysis: Radium 226, 228	Requested Analysis: Total Radium	LAB USE ONLY
1	FGD-8_062319	PS	6/23/2019 12:16	60307729001	Water	2	X	X	001
2	DUP-062319	PS	6/23/2019 12:21	60307729002	Water	2	X	X	002
3	FGD-7-062319	PS	6/23/2019 13:35	60307729003	Water	2	X	X	003
4	FGD-6-062319	PS	6/23/2019 16:34	60307729004	Water	2	X	X	004
5	FGD-9-062319	PS	6/23/2019 11:10	60307729005	Water	2	X	X	005

Transfers	Released By	Date/Time	Received By	Date/Time
1			DATE	06/27/19 0930
2				DB 07/05/19
3				

Comments

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

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

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CHAIN-OF-CUSTODY / Analytical Request Document

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

30312265

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Friedrich
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-8_062319	WT	G			06/23	1216		2										X	X	X		001
2	DUP-062319	WT	G			06/23	1221		2										X	X	X		002
3	FGD-7_062319	WT	G			06/23	1335		2										X	X	X		003
4	~~FGD-1_062319~~	WT	G			06/23	1445												X	X	X	EF	
5	FGD-6_062319	WT	G			06/23	1634		2										X	X	X		004
6	FGD-9_062319	WT	G			06/23	1110		2										X	X	X		005
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Eli Fredrickson	06/25	900		6/25	9:00	
				Madison Pace	6/27/19	930	NA N Y Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Eli Fredrickson				
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 06/25/19				

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

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

30312265

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Friedrich
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-8_062319	WT	G			06/23	1216		2										X	X	X		001
2	DUP-062319	WT	G			06/23	1221		2										X	X	X		002
3	FGD-7_062319	WT	G			06/23	1335		2										X	X	X		003
4	~~FGD-1_062319~~	WT	G			06/23	1445												X	X	X	EF	
5	FGD-6_062319	WT	G			06/23	1634		2										X	X	X		004
6	FGD-9_062319	WT	G			06/23	1110		2										X	X	X		005
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Eli Fredrickson	06/25	900		6/25	9:00	
				Madison Pace	6/27/19	930	NA N Y Y

SAMPLER NAME AND SIGNATURE		Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Eli Fredrickson				
SIGNATURE of SAMPLER:	DATE Signed (MM/DD/YY): 06/25/19				

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace - KS Project #: 30312265

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

Label: OW OS
LIMS Login

Tracking #: 1007 8250 1447

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: ____ °C Correction Factor: ____ °C Final Temp: ____ °C

Temp should be above freezing to 6°C

pH paper Lot#: 10D4281 Date and Initials of person examining contents: MG 6/3/19

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: NT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓ ✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH < 2
All containers meet method preservation requirements.	✓			Initial when completed: MG Date/time of preservation: ____ Lot # of added preservative: ____
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 6/3/19

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

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

September 16, 2019

JD Schlegel
KCP&L & Westar
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on August 08, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Kansas Certification IDs

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

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

SAMPLE SUMMARY

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60311368001	**FGD-6-080719**	Water	08/07/19 17:45	08/08/19 16:30

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

SAMPLE ANALYTE COUNT

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60311368001	**FGD-6-080719**	EPA 300.0	MJK	1	PASI-K

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

PROJECT NARRATIVE

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: September 16, 2019

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.

H1: Analysis conducted outside the EPA method holding time.
- FGD-6-080719 (Lab ID: 60311368001)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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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Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Sample: FGD-6-080719 **Lab ID: 60311368001** Collected: 08/07/19 17:45 Received: 08/08/19 16:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**1.6**	mg/L	0.20	1		09/13/19 15:36	16984-48-8	H1

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

QC Batch: 609281 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60311368001

METHOD BLANK: 2488887 Matrix: Water
Associated Lab Samples: 60311368001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/13/19 10:45	

LABORATORY CONTROL SAMPLE: 2488888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2488889 2488890

Parameter	Units	60311368001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	1.6	2.5	2.5	4.1	4.2	103	105	80-120	1	15	H1

MATRIX SPIKE SAMPLE: 2488891

Parameter	Units	60314028001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.46	2.5	2.9	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

QUALIFIERS

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H1	Analysis conducted outside the EPA method holding time.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD CCR (RESAMPLE)
Pace Project No.: 60311368

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60311368001	**FGD-6-080719**	EPA 300.0	609281		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60311368

60311368

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-300 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 2.5 **Corr. Factor** 0.0 **Corrected** 2.5

Date and initials of person examining contents: PM 8/8/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

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~~ akneeling@haleyaldrich.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
Purchase Order No.: 10JEC-0000040819
Project Name: JEC FGD CCR (Resample)
Project Number:

Section C
Invoice Information:
Attention:
Company Name:
Address:
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

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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-6-080719	WT	G			8-7-19	1745		1	1												X	BPU			603/1368
2																										* HOLD 001
3																										
4																										
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl	[signature] H+A	8-8-19	1630	Valton Brown/pace	8/8/19	1630	2.5	Y	N	Y

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: KENDRA FORD
SIGNATURE of SAMPLER: [signature]
DATE Signed (MM/DD/YY): 8-7-19

ATTACHMENT 1-2
Routine Assessment Monitoring
Laboratory Analytical Reports

ATTACHMENT 1-2-1
March 2019 Sampling Event
Laboratory Analytical Report

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

April 09, 2019

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

RE: Project: JEC FDG CCR
Pace Project No.: 60298142

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FDG CCR
Pace Project No.: 60298142

Pennsylvania Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FDG CCR
Pace Project No.: 60298142

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60298142001	**FGD-2-032719**	Water	03/27/19 11:50	03/28/19 09:30
60298142002	**FGD-3-032719**	Water	03/27/19 12:45	03/28/19 09:30
60298142003	**FGD-4-032719**	Water	03/27/19 14:10	03/28/19 09:30
60298142004	**FGD-1-032619**	Water	03/26/19 14:20	03/28/19 09:30

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SAMPLE ANALYTE COUNT

Project: JEC FDG CCR
Pace Project No.: 60298142

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60298142001	**FGD-2-032719**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298142002	**FGD-3-032719**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298142003	**FGD-4-032719**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60298142004	**FGD-1-032619**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298142

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298142

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298142

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: April 09, 2019

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60298142

Sample: FGD-2-032719 **Lab ID: 60298142001** Collected: 03/27/19 11:50 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.0765 ± 0.450 (0.918) C:NA T:87%**	pCi/L	04/08/19 22:10	13982-63-3	
Radium-228	EPA 904.0	**0.369 ± 0.523 (1.12) C:72% T:79%**	pCi/L	04/08/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.446 ± 0.973 (2.04)**	pCi/L	04/09/19 12:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60298142

Sample: FGD-3-032719 **Lab ID: 60298142002** Collected: 03/27/19 12:45 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.561 ± 0.612 (0.962) C:NA T:88%**	pCi/L	04/08/19 22:10	13982-63-3	
Radium-228	EPA 904.0	**0.641 ± 0.550 (1.10) C:73% T:77%**	pCi/L	04/08/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	**1.20 ± 1.16 (2.06)**	pCi/L	04/09/19 12:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60298142

Sample: FGD-4-032719 **Lab ID: 60298142003** Collected: 03/27/19 14:10 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.430 ± 0.561 (0.925) C:NA T:81%**	pCi/L	04/08/19 22:10	13982-63-3	
Radium-228	EPA 904.0	**0.468 ± 0.564 (1.19) C:72% T:72%**	pCi/L	04/08/19 18:48	15262-20-1	
Total Radium	Total Radium Calculation	**0.898 ± 1.13 (2.12)**	pCi/L	04/09/19 12:30	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60298142

Sample: FGD-1-032619 **Lab ID: 60298142004** Collected: 03/26/19 14:20 Received: 03/28/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.183 ± 0.439 (0.848) C:NA T:73%**	pCi/L	04/08/19 22:10	13982-63-3	
Radium-228	EPA 904.0	**0.143 ± 0.485 (1.08) C:71% T:83%**	pCi/L	04/08/19 15:28	15262-20-1	
Total Radium	Total Radium Calculation	**0.326 ± 0.924 (1.93)**	pCi/L	04/09/19 12:30	7440-14-4	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60298142

QC Batch: 336631 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60298142001, 60298142002, 60298142003, 60298142004

METHOD BLANK: 1638160 Matrix: Water
Associated Lab Samples: 60298142001, 60298142002, 60298142003, 60298142004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0745 ± 0.340 (0.802) C:NA T:91%	pCi/L	04/08/19 21:55	

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 FDG CCR
Pace Project No.: 60298142

QC Batch: 336663 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60298142001, 60298142002, 60298142003, 60298142004

METHOD BLANK: 1638239 Matrix: Water
Associated Lab Samples: 60298142001, 60298142002, 60298142003, 60298142004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	-0.0797 ± 0.337 (0.805) C:75% T:79%	pCi/L	04/08/19 12:08	

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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9608 Loiret Blvd.
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QUALIFIERS

Project: JEC FDG CCR
Pace Project No.: 60298142

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG CCR
Pace Project No.: 60298142

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60298142001	**FGD-2-032719**	EPA 903.1	336631		
60298142002	**FGD-3-032719**	EPA 903.1	336631		
60298142003	**FGD-4-032719**	EPA 903.1	336631		
60298142004	**FGD-1-032619**	EPA 903.1	336631		
60298142001	**FGD-2-032719**	EPA 904.0	336663		
60298142002	**FGD-3-032719**	EPA 904.0	336663		
60298142003	**FGD-4-032719**	EPA 904.0	336663		
60298142004	**FGD-1-032619**	EPA 904.0	336663		
60298142001	**FGD-2-032719**	Total Radium Calculation	337506		
60298142002	**FGD-3-032719**	Total Radium Calculation	337506		
60298142003	**FGD-4-032719**	Total Radium Calculation	337506		
60298142004	**FGD-1-032619**	Total Radium Calculation	337506		

Chain of Custody

Pace Analytical®
www.pacelabs.com

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

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

Workorder: 60298142 **Workorder Name:** JEC FDG CCR

Owner Received Date: 3/28/2019 **Results Requested By:** 4/11/2019

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

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Other	Requested Analysis: Radium-226 & Total Radium	Requested Analysis: Radium-228	LAB USE ONLY
1	FGD-2-032719	PS	3/27/2019 11:50	60298142001	Water	1	X	X	001
2	FGD-3-032719	PS	3/27/2019 12:45	60298142002	Water	1	X	X	002
3	FGD-4-032719	PS	3/27/2019 14:10	60298142003	Water	1	X	X	003
4	FGD-1-032619	PS	3/26/2019 14:20	60298142004	Water	1	X	X	004
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1			MSS	32919 0930
2				
3				

Comments: MS 328:9

Cooler Temperature on Receipt 2.5 °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# : 30286518

30286518

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RUSH

CHAIN-OF-CUSTODY / Analytical Request Document

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

30286518

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.:	10JEC-0000040819	Pace Quote Reference:	
Phone:	(785) 575-8135 Fax:	Project Name:	JEC FDG CCR	Pace Project Manager:	Heather Wilson, 913-563-1407
Requested Due Date/TAT:	~~15 Day~~ 4/12/19	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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-2-032719	WT	G			3/27	1150		2			2											
2	FGD-3-032719	WT	G			3/27	1245		2			2											
3	FGD-4-032719	WT	G			3/27	1410		2			2											
4	FGD-1-032619	WT	G			3/26	1420		2			2											
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Westar	3/27/19	1400		3-28-19	0930	25	4	4	4

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Brandon Griffin				
SIGNATURE of SAMPLER:		DATE Signed (MM/DD/YY):	03/27/19		

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

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

30286518

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: WestacEnergy Project # ______

Label MJh
LIMS Login MD

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

Tracking #: 474687425267

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

Thermometer Used 10 **Type of Ice:** (Wet) Blue None

Cooler Temperature **Observed Temp** 2.5 °C Correction Factor: +0.0 °C Final Temp: 2.5 °C

Temp should be above freezing to 6°C

pH paper Lot# 1002451

Date and Initials of person examining contents: MDS 3-28-19

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. 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 MDS; Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:			✓	18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MDS Date: 3-28-19

Client Notification/ Resolution:

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

Comments/ Resolution: ______

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

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

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

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

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April 08, 2019

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

RE: Project: JEC FDG CCR
Pace Project No.: 60298155

Dear Brandon Griffin:
Enclosed are the analytical results for sample(s) received by the laboratory on March 28, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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Lenexa, KS 66219
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CERTIFICATIONS

Project: JEC FDG CCR
Pace Project No.: 60298155

Kansas Certification IDs

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

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: JEC FDG CCR
Pace Project No.: 60298155

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60298155001	**FGD-2-032719**	Water	03/27/19 11:50	03/28/19 06:15
60298155002	**FGD-3-032719**	Water	03/27/19 12:45	03/28/19 06:15
60298155003	**FGD-4-032719**	Water	03/27/19 14:10	03/28/19 06:15
60298155004	**FGD-1-032619**	Water	03/26/19 14:20	03/28/19 06:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: JEC FDG CCR
Pace Project No.: 60298155

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60298155001	**FGD-2-032719**	EPA 200.7	JDE	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60298155002	**FGD-3-032719**	EPA 200.7	JDE	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60298155003	**FGD-4-032719**	EPA 200.7	JDE	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K
60298155004	**FGD-1-032619**	EPA 200.7	JDE	7	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	LRS	1	PASI-K
		SM 2540C	LDF	1	PASI-K
		SM 4500-H+B	ZMH	1	PASI-K
		EPA 300.0	MGS	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298155

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

QC Batch: 576947

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60298155003,60298156006

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

- MS (Lab ID: 2367259)
  - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298155

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298155

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298155

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

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

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60298155

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- FGD-1-032619 (Lab ID: 60298155004)
- FGD-2-032719 (Lab ID: 60298155001)
- FGD-3-032719 (Lab ID: 60298155002)
- FGD-4-032719 (Lab ID: 60298155003)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FDG CCR
Pace Project No.: 60298155

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: April 08, 2019

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

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

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

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

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

QC Batch: 577497

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60298149001,60298156005

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

- MS (Lab ID: 2369588)
  - Chloride
  - Sulfate

Additional Comments:

Analyte Comments:

QC Batch: 577256

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

- MS (Lab ID: 2368461)
  - Sulfate
- MSD (Lab ID: 2368462)
  - Sulfate

QC Batch: 577497

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

- MSD (Lab ID: 2369589)
  - Sulfate

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

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60298155

Sample: FGD-2-032719 **Lab ID: 60298155001** Collected: 03/27/19 11:50 Received: 03/28/19 06:15 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	**0.082**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:42	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 08:41	04/04/19 11:42	7440-41-7	
Boron, Total Recoverable	**0.23**	mg/L	0.10	1	04/03/19 08:41	04/04/19 11:42	7440-42-8	
Calcium, Total Recoverable	**182**	mg/L	0.20	1	04/03/19 08:41	04/04/19 11:42	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:42	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:42	7439-92-1	
Lithium	**0.012**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:42	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	04/02/19 10:53	04/04/19 15:23	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:23	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 15:23	7440-43-9	
Cobalt, Total Recoverable	**0.0017**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:23	7440-48-4	
Molybdenum, Total Recoverable	**0.0040**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:23	7439-98-7	
Selenium, Total Recoverable	**0.0012**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:23	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:23	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:20	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**869**	mg/L	5.0	1		04/01/19 11:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		04/04/19 10:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**54.6**	mg/L	10.0	10		04/05/19 19:24	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		04/05/19 00:45	16984-48-8	
Sulfate	**333**	mg/L	50.0	50		04/05/19 01:02	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60298155

Sample: FGD-3-032719 **Lab ID: 60298155002** Collected: 03/27/19 12:45 Received: 03/28/19 06:15 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	**0.099**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:44	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 08:41	04/04/19 11:44	7440-41-7	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	04/03/19 08:41	04/04/19 11:44	7440-42-8	
Calcium, Total Recoverable	**192**	mg/L	0.20	1	04/03/19 08:41	04/04/19 11:44	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:44	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:44	7439-92-1	
Lithium	**0.019**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:44	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	04/02/19 10:53	04/04/19 15:26	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:26	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 15:26	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:26	7440-48-4	
Molybdenum, Total Recoverable	**0.0058**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:26	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:26	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:26	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:27	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1000**	mg/L	5.0	1		04/01/19 11:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		04/04/19 10:20		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**83.9**	mg/L	10.0	10		04/05/19 19:39	16887-00-6	
Fluoride	**0.32**	mg/L	0.20	1		04/05/19 01:18	16984-48-8	
Sulfate	**380**	mg/L	50.0	50		04/05/19 01:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60298155

