

2021 ANNUAL GROUNDWATER MONITORING AND
CORRECTIVE ACTION REPORT
FLUE GAS DESULFURIZATION LANDFILL
JEFFREY ENERGY CENTER
ST. MARYS, KANSAS

by
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Cleveland, Ohio

for
Eversource Energy Kansas Central, Inc.
Topeka, Kansas

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Revision No.	Date	Notes

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**2021 Annual Groundwater Monitoring
and Corrective Action Report**

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 (2021) and documents compliance with the U.S. Environmental Protection Agency Coal Combustion Residual Rule. I certify that the 2021 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. 881
Title: Technical Expert 2
Company: Haley & Aldrich, Inc.



1. Introduction

This 2021 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). This Annual Report was developed in accordance with the U.S. Environmental Protection Agency Coal Combustion Residual (CCR) Rule (Rule) effective October 19, 2015, including subsequent revisions, specifically Code of Federal Regulations Title 40 (40 CFR), subsection 257.90(e). The Annual Report documents the groundwater monitoring system for the FGD Landfill consistent with applicable sections of 257.90 through 257.98, and describes activities conducted in the prior calendar year (2021) and documents compliance with the Rule. The specific requirements for the Annual Report listed in § 257.90(e) of the Rule are provided in Sections 1 and 2 of this Annual Report and are in bold italic font, followed by a narrative describing how each Rule requirement has been met.

1.1 40 CFR § 257.90(E)(6) SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

1.1.1 40 CFR § 257.90(e)(6)(i) – Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the start of the current annual reporting period (January 1, 2021), the FGD Landfill was operating under a detection monitoring program in compliance with 40 CFR § 257.95.

1.1.2 40 CFR § 257.90(e)(6)(ii) – Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the end of the current annual reporting period (December 31, 2021), the FGD Landfill was operating under a detection monitoring program in compliance with 40 CFR § 257.94.

1.1.3 40 CFR § 257.90(e)(6)(iii) – Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e):

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1.1.3.1 40 CFR § 257.90(e)(6)(iii)(a)

Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and

No statistically significant increases (SSI) over background were identified during the previous calendar year (2021).

1.1.3.2 40 CFR § 257.90(e)(6)(iii)(b)

Provide the date when the assessment monitoring program was initiated for the CCR unit.

An assessment monitoring program was initiated on July 17, 2018 for the FGD Landfill with a notification establishing assessment monitoring provided on August 15, 2018 to meet the requirements of 40 CFR § 257.95. The FGD Landfill returned to a detection monitoring program on August 14, 2020.

1.1.4 40 CFR § 257.90(e)(6)(iv) – Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following:

1.1.4.1 40 CFR § 257.90(e)(6)(iv)(A) – Statistically Significant Level Constituents

Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;

The FGD Landfill remains in detection monitoring, and no appendix IV constituents were collected or analyzed in 2021. Therefore, no statistically significant levels above the groundwater protection standard were identified for the FGD Landfill.

1.1.4.2 40 CFR § 257.90(e)(6)(iv)(B) – Initiation of the Assessment of Corrective Measures

Provide the date when the assessment of corrective measures was initiated for the CCR unit;

No assessment of corrective measures was required to be initiated in 2021 for this unit. The FGD Landfill remained in detection monitoring during 2021.

1.1.4.3 40 CFR § 257.90(e)(6)(iv)(C) – Assessment of Corrective Measures Public Meeting

Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

An assessment of corrective measures was not required for the FGD Landfill in 2021; therefore, a public meeting was not held.

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1.1.4.4 40 CFR § 257.90(e)(6)(iv)(D) – Completion of the Assessment of Corrective Measures
Provide the date when the assessment of corrective measures was completed for the CCR unit.

No assessment of corrective measures was required to be initiated in 2021 for this unit. The FGD Landfill remained in detection monitoring during 2021.

1.1.5 40 CFR § 257.90(e)(6)(v) – Selection of Remedy
Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

The FGD Landfill remains in detection monitoring, and no remedy was required to be selected.

1.1.6 40 CFR § 257.90(e)(6)(vi) – Remedial Activities
Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

No remedial activities were required in 2021.

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 is provided in this report. This Annual Report documents the applicable groundwater-related activities completed in the calendar year 2021.

2.2.1 Status of the Groundwater Monitoring Program

The FGD Landfill remained in the detection monitoring program during 2021.

2.2.2 Key Actions Completed

The 2020 Annual Groundwater Monitoring and Corrective Action Report was completed in January 2021. Statistical evaluation was completed in January 2021 on analytical data from the September 2020 semi-annual detection monitoring sampling event. Semi-annual detection monitoring sampling events were completed in March and September of 2021. Statistical evaluation was completed in July 2021 on analytical data from the March 2021 semi-annual

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detection monitoring sampling event. Statistical evaluation of the results from the September 2021 semi-annual detection monitoring sampling event are due to be completed in January 2022 and will be reported in the next annual report.

2.2.3 Problems Encountered

One problem encountered during groundwater monitoring activities in 2021 consisted of laboratory analytical errors that required the laboratory to reanalyze the following analytical results:

- Fluoride and sulfate for monitoring well MW-FGD-4 in the March 2021 semi-annual detection monitoring sampling event, and
- pH for monitoring wells MW-FGD-2 and MW-FGD-6 in the September 2021 semi-annual detection monitoring sampling event.

These are the only issues that needed to be addressed at the FGD Landfill in 2021.

2.2.4 Actions to Resolve Problems

The resolution to problems encountered in 2021 included additional laboratory analyses as described above. The analytical results were revised accordingly. No other problems were encountered at the FGD Landfill in 2021; therefore, no actions to resolve problems were required.

2.2.5 Projected Key Activities for Upcoming Year

Key activities planned for 2022 include the completion of the 2021 Annual Groundwater Monitoring and Corrective Action Report, statistical evaluation of semi-annual detection monitoring analytical data collected in September 2021, semi-annual detection monitoring, and subsequent statistical evaluations.

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 2021.

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

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

In accordance with § 257.94(b), two independent detection monitoring samples from each background and downgradient monitoring well were collected in 2021. 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 I of this report. Groundwater potentiometric elevation contour maps associated with each groundwater monitoring sampling event in 2021 are provided in Figures 2 and 3.

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

There was no transition between monitoring programs in 2021. Only detection monitoring was conducted in 2021.

An assessment monitoring program was initiated on July 17, 2018 with a notification establishing assessment monitoring provided on August 15, 2018 to meet the requirements of 40 CFR § 257.95. In accordance with 40 CFR § 257.95(e), the concentrations of appendix III and detected appendix IV constituents at the FGD Landfill were shown to be at or below background values for two consecutive sampling events; therefore, the CCR unit returned to detection monitoring on August 14, 2020.

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 257.94 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 2021.

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.

No alternate source demonstration or certification was required in 2021; therefore, no demonstration or certification is applicable.

2.3.5.3 40 CFR § 257.95(c)(3) – Demonstration for Alternative Assessment Monitoring Frequency
The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

The FGD Landfill remains in detection monitoring and 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).

The FGD Landfill remains in detection monitoring, and no assessment monitoring samples were collected or analyzed in 2021. Consequently, Evergy is not required to establish groundwater protection standards for this CCR unit, and this criterion is not applicable.

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 2021. The FGD Landfill remained in detection monitoring during 2021.

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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 2021; therefore, no demonstration or certification is applicable for this unit.

TABLES

TABLE I
SUMMARY OF ANALYTICAL RESULTS - 2021 DETECTION 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	
Measure Point (TOC)	1239.05		1277.52		1184.20		1186.26	
Sample Name	FGD-1-030421	FGD-1-091421	FGD-6-030421	FGD-6-091421	FGD-2-030421	FGD-2-091421	FGD-3-030421	FGD-3-091421
Sample Date	3/4/2021	9/14/2021	3/4/2021	9/14/2021	3/4/2021	9/14/2021	3/4/2021	9/14/2021
Final Lab Report Date	3/16/2021	9/30/2021	3/16/2021	9/30/2021	3/16/2021	9/30/2021	3/16/2021	9/30/2021
Final Lab Report Revision Date	3/25/2021	11/11/2021	3/25/2021	11/11/2021	3/25/2021	11/11/2021	3/25/2021	11/11/2021
Lab Data Reviewed and Validated	4/16/2021	12/10/2021	4/16/2021	12/10/2021	4/16/2021	12/10/2021	4/16/2021	12/10/2021
Depth to Water (ft btoc)	73.60	74.43	99.85	100.20	22.73	23.81	23.96	24.32
Temperature (Deg C)	12.93	16.93	14.04	15.70	13.49	16.15	15.59	16.54
Conductivity, Field (µS/cm)	904	968	1060	9510	1360	1460	1300	1340
Turbidity, Field (NTU)	0.0	0.0	9.6	0.0	0.0	0.0	2.8	0.0
pH, Field (su)	7.10	7.51	7.63	7.68	7.06	7.65	7.02	7.51
Boron, Total (mg/L)	< 0.10	< 0.10	11.1	11.4	0.22	0.22	0.14	0.13
Calcium, Total (mg/L)	97.3	98.4	623	645	201	223	176	161
Chloride (mg/L)	72.5	75.4	2400	2100	67.3	80.7	91.2	85.1
Fluoride (mg/L)	0.33	0.36	1.5	1.4	0.26	0.28	0.22	0.26
Sulfate (mg/L)	92.0	94.0	3090	2640	393	430	347	284
pH (lab) (su)	7.0	7.5	6.8	7.0	6.9	7.4	6.8	7.4
TDS (mg/L)	552	545	9100	8200	989	1080	1100	846

Notes and Abbreviations:

Bold value: Detection above laboratory reporting limit.
 Data presented in this table were verified against the laboratory and validation reports.
 µS/cm = micro Siemens per centimeter
 Deg C = degrees Celsius
 ft btoc = feet below top of casing
 mg/L = milligrams per liter
 NTU = Nephelometric Turbidity Unit
 su = standard unit
 TDS = total dissolved solids
 TOC = top of casing

TABLE I
SUMMARY OF ANALYTICAL RESULTS - 2021 DETECTION MONITORING
 EVERGY KANSAS CENTRAL, INC.
 JEFFREY ENERGY CENTER
 FLUE GAS DESULFURIZATION LANDFILL
 ST. MARYS, KANSAS

