REPORT

2022 Annual Groundwater Monitoring and Corrective Action Report

SCL4A - Utility Waste Landfill Cell 4A, Sioux Energy Center, St. Charles County, Missouri, USA

Submitted to:

Ameren Missouri

1901 Chouteau Avenue, St. Louis, Missouri 63103

Submitted by:

WSP USA Inc.

701 Emerson Road, Suite 250, Creve Coeur, Missouri, 63141

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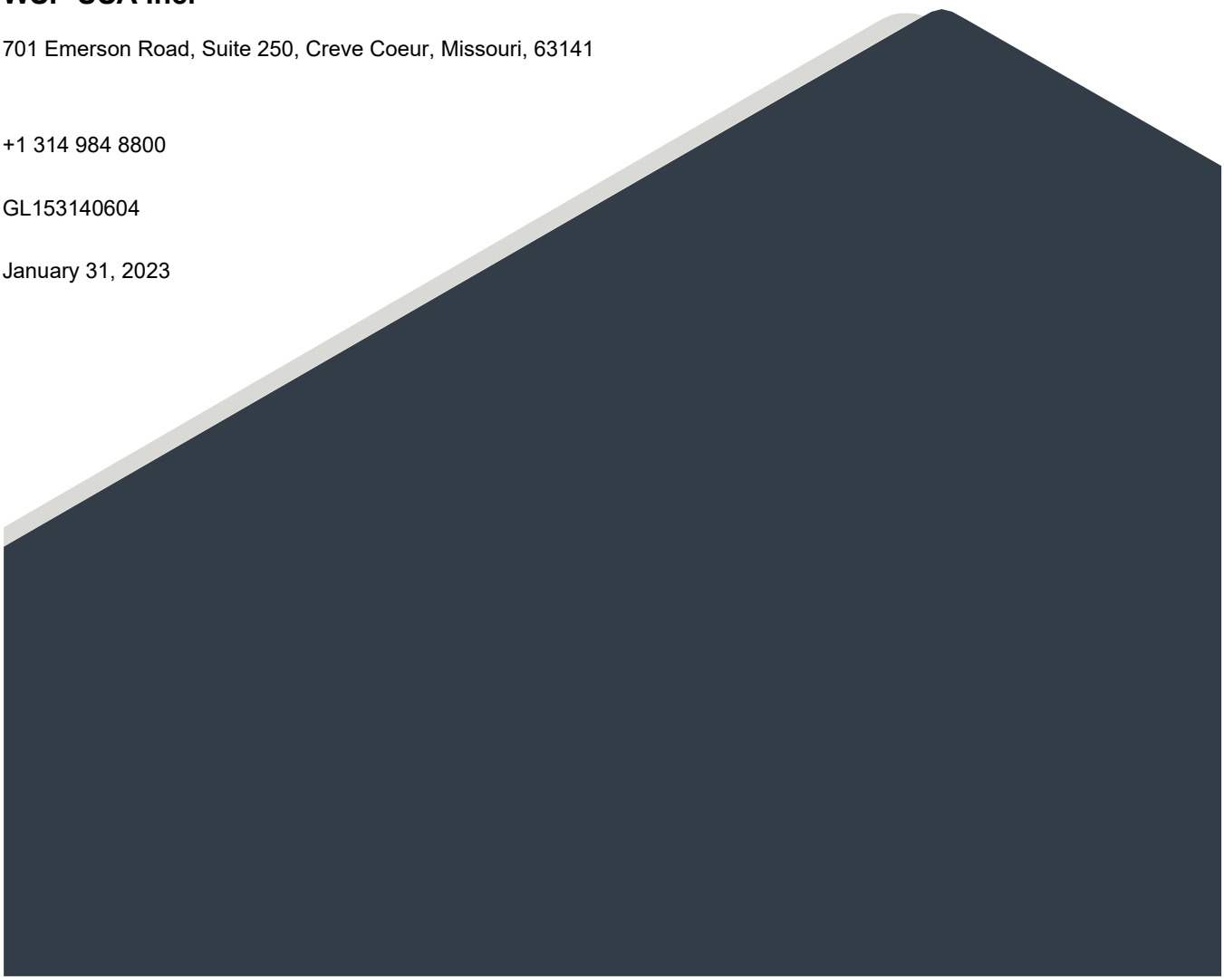
GL153140604