Sample: FGD-4-032719 **Lab ID: 60298155003** Collected: 03/27/19 14:10 Received: 03/28/19 06:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.054**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:46	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 08:41	04/04/19 11:46	7440-41-7	
Boron, Total Recoverable	**0.28**	mg/L	0.10	1	04/03/19 08:41	04/04/19 11:46	7440-42-8	
Calcium, Total Recoverable	**226**	mg/L	0.20	1	04/03/19 08:41	04/04/19 11:46	7440-70-2	M1
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:46	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:46	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:46	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	04/02/19 10:53	04/04/19 15:29	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:29	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 15:29	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:29	7440-48-4	
Molybdenum, Total Recoverable	**0.0038**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:29	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:29	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:29	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:29	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1230**	mg/L	5.0	1		04/01/19 11:07		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		04/04/19 10:26		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**113**	mg/L	10.0	10		04/05/19 19:55	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		04/05/19 01:52	16984-48-8	
Sulfate	**539**	mg/L	50.0	50		04/05/19 02:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60298155

Sample: FGD-1-032619 **Lab ID: 60298155004** Collected: 03/26/19 14:20 Received: 03/28/19 06:15 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	04/03/19 08:41	04/04/19 11:52	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/03/19 08:41	04/04/19 11:52	7440-41-7	
Boron, Total Recoverable	**<0.10**	mg/L	0.10	1	04/03/19 08:41	04/04/19 11:52	7440-42-8	
Calcium, Total Recoverable	**98.2**	mg/L	0.20	1	04/03/19 08:41	04/04/19 11:52	7440-70-2	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	04/03/19 08:41	04/04/19 11:52	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:52	7439-92-1	
Lithium	**0.016**	mg/L	0.010	1	04/03/19 08:41	04/04/19 11:52	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	04/02/19 10:53	04/04/19 15:42	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:42	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	04/02/19 10:53	04/04/19 15:42	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:42	7440-48-4	
Molybdenum, Total Recoverable	**0.0014**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:42	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:42	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	04/02/19 10:53	04/04/19 15:42	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.00020**	mg/L	0.00020	1	03/29/19 10:48	04/01/19 09:31	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**539**	mg/L	5.0	1		04/01/19 11:06		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.4**	Std. Units	0.10	1		04/04/19 10:12		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**71.7**	mg/L	10.0	10		04/05/19 20:43	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	1		04/05/19 02:26	16984-48-8	
Sulfate	**86.8**	mg/L	10.0	10		04/05/19 20:43	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 FDG CCR
Pace Project No.: 60298155

QC Batch: 576269 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2364311 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.00020	0.00020	04/01/19 08:59	

LABORATORY CONTROL SAMPLE: 2364312

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0047	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2364313 2364314

Parameter	Units	60297908001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	ND	0.005	0.005	0.0045	0.0045	88	88	70-130	1	20	

MATRIX SPIKE SAMPLE: 2364315

Parameter	Units	60298156002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.00020	0.005	0.0046	90	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 FDG CCR
Pace Project No.: 60298155

QC Batch: 576947 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2367257 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	04/04/19 11:39	
Beryllium	mg/L	<0.0010	0.0010	04/04/19 11:39	
Boron	mg/L	<0.10	0.10	04/04/19 11:39	
Calcium	mg/L	<0.20	0.20	04/04/19 11:39	
Chromium	mg/L	<0.0050	0.0050	04/04/19 11:39	
Lead	mg/L	<0.010	0.010	04/04/19 11:39	
Lithium	mg/L	<0.010	0.010	04/04/19 11:39	

LABORATORY CONTROL SAMPLE: 2367258

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	1.0	105	85-115	
Beryllium	mg/L	1	1.0	105	85-115	
Boron	mg/L	1	0.98	98	85-115	
Calcium	mg/L	10	10.7	107	85-115	
Chromium	mg/L	1	1.0	101	85-115	
Lead	mg/L	1	1.0	100	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2367259 2367260

Parameter	Units	60298155003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.054	1	1	1.1	1.1	103	105	70-130	2	20	
Beryllium	mg/L	<0.0010	1	1	1.0	1.0	102	103	70-130	2	20	
Boron	mg/L	0.28	1	1	1.3	1.3	100	101	70-130	1	20	
Calcium	mg/L	226	10	10	233	238	66	117	70-130	2	20	M1
Chromium	mg/L	<0.0050	1	1	0.99	1.0	99	100	70-130	1	20	
Lead	mg/L	<0.010	1	1	0.96	0.97	96	97	70-130	0	20	
Lithium	mg/L	0.016	1	1	1.1	1.1	104	105	70-130	1	20	

MATRIX SPIKE SAMPLE: 2367261

Parameter	Units	60298156006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.15	1	1.2	104	70-130	
Beryllium	mg/L	<0.0050	1	0.98	98	70-130	
Boron	mg/L	10.3	1	11.5	116	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 FDG CCR
Pace Project No.: 60298155

MATRIX SPIKE SAMPLE: 2367261

Parameter	Units	60298156006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Calcium	mg/L	4360	10	4370	105	70-130	
Chromium	mg/L	<0.050	1	1.0	99	70-130	
Lead	mg/L	<0.050	1	0.85	85	70-130	
Lithium	mg/L	4.9	1	6.0	113	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 FDG CCR
Pace Project No.: 60298155

QC Batch: 576613 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2366050 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	04/04/19 15:20	
Arsenic	mg/L	<0.0010	0.0010	04/04/19 15:20	
Cadmium	mg/L	<0.00050	0.00050	04/04/19 15:20	
Cobalt	mg/L	<0.0010	0.0010	04/04/19 15:20	
Molybdenum	mg/L	<0.0010	0.0010	04/04/19 15:20	
Selenium	mg/L	<0.0010	0.0010	04/04/19 15:20	
Thallium	mg/L	<0.0010	0.0010	04/04/19 15:20	

LABORATORY CONTROL SAMPLE: 2366051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.039	98	85-115	
Arsenic	mg/L	0.04	0.038	95	85-115	
Cadmium	mg/L	0.04	0.039	97	85-115	
Cobalt	mg/L	0.04	0.040	99	85-115	
Molybdenum	mg/L	0.04	0.037	92	85-115	
Selenium	mg/L	0.04	0.037	93	85-115	
Thallium	mg/L	0.04	0.038	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2366052 2366053

Parameter	Units	60298155003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.037	0.038	92	94	70-130	1	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.037	0.037	92	92	70-130	1	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.035	0.036	88	90	70-130	2	20	
Cobalt	mg/L	<0.0010	0.04	0.04	0.036	0.036	90	91	70-130	1	20	
Molybdenum	mg/L	0.0038	0.04	0.04	0.042	0.042	94	95	70-130	1	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.034	0.034	84	85	70-130	0	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.035	0.035	86	87	70-130	1	20	

MATRIX SPIKE SAMPLE: 2366054

Parameter	Units	60298157003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.037	93	70-130	
Arsenic	mg/L	<0.0010	0.04	0.037	91	70-130	
Cadmium	mg/L	<0.00050	0.04	0.036	90	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 FDG CCR
Pace Project No.: 60298155

MATRIX SPIKE SAMPLE: 2366054

Parameter	Units	60298157003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0011	0.04	0.037	90	70-130	
Molybdenum	mg/L	0.0048	0.04	0.041	91	70-130	
Selenium	mg/L	<0.0010	0.04	0.035	88	70-130	
Thallium	mg/L	<0.0010	0.04	0.034	86	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60298155

QC Batch: 576564 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2365975 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	04/01/19 11:06	

LABORATORY CONTROL SAMPLE: 2365976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1060	106	80-120	

SAMPLE DUPLICATE: 2365977

Parameter	Units	60298071006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3680	3820	4	10	

SAMPLE DUPLICATE: 2365978

Parameter	Units	60298176004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1560	1650	5	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60298155

QC Batch: 577185 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

SAMPLE DUPLICATE: 2368168

Parameter	Units	60298156001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.6	6.6	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60298155

QC Batch: 577256 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2368459 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	04/05/19 09:02	
Sulfate	mg/L	<1.0	1.0	04/05/19 09:02	

LABORATORY CONTROL SAMPLE: 2368460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	96	90-110	
Sulfate	mg/L	5	5.1	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2368461 2368462

Parameter	Units	60298116001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.26	2.5	2.5	2.5	2.6	91	94	90-110	3	15	
Sulfate	mg/L	15.0	5	5	20.2	20.3	104	106	90-110	1	15	E

MATRIX SPIKE SAMPLE: 2368463

Parameter	Units	60298156004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.38	2.5	2.7	94	90-110	
Sulfate	mg/L	504	250	749	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60298155

QC Batch: 577497 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

METHOD BLANK: 2369586 Matrix: Water
Associated Lab Samples: 60298155001, 60298155002, 60298155003, 60298155004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	04/05/19 18:04	
Sulfate	mg/L	<1.0	1.0	04/05/19 18:04	

LABORATORY CONTROL SAMPLE: 2369587

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	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2369588 2369589

Parameter	Units	60298149001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1300	500	500	1740	1750	87	90	90-110	1	15	M1
Sulfate	mg/L	1550	500	500	1990	2020	88	93	90-110	1	15	E,M1

MATRIX SPIKE SAMPLE: 2369590

Parameter	Units	60298156005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	96.9	50	146	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FDG CCR
Pace Project No.: 60298155

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG CCR
Pace Project No.: 60298155

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60298155001	**FGD-2-032719**	EPA 200.7	576947	EPA 200.7	577098
60298155002	**FGD-3-032719**	EPA 200.7	576947	EPA 200.7	577098
60298155003	**FGD-4-032719**	EPA 200.7	576947	EPA 200.7	577098
60298155004	**FGD-1-032619**	EPA 200.7	576947	EPA 200.7	577098
60298155001	**FGD-2-032719**	EPA 200.8	576613	EPA 200.8	576897
60298155002	**FGD-3-032719**	EPA 200.8	576613	EPA 200.8	576897
60298155003	**FGD-4-032719**	EPA 200.8	576613	EPA 200.8	576897
60298155004	**FGD-1-032619**	EPA 200.8	576613	EPA 200.8	576897
60298155001	**FGD-2-032719**	EPA 245.1	576269	EPA 245.1	576457
60298155002	**FGD-3-032719**	EPA 245.1	576269	EPA 245.1	576457
60298155003	**FGD-4-032719**	EPA 245.1	576269	EPA 245.1	576457
60298155004	**FGD-1-032619**	EPA 245.1	576269	EPA 245.1	576457
60298155001	**FGD-2-032719**	SM 2540C	576564		
60298155002	**FGD-3-032719**	SM 2540C	576564		
60298155003	**FGD-4-032719**	SM 2540C	576564		
60298155004	**FGD-1-032619**	SM 2540C	576564		
60298155001	**FGD-2-032719**	SM 4500-H+B	577185		
60298155002	**FGD-3-032719**	SM 4500-H+B	577185		
60298155003	**FGD-4-032719**	SM 4500-H+B	577185		
60298155004	**FGD-1-032619**	SM 4500-H+B	577185		
60298155001	**FGD-2-032719**	EPA 300.0	577256		
60298155001	**FGD-2-032719**	EPA 300.0	577497		
60298155002	**FGD-3-032719**	EPA 300.0	577256		
60298155002	**FGD-3-032719**	EPA 300.0	577497		
60298155003	**FGD-4-032719**	EPA 300.0	577256		
60298155003	**FGD-4-032719**	EPA 300.0	577497		
60298155004	**FGD-1-032619**	EPA 300.0	577256		
60298155004	**FGD-1-032619**	EPA 300.0	577497		

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Sample Condition Upon Receipt

WO# : 60298155

60298155

Client Name: Wester Energy

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

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

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

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

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

Cooler Temperature (°C): **As-read** 2.4 **Corr. Factor** -1.0 **Corrected** 1.3

Date and initials of person examining contents: 3/28/19 AT

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

CHAIN-OF-CUSTODY / Analytical Request Document

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

Pace Analytical
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Page: 1 of 1

Section A — **Required** Client Information:

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

Section B — **Required** Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG CCR
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
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)

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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-2-032719	WT	G			3/27	1150		2	1		1							1	1	1	1	1	1					10298155 DD1
2	FGD-3-032719	WT	G			3/27	1245		2	1		1							1	1	1	1	1	1					DD2
3	FGD-4-032719	WT	G			3/27	1410		2	1		1							1	1	1	1	1	1					DD3
4	FGD-1-032619	WT	G			3/26	1420		2	1		1							1	1	1	1	1	1					DD4
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp In °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	/Westar	3/27	1500		3/26/19	0615	2.4	Y	Y	Y
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brandon Griffin

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 03/27/19

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

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

ATTACHMENT 1-2-2
June 2019 Sampling Event
Laboratory Analytical Report

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

July 05, 2019

JD Schlegel
KCP&L & Westar
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD CCR
Pace Project No.: 60306864

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on June 25, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

Pace Analytical Services, LLC
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CERTIFICATIONS

Project: JEC FGD CCR
Pace Project No.: 60306864

Kansas Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD CCR
Pace Project No.: 60306864

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60306864001	**FGD-4-062219**	Water	06/22/19 14:30	06/25/19 12:25
60306864002	**FGD-3-062219**	Water	06/22/19 15:40	06/25/19 12:25
60306864003	**FGD-2-062219**	Water	06/22/19 16:50	06/25/19 12:25
60306864004	**FGD-1-062319**	Water	06/23/19 14:45	06/25/19 12:25

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SAMPLE ANALYTE COUNT

Project: JEC FGD CCR
Pace Project No.: 60306864

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60306864001	**FGD-4-062219**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306864002	**FGD-3-062219**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306864003	**FGD-2-062219**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K
60306864004	**FGD-1-062319**	EPA 200.7	EMR	5	PASI-K
		EPA 200.8	JGP	7	PASI-K
		EPA 245.1	TDS	1	PASI-K
		EPA 300.0	MGS	1	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD CCR
Pace Project No.: 60306864

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD CCR
Pace Project No.: 60306864

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

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

QC Batch: 593775

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60306862002,60306864002

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

- MS (Lab ID: 2434174)
  - Molybdenum
  - Selenium

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FGD CCR
Pace Project No.: 60306864

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

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

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

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

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FGD CCR
Pace Project No.: 60306864

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: WESTAR ENERGY
Date: July 05, 2019

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

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

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

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

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

QC Batch: 594228

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60306862001,60306864004

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

- MS (Lab ID: 2435440)
  - Fluoride

R1: RPD value was outside control limits.