Location	Downgradient					
	MW-FGD-4			MW-FGD-9		
Measure Point (TOC)	1188.43			1175.51		
Sample Name	FGD-4-030421	FGD-DUP-030421	FGD-4-091421	FGD-9-030421	FGD-9-091421	JEC-FGD-DUP-091421
Sample Date	3/4/2021	3/4/2021	9/14/2021	3/4/2021	9/14/2021	9/14/2021
Final Lab Report Date	3/16/2021	3/16/2021	9/30/2021	3/16/2021	9/30/2021	9/30/2021
Final Lab Report Revision Date	3/25/2021	3/25/2021	11/11/2021	3/25/2021	11/11/2021	11/11/2021
Lab Data Reviewed and Validated	4/16/2021	4/16/2021	12/10/2021	4/16/2021	12/10/2021	12/10/2021
Depth to Water (ft btoc)	31.36	-	32.91	9.90	12.20	-
Temperature (Deg C)	14.92	-	16.42	13.13	18.04	-
Conductivity, Field (µS/cm)	2310	-	2420	1030	1100	-
Turbidity, Field (NTU)	0.0	-	0.0	0.0	0.0	-
pH, Field (su)	6.94	-	7.53	7.20	7.44	-
Boron, Total (mg/L)	0.40	0.39	0.40	0.47	0.47	0.48
Calcium, Total (mg/L)	355	346	357	129	137	146
Chloride (mg/L)	219	227	204	39.1	36.2	36.5
Fluoride (mg/L)	0.29	0.83	0.23	0.47	0.47	0.47
Sulfate (mg/L)	899	954	835	257	287	291
pH (lab) (su)	7.2	7.1	7.1	7.1	7.2	7.1
TDS (mg/L)	2150	2060	1990	701	746	765





Notes and Abbreviations:

Bold value: Detection above laboratory reporting limit.
 Data presented in this table were verified against the laboratory and validation reports.
 µS/cm = micro Siemens per centimeter
 Deg C = degrees Celsius
 ft btoc = feet below top of casing
 mg/L = milligrams per liter
 NTU = Nephelometric Turbidity Unit
 su = standard unit
 TDS = total dissolved solids
 TOC = top of casing

FIGURES

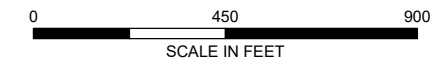


LEGEND

-  MONITORING WELL
-  PIEZOMETER OBSERVATION ONLY
-  FGD LANDFILL
-  FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019

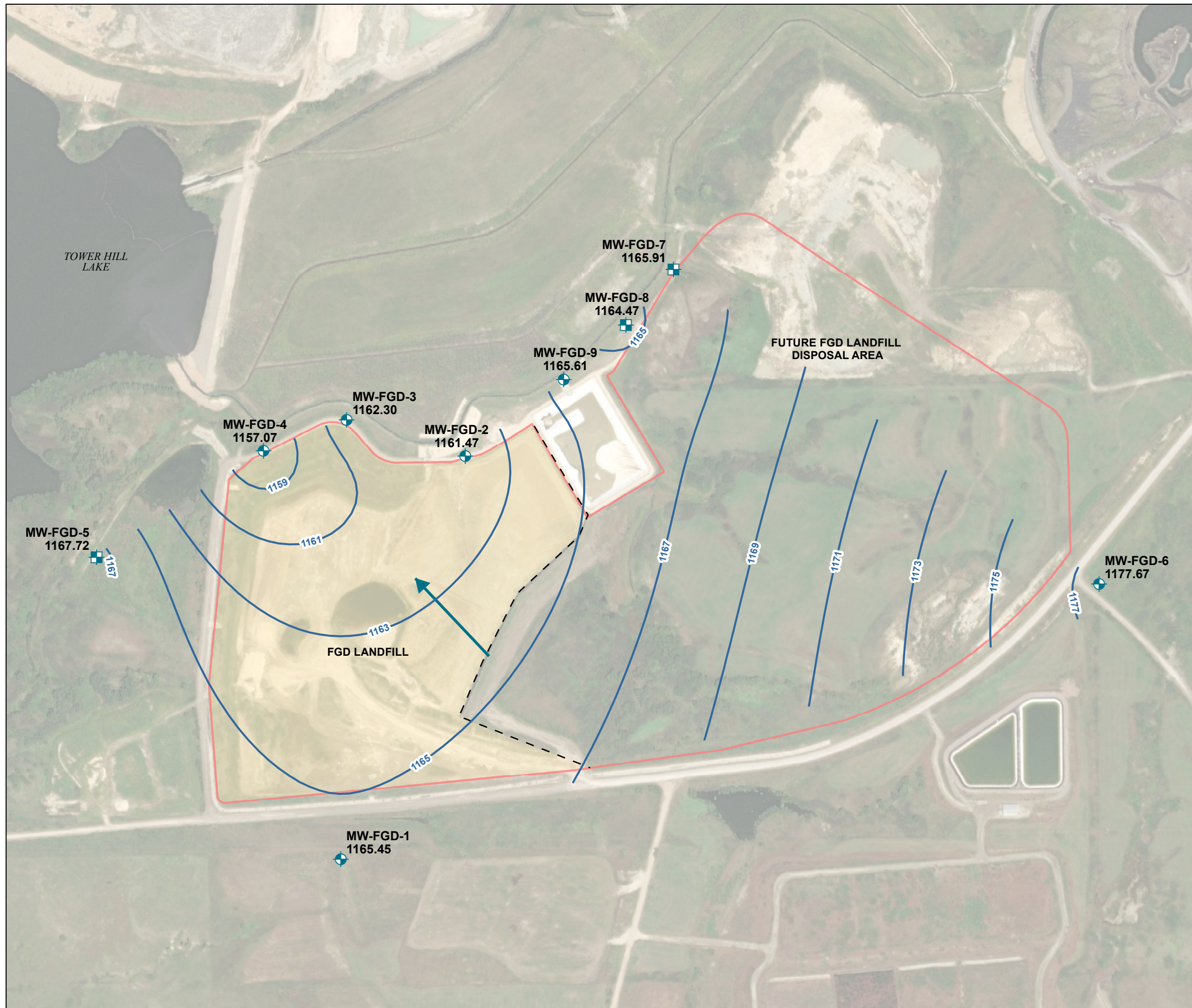


EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS







**FGD LANDFILL MONITORING
WELL LOCATION MAP**



JANUARY 2022

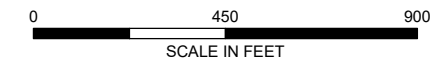


LEGEND

- MW-FGD-6 WELL NAME WITH GROUNDWATER ELEVATION, (FT AMSL)
1168.88 MARCH 2021
-  MONITORING WELL
-  PIEZOMETER OBSERVATION ONLY
-  ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
-  APPROXIMATE GROUNDWATER FLOW DIRECTION
-  FGD LANDFILL
-  FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 04 MARCH 2021.
3. FGD LANDFILL BOUNDARY REPRESENTATIVE OF ACTIVE UNIT OPERATIONS, AS OUTLINED IN THE OCTOBER 2021 GROUNDWATER SAMPLING AND ANALYSIS PLAN.
4. AMSL = ABOVE MEAN SEA LEVEL
5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019



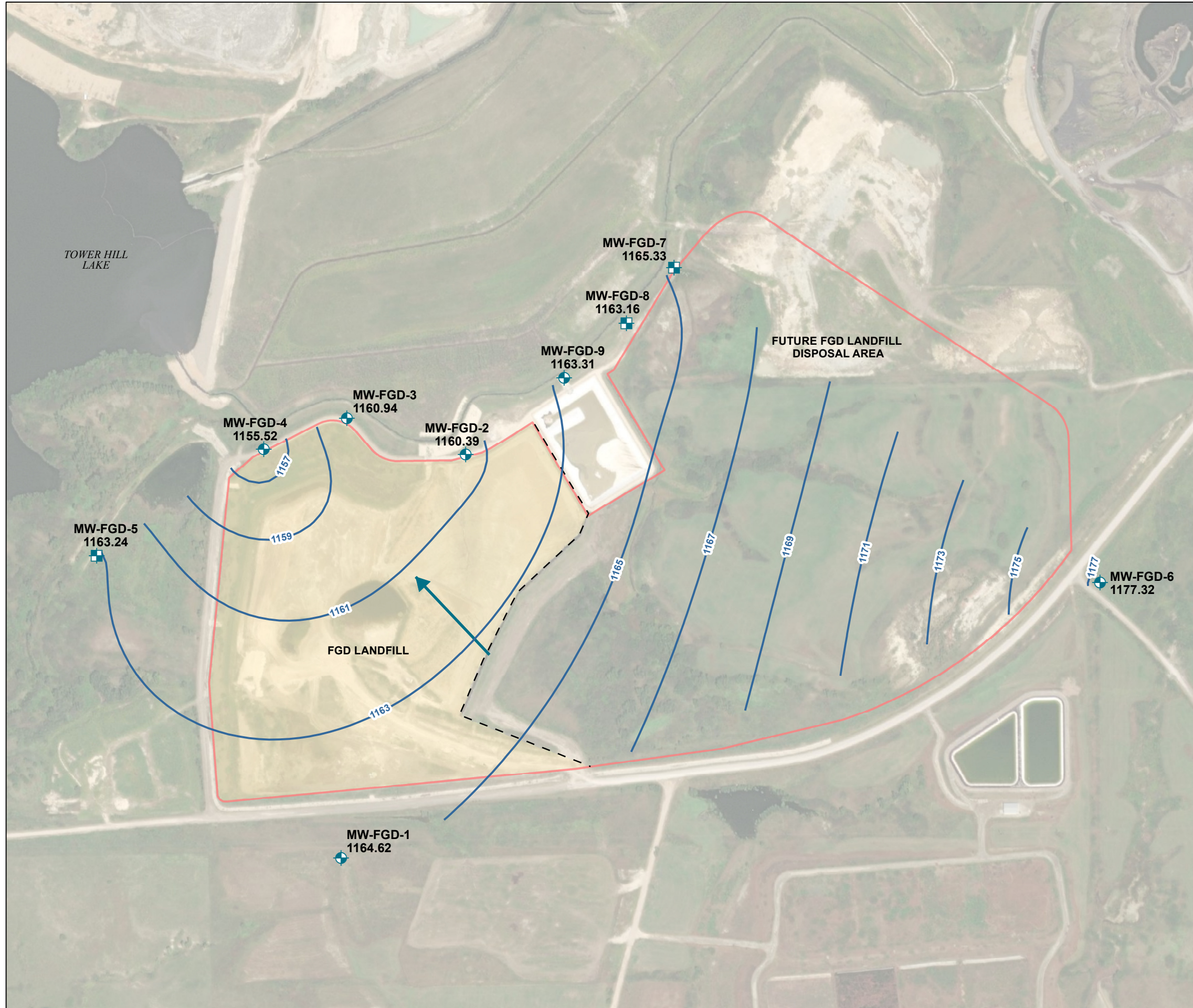
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
MARCH 4, 2021









JANUARY 2022

FIGURE 2

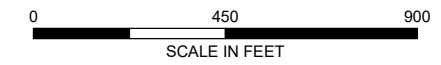


LEGEND

- MW-FGD-6 WELL NAME WITH GROUNDWATER ELEVATION, (FT AMSL)
1168.88 SEPTEMBER 2021
-  MONITORING WELL
-  PIEZOMETER OBSERVATION ONLY
-  ESTIMATED GROUNDWATER POTENTIOMETRIC ELEVATION CONTOUR, 2-FT INTERVAL (AMSL)
-  APPROXIMATE GROUNDWATER FLOW DIRECTION
-  FGD LANDFILL
-  FUTURE FGD LANDFILL DISPOSAL

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. GROUNDWATER POTENTIOMETRIC ELEVATIONS WERE MEASURED 14 SEPTEMBER 2021.
3. FGD LANDFILL BOUNDARY REPRESENTATIVE OF ACTIVE UNIT OPERATIONS, AS OUTLINED IN THE OCTOBER 2021 GROUNDWATER SAMPLING AND ANALYSIS PLAN.
4. AMSL = ABOVE MEAN SEA LEVEL
5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019



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

FGD LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
SEPTEMBER 14, 2021



JANUARY 2022

FIGURE 3

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: 2021 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 2021 for the FGD Landfill was completed and placed in the facility's operating record on January 28, 2022, 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 2021 sampling events are included in Attachment 1, and a discussion of the applicable statistical analyses completed in 2021 are included in Attachment 2 of this addendum. The 2021 GWMCA Report does include a "Groundwater

Potentiometric Elevation Contour Map” for each of the 2021 sampling events as Figures 2 and 3. In those figures, the measured groundwater elevations for each well are listed. Those maps have been duplicated in this addendum as Attachment 3 and were modified to include the calculated groundwater flow rate and direction.