January 31, 2023



EXECUTIVE SUMMARY AND STATUS OF THE SCL4A GROUNDWATER MONITORING PROGRAM

This annual report was developed to meet the requirements of United States Environmental Protection Agency (USEPA) 40 CFR Part 257 “Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities; Final Rule” (the CCR Rule). The CCR Rule requires owners or operators of existing CCR units to produce an Annual Groundwater Monitoring and Corrective Action Report (Annual Report) each year (§ 257.90(e)). Ameren Missouri (Ameren) has determined that the Utility Waste Landfill (UWL) Cell 4A (SCL4A) at the Sioux Energy Center (SEC) is subject to the requirements of the CCR Rule. This Annual Report for the SCL4A describes CCR Rule groundwater monitoring activities from January 1, 2022 through December 31, 2022 including verification results related to late 2021 sampling.

Throughout 2022, the SCL4A CCR unit has been operating under the Detection Monitoring Program (§257.94), which began October 17, 2017. As a part of Detection Monitoring, statistical evaluations are completed after each sampling event to determine if there are any values that represent a Statistically Significant Increase (SSI) over background concentrations. In 2022, an SSI was determined for the March/April 2022 sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

Table 1 - Summary of 2022 SCL4A Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSI	SSI Determination Date	ASD Completion Date
November 2021 Sampling Event	Detection Monitoring, November 8-9, 2021	December 28, 2021	Appendix III, Major Cations and Anions	None	NA	NA
	Verification Sampling, February 8, 2022	February 18, 2022	Detected Appendix III parameters (See Note 1)			
March/April 2022 Sampling Event	Detection Monitoring, March 29 to April 1, 2022	May 25, 2022	Appendix III, Major Cations and Anions	**Sulfate:** TMW-1	August 23, 2022	November 11, 2022
	Verification Sampling, June 6, 2022	June 17, 2022	Detected Appendix III parameters (See Note 1)			
October 2022 Sampling Event	Detection Monitoring, October 18-21, 2022	November 22, 2022	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sampling are completed in 2023.		

Notes:
1) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
2) SSI – Statistically Significant Increase.
3) ASD – Alternative Source Demonstration.
4) NA – Not Applicable.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An

Alternative Source Demonstration (ASD) was prepared for the March/April 2022 Detection Monitoring sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2022 with no new wells being installed or decommissioned.

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1.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the SCL4A. The groundwater monitoring system consists of six (6) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1** and wells are listed on **Table 2** below. No new monitoring wells were installed or decommissioned in 2022 as a part of the CCR Rule monitoring program for the SCL4A. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the SCL4A.

2.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the SCL4A CCR Unit in 2022. **Table 2** provides a summary of the groundwater samples collected in 2022 including the number of samples, the date of sample collection, and the monitoring program.

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells						Monitoring Program
	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3	
	Date of Sample Collection						
February 2022 Verification Sampling	-	-	-	2/8/2022	-	-	Detection
March/April 2022 Sampling Event	3/29/2022	3/29/2022	4/1/2022	3/29/2022	3/29/2022	3/29/2022	Detection
June 2022 Verification Sampling	-	-	-	6/6/2022	-	-	Detection
October 2022 Sampling Event	10/18/2022	10/18/2022	10/21/2022	10/20/2022	10/20/2022	10/20/2022	Detection
Total Number of Samples Collected	2	2	2	4	2	2	NA

Notes:
1.) Detection Monitoring Events tested for Appendix III Parameters.
2.) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
3.) "-" No sample collected.
4.) NA - Not applicable.

2.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 8-9, 2021. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2021 event were not completed until 2022 and are included in this report. Detections of Appendix III analytes triggered a Verification Sampling event, which was completed on February 8, 2022 and did not verify any SSIs. **Table 3** summarizes the results of the statistical

analysis of the November 2021 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in the Statistical Analysis Plan for this site, updates to the statistical limits are completed once four (4) to eight (8) new sample results are available. After statistical analysis of the April 2021 sampling event, the statistical limits used to determine an SSI were updated according to the Statistical Analysis Plan. These updated limits were used for November 2021 and subsequent statistical analyses.