- MSD (Lab ID: 2435441)
  - Fluoride

Additional Comments:

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

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(913)599-5665

ANALYTICAL RESULTS

Project: JEC FGD CCR
Pace Project No.: 60306864

Sample: FGD-4-062219 **Lab ID: 60306864001** Collected: 06/22/19 14:30 Received: 06/25/19 12:25 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	**0.052**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:43	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:43	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:43	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:43	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:43	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	07/01/19 12:18	07/02/19 12:26	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:26	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:26	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:26	7440-48-4	
Molybdenum, Total Recoverable	**0.0038**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:26	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:26	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:26	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 14:48	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.38**	mg/L	0.20	1		07/03/19 18:36	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD CCR
Pace Project No.: 60306864

Sample: FGD-3-062219 **Lab ID: 60306864002** Collected: 06/22/19 15:40 Received: 06/25/19 12:25 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	**0.10**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:46	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:46	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:46	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:46	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:46	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	07/01/19 12:18	07/02/19 12:33	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:33	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:33	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:33	7440-48-4	
Molybdenum, Total Recoverable	**0.0059**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:33	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:33	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:33	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 14:51	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.34**	mg/L	0.20	1		07/03/19 18:50	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD CCR
Pace Project No.: 60306864

Sample: FGD-2-062219 **Lab ID: 60306864003** Collected: 06/22/19 16:50 Received: 06/25/19 12:25 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	**0.081**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:48	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:48	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:48	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:48	7439-92-1	
Lithium	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:48	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:43	7440-43-9	
Cobalt, Total Recoverable	**0.0020**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7440-48-4	
Molybdenum, Total Recoverable	**0.0041**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7439-98-7	
Selenium, Total Recoverable	**0.0016**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:43	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 14:53	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.35**	mg/L	0.20	1		07/03/19 19:05	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD CCR
Pace Project No.: 60306864

Sample: FGD-1-062319 **Lab ID: 60306864004** Collected: 06/23/19 14:45 Received: 06/25/19 12:25 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	**0.31**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:51	7440-39-3	
Beryllium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 10:26	07/01/19 18:51	7440-41-7	
Chromium, Total Recoverable	**<0.0050**	mg/L	0.0050	1	07/01/19 10:26	07/01/19 18:51	7440-47-3	
Lead, Total Recoverable	**<0.010**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:51	7439-92-1	
Lithium	**0.013**	mg/L	0.010	1	07/01/19 10:26	07/01/19 18:51	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Antimony, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7440-36-0	
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7440-38-2	
Cadmium, Total Recoverable	**<0.00050**	mg/L	0.00050	1	07/01/19 12:18	07/02/19 12:47	7440-43-9	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7440-48-4	
Molybdenum, Total Recoverable	**0.0014**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7782-49-2	
Thallium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	07/01/19 12:18	07/02/19 12:47	7440-28-0	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	07/02/19 10:30	07/05/19 14:55	7439-97-6	
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Fluoride	**0.36**	mg/L	0.20	1		07/03/19 19:50	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60306864

QC Batch: 594114 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

METHOD BLANK: 2435087 Matrix: Water
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	07/05/19 14:16	

LABORATORY CONTROL SAMPLE: 2435088

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2435089 2435090

Parameter	Units	60306905001 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	4.7	96	93	70-130	3	20	

MATRIX SPIKE SAMPLE: 2435091

Parameter	Units	60306862001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.20	5	4.2	83	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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(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60306864

QC Batch: 593768 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

METHOD BLANK: 2434147 Matrix: Water
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	07/01/19 18:15	
Beryllium	mg/L	<0.0010	0.0010	07/01/19 18:15	
Chromium	mg/L	<0.0050	0.0050	07/01/19 18:15	
Lead	mg/L	<0.010	0.010	07/01/19 18:15	
Lithium	mg/L	<0.010	0.010	07/01/19 18:15	

LABORATORY CONTROL SAMPLE: 2434148

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	
Chromium	mg/L	1	1.0	100	85-115	
Lead	mg/L	1	0.97	97	85-115	
Lithium	mg/L	1	1.0	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2434149 2434150

Parameter	Units	60306862004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.0072	1	1	0.99	1.0	98	101	70-130	3	20	
Beryllium	mg/L	<0.0010	1	1	0.99	1.0	99	102	70-130	4	20	
Chromium	mg/L	<0.0050	1	1	0.99	0.99	99	99	70-130	0	20	
Lead	mg/L	<0.010	1	1	0.91	0.92	91	92	70-130	1	20	
Lithium	mg/L	0.11	1	1	1.2	1.2	110	113	70-130	3	20	

MATRIX SPIKE SAMPLE: 2434151

Parameter	Units	60306864004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.31	1	1.3	101	70-130	
Beryllium	mg/L	<0.0010	1	0.95	95	70-130	
Chromium	mg/L	<0.0050	1	1.0	102	70-130	
Lead	mg/L	<0.010	1	0.94	94	70-130	
Lithium	mg/L	0.013	1	1.1	110	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60306864

QC Batch: 593775 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

METHOD BLANK: 2434170 Matrix: Water
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/L	<0.0010	0.0010	07/02/19 11:14	
Arsenic	mg/L	<0.0010	0.0010	07/02/19 11:14	
Cadmium	mg/L	<0.00050	0.00050	07/02/19 11:14	
Cobalt	mg/L	<0.0010	0.0010	07/02/19 11:14	
Molybdenum	mg/L	<0.0010	0.0010	07/02/19 11:14	
Selenium	mg/L	<0.0010	0.0010	07/02/19 11:14	
Thallium	mg/L	<0.0010	0.0010	07/02/19 11:14	

LABORATORY CONTROL SAMPLE: 2434171

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	0.04	0.040	100	85-115	
Arsenic	mg/L	0.04	0.039	97	85-115	
Cadmium	mg/L	0.04	0.041	101	85-115	
Cobalt	mg/L	0.04	0.041	102	85-115	
Molybdenum	mg/L	0.04	0.038	94	85-115	
Selenium	mg/L	0.04	0.039	98	85-115	
Thallium	mg/L	0.04	0.039	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2434172 2434173

Parameter	Units	60306864002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/L	<0.0010	0.04	0.04	0.039	0.039	97	97	70-130	0	20	
Arsenic	mg/L	<0.0010	0.04	0.04	0.042	0.042	102	103	70-130	0	20	
Cadmium	mg/L	<0.00050	0.04	0.04	0.037	0.038	94	95	70-130	1	20	
Cobalt	mg/L	<0.0010	0.04	0.04	0.043	0.044	108	109	70-130	0	20	
Molybdenum	mg/L	0.0059	0.04	0.04	0.047	0.047	102	103	70-130	1	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.038	0.039	94	96	70-130	2	20	
Thallium	mg/L	<0.0010	0.04	0.04	0.037	0.037	93	93	70-130	0	20	

MATRIX SPIKE SAMPLE: 2434174

Parameter	Units	60306862002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Antimony	mg/L	<0.0010	0.04	0.039	96	70-130	
Arsenic	mg/L	0.0043	0.04	0.040	90	70-130	
Cadmium	mg/L	<0.00050	0.04	0.038	95	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60306864

MATRIX SPIKE SAMPLE: 2434174

Parameter	Units	60306862002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cobalt	mg/L	0.0012	0.04	0.043	104	70-130	
Molybdenum	mg/L	0.34	0.04	0.045	-739	70-130	M1
Selenium	mg/L	0.014	0.04	0.038	60	70-130	M1
Thallium	mg/L	<0.0010	0.04	0.038	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

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

QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60306864

QC Batch: 594228 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

METHOD BLANK: 2435438 Matrix: Water
Associated Lab Samples: 60306864001, 60306864002, 60306864003, 60306864004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	07/03/19 12:31	

LABORATORY CONTROL SAMPLE: 2435439

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: 2435440 2435441

Parameter	Units	60306862001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.43	2.5	2.5	2.1	3.1	67	108	80-120	40	15	M1,R1

MATRIX SPIKE SAMPLE: 2435442

Parameter	Units	60306864004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	0.36	2.5	3.0	104	80-120	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: JEC FGD CCR
Pace Project No.: 60306864

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD CCR
Pace Project No.: 60306864

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60306864001	**FGD-4-062219**	EPA 200.7	593768	EPA 200.7	594015
60306864002	**FGD-3-062219**	EPA 200.7	593768	EPA 200.7	594015
60306864003	**FGD-2-062219**	EPA 200.7	593768	EPA 200.7	594015
60306864004	**FGD-1-062319**	EPA 200.7	593768	EPA 200.7	594015
60306864001	**FGD-4-062219**	EPA 200.8	593775	EPA 200.8	593896
60306864002	**FGD-3-062219**	EPA 200.8	593775	EPA 200.8	593896
60306864003	**FGD-2-062219**	EPA 200.8	593775	EPA 200.8	593896
60306864004	**FGD-1-062319**	EPA 200.8	593775	EPA 200.8	593896
60306864001	**FGD-4-062219**	EPA 245.1	594114	EPA 245.1	594130
60306864002	**FGD-3-062219**	EPA 245.1	594114	EPA 245.1	594130
60306864003	**FGD-2-062219**	EPA 245.1	594114	EPA 245.1	594130
60306864004	**FGD-1-062319**	EPA 245.1	594114	EPA 245.1	594130
60306864001	**FGD-4-062219**	EPA 300.0	594228		
60306864002	**FGD-3-062219**	EPA 300.0	594228		
60306864003	**FGD-2-062219**	EPA 300.0	594228		
60306864004	**FGD-1-062319**	EPA 300.0	594228		

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Sample Condition Upon Receipt

WO# : 60306864

60306864

Client Name: Hunter

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

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

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

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

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

Cooler Temperature (°C): **As-read** 2.4 **Corr. Factor** 1.0 **Corrected** 1.4

Date and initials of person examining contents: 6/25/19 A

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☑Yes ☐No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: Due to an IT glitch with our bottle order system, the updated COC didn't get sent. Please see the attached correct COC. HMW 6/27/19

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A — **Required** Client Information:

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

Section B — **Required** Project Information:

Report To:	~~Brandon Griffin~~
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD ~~NEW~~ CCR
Project Number:	

Section C — Invoice Information:

Attention:	
Company Name:	
Address:	
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 Hg	300: Cl, F, SO4	2540C TDS	4500 H+B					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-4_062219	WT	G			06/22	1430		2		~~HNO3~~ HCl							X	X	X	X	X	X						001
2	FGD-3-062219	WT	G			06/22	1540		2									X	X	X	X	X	X						002
3	FGD-2-062219	WT	G			06/22	1650		2									X	X	X	X	X	X						003
4	~~FGD-1_062319~~	~~WT~~	~~G~~			~~06/23~~	~~1110~~		~~2~~									X	X	X	X	X	X	EF					
5	FGD-1-062319	WT	G			06/23	1445		2									X	X	X	X	X	X						004
6																													
7																													
8																													
9																													
10																													
11																													
12																													

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
200.7 Total Metals*: B, Ca, Ba, Be, Cr, Pb, Li	Eli Fredrickson	06/25	900		6/25	900				
200.8 Total Metals**: Sb, As, Cd, Co, Mo, Se, Tl					6/25/19	1225	24	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli

DATE Signed (MM/DD/YY): 06/25/19

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

CHAIN-OF-CUSTODY / Analytical Request Document

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

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Page: **of**

Section A **Required** Client Information:		**Section B** **Required** Project Information:		**Section C** Invoice Information:	
Company:	WESTAR ENERGY	Report To:	Brandon Griffin	Attention:	
Address:	818 Kansas Ave	Copy To:	Jared Morrison	Company Name:	
	Topeka, KS 66612			Address:	
Email To:	brandon.l.griffin@westarenergy.com	Purchase Order No.:	10JEC-0000040819	Pace Quote Reference:	
Phone: 785-575-8135	Fax:	Project Name:	JEC FDG CCR	Pace Project Manager:	Heather Wilson 913-563-1407
Requested Due Date/TAT:	7 day	Project Number:		Pace Profile #:	9657, 2

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	Preservatives: H_2SO_4	Preservatives: HNO_3	Preservatives: HCl	Preservatives: NaOH	Preservatives: $Na_2S_2O_3$	Preservatives: Methanol	Preservatives: Other	Y/N	Analysis Test: 200.7 Total Metals*	Analysis Test: 200.8 Total Metals**	Analysis Test: 245.1 Total Hg	Analysis Test: 300: Fluoride	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1																							
2																							
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

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

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

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

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

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

July 16, 2019

JD Schlegel
KCP&L & Westar
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FDG CCR
Pace Project No.: 60307782

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

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: JEC FDG CCR
Pace Project No.: 60307782

Pennsylvania Certification IDs

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

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

SAMPLE SUMMARY

Project: JEC FDG CCR
Pace Project No.: 60307782

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60307782001	**FGD-4_062219**	Water	06/22/19 14:30	06/27/19 09:30
60307782002	**FGD-3_062219**	Water	06/22/19 15:40	06/27/19 09:30
60307782003	**FGD-2_062219**	Water	06/22/19 16:50	06/27/19 09:30
60307782004	**FGD-1_062219**	Water	06/22/19 14:45	06/27/19 09:30

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SAMPLE ANALYTE COUNT

Project: JEC FDG CCR
Pace Project No.: 60307782

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60307782001	**FGD-4_062219**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307782002	**FGD-3_062219**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307782003	**FGD-2_062219**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60307782004	**FGD-1_062219**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60307782

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: WESTAR ENERGY
Date: July 16, 2019

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

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

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

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

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

Additional Comments:

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Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60307782

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: WESTAR ENERGY
Date: July 16, 2019

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

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

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

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

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

Additional Comments:

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

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60307782

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: WESTAR ENERGY
Date: July 16, 2019

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

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

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

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

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

Additional Comments:

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

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60307782

Sample: FGD-4_062219 **Lab ID: 60307782001** Collected: 06/22/19 14:30 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.443 ± 0.570 (0.949) C:NA T:91%**	pCi/L	07/15/19 12:27	13982-63-3	
Radium-228	EPA 904.0	**-0.0733 ± 0.312 (0.739) C:83% T:85%**	pCi/L	07/11/19 15:14	15262-20-1	
Total Radium	Total Radium Calculation	**0.443 ± 0.882 (1.69)**	pCi/L	07/15/19 14:49	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 FDG CCR
Pace Project No.: 60307782

Sample: FGD-3_062219 **Lab ID: 60307782002** Collected: 06/22/19 15:40 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.938 ± 0.598 (0.722) C:NA T:87%**	pCi/L	07/15/19 12:40	13982-63-3	
Radium-228	EPA 904.0	**0.0909 ± 0.275 (0.620) C:85% T:84%**	pCi/L	07/11/19 15:14	15262-20-1	
Total Radium	Total Radium Calculation	**1.03 ± 0.873 (1.34)**	pCi/L	07/15/19 14:49	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 FDG CCR
Pace Project No.: 60307782

Sample: FGD-2_062219 **Lab ID: 60307782003** Collected: 06/22/19 16:50 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.661 ± 0.524 (0.712) C:NA T:86%**	pCi/L	07/15/19 12:40	13982-63-3	
Radium-228	EPA 904.0	**0.219 ± 0.332 (0.718) C:78% T:80%**	pCi/L	07/11/19 15:14	15262-20-1	
Total Radium	Total Radium Calculation	**0.880 ± 0.856 (1.43)**	pCi/L	07/15/19 14:49	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60307782

Sample: FGD-1_062219 **Lab ID: 60307782004** Collected: 06/22/19 14:45 Received: 06/27/19 09:30 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.871 ± 0.498 (0.458) C:NA T:95%**	pCi/L	07/15/19 12:40	13982-63-3	
Radium-228	EPA 904.0	**0.0687 ± 0.385 (0.873) C:83% T:78%**	pCi/L	07/11/19 15:14	15262-20-1	
Total Radium	Total Radium Calculation	**0.940 ± 0.883 (1.33)**	pCi/L	07/15/19 14:49	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 FDG CCR
Pace Project No.: 60307782

QC Batch: 350656 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60307782001, 60307782002, 60307782003, 60307782004

METHOD BLANK: 1704591 Matrix: Water
Associated Lab Samples: 60307782001, 60307782002, 60307782003, 60307782004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.561 ± 0.441 (0.613) C:NA T:89%	pCi/L	07/15/19 12:27	

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 FDG CCR
Pace Project No.: 60307782

QC Batch: 350657 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60307782001, 60307782002, 60307782003, 60307782004

METHOD BLANK: 1704592 Matrix: Water
Associated Lab Samples: 60307782001, 60307782002, 60307782003, 60307782004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.0658 ± 0.313 (0.715) C:82% T:76%	pCi/L	07/11/19 15:13	

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

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALIFIERS

Project: JEC FDG CCR
Pace Project No.: 60307782

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG CCR
Pace Project No.: 60307782

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60307782001	**FGD-4_062219**	EPA 903.1	350656		
60307782002	**FGD-3_062219**	EPA 903.1	350656		
60307782003	**FGD-2_062219**	EPA 903.1	350656		
60307782004	**FGD-1_062219**	EPA 903.1	350656		
60307782001	**FGD-4_062219**	EPA 904.0	350657		
60307782002	**FGD-3_062219**	EPA 904.0	350657		
60307782003	**FGD-2_062219**	EPA 904.0	350657		
60307782004	**FGD-1_062219**	EPA 904.0	350657		
60307782001	**FGD-4_062219**	Total Radium Calculation	351806		
60307782002	**FGD-3_062219**	Total Radium Calculation	351806		
60307782003	**FGD-2_062219**	Total Radium Calculation	351806		
60307782004	**FGD-1_062219**	Total Radium Calculation	351806		

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Kneeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	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: 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	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	Radium-226	Radium-228	Total Radium		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-4_062219	WT	G			6/22	1430		2										X	X	X			001
2	FGD-3_062219	WT	G			6/22	1540		2										X	X	X			002
3	FGD-2_062219	WT	G			6/22	1650		2										X	X	X			003
4	~~FGD-9_062319~~	~~WT~~	~~G~~			~~6/23~~	~~1110~~		~~2~~										~~X~~	~~X~~	~~X~~	EF		
5	FGD-1_062319	WT	G			06/23	1445		2										X	X	X			004
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Eli Fredrickson	06/26	1800	[illegible] Pace	~~62719~~ 62719 ~~62619~~ MG 62719 MG 62719	930	NA	N	N	Y
							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: Eli Fredrickson

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/26/19

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

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace-KS Project #

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

Label
LIMS Login

Tracking #: 100782498907

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 °C Correction Factor: °C Final Temp: °C

Temp should be above freezing to 6°C

pH paper Lot# 10543281 Date and Initials of person examining contents: MG 6/3/19

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 sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH < 2
All containers meet method preservation requirements.	✓			Initial when completed: MG Date/time of preservation: Lot # of added preservative:
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG Date: 6/3/19

Client Notification/ Resolution:

Person Contacted: Date/Time: Contacted By:

Comments/ Resolution:

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

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

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

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

State Of Origin: KS
Cert. Needed: ☐ Yes ☐ No
Owner Received Date: 6/27/2019 Results Requested By: 7/9/2019

Pace Analytical® www.pacelabs.com

Workorder: 60307782 **Workorder Name:** JEC FDG CCR

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# : 30312115

30312115

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers HNO3						RADIUM 226 / 288	TOTAL RADIUM										LAB USE ONLY
1	FGD-4_062219	PS	6/22/2019 14:30	60307782001	Water	2						X	X										01
2	FGD-3_062219	PS	6/22/2019 15:40	60307782002	Water	2						X	X										02
3	FGD-2_062219	PS	6/22/2019 16:50	60307782003	Water	2						X	X										03
4	FGD-1_062219	PS	6/22/2019 14:45	60307782004	Water	2						X	X										04
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1			Unknown Pace 6/27/19 9:30	
2			mg 7/3/19	
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.*

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	~~Brandon Griffin~~ Adam Koeeling
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	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	Y/N	Analysis Test: Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	FGD-4_062219	WT	G			6/22	1430		2									X	X	X			001
2	FGD-3_062219	WT	G			6/22	1540		2									X	X	X			002
3	FGD-2_062219	WT	G			6/22	1650		2									X	X	X			003
4	~~FGD-9_062319~~	~~WT~~	~~G~~			~~6/23~~	~~1110~~		~~2~~									~~X~~	~~X~~	~~X~~	EP		
5	FGD-1_062319	WT	G			06/23	1445		2									X	X	X			004
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
	Eli Fredrickson	06/26	1800	[illegible] PACE ~~6/27/19~~ 6/27/19 ~~6/27/19~~ MG 6/27/19 MG 6/27/19		930

SAMPLE CONDITIONS

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eli Fredrickson

SIGNATURE of SAMPLER: Eli Fredrickson

DATE Signed (MM/DD/YY): 06/26/19

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

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace-KS

Project # #-30312115

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

Label MG / LIMS Login MG

Tracking #: 100782498907

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 _____ °C Correction Factor: _____ °C Final Temp: _____ °C

Temp should be above freezing to 6°C

Comments:	Yes	No	N/A	pH paper Lot# 10543281 / Date and Initials of person examining contents: MG 6/27/19
Chain of Custody Present:	✓			1.
Chain of Custody Filled Out:	✓			2.
Chain of Custody Relinquished:	✓			3.
Sampler Name & Signature on COC:	✓			4.
Sample Labels match COC: -includes date/time/ID Matrix: WT	✓			5.
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:		✓		8.
Sufficient Volume:	✓			9.
Correct Containers Used: -Pace Containers Used:	✓			10.
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH < 2
All containers meet method preservation requirements.	✓			Initial when completed MG / Date/time of preservation / Lot # of added preservative
Headspace in VOA Vials (>6mm):			✓	17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: MG / Date: 6/27/19

Client Notification/ Resolution:

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

Comments/ Resolution: _____

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

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

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

ATTACHMENT 1-2-3
September 2019 Sampling Event
Laboratory Analytical Report

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

September 30, 2019

JD Schlegel
KCP&L and Westar, Evergy Companies
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Kansas Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60315379001	**MW-FGD-6**	Water	09/16/19 09:30	09/18/19 17:15
60315379002	**MW-FGD-9**	Water	09/16/19 14:14	09/18/19 17:15

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60315379001	**MW-FGD-6**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60315379002	**MW-FGD-9**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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:

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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 FGD NEW CCR
Pace Project No.: 60315379

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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 FGD NEW CCR
Pace Project No.: 60315379

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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 FGD NEW CCR
Pace Project No.: 60315379

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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-FGD-6 (Lab ID: 60315379001)
- MW-FGD-9 (Lab ID: 60315379002)

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits 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 FGD NEW CCR
Pace Project No.: 60315379

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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 FGD NEW CCR
Pace Project No.: 60315379

Sample: MW-FGD-6 **Lab ID: 60315379001** Collected: 09/16/19 09:30 Received: 09/18/19 17:15 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	**0.019**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:01	7440-39-3	
Boron, Total Recoverable	**9.8**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:01	7440-42-8	
Calcium, Total Recoverable	**583**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:01	7440-70-2	
Lithium	**0.39**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:01	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.0047**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:40	7440-38-2	
Cobalt, Total Recoverable	**0.0017**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:40	7440-48-4	
Molybdenum, Total Recoverable	**0.036**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:40	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:40	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 11:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**6730**	mg/L	143	1		09/19/19 16:23		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		09/23/19 15:59		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**2100**	mg/L	200	200		09/26/19 20:01	16887-00-6	
Fluoride	**0.91**	mg/L	0.20	1		09/25/19 16:44	16984-48-8	
Sulfate	**2790**	mg/L	200	200		09/26/19 20:01	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Sample: MW-FGD-9 **Lab ID: 60315379002** Collected: 09/16/19 14:14 Received: 09/18/19 17:15 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	**0.090**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:04	7440-39-3	
Boron, Total Recoverable	**0.48**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:04	7440-42-8	
Calcium, Total Recoverable	**116**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:04	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:04	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**0.0025**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:42	7440-38-2	
Cobalt, Total Recoverable	**0.0018**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:42	7440-48-4	
Molybdenum, Total Recoverable	**0.0095**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:42	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:42	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 11:59	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**667**	mg/L	10.0	1		09/19/19 16:23		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/23/19 16:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**38.0**	mg/L	5.0	5		09/26/19 20:17	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	1		09/25/19 19:46	16984-48-8	
Sulfate	**251**	mg/L	20.0	20		09/25/19 20:03	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 FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 610636 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2494405 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	09/23/19 11:39	

LABORATORY CONTROL SAMPLE: 2494406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2494407 2494408

Parameter	Units	60315289001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	96	96	70-130	0	20	

MATRIX SPIKE SAMPLE: 2494409

Parameter	Units	60315456001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	85	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 FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 611441 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2497393 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/25/19 17:57	
Boron	mg/L	<0.10	0.10	09/25/19 17:57	
Calcium	mg/L	<0.20	0.20	09/25/19 17:57	
Lithium	mg/L	<0.010	0.010	09/25/19 17:57	

LABORATORY CONTROL SAMPLE: 2497394

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.92	92	85-115	
Calcium	mg/L	10	10.1	101	85-115	
Lithium	mg/L	1	0.97	97	85-115	

MATRIX SPIKE SAMPLE: 2497395

Parameter	Units	60315380001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.27	1	1.2	93	70-130	
Boron	mg/L	0.11	1	1.0	92	70-130	
Calcium	mg/L	92.2	10	99.5	73	70-130	
Lithium	mg/L	<0.010	1	0.95	94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2497396 2497397

Parameter	Units	60315381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.027	1	1	0.97	0.97	95	94	70-130	0	20	
Boron	mg/L	0.35	1	1	1.3	1.3	96	94	70-130	1	20	
Calcium	mg/L	160	10	10	168	170	81	92	70-130	1	20	
Lithium	mg/L	<0.010	1	1	0.96	0.96	95	95	70-130	0	20	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 611444 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2497407 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0010	0.0010	09/27/19 13:36	
Cobalt	mg/L	<0.0010	0.0010	09/27/19 13:36	
Molybdenum	mg/L	<0.0010	0.0010	09/27/19 13:36	
Selenium	mg/L	<0.0010	0.0010	09/27/19 13:36	

LABORATORY CONTROL SAMPLE: 2497408

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.04	0.037	93	85-115	
Cobalt	mg/L	0.04	0.039	98	85-115	
Molybdenum	mg/L	0.04	0.039	98	85-115	
Selenium	mg/L	0.04	0.037	92	85-115	

MATRIX SPIKE SAMPLE: 2497409

Parameter	Units	60315379002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0025	0.04	0.041	96	70-130	
Cobalt	mg/L	0.0018	0.04	0.040	95	70-130	
Molybdenum	mg/L	0.0095	0.04	0.049	99	70-130	
Selenium	mg/L	<0.0010	0.04	0.036	89	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2497410 2497411

Parameter	Units	60315381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	0.0017	0.04	0.04	0.039	0.038	94	92	70-130	2	20	
Cobalt	mg/L	0.0016	0.04	0.04	0.039	0.038	94	90	70-130	3	20	
Molybdenum	mg/L	0.0019	0.04	0.04	0.039	0.038	94	91	70-130	3	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.036	0.035	88	86	70-130	3	20	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 610530 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2493950 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/19/19 16:21	

LABORATORY CONTROL SAMPLE: 2493951

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	987	99	80-120	

SAMPLE DUPLICATE: 2493952

Parameter	Units	60315000002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	446	450	1	10	

SAMPLE DUPLICATE: 2493953

Parameter	Units	60315372001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	226	226	0	10	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 611132
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Associated Lab Samples: 60315379001, 60315379002

SAMPLE DUPLICATE: 2496206

Parameter	Units	60314989002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.2	1	5	H6

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 611663 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2498444 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	09/25/19 11:08	
Sulfate	mg/L	<1.0	1.0	09/25/19 11:08	

LABORATORY CONTROL SAMPLE: 2498445

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.7	106	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2498446 2498447

Parameter	Units	60315379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.91	2.5	2.5	3.4	3.6	101	108	80-120	5	15	

MATRIX SPIKE SAMPLE: 2498448

Parameter	Units	60315381004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	<4.0	50	54.5	109	80-120	
Sulfate	mg/L	579	500	1140	111	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
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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

QC Batch: 611927 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60315379001, 60315379002

METHOD BLANK: 2499474 Matrix: Water
Associated Lab Samples: 60315379001, 60315379002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/26/19 11:15	
Sulfate	mg/L	<1.0	1.0	09/26/19 11:15	

LABORATORY CONTROL SAMPLE: 2499475

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2499476 2499477

Parameter	Units	20121881004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	312J	5000	5000	4780	4740	89	89	80-120	1	15	
Sulfate	mg/L	5800	5000	5000	10700	10700	99	98	80-120	0	15	

MATRIX SPIKE SAMPLE: 2499478

Parameter	Units	20121775006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	0.27J	5	4.7	89	80-120	
Sulfate	mg/L	0.23U	5	5.1	102	80-120	

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

REPORT OF LABORATORY ANALYSIS

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Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

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

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW CCR
Pace Project No.: 60315379

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60315379001	**MW-FGD-6**	EPA 200.7	611441	EPA 200.7	611545
60315379002	**MW-FGD-9**	EPA 200.7	611441	EPA 200.7	611545
60315379001	**MW-FGD-6**	EPA 200.8	611444	EPA 200.8	611547
60315379002	**MW-FGD-9**	EPA 200.8	611444	EPA 200.8	611547
60315379001	**MW-FGD-6**	EPA 245.1	610636	EPA 245.1	610678
60315379002	**MW-FGD-9**	EPA 245.1	610636	EPA 245.1	610678
60315379001	**MW-FGD-6**	SM 2540C	610530		
60315379002	**MW-FGD-9**	SM 2540C	610530		
60315379001	**MW-FGD-6**	SM 4500-H+B	611132		
60315379002	**MW-FGD-9**	SM 4500-H+B	611132		
60315379001	**MW-FGD-6**	EPA 300.0	611663		
60315379001	**MW-FGD-6**	EPA 300.0	611927		
60315379002	**MW-FGD-9**	EPA 300.0	611663		
60315379002	**MW-FGD-9**	EPA 300.0	611927		

Pace Analytical
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Sample Condition Upon Receipt

WO# : 60315379

60315379

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-300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.2 **Corr. Factor** 0.0 **Corrected** 1.2

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

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: of

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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)

ITEM #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test	200.7 Total Metals*	200.8 Total Metals**	4500 H+B	300: Cl, F, SO4	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 60315379
1	MW-FGD-6	WT	G			9/16/19	0930		3	2		1							X	X	X	X	X		2BP1U BP1N 001
2	MW-FGD-9	WT	G			9/16/19	1414		3	2		1							X	X	X	X	X		↓ ↓ 002
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*: B, Ca, Ba, Li	[signature]	9/18/19	1715	H Salem /Pace	9.18.19	1715	1.2	Y	N	Y
200.8 Total Metals**: As, Co, Mo, Se										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Knightly

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 9/16/19

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

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

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

September 30, 2019

JD Schlegel
KCP&L and Westar, Evergy Companies
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FDG CCR
Pace Project No.: 60315380

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

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

Enclosures

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

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CERTIFICATIONS

Project: JEC FDG CCR
Pace Project No.: 60315380

Kansas Certification IDs

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

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SAMPLE SUMMARY

Project: JEC FDG CCR
Pace Project No.: 60315380

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60315380001	**MW-FGD-1**	Water	09/16/19 11:19	09/18/19 17:15
60315380002	**MW-FGD-2**	Water	09/16/19 15:14	09/18/19 17:15
60315380003	**MW-FGD-3**	Water	09/16/19 18:10	09/18/19 17:15
60315380004	**MW-FGD-4**	Water	09/16/19 19:46	09/18/19 17:15

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SAMPLE ANALYTE COUNT

Project: JEC FDG CCR
Pace Project No.: 60315380

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60315380001	**MW-FGD-1**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60315380002	**MW-FGD-2**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60315380003	**MW-FGD-3**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60315380004	**MW-FGD-4**	EPA 200.7	JDE	4	PASI-K
		EPA 200.8	EMR	4	PASI-K
		EPA 245.1	HKC	1	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	AJS2	1	PASI-K
		EPA 300.0	MJK	3	PASI-K

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **EPA 200.7**
Description: 200.7 Metals, Total
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

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

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **EPA 200.8**
Description: 200.8 MET ICPMS
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

General Information:
4 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **EPA 245.1**
Description: 245.1 Mercury
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

General Information:
4 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

General Information:
4 samples were analyzed for SM 2540C. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **SM 4500-H+B**
Description: 4500H+ pH, Electrometric
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

General Information:
4 samples were analyzed for SM 4500-H+B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.
- MW-FGD-1 (Lab ID: 60315380001)
- MW-FGD-2 (Lab ID: 60315380002)
- MW-FGD-3 (Lab ID: 60315380003)
- MW-FGD-4 (Lab ID: 60315380004)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:
All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

Pace Analytical Services, LLC
9608 Loiret Blvd.
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(913)599-5665

PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315380

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: Evergy Kansas Central, Inc.
Date: September 30, 2019

General Information:
4 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 611663

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60315379001,60315381004

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2498448)
  - Chloride

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60315380

Sample: MW-FGD-1 **Lab ID: 60315380001** Collected: 09/16/19 11:19 Received: 09/18/19 17:15 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Barium, Total Recoverable	**0.27**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:06	7440-39-3	
Boron, Total Recoverable	**0.11**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:06	7440-42-8	
Calcium, Total Recoverable	**92.2**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:06	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:06	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:45	7440-38-2	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:45	7440-48-4	
Molybdenum, Total Recoverable	**0.0013**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:45	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:45	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 12:06	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**524**	mg/L	10.0	1		09/23/19 08:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.3**	Std. Units	0.10	1		09/23/19 16:02		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**50.8**	mg/L	20.0	20		09/25/19 20:53	16887-00-6	
Fluoride	**0.25**	mg/L	0.20	1		09/25/19 20:36	16984-48-8	
Sulfate	**99.3**	mg/L	20.0	20		09/25/19 20:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60315380

Sample: MW-FGD-2 **Lab ID: 60315380002** Collected: 09/16/19 15:14 Received: 09/18/19 17:15 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	**0.068**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:15	7440-39-3	
Boron, Total Recoverable	**0.21**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:15	7440-42-8	
Calcium, Total Recoverable	**201**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:15	7440-70-2	
Lithium	**<0.010**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:15	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:47	7440-38-2	
Cobalt, Total Recoverable	**0.0020**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:47	7440-48-4	
Molybdenum, Total Recoverable	**0.0035**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:47	7439-98-7	
Selenium, Total Recoverable	**0.0015**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:47	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 12:08	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1030**	mg/L	10.0	1		09/23/19 08:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/23/19 16:04		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**65.5**	mg/L	20.0	20		09/25/19 22:16	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/25/19 21:59	16984-48-8	
Sulfate	**426**	mg/L	100	100		09/25/19 22:32	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60315380

Sample: MW-FGD-3 **Lab ID: 60315380003** Collected: 09/16/19 18:10 Received: 09/18/19 17:15 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	**0.082**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:17	7440-39-3	
Boron, Total Recoverable	**0.15**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:17	7440-42-8	
Calcium, Total Recoverable	**197**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:17	7440-70-2	
Lithium	**0.016**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:17	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:49	7440-38-2	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:49	7440-48-4	
Molybdenum, Total Recoverable	**0.0052**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:49	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:49	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 12:11	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1080**	mg/L	13.3	1		09/23/19 08:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.2**	Std. Units	0.10	1		09/23/19 16:05		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**98.0**	mg/L	20.0	20		09/25/19 23:05	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/25/19 22:49	16984-48-8	
Sulfate	**419**	mg/L	100	100		09/25/19 23:22	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FDG CCR
Pace Project No.: 60315380