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 completed in March and September 2021 are provided.
- Attachment 2 – Statistical Analyses: Includes a discussion of the statistical analyses utilized along with a table summarizing the statistical outputs (e.g., frequency of detection, maximum detection, variance, standard deviation, coefficient of variance, outlier tests, trends, upper and lower confidence limits, and comparison against groundwater protection standards), and supporting backup for statistical analyses completed in 2020. Statistical analyses completed in 2019 included:
 - Overview of the January 2021 statistical analyses for data obtained in the September 2020 sampling event; and
 - Overview of the July 2021 statistical analyses for data obtained in the March 2021 sampling events.
- Attachment 3 – Revised Groundwater Potentiometric Maps: Includes the measured groundwater elevations at each well and the generalized groundwater flow direction and calculated flow rate. Maps for the sampling events completed in March and September 2021 are provided.

ATTACHMENT 1
Laboratory Analytical Reports

ATTACHMENT 1-1
March 2021 Sampling Event
Laboratory Analytical Report

March 25, 2021

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD CCR
Pace Project No.: 60362960

Dear Melissa Michels:

Enclosed are the analytical results for sample(s) received by the laboratory on March 05, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

Revised Report REV_1

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

Sincerely,



Jasmine Amerin
jasmine.amerin@pacelabs.com
(913)599-5665
Project Manager

Enclosures

cc: Sarah Hazelwood, Evergy, Inc.
Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Dustin Kadous, Evergy Kansas Central, Inc. Jeffrey Energy
Center
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Sataneck, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: JEC FGD CCR

Pace Project No.: 60362960

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 200030

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: JEC FGD CCR

Pace Project No.: 60362960

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60362960001	FGD-1-030421	Water	03/04/21 20:15	03/05/21 17:00
60362960002	FGD-2-030421	Water	03/04/21 18:15	03/05/21 17:00
60362960003	FGD-3-030421	Water	03/04/21 17:35	03/05/21 17:00
60362960004	FGD-4-030421	Water	03/04/21 16:25	03/05/21 17:00
60362960005	FGD-6-030421	Water	03/04/21 20:55	03/05/21 17:00
60362960006	FGD-9-030421	Water	03/04/21 18:55	03/05/21 17:00
60362960007	FGD-DUP-030421	Water	03/04/21 16:25	03/05/21 17:00

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: JEC FGD CCR

Pace Project No.: 60362960

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60362960001	FGD-1-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60362960002	FGD-2-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS, MJK	3	PASI-K
60362960003	FGD-3-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS	3	PASI-K
60362960004	FGD-4-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS, CRN2	3	PASI-K
60362960005	FGD-6-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS, MJK	3	PASI-K
60362960006	FGD-9-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS, MJK	3	PASI-K
60362960007	FGD-DUP-030421	EPA 200.7	TDS	2	PASI-K
		SM 2540C	AJS	1	PASI-K
		SM 4500-H+B	LDB	1	PASI-K
		EPA 300.0	AJS, MJK	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR
Pace Project No.: 60362960

Date: March 25, 2021

Amended report revised to include chloride, fluoride, and sulfate rerun results for sample 60362960004 (FGD-4-030421).

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Sample: FGD-1-030421		Lab ID: 60362960001	Collected: 03/04/21 20:15	Received: 03/05/21 17:00	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Boron, Total Recoverable	<0.10	mg/L	0.10	1	03/10/21 12:01	03/15/21 22:39	7440-42-8	
Calcium, Total Recoverable	97.3	mg/L	0.20	1	03/10/21 12:01	03/15/21 22:39	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	552	mg/L	10.0	1		03/11/21 13:25		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	7.0	Std. Units	0.10	1		03/12/21 12:24		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	72.5	mg/L	20.0	20		03/09/21 15:53	16887-00-6	
Fluoride	0.33	mg/L	0.20	1		03/09/21 15:11	16984-48-8	
Sulfate	92.0	mg/L	20.0	20		03/09/21 15:53	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-2-030421 Lab ID: 60362960002 Collected: 03/04/21 18:15 Received: 03/05/21 17:00 Matrix: Water								
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.22	mg/L	0.10	1	03/10/21 12:01	03/15/21 22:49	7440-42-8	
Calcium, Total Recoverable	201	mg/L	0.20	1	03/10/21 12:01	03/15/21 22:49	7440-70-2	
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	989	mg/L	10.0	1		03/11/21 13:26		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.9	Std. Units	0.10	1		03/12/21 12:16		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	67.3	mg/L	20.0	20		03/09/21 16:22	16887-00-6	
Fluoride	0.26	mg/L	0.20	1		03/09/21 16:08	16984-48-8	
Sulfate	393	mg/L	50.0	50		03/10/21 16:58	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-3-030421 Lab ID: 60362960003 Collected: 03/04/21 17:35 Received: 03/05/21 17:00 Matrix: Water								
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.14	mg/L	0.10	1	03/10/21 12:01	03/15/21 22:51	7440-42-8	
Calcium, Total Recoverable	176	mg/L	0.20	1	03/10/21 12:01	03/15/21 22:51	7440-70-2	
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	1100	mg/L	13.3	1		03/11/21 13:26		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/12/21 12:11		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	91.2	mg/L	20.0	20		03/09/21 16:51	16887-00-6	
Fluoride	0.22	mg/L	0.20	1		03/09/21 16:36	16984-48-8	
Sulfate	347	mg/L	20.0	20		03/09/21 16:51	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-4-030421 Lab ID: 60362960004 Collected: 03/04/21 16:25 Received: 03/05/21 17:00 Matrix: Water								
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.40	mg/L	0.10	1	03/10/21 12:01	03/15/21 22:54	7440-42-8	
Calcium, Total Recoverable	355	mg/L	0.20	1	03/10/21 12:01	03/15/21 22:54	7440-70-2	M1
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	2150	mg/L	20.0	1		03/11/21 13:26		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.2	Std. Units	0.10	1		03/12/21 11:05		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	219	mg/L	20.0	20		03/09/21 17:19	16887-00-6	
Fluoride	0.29	mg/L	0.20	1		03/19/21 14:58	16984-48-8	
Sulfate	899	mg/L	100	100		03/19/21 15:14	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Sample: FGD-6-030421	Lab ID: 60362960005	Collected: 03/04/21 20:55	Received: 03/05/21 17:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Boron, Total Recoverable	11.1	mg/L	0.10	1	03/10/21 12:01	03/15/21 23:01	7440-42-8	
Calcium, Total Recoverable	623	mg/L	0.20	1	03/10/21 12:01	03/15/21 23:01	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	9100	mg/L	167	1		03/11/21 13:26		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	6.8	Std. Units	0.10	1		03/12/21 12:26		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	2400	mg/L	400	400		03/10/21 17:27	16887-00-6	
Fluoride	1.5	mg/L	0.20	1		03/09/21 17:34	16984-48-8	
Sulfate	3090	mg/L	400	400		03/10/21 17:27	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-9-030421 Lab ID: 60362960006 Collected: 03/04/21 18:55 Received: 03/05/21 17:00 Matrix: Water								
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.47	mg/L	0.10	1	03/10/21 12:01	03/15/21 23:04	7440-42-8	
Calcium, Total Recoverable	129	mg/L	0.20	1	03/10/21 12:01	03/15/21 23:04	7440-70-2	
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	701	mg/L	10.0	1		03/11/21 13:26		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.1	Std. Units	0.10	1		03/12/21 12:19		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	39.1	mg/L	5.0	5		03/10/21 17:42	16887-00-6	
Fluoride	0.47	mg/L	0.20	1		03/09/21 18:02	16984-48-8	
Sulfate	257	mg/L	20.0	20		03/09/21 18:45	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60362960

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-DUP-030421 Lab ID: 60362960007 Collected: 03/04/21 16:25 Received: 03/05/21 17:00 Matrix: Water								
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.39	mg/L	0.10	1	03/10/21 12:01	03/15/21 23:06	7440-42-8	
Calcium, Total Recoverable	346	mg/L	0.20	1	03/10/21 12:01	03/15/21 23:06	7440-70-2	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	2060	mg/L	20.0	1		03/11/21 13:26		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.1	Std. Units	0.10	1		03/12/21 11:06		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	227	mg/L	20.0	20		03/09/21 19:14	16887-00-6	
Fluoride	0.83	mg/L	0.20	1		03/09/21 19:00	16984-48-8	
Sulfate	954	mg/L	100	100		03/10/21 18:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch:	707827	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

METHOD BLANK: 2850595 Matrix: Water
Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	mg/L	<0.10	0.10	03/15/21 22:34	
Calcium	mg/L	<0.20	0.20	03/15/21 22:34	

LABORATORY CONTROL SAMPLE: 2850596

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1	0.96	96	85-115	
Calcium	mg/L	10	10.2	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2850597 2850598

Parameter	Units	60362960004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/L	0.40	1	1	1.4	1.4	96	96	70-130	0	20	
Calcium	mg/L	355	10	10	352	351	-28	-39	70-130	0	20 M1	

MATRIX SPIKE SAMPLE: 2850599

Parameter	Units	60362963003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1.7	1	2.7	96	70-130	
Calcium	mg/L	537	10	555	179	70-130 M1	

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

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch:	707980	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

METHOD BLANK: 2851179 Matrix: Water

Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	03/11/21 13:24	

LABORATORY CONTROL SAMPLE: 2851180

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

SAMPLE DUPLICATE: 2851181

Parameter	Units	60362782001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	12500	13400	7	10	