Detection Monitoring samples were collected March 29 to April 1, 2022 and testing was completed for all Appendix III analytes as well as major cation and anions. Statistical analysis of the data determined SSIs. Detections of Appendix III analytes triggered Verification Sampling, which was completed June 6, 2022 and the testing results verified an SSI. **Table 4** summarizes the results of the statistical analysis of the March/April 2022 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An ASD was completed for the SSI and is provided in **Appendix B**. This ASD demonstrates that the SSI at TMW-1 was not caused by the SCL4A CCR Unit and the SCL4A CCR Unit remains in Detection Monitoring.

A Detection Monitoring sampling event was completed October 18-21, 2022 and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the October 2022 data were not completed in 2022 and the results will be provided in the 2023 Annual Report. **Table 5** summarizes the results of the October 2022 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

2.2 Groundwater Elevation, Flow Rate and Direction

To meet the requirements of §257.93(c), water level measurements were taken at all monitoring wells prior to the start of groundwater purging and sampling. Static water levels were measured within a 24-hour period in each monitoring well using an electronic water level indicator.

Groundwater elevations were used to generate potentiometric surface maps included in **Appendix C**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and influenced by seasonal changes in the water level in the adjacent Mississippi and Missouri Rivers, which affect water levels, gradients and flow directions in these water bodies. Groundwater in the alluvial aquifer will generally flow from the higher of the two rivers toward the lower elevation river. Water flows into and out of the alluvial aquifer as a result of fluctuating river water levels that produce “bank recharge” and “bank discharge” conditions. At this facility, groundwater can flow north and south toward the Mississippi and Missouri Rivers, depending on river levels.

Groundwater flow direction and hydraulic gradient at the SEC were estimated for the alluvial aquifer wells using commercially available software to evaluate data since 2016. Results indicate that groundwater flow direction at the SEC is variable due to fluctuating river levels but has often flowed from north to south. The overall net groundwater flow direction in the alluvial aquifer at the SEC was slightly to the southeast due to reversals in flow as a result of variable river levels in the Missouri and Mississippi Rivers. Horizontal gradients calculated by the

program range from 0.00006 to 0.0009 feet/foot with an estimated net annual groundwater movement of approximately four (4) feet per year in the prevailing downgradient direction.

2.3 Sampling Issues

No notable sampling issues were encountered at the SCL4A in 2022.

3.0 ACTIVITIES PLANNED FOR 2023

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2023. Statistical analysis of the October 2022 Detection Monitoring data will be completed in 2023 and included in the 2023 Annual Report.

Tables

Table 3
November 2021 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
November 2021 Detection Monitoring Event											
DATE	NA	11/8/2021	11/8/2021	NA	11/9/2021	NA	11/9/2021	NA	11/9/2021	NA	11/9/2021
pH	SU	6.86	6.99	6.659-7.397	6.71	6.356-7.504	6.94	6.601-7.399	6.97	6.41-7.31	6.96
BORON, TOTAL	µg/L	66.9 J	67.8 J	1,200	210	DQR	69.8 J	104.4	86.9 J	110.6	96.5 J
CALCIUM, TOTAL	µg/L	160,000	137,000	172,812	126,000	119,842	111,000	133,759	115,000	146,661	126,000
CHLORIDE, TOTAL	mg/L	7.4	12.0	85.54	24.5	4.199	1.9 J	4.641	1.8 J	3.1	2.6 J
FLUORIDE, TOTAL	mg/L	ND	0.46	0.3954	0.38	0.4537	0.46 J	0.4229	0.36	0.3773	0.32
SULFATE, TOTAL	mg/L	31.8	31.2	139.9	66.0	49.87	41.5	80.98	46.0	60.9	34.6
TOTAL DISSOLVED SOLIDS	mg/L	534	461	671.3	519	462.8	390	513	423	505.4	449
February 2022 Verification Sampling Event											
DATE	NA						2/8/2022				
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L						0.30 J				
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
6. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
7. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.
8. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.