Sample: MW-FGD-4 **Lab ID: 60315380004** Collected: 09/16/19 19:46 Received: 09/18/19 17:15 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	**0.045**	mg/L	0.0050	1	09/25/19 09:08	09/25/19 18:19	7440-39-3	
Boron, Total Recoverable	**0.30**	mg/L	0.10	1	09/25/19 09:08	09/25/19 18:19	7440-42-8	
Calcium, Total Recoverable	**240**	mg/L	0.20	1	09/25/19 09:08	09/25/19 18:19	7440-70-2	
Lithium	**0.013**	mg/L	0.010	1	09/25/19 09:08	09/25/19 18:19	7439-93-2	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8							
Arsenic, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:50	7440-38-2	
Cobalt, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:50	7440-48-4	
Molybdenum, Total Recoverable	**0.0035**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:50	7439-98-7	
Selenium, Total Recoverable	**<0.0010**	mg/L	0.0010	1	09/25/19 09:08	09/27/19 13:50	7782-49-2	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1							
Mercury	**<0.20**	ug/L	0.20	1	09/20/19 10:08	09/23/19 12:13	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1480**	mg/L	13.3	1		09/23/19 08:46		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**7.0**	Std. Units	0.10	1		09/23/19 16:09		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Chloride	**134**	mg/L	20.0	20		09/25/19 23:55	16887-00-6	
Fluoride	**<0.20**	mg/L	0.20	1		09/25/19 23:39	16984-48-8	
Sulfate	**640**	mg/L	100	100		09/26/19 00:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 610636 Analysis Method: EPA 245.1
QC Batch Method: EPA 245.1 Analysis Description: 245.1 Mercury
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

METHOD BLANK: 2494405 Matrix: Water
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.20	0.20	09/23/19 11:39	

LABORATORY CONTROL SAMPLE: 2494406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2494407 2494408

Parameter	Units	60315289001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.8	4.8	96	96	70-130	0	20	

MATRIX SPIKE SAMPLE: 2494409

Parameter	Units	60315456001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	ND	5	4.2	85	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 611441 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 Metals, Total
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

METHOD BLANK: 2497393 Matrix: Water
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	mg/L	<0.0050	0.0050	09/25/19 17:57	
Boron	mg/L	<0.10	0.10	09/25/19 17:57	
Calcium	mg/L	<0.20	0.20	09/25/19 17:57	
Lithium	mg/L	<0.010	0.010	09/25/19 17:57	

LABORATORY CONTROL SAMPLE: 2497394

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	1	0.97	97	85-115	
Boron	mg/L	1	0.92	92	85-115	
Calcium	mg/L	10	10.1	101	85-115	
Lithium	mg/L	1	0.97	97	85-115	

MATRIX SPIKE SAMPLE: 2497395

Parameter	Units	60315380001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Barium	mg/L	0.27	1	1.2	93	70-130	
Boron	mg/L	0.11	1	1.0	92	70-130	
Calcium	mg/L	92.2	10	99.5	73	70-130	
Lithium	mg/L	<0.010	1	0.95	94	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2497396 2497397

Parameter	Units	60315381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	mg/L	0.027	1	1	0.97	0.97	95	94	70-130	0	20	
Boron	mg/L	0.35	1	1	1.3	1.3	96	94	70-130	1	20	
Calcium	mg/L	160	10	10	168	170	81	92	70-130	1	20	
Lithium	mg/L	<0.010	1	1	0.96	0.96	95	95	70-130	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 611444 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

METHOD BLANK: 2497407 Matrix: Water
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0010	0.0010	09/27/19 13:36	
Cobalt	mg/L	<0.0010	0.0010	09/27/19 13:36	
Molybdenum	mg/L	<0.0010	0.0010	09/27/19 13:36	
Selenium	mg/L	<0.0010	0.0010	09/27/19 13:36	

LABORATORY CONTROL SAMPLE: 2497408

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.04	0.037	93	85-115	
Cobalt	mg/L	0.04	0.039	98	85-115	
Molybdenum	mg/L	0.04	0.039	98	85-115	
Selenium	mg/L	0.04	0.037	92	85-115	

MATRIX SPIKE SAMPLE: 2497409

Parameter	Units	60315379002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.0025	0.04	0.041	96	70-130	
Cobalt	mg/L	0.0018	0.04	0.040	95	70-130	
Molybdenum	mg/L	0.0095	0.04	0.049	99	70-130	
Selenium	mg/L	<0.0010	0.04	0.036	89	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2497410 2497411

Parameter	Units	60315381002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	0.0017	0.04	0.04	0.039	0.038	94	92	70-130	2	20	
Cobalt	mg/L	0.0016	0.04	0.04	0.039	0.038	94	90	70-130	3	20	
Molybdenum	mg/L	0.0019	0.04	0.04	0.039	0.038	94	91	70-130	3	20	
Selenium	mg/L	<0.0010	0.04	0.04	0.036	0.035	88	86	70-130	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 610909 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

METHOD BLANK: 2495709 Matrix: Water
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/23/19 08:45	

LABORATORY CONTROL SAMPLE: 2495710

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1010	101	80-120	

SAMPLE DUPLICATE: 2495711

Parameter	Units	60315380001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	524	531	1	10	

SAMPLE DUPLICATE: 2495712

Parameter	Units	60315424009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	893	914	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 611132 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

SAMPLE DUPLICATE: 2496206

Parameter	Units	60314989002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.2	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FDG CCR
Pace Project No.: 60315380

QC Batch: 611663 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

METHOD BLANK: 2498444 Matrix: Water
Associated Lab Samples: 60315380001, 60315380002, 60315380003, 60315380004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/25/19 11:08	
Fluoride	mg/L	<0.20	0.20	09/25/19 11:08	
Sulfate	mg/L	<1.0	1.0	09/25/19 11:08	

LABORATORY CONTROL SAMPLE: 2498445

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	2.7	106	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2498446 2498447

Parameter	Units	60315379001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.91	2.5	2.5	3.4	3.6	101	108	80-120	5	15	

MATRIX SPIKE SAMPLE: 2498448

Parameter	Units	60315381004 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	59.2	100	152	93	80-120	M1
Fluoride	mg/L	<4.0	50	54.5	109	80-120	
Sulfate	mg/L	579	500	1140	111	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FDG CCR
Pace Project No.: 60315380

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG CCR
Pace Project No.: 60315380

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60315380001	**MW-FGD-1**	EPA 200.7	611441	EPA 200.7	611545
60315380002	**MW-FGD-2**	EPA 200.7	611441	EPA 200.7	611545
60315380003	**MW-FGD-3**	EPA 200.7	611441	EPA 200.7	611545
60315380004	**MW-FGD-4**	EPA 200.7	611441	EPA 200.7	611545
60315380001	**MW-FGD-1**	EPA 200.8	611444	EPA 200.8	611547
60315380002	**MW-FGD-2**	EPA 200.8	611444	EPA 200.8	611547
60315380003	**MW-FGD-3**	EPA 200.8	611444	EPA 200.8	611547
60315380004	**MW-FGD-4**	EPA 200.8	611444	EPA 200.8	611547
60315380001	**MW-FGD-1**	EPA 245.1	610636	EPA 245.1	610678
60315380002	**MW-FGD-2**	EPA 245.1	610636	EPA 245.1	610678
60315380003	**MW-FGD-3**	EPA 245.1	610636	EPA 245.1	610678
60315380004	**MW-FGD-4**	EPA 245.1	610636	EPA 245.1	610678
60315380001	**MW-FGD-1**	SM 2540C	610909		
60315380002	**MW-FGD-2**	SM 2540C	610909		
60315380003	**MW-FGD-3**	SM 2540C	610909		
60315380004	**MW-FGD-4**	SM 2540C	610909		
60315380001	**MW-FGD-1**	SM 4500-H+B	611132		
60315380002	**MW-FGD-2**	SM 4500-H+B	611132		
60315380003	**MW-FGD-3**	SM 4500-H+B	611132		
60315380004	**MW-FGD-4**	SM 4500-H+B	611132		
60315380001	**MW-FGD-1**	EPA 300.0	611663		
60315380002	**MW-FGD-2**	EPA 300.0	611663		
60315380003	**MW-FGD-3**	EPA 300.0	611663		
60315380004	**MW-FGD-4**	EPA 300.0	611663		

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Sample Condition Upon Receipt

WO# : 60315380

60315380

Client Name: Westar Energy

Courier: FedEx ☐ UPS ☐ ~~VIA~~ ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☒ Other ☐

Tracking #: pw 9/18 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-300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.8 **Corr. Factor** 0.0 **Corrected** 0.8

Temperature should be above freezing to 6°C

Date and initials of person examining contents: pw 9/18/19

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: 785-575-8135	Fax:
Requested Due Date/TAT:	7 day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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**	4500 H+B	300: Cl, F, SO4	2540C TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-FGD-1	WT	G			9/16/19	1119		3	2		1						X	X	X	X	X		2BPIU BPIN 001
2	MW-FGD-2	WT	G			9/16/19	1514		3	2		1						X	X	X	X	X		002
3	MW-FGD-3	WT	G			9/16/19	1810		3	2		1						X	X	X	X	X		003
4	MW-FGD-4	WT	G			9/16/19	1946		2	2		1						X	X	X	X	X		004
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Pace Project No./ Lab I.D.: 60315380

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
200.7 Total Metals*: B, Ca, Ba, Li	John Kyle	9/18/19	1715	H Salow / Pace	9.18.19	1715	0.8	Y	N	Y
200.8 Total Metals**: As, Co, Mo, Se										

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	John Kyle	Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	John Kyle	DATE Signed (MM/DD/YY): 9/16/19			

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 15, 2019

JD Schlegel
KCP&L and Westar, Evergy Companies
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company
HEATH HORYNA, WESTAR ENERGY
Andrew Hare, KCP&L and Westar, Evergy Companies
Jake Humphrey, KCP&L and Westar, Evergy Companies
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, KCP&L and Westar, Evergy Companies
Melissa Michels, KCP&L and Westar, Evergy Companies
Danielle Zinmaster, Haley & Aldrich

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CERTIFICATIONS

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60315383001	**MW-FGD-6**	Water	09/16/19 09:30	09/18/19 17:15
60315383002	**MW-FGD-9**	Water	09/16/19 14:14	09/18/19 17:15

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SAMPLE ANALYTE COUNT

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60315383001	**MW-FGD-6**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60315383002	**MW-FGD-9**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Evergy Kansas Central, Inc.
Date: October 15, 2019

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 FGD NEW CCR
Pace Project No.: 60315383

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Evergy Kansas Central, Inc.
Date: October 15, 2019

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 FGD NEW CCR
Pace Project No.: 60315383

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Evergy Kansas Central, Inc.
Date: October 15, 2019

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:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Sample: MW-FGD-6 **Lab ID: 60315383001** Collected: 09/16/19 09:30 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**5.42 ± 1.37 (0.711) C:NA T:80%**	pCi/L	10/07/19 13:24	13982-63-3	
Radium-228	EPA 904.0	**1.26 ± 0.483 (0.718) C:70% T:90%**	pCi/L	10/08/19 16:18	15262-20-1	
Total Radium	Total Radium Calculation	**6.68 ± 1.85 (1.43)**	pCi/L	10/09/19 13:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Sample: MW-FGD-9 **Lab ID: 60315383002** Collected: 09/16/19 14:14 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.347 ± 0.454 (0.748) C:NA T:79%**	pCi/L	10/07/19 13:37	13982-63-3	
Radium-228	EPA 904.0	**0.439 ± 0.381 (0.765) C:70% T:84%**	pCi/L	10/08/19 16:18	15262-20-1	
Total Radium	Total Radium Calculation	**0.786 ± 0.835 (1.51)**	pCi/L	10/09/19 13:42	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

QC Batch: 363149 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60315383001, 60315383002

METHOD BLANK: 1761991 Matrix: Water
Associated Lab Samples: 60315383001, 60315383002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.288 ± 0.340 (0.535) C:NA T:86%	pCi/L	10/07/19 13:12	

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 - RADIOCHEMISTRY

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

QC Batch: 363150 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60315383001, 60315383002

METHOD BLANK: 1761992 Matrix: Water
Associated Lab Samples: 60315383001, 60315383002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.348 ± 0.342 (0.692) C:73% T:75%	pCi/L	10/08/19 16:19	

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

Pace Analytical Services, LLC
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QUALIFIERS

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD NEW CCR
Pace Project No.: 60315383

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60315383001	**MW-FGD-6**	EPA 903.1	363149		
60315383002	**MW-FGD-9**	EPA 903.1	363149		
60315383001	**MW-FGD-6**	EPA 904.0	363150		
60315383002	**MW-FGD-9**	EPA 904.0	363150		
60315383001	**MW-FGD-6**	Total Radium Calculation	365386		
60315383002	**MW-FGD-9**	Total Radium Calculation	365386		

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Sample Condition Upon Receipt

WO# : 60315383

60315383

Client Name: Wlstar 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-300 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.7 **Corr. Factor** 0.0 **Corrected** 0.7

Date and initials of person examining contents: 9/18/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: 785-575-8135	Fax:
Requested Due Date/TAT:	15 day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FGD NEW CCR
Project Number:	

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-F6A-6	WT	G			9/16/19	0930		2			2						Y	Y	Y			2BPW 001
2	MW-F6A-9	WT	G			9/16/19	1414		2			2						Y	Y	Y			002
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

Requested Analysis Filtered (Y/N)

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)
	John Knightly	9/18/19	0715	H Solum / Pace	9.18.19	1715	0.7	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Knightly

SIGNATURE of SAMPLER: John Knightly DATE Signed (MM/DD/YY): 9/16/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.08, 12-Oct-2007

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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State Of Origin: KS
Cert. Needed: [X] Yes [ ] No
Owner Received Date: 9/18/2019 Results Requested By: 9/30/2019

Workorder: 60315383 Workorder Name: JEC FGD NEW CCR

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#: 30326112
30326112

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3						Requested Analysis: Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	MW-FGD-6	PS	9/16/2019 09:30	60315383001	Water	2						X	X	001
2	MW-FGD-9	PS	9/16/2019 14:14	60315383002	Water	2						X	X	002
3														
4														
5														

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1	[signature]	9-23-19 1700	[signature]	9/24/19 918	
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.