SAMPLE DUPLICATE: 2851182

Parameter	Units	60362961001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1710	1720	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch: 708291

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960004, 60362960007

SAMPLE DUPLICATE: 2852390

Parameter	Units	60362961004 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.3	1	5	H6

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch: 708292

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960005, 60362960006

SAMPLE DUPLICATE: 2852391

Parameter	Units	60362623002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.4	6.8	6	5	D6,H6

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch:	707523	Analysis Method:	EPA 300.0
QC Batch Method:	EPA 300.0	Analysis Description:	300.0 IC Anions
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

METHOD BLANK: 2849680 Matrix: Water
Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/09/21 12:26	
Fluoride	mg/L	<0.20	0.20	03/09/21 12:26	
Sulfate	mg/L	<1.0	1.0	03/09/21 12:26	

METHOD BLANK: 2850717 Matrix: Water
Associated Lab Samples: 60362960001, 60362960002, 60362960003, 60362960004, 60362960005, 60362960006, 60362960007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	03/10/21 16:30	
Fluoride	mg/L	<0.20	0.20	03/10/21 16:30	
Sulfate	mg/L	<1.0	1.0	03/10/21 16:30	

LABORATORY CONTROL SAMPLE: 2849681

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	2.4	98	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2850718

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	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: 2849682 2849683

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60362867002 Result	Spike Conc.	Spike Conc.	Result						
Chloride	mg/L	12.0	5	5	17.6	17.5	113	111	80-120	1	15
Fluoride	mg/L	0.71	2.5	2.5	3.3	3.3	105	103	80-120	1	15
Sulfate	mg/L	19.9	5	5	25.5	25.4	113	111	80-120	0	15 E

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

MATRIX SPIKE SAMPLE:		2849684					
Parameter	Units	60362961002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	111	100	222	111	80-120	
Fluoride	mg/L	<0.20	2.5	2.8	114	80-120	
Sulfate	mg/L	608	250	886	111	80-120	

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

QC Batch: 709735

Analysis Method: EPA 300.0

QC Batch Method: EPA 300.0

Analysis Description: 300.0 IC Anions

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60362960004

METHOD BLANK: 2857639

Matrix: Water

Associated Lab Samples: 60362960004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	03/19/21 09:34	
Sulfate	mg/L	<1.0	1.0	03/19/21 09:34	

METHOD BLANK: 2858788

Matrix: Water

Associated Lab Samples: 60362960004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Fluoride	mg/L	<0.20	0.20	03/22/21 09:38	
Sulfate	mg/L	<1.0	1.0	03/22/21 09:38	

LABORATORY CONTROL SAMPLE: 2857640

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 2858789

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	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2857641 2857642

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		60363374001 Result	Spike Conc.	Spike Conc.	Result						
Fluoride	mg/L	1.8	2.5	2.5	4.0	87	80	80-120	5	15	
Sulfate	mg/L	671	500	500	1190	103	108	80-120	2	15	

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60362960

MATRIX SPIKE SAMPLE: 2857644

Parameter	Units	60363383003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	125	124	99	80-120	
Sulfate	mg/L	692	250	973	112	80-120	

SAMPLE DUPLICATE: 2857643

Parameter	Units	60363374001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	1.8	1.8	2	15	
Sulfate	mg/L	671	662	1	15 D6	

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD CCR

Pace Project No.: 60362960

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.

ANALYTE QUALIFIERS

D6 The precision between the sample and sample duplicate exceeded laboratory control limits.

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.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD CCR

Pace Project No.: 60362960

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60362960001	FGD-1-030421	EPA 200.7	707827	EPA 200.7	707926
60362960002	FGD-2-030421	EPA 200.7	707827	EPA 200.7	707926
60362960003	FGD-3-030421	EPA 200.7	707827	EPA 200.7	707926
60362960004	FGD-4-030421	EPA 200.7	707827	EPA 200.7	707926
60362960005	FGD-6-030421	EPA 200.7	707827	EPA 200.7	707926
60362960006	FGD-9-030421	EPA 200.7	707827	EPA 200.7	707926
60362960007	FGD-DUP-030421	EPA 200.7	707827	EPA 200.7	707926
60362960001	FGD-1-030421	SM 2540C	707980		
60362960002	FGD-2-030421	SM 2540C	707980		
60362960003	FGD-3-030421	SM 2540C	707980		
60362960004	FGD-4-030421	SM 2540C	707980		
60362960005	FGD-6-030421	SM 2540C	707980		
60362960006	FGD-9-030421	SM 2540C	707980		
60362960007	FGD-DUP-030421	SM 2540C	707980		
60362960001	FGD-1-030421	SM 4500-H+B	708292		
60362960002	FGD-2-030421	SM 4500-H+B	708292		
60362960003	FGD-3-030421	SM 4500-H+B	708292		
60362960004	FGD-4-030421	SM 4500-H+B	708291		
60362960005	FGD-6-030421	SM 4500-H+B	708292		
60362960006	FGD-9-030421	SM 4500-H+B	708292		
60362960007	FGD-DUP-030421	SM 4500-H+B	708291		
60362960001	FGD-1-030421	EPA 300.0	707523		
60362960002	FGD-2-030421	EPA 300.0	707523		
60362960003	FGD-3-030421	EPA 300.0	707523		
60362960004	FGD-4-030421	EPA 300.0	707523		
60362960004	FGD-4-030421	EPA 300.0	709735		
60362960005	FGD-6-030421	EPA 300.0	707523		
60362960006	FGD-9-030421	EPA 300.0	707523		
60362960007	FGD-DUP-030421	EPA 300.0	707523		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO#: 60362960



Client Name: Energy KS central

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: Ice Blue None

Cooler Temperature (°C): As-read 2.1/1.9 Corr. Factor 0.0 Corrected 2.1/1.9

Date and initials of person examining contents:
W 3/5/21

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: _____

ATTACHMENT 1-2
September 2021 Sampling Event
Laboratory Analytical Report

November 11, 2021

Melissa Michels
Evergy, Inc.
818 Kansas Avenue
Topeka, KS 66612

RE: Project: JEC FGD CCR
Pace Project No.: 60380631

Dear Melissa Michels:

Enclosed are the analytical results for sample(s) received by the laboratory on September 17, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Kansas City

REV-1, 11/11/21: Client requested reanalysis of pH for FGD-2 and FGD-6. Reanalysis results are reported.

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

Sincerely,



Jamie Church for
Alice Spiller
alice.spiller@pacelabs.com
(913)599-5665
PM Lab Management

Enclosures

cc: Laura Hines, Evergy, Inc.
Jake Humphrey, Evergy, Inc.
Samantha Kaney, Haley & Aldrich
Jared Morrison, Evergy, Inc.
Danielle Oberbroeckling, Haley & Aldrich
Melanie Sataneck, Haley & Aldrich, Inc.
JD Schlegel, Evergy, Inc.
Jacob Will, Evergy Kansas Central, Jeffrey Energy Center



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: JEC FGD CCR

Pace Project No.: 60380631

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219

Missouri Inorganic Drinking Water Certification #: 10090

Arkansas Drinking Water

Arkansas Certification #: 20-020-0

Arkansas Drinking Water

Illinois Certification #: 2000302021-3

Iowa Certification #: 118

Kansas/NELAP Certification #: E-10116

Louisiana Certification #: 03055

Nevada Certification #: KS000212020-2

Oklahoma Certification #: 9205/9935

Florida: Cert E871149 SEKS WET

Texas Certification #: T104704407-19-12

Utah Certification #: KS000212019-9

Illinois Certification #: 004592

Kansas Field Laboratory Accreditation: # E-92587

Missouri SEKS Micro Certification: 10070

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: JEC FGD CCR

Pace Project No.: 60380631

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60380631001	FGD-1-091421	Water	09/14/21 11:10	09/17/21 00:00
60380631002	FGD-2-091421	Water	09/14/21 12:15	09/17/21 00:00
60380631003	FGD-3-091421	Water	09/14/21 13:10	09/17/21 00:00
60380631004	FGD-4-091421	Water	09/14/21 13:15	09/17/21 00:00
60380631005	FGD-6-091421	Water	09/14/21 11:15	09/17/21 00:00
60380631006	FGD-9-091421	Water	09/14/21 12:25	09/17/21 00:00
60380631007	JEC-FGD-DUP-091421	Water	09/14/21 12:25	09/17/21 00:00

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SAMPLE ANALYTE COUNT

Project: JEC FGD CCR

Pace Project No.: 60380631

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60380631001	FGD-1-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH	3	PASI-K
60380631002	FGD-2-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH, LDB	3	PASI-K
60380631003	FGD-3-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH	3	PASI-K
60380631004	FGD-4-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH, LDB	3	PASI-K
60380631005	FGD-6-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH, LDB	3	PASI-K
60380631006	FGD-9-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH, LDB	3	PASI-K
60380631007	JEC-FGD-DUP-091421	EPA 200.7	JLH	2	PASI-K
		SM 2540C	BLA	1	PASI-K
		SM 4500-H+B	KB	1	PASI-K
		EPA 300.0	ALH, LDB	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR

Pace Project No.: 60380631

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: Evergy Kansas Central, Inc.

Date: November 11, 2021

General Information:

7 samples were analyzed for EPA 200.7 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) 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: 745516

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60380630002

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

- MS (Lab ID: 2986175)
 - Calcium
- MS (Lab ID: 2986177)
 - Boron
 - Calcium
- MSD (Lab ID: 2986176)
 - Calcium

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR

Pace Project No.: 60380631

Method: EPA 200.7

Description: 200.7 Metals, Total

Client: Evergy Kansas Central, Inc.

Date: November 11, 2021

Analyte Comments:

QC Batch: 745516

P8: Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.

- BLANK (Lab ID: 2986173)
- Calcium

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR

Pace Project No.: 60380631

Method: SM 2540C

Description: 2540C Total Dissolved Solids

Client: Evergy Kansas Central, Inc.

Date: November 11, 2021

General Information:

7 samples were analyzed for SM 2540C by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) 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:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR

Pace Project No.: 60380631

Method: SM 4500-H+B

Description: 4500H+ pH, Electrometric

Client: Evergy Kansas Central, Inc.

Date: November 11, 2021

General Information:

7 samples were analyzed for SM 4500-H+B by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) 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-1-091421 (Lab ID: 60380631001)
- FGD-2-091421 (Lab ID: 60380631002)
- FGD-3-091421 (Lab ID: 60380631003)
- FGD-4-091421 (Lab ID: 60380631004)
- FGD-6-091421 (Lab ID: 60380631005)
- FGD-9-091421 (Lab ID: 60380631006)
- JEC-FGD-DUP-091421 (Lab ID: 60380631007)

Method Blank:

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

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits 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:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: JEC FGD CCR

Pace Project No.: 60380631

Method: EPA 300.0

Description: 300.0 IC Anions 28 Days

Client: Evergy Kansas Central, Inc.