Prepared By: EMS
Checked By: LMS
Reviewed By: MNH

Table 4
March/April 2022 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
March-April 2022 Detection Monitoring Event											
DATE	NA	3/29/2022	3/29/2022	NA	4/1/2022	NA	3/29/2022	NA	3/29/2022	NA	3/29/2022
pH	SU	6.80	6.94	6.659-7.397	6.94	6.356-7.504	7.10	6.601-7.399	6.95	6.41-7.31	6.92
BORON, TOTAL	µg/L	68.0 J	70.7 J	1,200	184	DQR	76.8 J	104.4	84.9 J	110.6	95.6 J
CALCIUM, TOTAL	µg/L	173,000	147,000	172,812	120,000	119,842	103,000	133,759	124,000	146,661	132,000
CHLORIDE, TOTAL	mg/L	8.5	11.8	85.54	73.5	4.199	3.2	4.641	3.4	3.1	2.4
FLUORIDE, TOTAL	mg/L	0.30	0.36	0.3954	0.35	0.4537	0.36	0.4229	0.34	0.3773	0.30
SULFATE, TOTAL	mg/L	44.9	47.8	139.9	18.6	49.87	64.9	80.98	79.0	60.9	51.0
TOTAL DISSOLVED SOLIDS	mg/L	591	508	671.3	612	462.8	365	513	447	505.4	476
June 2022 Verification Sampling Event											
DATE	NA						6/6/2022				
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L						50.5 J				
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
6. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
7. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: GTM
Checked By: BTT
Reviewed By: MNH

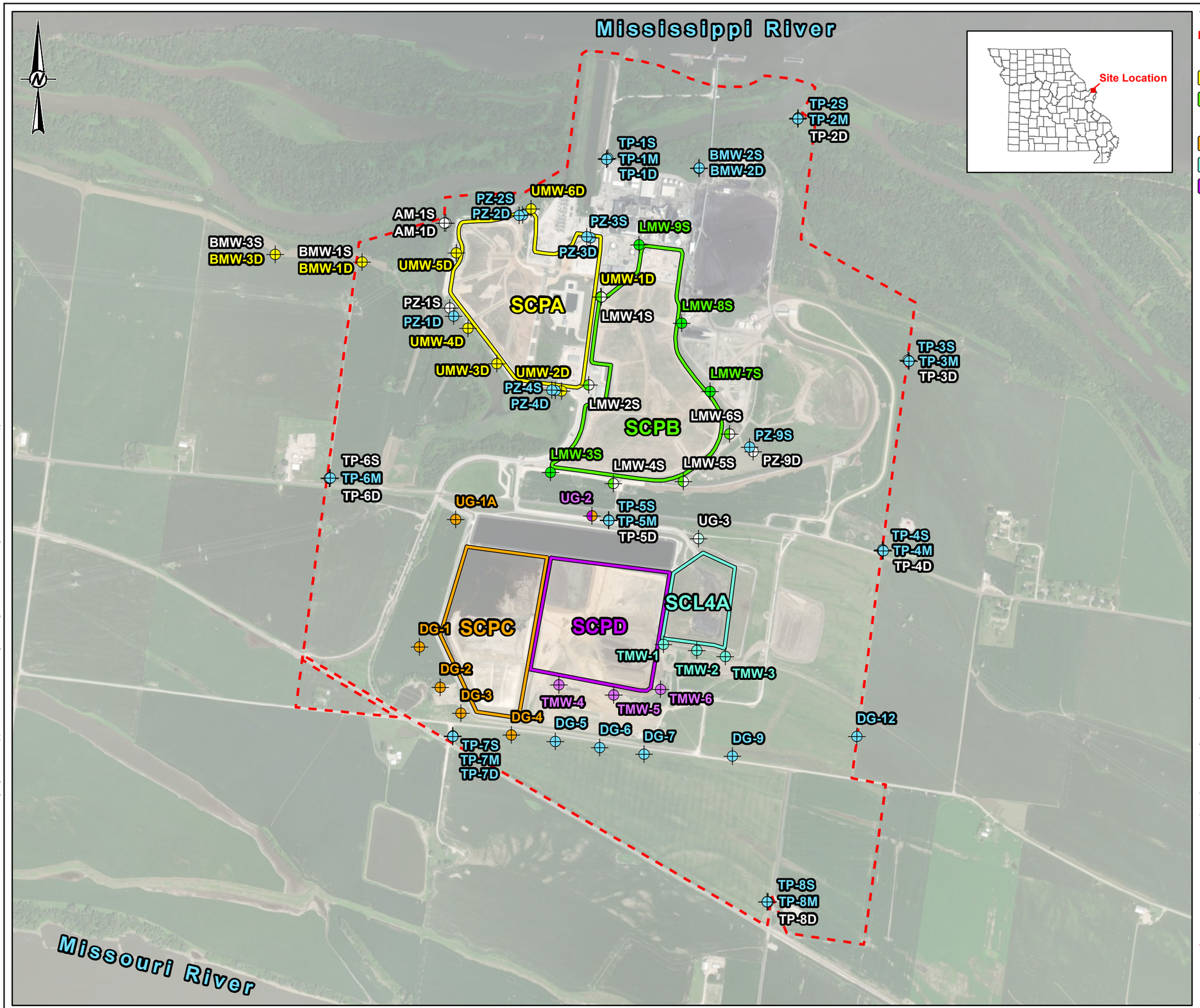
Table 5
October 2022 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS			
ANALYTE	UNITS	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3
October 2022 Detection Monitoring Event							
DATE	NA	10/18/2022	10/18/2022	10/21/2022	10/20/2022	10/20/2022	10/20/2022
pH	SU	6.84	7.01	6.94	7.04	6.89	6.84
BORON, TOTAL	µg/L	73.0 J	84.2 J	302	ND	83.7 J	90.5 J
CALCIUM, TOTAL	µg/L	168,000	131,000	126,000	95,000	118,000	136,000
CHLORIDE, TOTAL	mg/L	9.2	11.7	39.5	2.7 J	3.3 J	2.6
FLUORIDE, TOTAL	mg/L	0.20 J	0.22	ND	0.42	ND	ND
SULFATE, TOTAL	mg/L	61.1	27.8	44.1	53.5	35.8	44.9
TOTAL DISSOLVED SOLIDS	mg/L	711	467	496	407	ND	838 J