Pittsburgh Lab Sample Condition Upon Receipt

Pace Analytical

Client Name: Pace-KS   Project # 30326112

Label	
LIMS Login	

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other ________

Tracking #: 1219 2979 0366

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 — °C   Correction Factor: — °C   Final Temp: — °C

Temp should be above freezing to 6°C

pH paper Lot# 1013581

Date and Initials of person examining contents: NJ 9/24/19

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: NA				
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:	✓			
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH <2
All containers meet method preservation requirements.	✓			Initial when completed: NJ; Date/time of preservation; Lot # of added preservative
Headspace in VOA Vials (>6mm):		✓		17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: NJ Date: 9/24/19

Client Notification/ Resolution:

Person Contacted: ________ Date/Time: ________ Contacted By: ________

Comments/ Resolution: ________

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

*PM review is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

J:\QAQC\Master\Document Management\Sample Mgt\Sample Condition Upon Receipt Pittsburgh (C056-9 5April2019)

Quality Control Sample Performance Assessment

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Test:	Ra-226
Analyst:	MK1
Date:	9/28/2019
Batch ID:	50007
Matrix:	DW

Method Blank Assessment	
MB Sample ID	1761991
MB concentration:	0.288
M/B Counting Uncertainty:	0.339
MB MDC:	0.535
MB Numerical Performance Indicator:	1.67
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS50007	LCSD50007
Count Date:	10/7/2019	10/7/2019
Spike I.D.:	19-022	19-022
Spike Concentration (pCi/mL):	32.118	32.118
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.647	0.654
Target Conc. (pCi/L, g, F):	4.963	4.912
Uncertainty (Calculated):	0.233	0.231
Result (pCi/L, g, F):	5.663	5.715
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.093	1.062
Numerical Performance Indicator:	1.23	1.45
Percent Recovery:	114.09%	116.35%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	73%	73%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS50007	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD50007	
Sample Result (pCi/L, g, F):	5.663	
Sample Result Counting Uncertainty (pCi/L, g, F):	1.093	
Sample Duplicate Result (pCi/L, g, F):	5.715	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.062	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.067	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	1.96%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

10-07-19 uc

CMM 10/7/19

Quality Control Sample Performance Assessment

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Test:	Ra-228
Analyst:	VAL
Date:	10/1/2019
Worklist:	50008
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1761992
MB concentration:	0.348
M/B 2 Sigma CSU:	0.342
MB MDC:	0.692
MB Numerical Performance Indicator:	2.00
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS50008	LCSD50008
Count Date:	10/8/2019	10/8/2019
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	35.141	35.141
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.802	0.804
Target Conc. (pCi/L, g, F):	4.384	4.369
Uncertainty (Calculated):	0.215	0.214
Result (pCi/L, g, F):	3.040	5.289
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	0.780	1.253
Numerical Performance Indicator:	-3.26	1.42
Percent Recovery:	69.35%	121.04%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Spike I.D.:		
MS/MSD Decay Corrected Spike Concentration (pCi/mL):		
Spike Volume Used in MS (mL):		
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):		
MS Target Conc.(pCi/L, g, F):		
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):		
MSD Spike Uncertainty (calculated):		
Sample Result:		
Sample Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:		
MSD Numerical Performance Indicator:		
MS Percent Recovery:		
MSD Percent Recovery:		
MS Status vs Numerical Indicator:		
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:		
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:		
MS/MSD Lower % Recovery Limits:		

Duplicate Sample Assessment		
Sample I.D.:	LCS50008	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD50008	
Sample Result (pCi/L, g, F):	3.040	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.780	
Sample Duplicate Result (pCi/L, g, F):	5.289	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.253	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-2.986	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	54.30%	
Duplicate Status vs Numerical Indicator:	Warning	
Duplicate Status vs RPD:	Fail***	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments: NI < 3 acceptable for non-DW matrices — 10/9/19

TJT 10-9-19

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

October 11, 2019

JD Schlegel
KCP&L and Westar, Evergy Companies
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FDG CCR
Pace Project No.: 60315385

Dear JD Schlegel:
Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Heather Wilson
heather.wilson@pacelabs.com
1(913)563-1407
Project Manager

Enclosures

cc: Bob Beck, Kansas City Power & Light Company
HEATH HORYNA, WESTAR ENERGY
Andrew Hare, KCP&L and Westar, Evergy Companies
Jake Humphrey, KCP&L and Westar, Evergy Companies
Adam Kneeling, Haley & Aldrich, Inc.
JARED MORRISON, KCP&L and Westar, Evergy Companies
Melissa Michels, KCP&L and Westar, Evergy Companies
Danielle Zinmaster, Haley & Aldrich

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CERTIFICATIONS

Project: JEC FDG CCR
Pace Project No.: 60315385

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

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SAMPLE SUMMARY

Project: JEC FDG CCR
Pace Project No.: 60315385

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60315385001	**MW-FGD-1**	Water	09/16/19 11:19	09/18/19 17:15
60315385002	**MW-FGD-2**	Water	09/16/19 15:14	09/18/19 17:15
60315385003	**MW-FGD-3**	Water	09/16/19 18:10	09/18/19 17:15
60315385004	**MW-FGD-4**	Water	09/16/19 19:46	09/18/19 17:15

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SAMPLE ANALYTE COUNT

Project: JEC FDG CCR
Pace Project No.: 60315385

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60315385001	**MW-FGD-1**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60315385002	**MW-FGD-2**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60315385003	**MW-FGD-3**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
60315385004	**MW-FGD-4**	EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315385

Method: **EPA 903.1**
Description: 903.1 Radium 226
Client: Evergy Kansas Central, Inc.
Date: October 11, 2019

General Information:
4 samples were analyzed for EPA 903.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315385

Method: **EPA 904.0**
Description: 904.0 Radium 228
Client: Evergy Kansas Central, Inc.
Date: October 11, 2019

General Information:
4 samples were analyzed for EPA 904.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: JEC FDG CCR
Pace Project No.: 60315385

Method: **Total Radium Calculation**
Description: Total Radium 228+226
Client: Evergy Kansas Central, Inc.
Date: October 11, 2019

General Information:
4 samples were analyzed for Total Radium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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Lenexa, KS 66219
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60315385

Sample: MW-FGD-1 **Lab ID: 60315385001** Collected: 09/16/19 11:19 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.56 ± 0.947 (1.22) C:NA T:69%**	pCi/L	10/03/19 13:55	13982-63-3	
Radium-228	EPA 904.0	**0.243 ± 0.562 (1.25) C:75% T:80%**	pCi/L	10/04/19 17:52	15262-20-1	
Total Radium	Total Radium Calculation	**1.80 ± 1.51 (2.47)**	pCi/L	10/07/19 13:58	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 FDG CCR
Pace Project No.: 60315385

Sample: MW-FGD-2 **Lab ID: 60315385002** Collected: 09/16/19 15:14 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Comments: • Sample collection time on containers does not match COC; client was notified.

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.744 ± 0.544 (0.608) C:NA T:70%**	pCi/L	10/03/19 13:55	13982-63-3	
Radium-228	EPA 904.0	**0.438 ± 0.614 (1.32) C:69% T:71%**	pCi/L	10/04/19 17:53	15262-20-1	
Total Radium	Total Radium Calculation	**1.18 ± 1.16 (1.93)**	pCi/L	10/07/19 13:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: JEC FDG CCR
Pace Project No.: 60315385

Sample: MW-FGD-3 **Lab ID: 60315385003** Collected: 09/16/19 18:10 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.403 ± 0.591 (1.01) C:NA T:84%**	pCi/L	10/03/19 13:55	13982-63-3	
Radium-228	EPA 904.0	**-0.225 ± 0.567 (1.37) C:66% T:78%**	pCi/L	10/04/19 17:55	15262-20-1	
Total Radium	Total Radium Calculation	**0.403 ± 1.16 (2.38)**	pCi/L	10/07/19 13:58	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 FDG CCR
Pace Project No.: 60315385

Sample: MW-FGD-4 **Lab ID: 60315385004** Collected: 09/16/19 19:46 Received: 09/18/19 17:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.782 ± 0.620 (0.842) C:NA T:73%**	pCi/L	10/03/19 13:55	13982-63-3	
Radium-228	EPA 904.0	**0.327 ± 0.589 (1.29) C:69% T:74%**	pCi/L	10/04/19 17:56	15262-20-1	
Total Radium	Total Radium Calculation	**1.11 ± 1.21 (2.13)**	pCi/L	10/08/19 13:50	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 FDG CCR
Pace Project No.: 60315385

QC Batch: 362705 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 60315385001, 60315385002, 60315385003, 60315385004

METHOD BLANK: 1760171 Matrix: Water
Associated Lab Samples: 60315385001, 60315385002, 60315385003, 60315385004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.234 ± 0.325 (0.542) C:NA T:79%	pCi/L	10/03/19 13:42	

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 FDG CCR
Pace Project No.: 60315385

QC Batch: 362704 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 60315385001, 60315385002, 60315385003, 60315385004

METHOD BLANK: 1760170 Matrix: Water
Associated Lab Samples: 60315385001, 60315385002, 60315385003, 60315385004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.220 ± 0.411 (0.902) C:76% T:75%	pCi/L	10/04/19 14:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALIFIERS

Project: JEC FDG CCR
Pace Project No.: 60315385

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-PA Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FDG CCR
Pace Project No.: 60315385

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60315385001	**MW-FGD-1**	EPA 903.1	362705		
60315385002	**MW-FGD-2**	EPA 903.1	362705		
60315385003	**MW-FGD-3**	EPA 903.1	362705		
60315385004	**MW-FGD-4**	EPA 903.1	362705		
60315385001	**MW-FGD-1**	EPA 904.0	362704		
60315385002	**MW-FGD-2**	EPA 904.0	362704		
60315385003	**MW-FGD-3**	EPA 904.0	362704		
60315385004	**MW-FGD-4**	EPA 904.0	362704		
60315385001	**MW-FGD-1**	Total Radium Calculation	364962		
60315385002	**MW-FGD-2**	Total Radium Calculation	364962		
60315385003	**MW-FGD-3**	Total Radium Calculation	364962		
60315385004	**MW-FGD-4**	Total Radium Calculation	365156		

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Sample Condition Upon Receipt

WO# : 60315385

60315385

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-300 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 0.3 Corr. Factor 0.0 Corrected 0.3

Date and initials of person examining contents: PW 9/18/19

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO₃, H₂SO₄, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	~~☐Yes~~ ☐No ☑N/A PW 9/18/19	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: of

Section A Required Client Information:

Company:	WESTAR ENERGY
Address:	818 Kansas Ave
	Topeka, KS 66612
Email To:	brandon.l.griffin@westarenergy.com
Phone: (785) 575-8135	Fax:
Requested Due Date/TAT:	15 Day

Section B Required Project Information:

Report To:	Brandon Griffin
Copy To:	Jared Morrison, Heath Hornya
Purchase Order No.:	10JEC-0000040819
Project Name:	JEC FDG CCR
Project Number:	

Section C Invoice Information:

Attention:	Jared Morrison
Company Name:	WESTAR ENERGY
Address:	SEE SECTION A
Pace Quote Reference:	
Pace Project Manager:	Heather Wilson, 913-563-1407
Pace Profile #:	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	Radium-226	Radium-228	Total Radium	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	MW-FGD-1	WT	G			9/16/19	1119		2			2						X	X	X		2BAN	001
2	MW-FGD-2	WT	G			9/16/19	1514		2			2						X	X	X			002
3	MW-FGD-3	WT	G			9/16/19	1510		2			2						X	X	X			003
4	MW-FGD-4	WT	G			9/16/19	1446		2			2						X	X	X			004
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	John Knightly	9/18/19	1715	H Salmon / Pace	9.18.19	1715	0.3	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: John Knightly

SIGNATURE of SAMPLER: John Knightly

DATE Signed (MM/DD/YY): 9/16/19

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Chain of Custody

☐ Samples were sent directly to the Subcontracting Laboratory.

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State Of Origin: KS
Cert. Needed: ☒ Yes ☐ No
Owner Received Date: 9/18/2019 **Results Requested By:** 9/30/2019

Workorder: 60315385 **Workorder Name:** JEC FDG CCR

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# : 30325805

30325805

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: HNO3	Requested Analysis: Radium-226 & Total Radium	Radium-228	LAB USE ONLY
1	MW-FGD-1	PS	9/16/2019 11:19	60315385001	Water	2	X	X	01
2	MW-FGD-2	PS	9/16/2019 15:14	60315385002	Water	2	X	X	02
3	MW-FGD-3	PS	9/16/2019 18:10	60315385003	Water	2	X	X	03
4	MW-FGD-4	PS	9/16/2019 19:46	60315385004	Water	2	X	X	04
5									

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature]	9/19/19 1800	[signature]	9/20/19 930
2				
3				

Comments

Cooler Temperature on Receipt 4.3 °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

Pace Analytical

Client Name: Pace KS Project # 30325805

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other _____

Label LIMS Login

Tracking #: 121929181911

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Thermometer Used 11 Type of Ice: (Wet) Blue None

Cooler Temperature Observed Temp 4.3 °C Correction Factor: 0 °C Final Temp: 4.3 °C

Temp should be above freezing to 6°C

pH paper Lot# 10154287 Date and Initials of person examining contents: NF 9/20/18

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. See comments below
Samples Arrived within Hold Time:	✓			6.
Short Hold Time Analysis (<72hr remaining):		✓		7.
Rush Turn Around Time Requested:	✓			8.
Sufficient Volume:	✓			9.
Correct Containers Used:	✓			10.
-Pace Containers Used:		✓		
Containers Intact:	✓			11.
Orthophosphate field filtered			✓	12.
Hex Cr Aqueous sample field filtered			✓	13.
Organic Samples checked for dechlorination:			✓	14.
Filtered volume received for Dissolved tests			✓	15.
All containers have been checked for preservation. exceptions: VOA, coliform, TOC, O&G, Phenolics, Radon, Non-aqueous matrix	✓			16. pH<2
All containers meet method preservation requirements.	✓			Initial when completed NF Date/time of preservation Lot # of added preservative
Headspace in VOA Vials (>6mm):		✓		17.
Trip Blank Present:		✓		18.
Trip Blank Custody Seals Present			✓	
Rad Samples Screened < 0.5 mrem/hr	✓			Initial when completed: NF Date: 9/20/18

Client Notification/ Resolution:

Person Contacted: _____ Date/Time: _____ Contacted By: _____

Comments/ Resolution: Sample 001 Client label on bottle has time as 12:10
Sample 002 Client label has time as 16:13

☐ **A check in this box indicates that additional information has been stored in ereports.**

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

***PM review** is documented electronically in LIMS. When the Project Manager closes the SRF Review schedule in LIMS. The review is in the Status section of the Workorder Edit Screen.

Quality Control Sample Performance Assessment

Pace Analytical
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Test:	Ra-226
Analyst:	MK1
Date:	9/27/2019
Batch ID:	49963
Matrix:	DW

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1760171
MB concentration:	0.234
M/B Counting Uncertainty:	0.324
MB MDC:	0.542
MB Numerical Performance Indicator:	1.41
MB Status vs Numerical Indicator:	N/A
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS49963	LCSD49963
Count Date:	10/3/2019	10/3/2019
Spike I.D.:	19-022	19-022
Spike Concentration (pCi/mL):	32.118	32.118
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.661	0.655
Target Conc. (pCi/L, g, F):	4.861	4.907
Uncertainty (Calculated):	0.228	0.231
Result (pCi/L, g, F):	4.839	5.175
LCS/LCSD Counting Uncertainty (pCi/L, g, F):	1.047	1.081
Numerical Performance Indicator:	-0.04	0.48
Percent Recovery:	99.54%	105.47%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	73%	73%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/17/2019	
Sample I.D.	30325864001	
Sample MS I.D.	30325864001MS	
Sample MSD I.D.		
Spike I.D.:	19-022	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	32.118	
Spike Volume Used in MS (mL):	0.10	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.500	
MS Target Conc.(pCi/L, g, F):	6.423	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.302	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.253	
Sample Result Counting Uncertainty (pCi/L, g, F):	0.370	
Sample Matrix Spike Result:	7.724	
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):	1.748	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
MS Numerical Performance Indicator:	1.133	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	116.31%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	N/A	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	136%	
MS/MSD Lower % Recovery Limits:	71%	

Duplicate Sample Assessment		
Sample I.D.:	LCS49963	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD49963	
Sample Result (pCi/L, g, F):	4.839	
Sample Result Counting Uncertainty (pCi/L, g, F):	1.047	
Sample Duplicate Result (pCi/L, g, F):	5.175	
Sample Duplicate Result Counting Uncertainty (pCi/L, g, F):	1.081	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	-0.439	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	5.79%	
Duplicate Status vs Numerical Indicator:	N/A	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	32%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result Counting Uncertainty (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result Counting Uncertainty (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the RL.

Comments:

10-03-19 uc

AF 10/3/19

Quality Control Sample Performance Assessment

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Test:	Ra-228
Analyst:	VAL
Date:	9/30/2019
Worklist:	49962
Matrix:	WT

Analyst Must Manually Enter All Fields Highlighted in Yellow.