Date: November 11, 2021

General Information:

7 samples were analyzed for EPA 300.0 by Pace Analytical Services Kansas City. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) 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: 744822

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s):
60380628002,60380631002,60380635001

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

- MS (Lab ID: 2983704)
 - Chloride

R1: RPD value was outside control limits.

- MSD (Lab ID: 2983705)
 - Chloride

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Sample: FGD-1-091421	Lab ID: 60380631001	Collected: 09/14/21 11:10		Received: 09/17/21 00:00		Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Boron, Total Recoverable	<0.10	mg/L	0.10	1	09/24/21 16:45	09/27/21 19:11	7440-42-8	
Calcium, Total Recoverable	98.4	mg/L	0.20	1	09/24/21 16:45	09/27/21 19:11	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	545	mg/L	10.0	1		09/21/21 13:54		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	7.5	Std. Units	0.10	1		09/20/21 11:37		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	75.4	mg/L	20.0	20		09/22/21 20:05	16887-00-6	
Fluoride	0.36	mg/L	0.20	1		09/22/21 19:46	16984-48-8	
Sulfate	94.0	mg/L	20.0	20		09/22/21 20:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-2-091421		Lab ID: 60380631002		Collected: 09/14/21 12:15	Received: 09/17/21 00:00	Matrix: Water		
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.22	mg/L	0.10	1	09/24/21 16:45	09/27/21 19:14	7440-42-8	
Calcium, Total Recoverable	223	mg/L	0.20	1	09/24/21 16:45	09/27/21 19:14	7440-70-2	
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	1080	mg/L	13.3	1		09/21/21 13:54		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.4	Std. Units	0.10	1		11/03/21 11:08		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	80.7	mg/L	20.0	20		09/22/21 21:00	16887-00-6	
Fluoride	0.28	mg/L	0.20	1		09/22/21 20:23	16984-48-8	
Sulfate	430	mg/L	50.0	50		09/23/21 21:45	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Sample: FGD-3-091421	Lab ID: 60380631003	Collected: 09/14/21 13:10	Received: 09/17/21 00:00	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.13	mg/L	0.10	1	09/24/21 16:45	09/27/21 19:17	7440-42-8	
Calcium, Total Recoverable	161	mg/L	0.20	1	09/24/21 16:45	09/27/21 19:17	7440-70-2	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	846	mg/L	10.0	1		09/21/21 13:54		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.4	Std. Units	0.10	1		09/20/21 11:56		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	85.1	mg/L	20.0	20		09/22/21 21:55	16887-00-6	
Fluoride	0.26	mg/L	0.20	1		09/22/21 21:37	16984-48-8	
Sulfate	284	mg/L	20.0	20		09/22/21 21:55	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Sample: FGD-4-091421		Lab ID: 60380631004		Collected: 09/14/21 13:15	Received: 09/17/21 00:00	Matrix: Water		
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total		Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City						
Boron, Total Recoverable	0.40	mg/L	0.10	1	09/24/21 16:45	09/27/21 19:19	7440-42-8	
Calcium, Total Recoverable	357	mg/L	0.20	1	09/24/21 16:45	09/27/21 19:19	7440-70-2	
2540C Total Dissolved Solids		Analytical Method: SM 2540C Pace Analytical Services - Kansas City						
Total Dissolved Solids	1990	mg/L	20.0	1		09/21/21 13:55		
4500H+ pH, Electrometric		Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City						
pH at 25 Degrees C	7.1	Std. Units	0.10	1		09/20/21 11:58		H6
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City						
Chloride	204	mg/L	20.0	20		09/23/21 22:32	16887-00-6	
Fluoride	0.23	mg/L	0.20	1		09/22/21 22:50	16984-48-8	
Sulfate	835	mg/L	100	100		09/23/21 22:44	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-6-091421 Lab ID: 60380631005 Collected: 09/14/21 11:15 Received: 09/17/21 00:00 Matrix: Water								
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Boron, Total Recoverable	11.4	mg/L	0.10	1	09/24/21 16:45	09/28/21 11:55	7440-42-8	
Calcium, Total Recoverable	645	mg/L	0.20	1	09/24/21 16:45	09/28/21 11:55	7440-70-2	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	8200	mg/L	167	1		09/21/21 13:55		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.0	Std. Units	0.10	1		11/03/21 11:02		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	2100	mg/L	500	500		09/23/21 22:56	16887-00-6	
Fluoride	1.4	mg/L	0.20	1		09/22/21 23:27	16984-48-8	
Sulfate	2640	mg/L	500	500		09/23/21 22:56	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: FGD-9-091421		Lab ID: 60380631006		Collected: 09/14/21 12:25	Received: 09/17/21 00:00	Matrix: Water		
200.7 Metals, Total Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.47	mg/L	0.10	1	09/24/21 16:45	09/28/21 12:01	7440-42-8	
Calcium, Total Recoverable	137	mg/L	0.20	1	09/24/21 16:45	09/28/21 12:01	7440-70-2	
2540C Total Dissolved Solids Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	746	mg/L	10.0	1		09/21/21 13:55		
4500H+ pH, Electrometric Analytical Method: SM 4500-H+B Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.2	Std. Units	0.10	1		09/20/21 11:47		H6
300.0 IC Anions 28 Days Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	36.2	mg/L	5.0	5		09/23/21 23:08	16887-00-6	
Fluoride	0.47	mg/L	0.20	1		09/23/21 00:04	16984-48-8	
Sulfate	287	mg/L	20.0	20		09/23/21 00:22	14808-79-8	

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ANALYTICAL RESULTS

Project: JEC FGD CCR

Pace Project No.: 60380631

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
Sample: JEC-FGD-DUP-091421 Lab ID: 60380631007 Collected: 09/14/21 12:25 Received: 09/17/21 00:00 Matrix: Water								
200.7 Metals, Total								
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Pace Analytical Services - Kansas City								
Boron, Total Recoverable	0.48	mg/L	0.10	1	09/24/21 16:45	09/28/21 12:04	7440-42-8	
Calcium, Total Recoverable	146	mg/L	0.20	1	09/24/21 16:45	09/28/21 12:04	7440-70-2	
2540C Total Dissolved Solids								
Analytical Method: SM 2540C								
Pace Analytical Services - Kansas City								
Total Dissolved Solids	765	mg/L	10.0	1		09/21/21 13:55		
4500H+ pH, Electrometric								
Analytical Method: SM 4500-H+B								
Pace Analytical Services - Kansas City								
pH at 25 Degrees C	7.1	Std. Units	0.10	1		09/20/21 11:51		H6
300.0 IC Anions 28 Days								
Analytical Method: EPA 300.0								
Pace Analytical Services - Kansas City								
Chloride	36.5	mg/L	5.0	5		09/23/21 23:19	16887-00-6	
Fluoride	0.47	mg/L	0.20	1		09/23/21 00:40	16984-48-8	
Sulfate	291	mg/L	20.0	20		09/23/21 00:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

QC Batch:	745516	Analysis Method:	EPA 200.7
QC Batch Method:	EPA 200.7	Analysis Description:	200.7 Metals, Total
		Laboratory:	Pace Analytical Services - Kansas City

Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

METHOD BLANK: 2986173 Matrix: Water
Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	mg/L	<0.10	0.10	09/27/21 18:40	
Calcium	mg/L	0.29	0.20	09/28/21 11:53	P8

LABORATORY CONTROL SAMPLE: 2986174

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	1	0.95	95	85-115	
Calcium	mg/L	10	10.2	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2986175 2986176

Parameter	Units	60380630002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	mg/L	2.3	1	1	3.4	3.3	108	97	70-130	3	20	
Calcium	mg/L	542	10	10	572	556	292	135	70-130	3	20 M1	

MATRIX SPIKE SAMPLE: 2986177

Parameter	Units	60380630002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	mg/L	2.3	1	12.3	999	70-130	M1
Calcium	mg/L	542	10	664	1210	70-130	M1

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

QC Batch:	744456	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Kansas City
Associated Lab Samples:	60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007		

METHOD BLANK:	2982539	Matrix:	Water
Associated Lab Samples:	60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	09/21/21 13:53	

LABORATORY CONTROL SAMPLE: 2982540						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	956	96	80-120	

SAMPLE DUPLICATE: 2982541						
Parameter	Units	60380630003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	3060	3380	10	10	

SAMPLE DUPLICATE: 2982542						
Parameter	Units	60380632001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	74400	72800	2	10	

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

QC Batch: 744237

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60380631001, 60380631003, 60380631004, 60380631006, 60380631007

SAMPLE DUPLICATE: 2981913

Parameter	Units	60379873001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	8.0	2	5	H6

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

QC Batch: 753763

Analysis Method: SM 4500-H+B

QC Batch Method: SM 4500-H+B

Analysis Description: 4500H+B pH

Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60380631002, 60380631005

SAMPLE DUPLICATE: 3016904

Parameter	Units	60380631005 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	5	H6

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

QC Batch: 744822 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Laboratory: Pace Analytical Services - Kansas City
 Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

METHOD BLANK: 2983702 Matrix: Water
 Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/22/21 08:26	
Fluoride	mg/L	<0.20	0.20	09/22/21 08:26	
Sulfate	mg/L	<1.0	1.0	09/22/21 08:26	

METHOD BLANK: 2985972 Matrix: Water
 Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/23/21 08:02	
Fluoride	mg/L	<0.20	0.20	09/23/21 08:02	
Sulfate	mg/L	<1.0	1.0	09/23/21 08:02	

METHOD BLANK: 2988412 Matrix: Water
 Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/27/21 09:57	
Fluoride	mg/L	<0.20	0.20	09/27/21 09:57	
Sulfate	mg/L	<1.0	1.0	09/27/21 09:57	

METHOD BLANK: 2988943 Matrix: Water
 Associated Lab Samples: 60380631001, 60380631002, 60380631003, 60380631004, 60380631005, 60380631006, 60380631007

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<1.0	1.0	09/28/21 10:43	
Fluoride	mg/L	<0.20	0.20	09/28/21 10:43	
Sulfate	mg/L	<1.0	1.0	09/28/21 10:43	

LABORATORY CONTROL SAMPLE: 2983703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.4	108	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	

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QUALITY CONTROL DATA

Project: JEC FGD CCR
Pace Project No.: 60380631

LABORATORY CONTROL SAMPLE: 2983703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	5	5.5	110	90-110	

LABORATORY CONTROL SAMPLE: 2985973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.6	106	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2988413

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	2.6	103	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

LABORATORY CONTROL SAMPLE: 2988944

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	98	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2983704 2983705

Parameter	Units	60380628002		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Chloride	mg/L	83.8	100	100	237	193	153	109	80-120	21	15	M1, R1	
Fluoride	mg/L	0.38	2.5	2.5	2.9	2.9	99	101	80-120	1	15		
Sulfate	mg/L	488	500	500	985	1000	99	103	80-120	2	15		

MATRIX SPIKE SAMPLE: 2983706

Parameter	Units	60380631002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L		80.7	100	183	102	80-120
Fluoride	mg/L		0.28	2.5	2.3	82	80-120
Sulfate	mg/L		430	250	686	102	80-120

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QUALITY CONTROL DATA

Project: JEC FGD CCR

Pace Project No.: 60380631

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2988049 2988050															
Parameter	Units	60380635001		MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	MSD % Rec							
Chloride	mg/L	4530	5000	5000	9270	9470	95	99	80-120	2	15				
Fluoride	mg/L	0.26	2500	2500	2460	2450	98	98	80-120	0	15				
Sulfate	mg/L	184	5000	5000	4940	4960	95	95	80-120	0	15				

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: JEC FGD CCR

Pace Project No.: 60380631

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.