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. ND - Constituent was analyzed but was not detected above the Method Detection Limit (MDL) or the adjusted Practical Quantitation Limit (PQL) based on data validation and is considered a non-detect. Values displayed as ND.

Prepared By: EMS
Checked By: JAB
Reviewed By: MNH

Figures



LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Closed Bottom Ash Surface Impoundment
- SCPB - Closed Fly Ash Surface Impoundment

Utility Waste Landfill (UWL)

- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
- SCPD - WFGD Surface Impoundment

Monitoring Well Networks

- Corrective Action Monitoring Well
- SCPA Detection and Assessment Monitoring Well
- SCPB and Corrective Action Monitoring Well
- SCPB Detection Monitoring Well
- SCPC Detection Monitoring Well
- SCPD and SCPC Detection Monitoring Well
- SCPD Detection Monitoring Well
- SCL4A and Corrective Action Monitoring Well
- SCL4A Detection Monitoring Well
- Monitoring Well Used for Water Level Elevation Measurements Only

0 1,000 2,000 3,000

Feet

NOTE(S)

1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2.) WFGD - WET FLUE GAS DESULFURIZATION
3.) CCR - COAL COMBUSTION RESIDUALS

REFERENCE(S)

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND SAMPLE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2022-12-12
DESIGNED	JSI
PREPARED	EMS
REVIEWED	GTM/JSI
APPROVED	MNH

PROJECT NO.	CONTROL	REV.	FIGURE
1531406-04	1240	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B

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PATH: C:\Users\Echneider\Golder Associates\1531406\01.02 - Ameren CCR GW Monitoring Program 2020 - APF (1)\5 Technical Work\0003-SEC\3.5-Figures-Drawings\PRODUCTION\MNA Eval\Figure XX - CCR WELL PROGRAMS - MNA - Copy.mxd PRINTED ON: 2022-12-12 AT: 8:34:56 AM

APPENDIX A

Laboratory Analytical Data

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

February 18, 2022

Jeffrey Ingram
Golder Associates
701 Emerson Road, Suite 250
Saint Louis, MO 63141

RE: Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on February 09, 2022. 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

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

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

CERTIFICATIONS

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

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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Lenexa, KS 66219
(913)599-5665