Method Blank Assessment	
MB Sample ID	1760170
MB concentration:	0.220
M/B 2 Sigma CSU:	0.411
MB MDC:	0.902
MB Numerical Performance Indicator:	1.05
MB Status vs Numerical Indicator:	Pass
MB Status vs. MDC:	Pass

Laboratory Control Sample Assessment	LCSD (Y or N)?	Y
	LCS49962	LCSD49962
Count Date:	10/4/2019	10/4/2019
Spike I.D.:	19-026	19-026
Decay Corrected Spike Concentration (pCi/mL):	35.188	35.188
Volume Used (mL):	0.10	0.10
Aliquot Volume (L, g, F):	0.814	0.801
Target Conc. (pCi/L, g, F):	4.323	4.391
Uncertainty (Calculated):	0.212	0.215
Result (pCi/L, g, F):	4.600	4.248
LCS/LCSD 2 Sigma CSU (pCi/L, g, F):	1.149	1.061
Numerical Performance Indicator:	0.46	-0.26
Percent Recovery:	106.40%	96.73%
Status vs Numerical Indicator:	N/A	N/A
Status vs Recovery:	Pass	Pass
Upper % Recovery Limits:	135%	135%
Lower % Recovery Limits:	60%	60%

Sample Matrix Spike Control Assessment	MS/MSD 1	MS/MSD 2
Sample Collection Date:	9/17/2019	
Sample I.D.	30325864001	
Sample MS I.D.	30325864001MS	
Sample MSD I.D.		
Spike I.D.:	19-026	
MS/MSD Decay Corrected Spike Concentration (pCi/mL):	35.394	
Spike Volume Used in MS (mL):	0.20	
Spike Volume Used in MSD (mL):		
MS Aliquot (L, g, F):	0.800	
MS Target Conc.(pCi/L, g, F):	8.847	
MSD Aliquot (L, g, F):		
MSD Target Conc. (pCi/L, g, F):		
MS Spike Uncertainty (calculated):	0.433	
MSD Spike Uncertainty (calculated):		
Sample Result:	0.631	
Sample Result 2 Sigma CSU (pCi/L, g, F):	0.437	
Sample Matrix Spike Result:	8.810	
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):	2.010	
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
MS Numerical Performance Indicator:	-0.622	
MSD Numerical Performance Indicator:		
MS Percent Recovery:	92.46%	
MSD Percent Recovery:		
MS Status vs Numerical Indicator:	Pass	
MSD Status vs Numerical Indicator:		
MS Status vs Recovery:	Pass	
MSD Status vs Recovery:		
MS/MSD Upper % Recovery Limits:	135%	
MS/MSD Lower % Recovery Limits:	60%	

Duplicate Sample Assessment		
Sample I.D.:	LCS49962	Enter Duplicate sample IDs if other than LCS/LCSD in the space below.
Duplicate Sample I.D.	LCSD49962	
Sample Result (pCi/L, g, F):	4.600	
Sample Result 2 Sigma CSU (pCi/L, g, F):	1.149	
Sample Duplicate Result (pCi/L, g, F):	4.248	
Sample Duplicate Result 2 Sigma CSU (pCi/L, g, F):	1.061	
Are sample and/or duplicate results below RL?	NO	
Duplicate Numerical Performance Indicator:	0.441	
(Based on the LCS/LCSD Percent Recoveries) Duplicate RPD:	9.52%	
Duplicate Status vs Numerical Indicator:	Pass	
Duplicate Status vs RPD:	Pass	
% RPD Limit:	36%	

Matrix Spike/Matrix Spike Duplicate Sample Assessment		
Sample I.D.		
Sample MS I.D.		
Sample MSD I.D.		
Sample Matrix Spike Result:		
Matrix Spike Result 2 Sigma CSU (pCi/L, g, F):		
Sample Matrix Spike Duplicate Result:		
Matrix Spike Duplicate Result 2 Sigma CSU (pCi/L, g, F):		
Duplicate Numerical Performance Indicator:		
(Based on the Percent Recoveries) MS/ MSD Duplicate RPD:		
MS/ MSD Duplicate Status vs Numerical Indicator:		
MS/ MSD Duplicate Status vs RPD:		
% RPD Limit:		

Evaluation of duplicate precision is not applicable if either the sample or duplicate results are below the MDC.

Comments:

CLW 10/7/19

ATTACHMENT 2
Statistical Analyses

ATTACHMENT 2-1
September 2018 Statistical Analyses

HALEY & ALDRICH, INC.
6500 Rockside Road
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Cleveland, OH 44131
216.739.0555

TECHNICAL MEMORANDUM

November 10, 2022
File No. 129778

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Senior Associate – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: September 2018 Semi-Annual Groundwater Assessment Monitoring Data Statistical Evaluation
Completed January 14, 2019
Jeffrey Energy Center
Flue Gas Desulfurization Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **September 2018** semi-annual assessment monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Flue Gas Desulfurization (FGD) Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on **September 10 and 11, 2018**. All laboratory results were received and accepted on **October 15, 2018**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant level (SSL) above the groundwater protection standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level (MCL), regional screening level (RSL), or background concentration.

Statistical Evaluation of Appendix IV Constituents

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residual (CCR) unit (40 CFR § 257.93(f)(1-4)). The statistical method used for these evaluations (tolerance limit [TL]) was certified by Haley & Aldrich, Inc. on January 14, 2019. The TL method, as determined applicable for this sampling event, was used to evaluate potential SSLs above background. Background levels for each constituent listed in Appendix IV were computed as upper tolerance limits (UTLs), and a minimum 95 percent confidence coefficient and 95 percent coverage. The most recent groundwater sampling event from each compliance well was compared to the corresponding background UTL to determine if a SSL existed.

STATISTICAL ANALYSIS

An interwell evaluation was used to determine the SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The TL method was used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using a background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event using parametric TLs. If an Appendix IV constituent concentration from the **September 2018** sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if a SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location MW-FGD-1 were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009, background concentrations were updated based on statistical evaluation of analytical results collected through **September 2018.**

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

Sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the **September 2018** semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent a SSI. A sample concentration greater than the GWPS is considered to represent a SSL. The results of the groundwater assessment monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation of groundwater sampling data collected in September 2018, no SSLs above the GWPS occurred at the JEC FGD Landfill.**

Enclosures:
Table I – Summary of Semi-Annual Assessment Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
SEPTEMBER 2018 SAMPLING EVENT
JEFFREY ENERGY CENTER FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

										MCL Comparison							Interwell Analysis		Groundwater Protection Standard	
Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL	Report Result Unit	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well	September 2018 Concentration (mg/L)	Background Limits[1] (UTL) mg/L	SSI	GWPS (Higher of MCL/ RSL or UTL) (mg/L)	SSL
	CCR Appendix-IV: Barium, Total (µg/L)																			
MW-FGD-1 (Upgradient)	10/10	0%	-	310	217.8	14.76	0.05124	2000	mg/L	0	0	No	No	Stable	Normal	0.28	0.316		2	
MW-FGD-2	10/10	0%	-	97	74.46	8.629	0.1102	2000	mg/L	0	0	No	No	Stable	Normal	0.070		No		No
MW-FGD-3	10/10	0%	-	230	1844	42.94	0.2845	2000	mg/L	0	0	No	No	Decreasing	Normal	0.099		No		No
MW-FGD-4	10/10	0%	-	64	34.93	5.91	0.1063	2000	mg/L	0	0	No	No	Decreasing	Normal	0.047		No		No
	CCR Appendix-IV: Cobalt, Total (µg/L)																			
MW-FGD-1 (Upgradient)	1/10	90%	1-1	1	0	0	0	6	mg/L	0	0	No	No	NT	Non-parametric	<0.0010	0.001		0.006	
MW-FGD-2	10/10	0%	-	2	0.1084	0.3293	0.2386	6	mg/L	0	0	No	No	Stable	Normal	0.0016		Yes		No
MW-FGD-3	0/10	100%	1-1		0	0	0	6	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No
MW-FGD-4	0/10	100%	1-1		0	0	0	6	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No
	CCR Appendix-IV: Fluoride, Total (µg/L)																			
MW-FGD-1 (Upgradient)	12/12	0%	-	440	1197	34.6	0.09932	4000	mg/L	0	0	No	No	Increasing	Normal	0.44	0.416		4.0	
MW-FGD-2	11/11	0%	-	410	827.3	28.76	0.0789	4000	mg/L	0	0	No	No	Stable	Normal	0.40		No		No
MW-FGD-3	11/11	0%	-	530	6247	79.04	0.2595	4000	mg/L	0	0	Yes	No	Stable	Non-parametric	0.53		Yes		No
MW-FGD-4	11/11	0%	-	430	1445	38.02	0.1106	4000	mg/L	0	0	No	No	Stable	Normal	0.39		No		No
	CCR Appendix-IV: Lithium, Total (µg/L)																			
MW-FGD-1 (Upgradient)	10/10	0%	-	16	2.044	1.43	0.09929	40	mg/L	0	0	Yes	No	Stable	Normal	0.015	0.017		0.040	
MW-FGD-2	2/10	80%	10-10	11	0.1	0.3162	0.03131	40	mg/L	0	0	No	No	NT	Non-parametric	<0.010		No		No
MW-FGD-3	10/10	0%	-	18	3.389	1.841	0.127	40	mg/L	0	0	No	No	Stable	Normal	0.013		No		No
MW-FGD-4	9/10	10%	20-20	17	6.456	2.541	0.1777	40	mg/L	0	0	No	No	Stable	Normal	0.014		No		No
	CCR Appendix-IV: Molybdenum, Total (µg/L)																			
MW-FGD-1 (Upgradient)	10/10	0%	-	8.3	4.829	2.198	1.072	100	mg/L	0	0	Yes	No	Stable	Non-parametric	0.0014	0.008		0.100	
MW-FGD-2	10/10	0%	-	4.7	0.1004	0.3169	0.07655	100	mg/L	0	0	No	No	Stable	Normal	0.0042		No		No
MW-FGD-3	10/10	0%	-	7.1	0.2773	0.5266	0.08896	100	mg/L	0	0	No	No	Decreasing	Normal	0.0053		No		No
MW-FGD-4	10/10	0%	-	4.6	0.08989	0.2998	0.07707	100	mg/L	0	0	No	No	Decreasing	Normal	0.0037		No		No
	CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																			
MW-FGD-1 (Upgradient)	10/10	0%	-	0.937	0.07144	0.2673	0.9326	5	pCi/L	0	0	No	No	Stable	Normal	1.61	0.8		5	
MW-FGD-2	10/10	0%	-	1.06	0.1279	0.3576	0.9897	5	pCi/L	0	0	No	No	Stable	Normal	0.412		No		No
MW-FGD-3	10/10	0%	-	1.04	0.1207	0.3475	0.9595	5	pCi/L	0	0	No	No	Stable	Normal	0.967		Yes		No
MW-FGD-4	10/10	0%	-	1.13	0.0677	0.2602	0.4487	5	pCi/L	0	0	No	No	Stable	Normal	1.19		Yes		No

Notes and Abbreviations:

[1] Based on background data collected from 08/24/2016 through 09/10/2018

CCR = coal combustion residuals
GWPS = Groundwater Protection Standard
MCL = maximum contaminant level
mg/L = milligrams per Liter
NA = not analyzed
pCi/L = picoCuries per Liter
RSL = regional screening level
SSI = statistically significant increase
SSL = statistically significant level
UTL = upper tolerance limits

ATTACHMENT 2-2
March 2019 Statistical Analyses

HALEY & ALDRICH, INC.
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Suite 200
Cleveland, OH 44131
216.739.0555

TECHNICAL MEMORANDUM

November 10, 2022
File No. 129778

TO: Evergy Kansas Central, Inc.
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Senior Associate – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: March 2019 Semi-Annual Groundwater Assessment Monitoring Data
Statistical Evaluation
Completed July 8, 2019
Jeffrey Energy Center
Flue Gas Desulfurization Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.95 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **March 2019** semi-annual assessment monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Flue Gas Desulfurization (FGD) Landfill. This semi-annual assessment monitoring groundwater sampling event was completed on **March 26 and 27, 2019**. All laboratory results were received and accepted on **April 9, 2019**.

The statistical evaluation discussed in this memorandum was conducted to determine if Appendix IV groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background values and if one or more of the constituents have been detected at statistically significant level (SSL) above the groundwater protection standard (GWPS) consistent with the requirements of the Rule. GWPSs for each of the Appendix IV constituents have been set equal to the highest value of the maximum contaminant level (MCL), regional screening level (RSL), or background concentration.

Statistical Evaluation of Appendix IV Constituents

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STATISTICAL ANALYSIS

An interwell evaluation was used to determine the SSIs. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data. Because the CCR unit has transitioned into assessment monitoring, no statistical evaluations were conducted on Appendix III (detection monitoring) semi-annual assessment monitoring data.

The TL method was used to complete statistical evaluations of the referenced dataset. The TL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a minimum 95 percent confidence level. The upper endpoint of a tolerance interval is called the UTL. Depending on the data distribution, parametric or non-parametric TL procedures are used to evaluate groundwater monitoring data using this method. Parametric TLs utilize normally distributed data or normalized data via a transformation of the sample background data used to construct the limit. If the data are non-normal and a transformation is not indicated, non-parametric procedures (order statistics or bootstrap methods) are used to calculate the TL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UTL.

These statistical evaluations were conducted using a background dataset for all Appendix IV constituents that were detected in the annual assessment monitoring sample event using parametric TLs. If an Appendix IV constituent concentration from the **March 2019** sampling event was above the GWPS, the lower confidence limit (LCL) for the downgradient well constituent will be used to evaluate if a SSI is present. The LCL is the lower end of the confidence interval range, which is an estimated concentration range intended to contain the true mean or median of the population from which the sample is drawn. The confidence interval range is designed to locate the true population mean or median with a high degree of statistical confidence, or conversely, with a low probability of error.

The UTLs were calculated from the background well dataset using Chemstat software after testing for outlier sample results that would warrant removal from the dataset based on likely error in sampling or measurement. Both visual and statistical outlier tests for the background data were performed using Chemstat and U.S. Environmental Protection Agency's ProUCL 5.1 software, and a visual inspection of the data was performed using box plots and distribution plots for the downgradient sample data. No sample data were identified as outliers that warranted removal from the dataset.

BACKGROUND DISTRIBUTIONS

The groundwater analytical results for each sampling event from the background sample location MW-FGD-1 were combined to calculate the UTL for each detected Appendix IV constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UTL calculation. Per the document, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance,* March 2009, background concentrations were updated based on statistical evaluation of analytical results collected through **September 2018.**

RESULTS OF APPENDIX IV DOWNGRADIENT STATISTICAL COMPARISONS

Sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the **March 2019** semi-annual assessment monitoring event were compared to their respective background UTLs and GWPSs (Table I). A sample concentration greater than the background UTL is considered to represent a SSI. A sample concentration greater than the GWPS is considered to represent a SSL. The results of the groundwater assessment monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation of groundwater sampling data collected in September 2018, no SSLs above the GWPS occurred at the JEC FGD Landfill.**

Enclosures:
Table I – Summary of Semi-Annual Assessment Monitoring Statistical Evaluation

TABLE

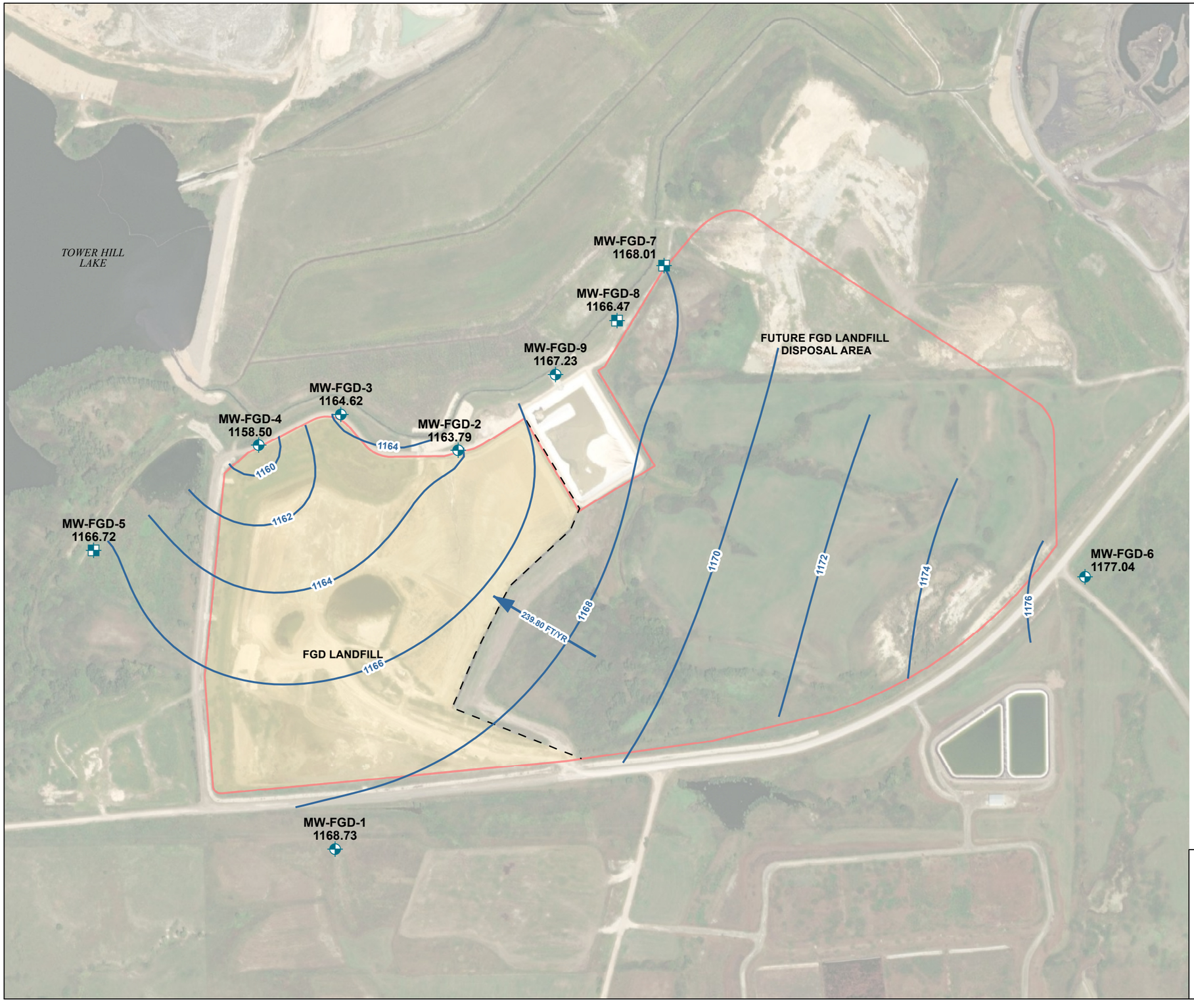
TABLE I
SUMMARY OF SEMI-ANNUAL ASSESSMENT GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2019 SAMPLING EVENT
JEFFREY ENERGY CENTER FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