Reported results are not rounded until the final step prior to reporting. Therefore, calculated parameters that are typically reported as "Total" may vary slightly from the sum of the reported component parameters.

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

TNI - The NELAC Institute.

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.

P8 Analyte was detected in the method blank. All associated samples had concentrations of at least ten times greater than the blank or were below the reporting limit.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: JEC FGD CCR

Pace Project No.: 60380631

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60380631001	FGD-1-091421	EPA 200.7	745516	EPA 200.7	745589
60380631002	FGD-2-091421	EPA 200.7	745516	EPA 200.7	745589
60380631003	FGD-3-091421	EPA 200.7	745516	EPA 200.7	745589
60380631004	FGD-4-091421	EPA 200.7	745516	EPA 200.7	745589
60380631005	FGD-6-091421	EPA 200.7	745516	EPA 200.7	745589
60380631006	FGD-9-091421	EPA 200.7	745516	EPA 200.7	745589
60380631007	JEC-FGD-DUP-091421	EPA 200.7	745516	EPA 200.7	745589
60380631001	FGD-1-091421	SM 2540C	744456		
60380631002	FGD-2-091421	SM 2540C	744456		
60380631003	FGD-3-091421	SM 2540C	744456		
60380631004	FGD-4-091421	SM 2540C	744456		
60380631005	FGD-6-091421	SM 2540C	744456		
60380631006	FGD-9-091421	SM 2540C	744456		
60380631007	JEC-FGD-DUP-091421	SM 2540C	744456		
60380631001	FGD-1-091421	SM 4500-H+B	744237		
60380631002	FGD-2-091421	SM 4500-H+B	753763		
60380631003	FGD-3-091421	SM 4500-H+B	744237		
60380631004	FGD-4-091421	SM 4500-H+B	744237		
60380631005	FGD-6-091421	SM 4500-H+B	753763		
60380631006	FGD-9-091421	SM 4500-H+B	744237		
60380631007	JEC-FGD-DUP-091421	SM 4500-H+B	744237		
60380631001	FGD-1-091421	EPA 300.0	744822		
60380631002	FGD-2-091421	EPA 300.0	744822		
60380631003	FGD-3-091421	EPA 300.0	744822		
60380631004	FGD-4-091421	EPA 300.0	744822		
60380631005	FGD-6-091421	EPA 300.0	744822		
60380631006	FGD-9-091421	EPA 300.0	744822		
60380631007	JEC-FGD-DUP-091421	EPA 300.0	744822		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

WO# : 60380631



Client Name: Evergy

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: _____ Type of Ice: Wet Blue None

Cooler Temperature (°C): As-read 2.0/1.6 Corr. Factor _____ Corrected _____

Date and initials of person examining contents: 9-18-21

Temperature should be above freezing to 6°C

Chain of Custody present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Chain of Custody relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples arrived within holding time:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Short Hold Time analyses (<72hr):	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Rush Turn Around Time requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Pace containers used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Filtered volume received for dissolved tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Sample labels match COC: Date / time / ID / analyses	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples contain multiple phases? Matrix: <u>WT</u>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Containers requiring pH preservation in compliance? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> 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)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <u>N/A</u>	
Potassium iodide test strip turns blue/purple? (Preserve)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Trip Blank present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Samples from USDA Regulated Area: State:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: _____

ATTACHMENT 2
Statistical Analyses

ATTACHMENT 2-1
September 2020 Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
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., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: September 2020 Semi-Annual Groundwater Detection Monitoring Data
Statistical Evaluation
Completed January 15, 2021
Jeffrey Energy Center
Flue Gas Desulfurization Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.94 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **September 2020** semi-annual detection monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Flue Gas Desulfurization (FGD) Landfill. This semi-annual detection monitoring groundwater sampling event was completed on **September 14, 2020**, with laboratory results received and validated on **October 23, 2020**.

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). The statistical evaluation discussed in this memorandum was conducted to determine if Appendix III groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background or upgradient wells consistent with the requirements in 40 CFR § 257.94.

Statistical Evaluation of Appendix III Constituents

The two statistical methods used for these evaluations, prediction limits (PL) and Parametric Analysis of Variance, were certified by Haley & Aldrich, Inc. on April 17, 2019. The PL method, as determined applicable for this sampling event, was used to evaluate potential SSIs above background. Background levels for each constituent listed in Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids) were computed as upper prediction limits (UPL), considering one future observation,

and a minimum 95 percent confidence coefficient. The most recent groundwater sampling event from each compliance well was compared to the corresponding background PL to determine if a SSI existed.

STATISTICAL EVALUATION

An interwell evaluation using the PL method was used to complete the statistical evaluation of the referenced dataset. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-FGD-1 and MW-FGD-6). A PL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a specified confidence level (e.g., 95 percent). The upper endpoint of a concentration limit is called the UPL. Depending on the background data distribution, parametric or non-parametric PL procedures are used to evaluate groundwater monitoring data using this method. Parametric PLs 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 PL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UPL.

The statistical evaluation was conducted using the background dataset for all Appendix III constituents. The UPLs 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 locations (MW-FGD-1 and MW-FGD-6) were combined to calculate the UPL for each detected Appendix III constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UPL 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 **March 2020**.

RESULTS OF APPENDIX III DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the Appendix III constituents from the **September 2020** semi-annual detection monitoring sampling event were compared to their respective background UPLs (Table I). A sample concentration greater than the background UPL is considered to represent a SSI. The results of the groundwater detection monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in September 2020, no SSIs above background PLs occurred at the JEC FGD Landfill.**

Enclosures:

Table I – Summary of Semi-Annual Detection Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL DETECTION GROUNDWATER MONITORING STATISTICAL EVALUATION
 SEPTEMBER 2020 SAMPLING EVENT
 JEFFREY ENERGY CENTER FLUE GAS DESULFURIZATION LANDFILL
 ST. MARYS, KANSAS

Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	Outlier Presence	Outlier Removed	Trend	Distribution Well	September 2020 Concentration (mg/L)	Interwell Analysis	
													Background Limits ¹ (UPL) mg/L	SSI
CCR Appendix-III: Boron, Total (mg/L)														
MW-FGD-1 (upgradient)	7/14	50%	0.1-0.1	0.13	0.0008626	0.009288	0.08727	Yes	No	Stable		0.13	11.000	
MW-FGD-6 (upgradient)	12/12	0%	-	11	3.015	1.736	0.1836	No	No	Increasing		10.9		
MW-FGD-2	14/14	0%	-	0.26	0.0003038	0.01743	0.0737	No	No	Decreasing	Normal	0.23		No
MW-FGD-3	12/14	14%	0.1-0.1	0.18	0.0004965	0.02228	0.1572	No	No	Increasing	Normal	0.18		No
MW-FGD-4	14/14	0%	-	0.4	0.001509	0.03885	0.1341	Yes	No	Stable	Normal	0.40		No
MW-FGD-9	12/12	0%	-	0.59	0.003317	0.0576	0.1139	No	No	Stable	Normal	0.51		No
CCR Appendix-III: Calcium, Total (mg/L)														
MW-FGD-1 (upgradient)	14/14	0%	-	100	12.7	3.563	0.03761	No	No	Stable		99.2	658.000	
MW-FGD-6 (upgradient)	12/12	0%	-	658	1136	33.7	0.05658	No	No	Increasing		586		
MW-FGD-2	14/14	0%	-	236	1598	39.97	0.2562	No	No	Increasing	Normal	236		No
MW-FGD-3	14/14	0%	-	228	891.3	29.86	0.1828	No	No	Increasing	Normal	190		No
MW-FGD-4	14/14	0%	-	322	2762	52.55	0.2621	No	No	Increasing	Normal	322		No
MW-FGD-9	12/12	0%	-	129	122	11.04	0.1031	No	No	Stable	Normal	129		No
CCR Appendix-III: Chloride (mg/L)														
MW-FGD-1 (upgradient)	14/14	0%	-	71.7	91.92	9.587	0.1717	No	No	Stable		50.2	2180	
MW-FGD-6 (upgradient)	12/12	0%	-	2440	221200	470.3	0.2579	Yes	No	Increasing		2440		
MW-FGD-2	14/14	0%	-	85.1	268.2	16.38	0.3715	No	No	Increasing	Normal	85.1		No
MW-FGD-3	14/14	0%	-	132	854.9	29.24	0.4017	No	No	Increasing	Normal	132		No
MW-FGD-4	14/14	0%	-	167	1056	32.5	0.3186	No	No	Increasing	Normal	166		No
MW-FGD-9	12/12	0%	-	42.5	9.202	3.034	0.07765	No	No	Decreasing	Normal	31.2		No
CCR Appendix-III: Fluoride (mg/L)														
MW-FGD-1 (upgradient)	17/17	0%	-	0.44	0.001872	0.04327	0.1247	No	No	Increasing		0.41	3.400	
MW-FGD-6 (upgradient)	15/15	0%	-	3.4	0.443	0.6656	0.4779	Yes	No	Stable		1.6		
MW-FGD-2	16/17	6%	0.2-0.2	0.41	0.003213	0.05669	0.1647	Yes	No	Stable	Normal	0.33		No
MW-FGD-3	15/17	12%	0.2-0.2	0.53	0.005753	0.07585	0.2513	Yes	No	Stable	Normal	0.37		No
MW-FGD-4	16/17	6%	0.2-0.2	0.46	0.003751	0.06124	0.178	Yes	No	Stable	Non-parametric	0.46		No
MW-FGD-9	14/14	0%	-	0.56	0.001664	0.0408	0.08033	No	No	Stable	Normal	0.55		No
CCR Appendix-III: pH (lab) (SU)														
MW-FGD-1 (upgradient)	14/14	0%	-	7.8	0.03978	0.1994	0.027	No	No	Stable		7.3	8.1	
MW-FGD-6 (upgradient)	12/12	0%	-	7.5	0.02932	0.1712	0.02354	No	No	Stable		7.3		
MW-FGD-2	14/14	0%	-	7.8	0.03764	0.194	0.02655	No	No	Decreasing	Normal	7.1		No
MW-FGD-3	14/14	0%	-	7.6	0.02989	0.1729	0.02392	No	No	Stable	Normal	7.1		No
MW-FGD-4	14/14	0%	-	7.6	0.02923	0.171	0.02375	No	No	Decreasing	Normal	7.1		No
MW-FGD-9	12/12	0%	-	7.6	0.01356	0.1165	0.01583	No	No	Stable	Normal	7.4		No
CCR Appendix-III: Sulfate (mg/L)														
MW-FGD-1 (upgradient)	14/14	0%	-	106	31.02	5.57	0.06056	Yes	No	Stable		106	3190	
MW-FGD-6 (upgradient)	12/12	0%	-	3190	136500	369.4	0.1341	Yes	No	Stable		3030		
MW-FGD-2	14/14	0%	-	528	12590	112.2	0.3784	No	No	Increasing	Normal	528		No
MW-FGD-3	14/14	0%	-	479	10330	101.6	0.3138	No	No	Increasing	Normal	479		No
MW-FGD-4	14/14	0%	-	726	16910	130	0.2746	No	No	Increasing	Normal	690		No
MW-FGD-9	12/12	0%	-	271	1152	33.94	0.1761	Yes	No	Stable	Normal	271		No
CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)														
MW-FGD-1 (upgradient)	14/14	0%	-	545	312.4	17.67	0.0341	No	No	Stable		521	8140	
MW-FGD-6 (upgradient)	12/12	0%	-	8450	1590000	1261	0.1767	Yes	No	Stable		8450		
MW-FGD-2	14/14	0%	-	1280	44170	210.2	0.2666	No	No	Increasing	Normal	1280		No
MW-FGD-3	14/14	0%	-	1310	38120	195.3	0.218	No	No	Increasing	Normal	1210		No
MW-FGD-4	14/14	0%	-	1760	88330	297.2	0.2553	No	No	Increasing	Normal	1760		No
MW-FGD-9	12/12	0%	-	708	3144	56.07	0.09178	No	No	Increasing	Normal	708		No