SAMPLE SUMMARY

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60392269001	**S-TMW-1**	Water	02/08/22 13:20	02/09/22 04:04
60392269002	**S-SCL4A-FB-1**	Water	02/08/22 13:40	02/09/22 04:04
60392269003	**S-SCL4A-DUP-1**	Water	02/08/22 08:00	02/09/22 04:04

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SAMPLE ANALYTE COUNT

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60392269001	**S-TMW-1**	EPA 300.0	SK	1	PASI-K
60392269002	**S-SCL4A-FB-1**	EPA 300.0	SK	1	PASI-K
60392269003	**S-SCL4A-DUP-1**	EPA 300.0	SK	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Sample: S-TMW-1 **Lab ID: 60392269001** Collected: 02/08/22 13:20 Received: 02/09/22 04:04 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.30**	mg/L	0.20	0.12	1		02/16/22 14:42	16984-48-8	

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ANALYTICAL RESULTS

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Sample: S-SCL4A-FB-1 **Lab ID: 60392269002** Collected: 02/08/22 13:40 Received: 02/09/22 04:04 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.12**	mg/L	0.20	0.12	1		02/15/22 13:49	16984-48-8	

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ANALYTICAL RESULTS

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Sample: S-SCL4A-DUP-1 **Lab ID: 60392269003** Collected: 02/08/22 08:00 Received: 02/09/22 04:04 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.38**	mg/L	0.20	0.12	1		02/16/22 13:44	16984-48-8	

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

QC Batch: 771173
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60392269002, 60392269003

METHOD BLANK: 3079295 Matrix: Water
Associated Lab Samples: 60392269002, 60392269003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/15/22 08:48	

METHOD BLANK: 3081055 Matrix: Water
Associated Lab Samples: 60392269002, 60392269003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/16/22 13:17	

METHOD BLANK: 3081506 Matrix: Water
Associated Lab Samples: 60392269002, 60392269003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/17/22 18:53	

LABORATORY CONTROL SAMPLE: 3079296

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

LABORATORY CONTROL SAMPLE: 3081056

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

LABORATORY CONTROL SAMPLE: 3081507

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

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3079297 3079298

Parameter	Units	60392266002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.47	2.5	2.5	2.7	2.8	91	95	80-120	3	15	

SAMPLE DUPLICATE: 3079299

Parameter	Units	60392266002 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.47	0.47	1	15	

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QUALITY CONTROL DATA

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

QC Batch: 771288
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60392269001

METHOD BLANK: 3079655 Matrix: Water
Associated Lab Samples: 60392269001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/16/22 09:04	

METHOD BLANK: 3081504 Matrix: Water
Associated Lab Samples: 60392269001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.12	0.20	0.12	02/17/22 20:30	

LABORATORY CONTROL SAMPLE: 3079656

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

LABORATORY CONTROL SAMPLE: 3081505

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3079657 3079658

Parameter	Units	60392269001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.30	2.5	2.5	2.8	2.9	101	105	80-120	3	15	

MATRIX SPIKE SAMPLE: 3079660

Parameter	Units	60392671001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	ND	25000	26500	106	80-120	

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QUALITY CONTROL DATA

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

SAMPLE DUPLICATE: 3079659

Parameter	Units	60392269001 Result	Dup Result	RPD	Max RPD	Qualifiers
Fluoride	mg/L	0.30	0.30	2	15	

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QUALIFIERS

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

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.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN VS SCL4A
Pace Project No.: 60392269

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60392269001	**S-TMW-1**	EPA 300.0	771288		
60392269002	**S-SCL4A-FB-1**	EPA 300.0	771173		
60392269003	**S-SCL4A-DUP-1**	EPA 300.0	771173		

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WO# : 60392269

60392269

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample C		
	Revision: 2	Effective Date: 01/12/2022	Issued By: Lenexa

Client Name: Golder Associates

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: T299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.5 **Corr. Factor** -0.2 **Corrected** 1.3

Date and initials of person examining contents: AN 2/9/22

Temperature should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	13515 Barrett Parkway Dr., Ste 260
	Ballwin, MO 63021
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman, Brendan Talbert
Purchase Order No.:	
Project Name:	Ameren - Verification Sampling - SCL4A
Project Number:	153140603.0063D

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates Inc
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285, line 1