										MCL Comparison							Interwell Analysis		Groundwater Protection Standard	
Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	CCR MCL/RSL	Report Result Unit	Number of Detection Exceedances	Number of Non-Detection Exceedances	Outlier Presence	Outlier Removed	Trend	Distribution Well	March 2019 Concentration (mg/L)	Background Limits[1] (UTL) mg/L	Exceedance above Background at Individual Well	Background Limit (Higher of MCL/RSL or Upper Tolerance Limit) mg/L	SSL
CCR Appendix-IV: Barium, Total (mg/L)																				
MW-FGD-1 (Upgradient)	11/11	0%	-	0.31	0.00024	0.01549	0.05342	2	mg/L	0	0	No	No	Stable	Normal	0.31	0.319		2	
MW-FGD-2	11/11	0%	-	0.097	0.00006825	0.008262	0.1051	2	mg/L	0	0	No	No	Stable	Normal	0.082		No		No
MW-FGD-3	11/11	0%	-	0.23	0.001904	0.04364	0.2985	2	mg/L	0	0	No	No	Decreasing	Normal	0.099		No		No
MW-FGD-4	11/11	0%	-	0.064	0.00003167	0.005628	0.1015	2	mg/L	0	0	No	No	Decreasing	Normal	0.054		No		No
CCR Appendix-IV: Cobalt, Total (mg/L)																				
MW-FGD-1 (Upgradient)	1/11	91%	0.001-0.001	0.001	0	0	0	0.006	mg/L	0	0	No	No	NA	Non-parametric	<0.0010	0.001		0.006	
MW-FGD-2	11/11	0%	-	0.002	1.069E-07	0.000327	0.232	0.006	mg/L	0	0	No	No	Stable	Normal	0.0017		Yes		No
MW-FGD-3	0/11	100%	0.001-0.001		0	0	0	0.006	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No
MW-FGD-4	0/11	100%	0.001-0.001		0	0	0	0.006	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No
CCR Appendix-IV: Fluoride, Total (mg/L)																				
MW-FGD-1 (Upgradient)	13/13	0%	-	0.44	0.001231	0.03508	0.0998	4	mg/L	0	0	No	No	Increasing	Normal	0.39	0.374		4.0	
MW-FGD-2	12/12	0%	-	0.41	0.0008061	0.02839	0.07743	4	mg/L	0	0	No	No	Stable	Normal	0.39		Yes		No
MW-FGD-3	12/12	0%	-	0.53	0.005699	0.07549	0.2468	4	mg/L	0	0	Yes	No	Stable	Non-parametric	0.32		No		No
MW-FGD-4	12/12	0%	-	0.43	0.0018	0.04243	0.1212	4	mg/L	0	0	No	No	Stable	Normal	0.42		Yes		No
CCR Appendix-IV: Lithium, Total (mg/L)																				
MW-FGD-1 (Upgradient)	11/11	0%	-	0.016	2.073E-06	0.00144	0.09898	0.04	mg/L	0	0	Yes	No	Stable	Normal	0.016	0.017		0.040	
MW-FGD-2	3/11	73%	0.01-0.01	0.012	4.182E-07	0.0006467	0.06295	0.04	mg/L	0	0	No	No	NT	Non-parametric	0.012		No		No
MW-FGD-3	11/11	0%	-	0.019	4.891E-06	0.002212	0.1483	0.04	mg/L	0	0	No	No	Stable	Normal	0.019		Yes		No
MW-FGD-4	10/11	9%	0.02-0.02	0.017	6.073E-06	0.002464	0.1705	0.04	mg/L	0	0	No	No	Stable	Normal	0.016		No		No
CCR Appendix-IV: Molybdenum, Total (mg/L)																				
MW-FGD-1 (Upgradient)	11/11	0%	-	0.0083	4.385E-06	0.002094	1.052	0.1	mg/L	0	0	Yes	No	Stable	Non-parametric	0.0014	0.008		0.100	
MW-FGD-2	11/11	0%	-	0.0047	9.218E-08	0.0003036	0.07356	0.1	mg/L	0	0	No	No	Stable	Normal	0.0040		No		No
MW-FGD-3	11/11	0%	-	0.0071	2.509E-07	0.0005009	0.08477	0.1	mg/L	0	0	No	No	Decreasing	Normal	0.0058		No		No
MW-FGD-4	11/11	0%	-	0.0046	8.164E-08	0.0002857	0.0736	0.1	mg/L	0	0	No	No	Decreasing	Normal	0.0038		No		No
CCR Appendix-IV: Radium-226 & 228, Total (pCi/L)																				
MW-FGD-1 (Upgradient)	11/11	0%	-	0.937	0.06443	0.2538	0.8748	5	pCi/L	0	0	No	No	Stable	Normal	0.326	0.8		5	
MW-FGD-2	11/11	0%	-	1.06	0.1157	0.3402	0.9219	5	pCi/L	0	0	No	No	Stable	Normal	0.446		No		No
MW-FGD-3	11/11	0%	-	1.2	0.1725	0.4153	0.9475	5	pCi/L	0	0	No	No	Stable	Normal	1.20		Yes		No
MW-FGD-4	11/11	0%	-	1.13	0.07012	0.2648	0.435	5	pCi/L	0	0	No	No	Stable	Normal	0.898		Yes		No
CCR Appendix-IV: Selenium, Total (mg/L)																				
MW-FGD-1 (Upgradient)	0/10	100%	0.001-0.001		0	0	0	0.05	mg/L	0	0	NA	NA	NA	NA	<0.0010	0.001		0.050	
MW-FGD-2	3/10	70%	0.001-0.001	0.0012	4E-09	0.00006325	0.06201	0.05	mg/L	0	0	No	No	NA	Non-parametric	0.0012		Yes		No
MW-FGD-3	0/10	100%	0.001-0.001		0	0	0	0.05	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No
MW-FGD-4	0/10	100%	0.001-0.001		0	0	0	0.05	mg/L	0	0	NA	NA	NA	NA	<0.0010		No		No

Notes and Abbreviations:

[1] Based on background data collected from 08/24/2016 through 6/4/2018
CCR = coal combustion residuals
GWPS = Groundwater Protection Standard
MCL = maximum contaminant level
mg/L = milligrams per Liter
NA = not analyzed
pCi/L = picoCuries per Liter
RSL = regional screening level
SSI = statistically significant increase
SSL = statistically significant level
UTL = upper tolerance limits

ATTACHMENT 3
Groundwater Potentiometric Maps



LEGEND

MW-FGD-6
1168.88 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MARCH 2019

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

FGD LANDFILL

FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 22 MARCH 2019.

3. FGD LANDFILL BOUNDARY REPRESENTATIVE OF ACTIVE UNIT OPERATIONS, AS OUTLINED IN THE OCTOBER 2021 GROUNDWATER SAMPLING AND ANALYSIS PLAN.

4. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 22 MARCH 2019 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019

N

0 450 900
SCALE IN FEET

HALEY ALDRICH

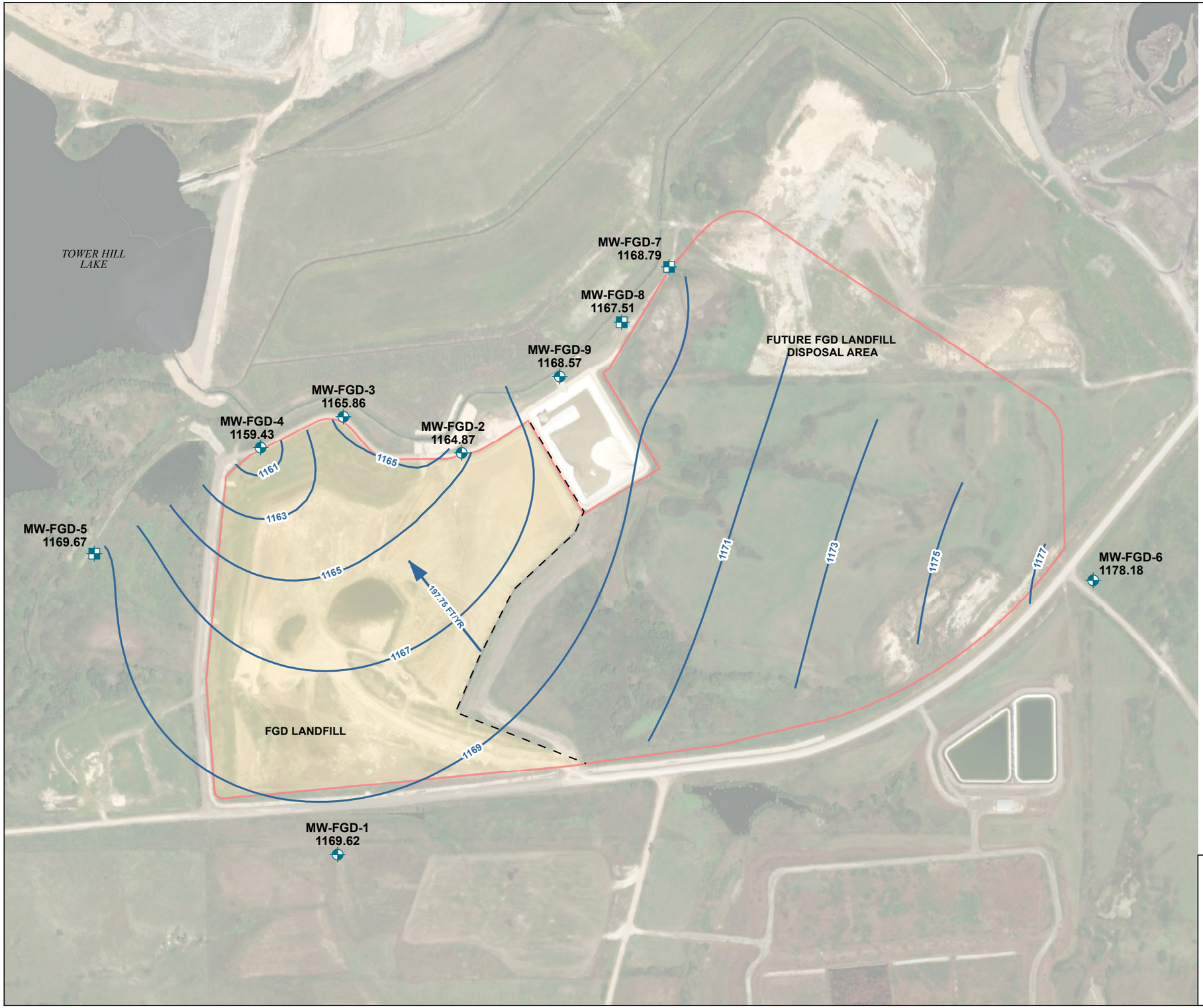
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP MARCH 22, 2019

evergy

NOVEMBER 2022

FIGURE 2



LEGEND

MW-FGD-6
1168.88 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), JUNE 2019

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

FGD LANDFILL

FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 22 JUNE 2019.

3. FGD LANDFILL BOUNDARY REPRESENTATIVE OF ACTIVE UNIT OPERATIONS, AS OUTLINED IN THE OCTOBER 2021 GROUNDWATER SAMPLING AND ANALYSIS PLAN.

4. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 22 JUNE 2019 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019

N

0 450 900
SCALE IN FEET

HALEY ALDRICH

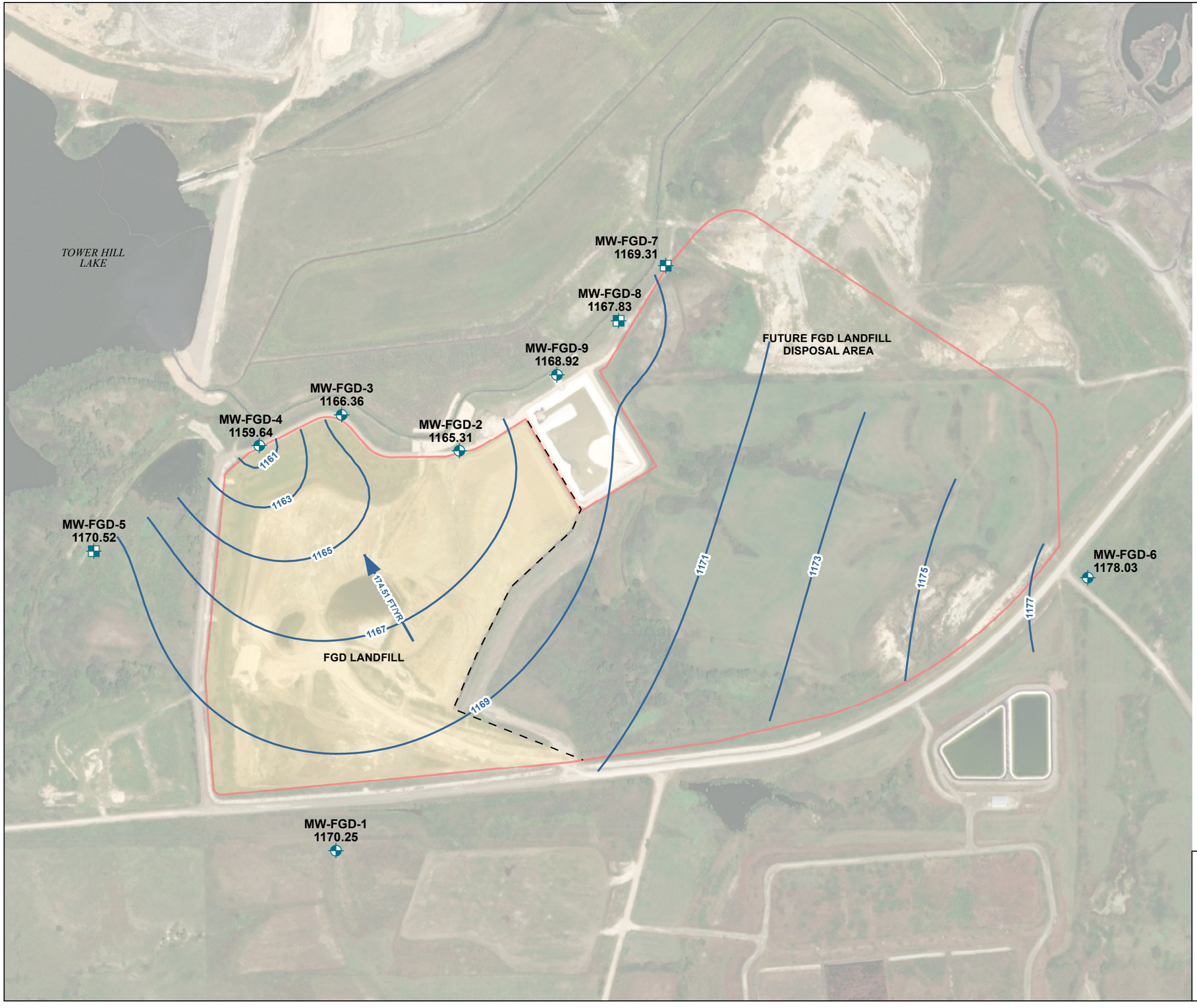
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP JUNE 22, 2019

evergy

NOVEMBER 2022

FIGURE 3



LEGEND

MW-FGD-6
1168.88 WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2019

MONITORING WELL

PIEZOMETER OBSERVATION ONLY

ESTIMATED GROUNDWATER POTENTIOMETRIC OBSERVATION ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)

GROUNDWATER FLOW DIRECTION AND APPROXIMATE GROUNDWATER FLOW RATE (FEET/YEAR)

FGD LANDFILL

FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 09 SEPTEMBER 2019.

3. FGD LANDFILL BOUNDARY REPRESENTATIVE OF ACTIVE UNIT OPERATIONS, AS OUTLINED IN THE OCTOBER 2021 GROUNDWATER SAMPLING AND ANALYSIS PLAN.

4. THE GROUNDWATER FLOW RATE WAS APPROXIMATED USING THE HYDRAULIC GRADIENT CALCULATED FROM GROUNDWATER POTENTIOMETRIC ELEVATIONS MEASURED 09 SEPTEMBER 2019 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.

5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019

N

0 450 900
SCALE IN FEET

HALEY ALDRICH

EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR MAP SEPTEMBER 9, 2019

evergy

NOVEMBER 2022

FIGURE 4