Notes and Abbreviations:
¹ Based on background data collected from 08/24/2016 through 03/05/2020.
 CCR = coal combustion residual
 mg/L = milligrams per liter
 SSI = statistically significant increase
 SU = standard unit
 UPL = upper prediction limit

ATTACHMENT 2-2
March 2021 Statistical Analyses



HALEY & ALDRICH, INC.
6500 Rockside Road
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., Principal Consultant – Engineering Principal
Mark Nicholls, P.G., Senior Associate – Senior Hydrogeologist

SUBJECT: March 2021 Semi-Annual Groundwater Detection Monitoring Data
Statistical Evaluation
Completed July 15, 2021
Jeffrey Energy Center
Flue Gas Desulfurization Landfill

Pursuant to Title 40 Code of Federal Regulations (40 CFR) §§ 257.93 and 257.94 (Rule), this memorandum summarizes the statistical evaluation of the analytical results for the **March 2021** semi-annual detection monitoring groundwater sampling event for the Jeffrey Energy Center (JEC) Flue Gas Desulfurization (FGD) Landfill. This semi-annual detection monitoring groundwater sampling event was completed on **March 4, 2021**, with laboratory results received and validated on **April 16, 2021**.

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a coal combustion residuals (CCR) unit (40 CFR § 257.93(f) (1-4)). The statistical evaluation discussed in this memorandum was conducted to determine if Appendix III groundwater monitoring constituents have been detected in downgradient wells at concentrations that represent a statistically significant increase (SSI) above background or upgradient wells consistent with the requirements in 40 CFR § 257.94.

Statistical Evaluation of Appendix III Constituents

The two statistical methods used for these evaluations, prediction limits (PL) and Parametric Analysis of Variance, were certified by Haley & Aldrich, Inc. on April 17, 2019. The PL method, as determined applicable for this sampling event, was used to evaluate potential SSIs above background. Background levels for each constituent listed in Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids) were computed as upper prediction limits (UPL), considering one future observation, and a minimum 95 percent confidence coefficient. The most recent groundwater sampling event from each compliance well was compared to the corresponding background PL to determine if a SSI existed.

STATISTICAL EVALUATION

An interwell evaluation using the PL method was used to complete the statistical evaluation of the referenced dataset. Interwell evaluation compares the most recent values from downgradient compliance wells against a background dataset composed of upgradient well data (MW-FGD-1 and MW-FGD-6). A PL procedure is one in which a concentration limit for each constituent is established from the distribution of the background data, with a specified confidence level (e.g., 95 percent). The upper endpoint of a concentration limit is called the UPL. Depending on the background data distribution, parametric or non-parametric PL procedures are used to evaluate groundwater monitoring data using this method. Parametric PLs 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 PL. If all the background data are non-detect, a maximum reporting limit may serve as an appropriate UPL.

The statistical evaluation was conducted using the background dataset for all Appendix III constituents. The UPLs 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 locations (MW-FGD-1 and MW-FGD-6) were combined to calculate the UPL for each detected Appendix III constituent. The variability and distribution of the pooled dataset were evaluated to determine the method for UPL 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 **March 2021**.

RESULTS OF APPENDIX III DOWNGRADIENT STATISTICAL COMPARISONS

The sample concentrations from the downgradient wells for each of the Appendix III constituents from the **March 2021** semi-annual detection monitoring sampling event were compared to their respective background UPLs (Table I). A sample concentration greater than the background UPL is considered to represent a SSI. The results of the groundwater detection monitoring statistical evaluation are provided in Table I. **Based on this statistical evaluation on groundwater sampling data collected in March 2021, no SSIs above background PLs occurred at the JEC FGD Landfill.**

Table:

- Table I – Summary of Semi-Annual Detection Groundwater Monitoring Statistical Evaluation

TABLE

TABLE I
SUMMARY OF SEMI-ANNUAL DETECTION GROUNDWATER MONITORING STATISTICAL EVALUATION
MARCH 2021 SAMPLING EVENT
JEFFREY ENERGY CENTER FLUE GAS DESULFURIZATION LANDFILL
ST. MARYS, KANSAS

Location Id	Frequency of Detection	Percent Non-Detects	Range of Non-Detect	Maximum Detect	Variance	Standard Deviation	Coefficient of Variance	Outlier Presence	Outlier Removed	Trend	Distribution Well	March 2021 Concentration (mg/L)	Interwell Analysis	
													Background Limits ¹ (UPL) mg/L	SSI
CCR Appendix-III: Boron, Total (mg/L)														
MW-FGD-1	7/15	53%	0.1-0.1	0.13	0.00008286	0.009103	0.08587	Yes	No	Stable		< 0.10	11.100	
MW-FGD-6	13/13	0%	-	11.1	2.971	1.724	0.1798	No	No	Increasing		11.1		
MW-FGD-2	15/15	0%	-	0.26	0.0003003	0.01733	0.07361	No	No	Decreasing	Normal	0.22		No
MW-FGD-3	13/15	13%	0.1-0.1	0.18	0.0004613	0.02148	0.1517	No	No	Stable	Normal	0.14		No
MW-FGD-4	15/15	0%	-	0.4	0.002214	0.04705	0.1584	Yes	No	Stable	Normal	0.40		No
MW-FGD-9	13/13	0%	-	0.59	0.00314	0.05603	0.1114	No	No	Stable	Normal	0.47		No
CCR Appendix-III: Calcium, Total (mg/L)														
MW-FGD-1	15/15	0%	-	100	12.22	3.496	0.03683	No	No	Stable		97.3	658.000	
MW-FGD-6	13/13	0%	-	658	1099	33.15	0.05546	No	No	Increasing		623		
MW-FGD-2	15/15	0%	-	236	1619	40.23	0.253	No	No	Increasing	Normal	201		No
MW-FGD-3	15/15	0%	-	228	838.3	28.95	0.1763	No	No	Increasing	Normal	176		No
MW-FGD-4	15/15	0%	-	355	4156	64.47	0.3058	No	No	Increasing	Normal	355		No
MW-FGD-9	13/13	0%	-	129	148.5	12.19	0.112	No	No	Increasing	Normal	129		No
CCR Appendix-III: Chloride (mg/L)														
MW-FGD-1	15/15	0%	-	72.5	103.9	10.19	0.179	No	No	Increasing		72.5	2440	
MW-FGD-6	13/13	0%	-	2440	228300	477.8	0.2558	Yes	No	Increasing		2400		
MW-FGD-2	15/15	0%	-	85.1	284.9	16.88	0.37	No	No	Increasing	Normal	67.3		No
MW-FGD-3	15/15	0%	-	132	816.4	28.57	0.386	No	No	Increasing	Normal	91.2		No
MW-FGD-4	15/15	0%	-	219	1893	43.51	0.3963	No	No	Increasing	Normal	219		No
MW-FGD-9	13/13	0%	-	42.5	8.436	2.904	0.07434	No	No	Decreasing	Normal	39.1		No
CCR Appendix-III: Fluoride (mg/L)														
MW-FGD-1	18/18	0%	-	0.44	0.001778	0.04217	0.1218	No	No	Stable		0.33	3.400	
MW-FGD-6	16/16	0%	-	3.4	0.4142	0.6436	0.4599	Yes	No	Stable		1.5		
MW-FGD-2	17/18	6%	0.2-0.2	0.41	0.003417	0.05846	0.1722	Yes	No	Stable	Normal	0.26		No
MW-FGD-3	16/18	11%	0.2-0.2	0.53	0.005786	0.07607	0.2559	Yes	No	Stable	Normal	0.22		No
MW-FGD-4	17/18	6%	0.2-0.2	0.46	0.003693	0.06077	0.1781	Yes	No	Stable	Non-parametric	0.29		No
MW-FGD-9	15/15	0%	-	0.56	0.001641	0.04051	0.08016	No	No	Stable	Normal	0.47		No
CCR Appendix-III: pH (lab) (SU)														
MW-FGD-1	15/15	0%	-	7.8	0.04686	0.2165	0.02941	No	No	Stable		7.0	8.1	
MW-FGD-6	13/13	0%	-	7.5	0.04423	0.2103	0.02905	No	No	Decreasing		6.8		
MW-FGD-2	15/15	0%	-	7.8	0.046	0.2145	0.02946	No	No	Decreasing	Normal	6.9		No
MW-FGD-3	15/15	0%	-	7.6	0.04	0.2	0.02778	No	No	Decreasing	Normal	6.8		No
MW-FGD-4	15/15	0%	-	7.6	0.02714	0.1648	0.02288	No	No	Decreasing	Normal	7.2		No
MW-FGD-9	13/13	0%	-	7.6	0.01756	0.1325	0.01806	No	No	Stable	Normal	7.1		No
CCR Appendix-III: Sulfate (mg/L)														
MW-FGD-1	15/15	0%	-	106	28.81	5.367	0.05836	Yes	No	Stable		92.0	3190	
MW-FGD-6	13/13	0%	-	3190	133800	365.7	0.1316	Yes	No	Stable		3090		
MW-FGD-2	15/15	0%	-	528	12310	111	0.3663	No	No	Increasing	Normal	393		No
MW-FGD-3	15/15	0%	-	479	9630	98.13	0.3015	No	No	Increasing	Normal	347		No
MW-FGD-4	15/15	0%	-	899	27770	166.6	0.332	No	No	Increasing	Normal	899		No
MW-FGD-9	13/13	0%	-	271	1374	37.06	0.1875	Yes	No	Stable	Normal	257		No
CCR Appendix-III: Total Dissolved Solids (TDS) (mg/L)														
MW-FGD-1	15/15	0%	-	552	365.5	19.12	0.03673	No	No	Stable		552	9100	
MW-FGD-6	13/13	0%	-	9100	1754000	1325	0.1818	Yes	No	Stable		9100		
MW-FGD-2	15/15	0%	-	1280	43700	209	0.2608	No	No	Increasing	Normal	989		No
MW-FGD-3	15/15	0%	-	1310	38190	195.4	0.2149	No	No	Increasing	Normal	1100		No
MW-FGD-4	15/15	0%	-	2150	146800	383.2	0.3115	No	No	Increasing	Normal	2150		No
MW-FGD-9	13/13	0%	-	708	3506	59.21	0.09584	No	No	Increasing	Normal	701		No

Notes and Abbreviations:

¹ Based on background data collected from 08/24/2016 through 03/04/2021.

CCR = coal combustion residual

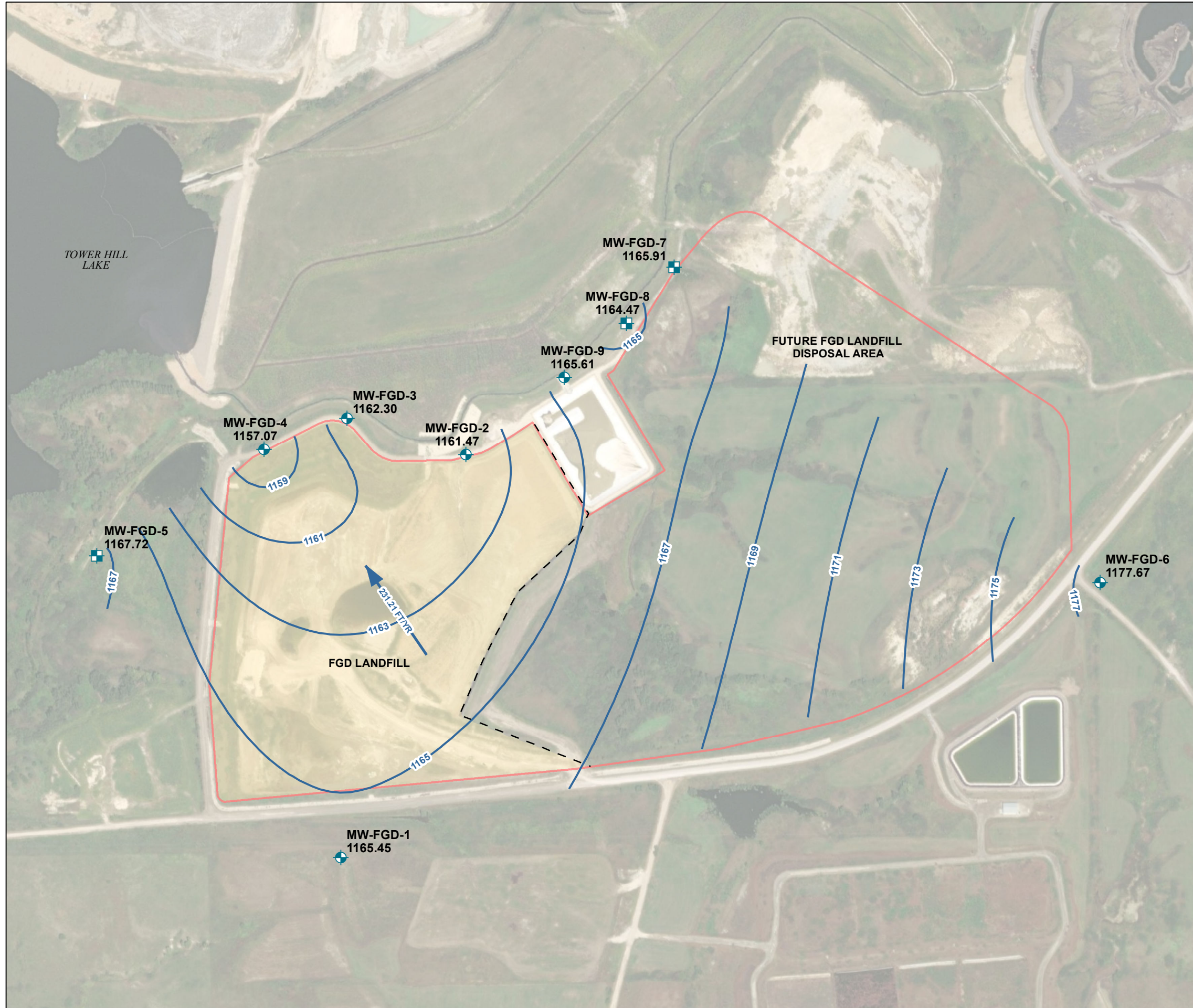
mg/L = milligrams per liter

SSI = statistically significant increase







SU = standard unit

UPL = upper prediction limit

ATTACHMENT 3
Groundwater Potentiometric Maps

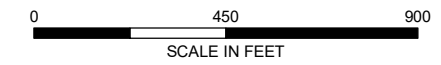


LEGEND

- MW-FGD-6 1168.88** WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), MARCH 2021
-  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 04 MARCH 2021.
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 04 MARCH 2021 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019



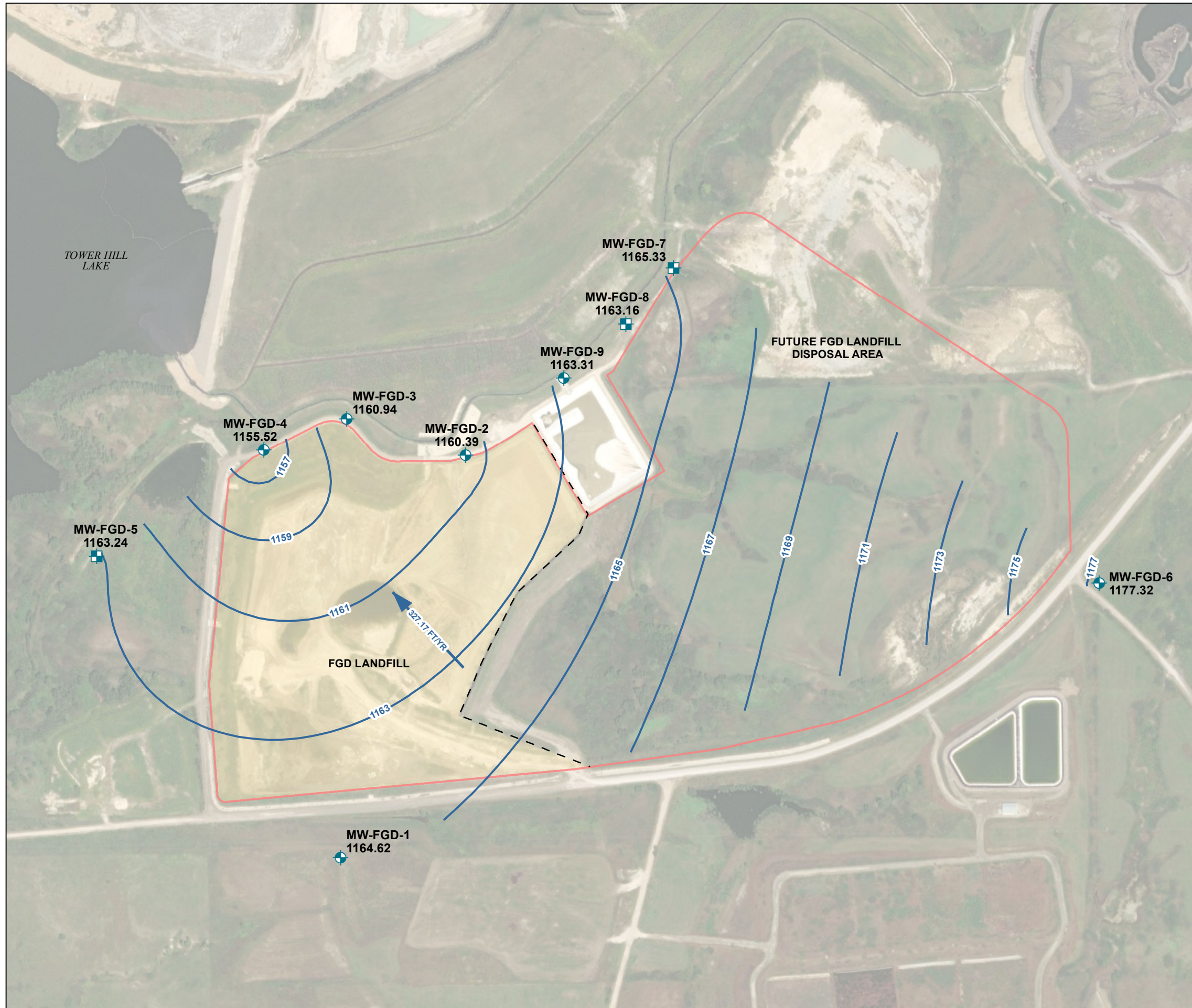
EVERGY KANSAS CENTRAL, INC.
JEFFREY ENERGY CENTER
ST. MARY'S, KANSAS

FGD LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
MARCH 4, 2021



NOVEMBER 2022

FIGURE 2

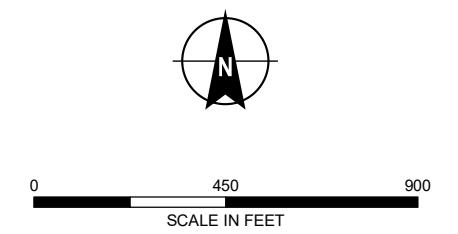


LEGEND

- MW-FGD-6** WELL NAME AND GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (AMSL), SEPTEMBER 2021
- 1168.88**
- 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 14 SEPTEMBER 2021.
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 14 SEPTEMBER 2021 AND THE CONDUCTIVITY VALUES AND EFFECTIVE POROSITY VALUES OBTAINED FROM SLUG TESTS COMPLETED APRIL 2016.
5. AERIAL IMAGERY SOURCE: ESRI, SEPTEMBER 3, 2019



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

**FGD LANDFILL
GROUNDWATER POTENTIOMETRIC
ELEVATION CONTOUR MAP
SEPTEMBER 14, 2021**

evergy NOVEMBER 2022 FIGURE 3