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride	Fluoride	Sulfate	TDS	Calcium	Boron					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N	N	N	N	N	N		60392269
1	S-TMW-1	WT	G			2-8-22	1320		2	1										/								6BP3U
2	S-SCL4A-FB-1	WT	G				1340		1	1																		2BP3U
3	S-SCL4A-DUP-1	WT	G				—		1	1																		↓
4	S-SCL4A-MS-1	WT	G				1320		1	1																		
5	S-SCL4A-MSD-1	WT	G			↓	1320		↓	↓										↓								
6		WT	G																									
7		WT	G																									
8		WT	G																									
9		WT	G																									
10		WT	G																									
11		WT	G																									
12		WT	G																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Brendan Talbert/Golder	2-8-22	1450	Angelo McK	2/8	1500				
	Angelo ML	2-8	1500	[signature]	2/9	0404	1.3	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Brendan Talbert

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 02/08/22

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

MEMORANDUM

DATE March 1, 2022 **Project No.** 153140604

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL AMuehlfarth@golder.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – VERIFICATION SAMPLING - DATA PACKAGE 60392269

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates USA Inc / WSP
Project Manager: J. Ingram
Project Name: Ameren- Sioux - SCL4A
Project Number: 153140604
Reviewer: A. Muehlfarth
Validation Date: 3/1/2022

Laboratory: Pace Analytical Services - Kansas City
SDG #: 60392269
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names S-TMW-1, S-SCL4A-FB-1, S-SCL4A-DUP-1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			2/8/2022
b) Sampling team indicated?	x			BTT
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?		x		
g) Were any matrix problems noted?		x		

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	S-SCL4A-FB-1 @ S-TMW-1
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☒	☐	☐	
b) Were the proper analytes included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☒	☐	☐	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	S-SCL4A-DUP-1 @ S-TMW-1
b) Were field dup. precision criteria met (note RPD)?	☐	☒	☐	See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	RPD: 2% [<15%]

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	☐	☐	☒	
b) Was the %D within control limits?	☐	☐	☒	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
b) Was MSD accuracy criteria met?	☒	☐	☐	
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
c) Were MS/MSD precision criteria met?	☒	☐	☐	

Comments/Notes:

S-SCL4A-DUP-1 @ S-TMW-1: RPD for fluoride (23.5%) exceeds limit (20%). Results qualified as estimates.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-1	Fluoride	0.30	J	Dup RPD exceeds limit
S-SCL4A-DUP-1	"	0.38	J	"

Signature: Ann Muhlfarth Date: 3/1/2022

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

May 25, 2022

Jeffrey Ingram
Golder Associates
701 Emerson Road, Suite 250
Saint Louis, MO 63141

RE: Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between March 30, 2022 and April 02, 2022. 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
- Pace Analytical Services - Greensburg

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

Pace Analytical Services, LLC
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(913)599-5665

CERTIFICATIONS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Pace Analytical Services 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 #: T104704407-21-15
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60396339001	**S-TMW-1**	Water	03/29/22 11:05	03/30/22 04:23
60396339002	**S-TMW-2**	Water	03/29/22 09:13	03/30/22 04:23
60396339003	**S-TMW-3**	Water	03/29/22 10:15	03/30/22 04:23
60396339004	**S-SCL4A-DUP-1**	Water	03/29/22 08:00	03/30/22 04:23
60396339005	**S-SCL4A-FB-1**	Water	04/01/22 14:20	04/02/22 03:00
60396333016	**S-UG-3**	Water	04/01/22 13:59	04/02/22 03:00
60396337002	**S-BMW-1S**	Water	03/29/22 14:00	03/30/22 04:23
60396337003	**S-BMW-3S**	Water	03/29/22 12:20	03/30/22 04:23

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SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60396339001	**S-TMW-1**	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396339002	**S-TMW-2**	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396339003	**S-TMW-3**	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396339004	**S-SCL4A-DUP-1**	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396339005	**S-SCL4A-FB-1**	EPA 200.7	MRV	7	PASI-K
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60396333016	**S-UG-3**	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	KB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60396337002	**S-BMW-1S**	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K
		EPA 300.0	KB	3	PASI-K
60396337003	**S-BMW-3S**	EPA 200.7	JLH, MRV	7	PASI-K
		EPA 903.1	RPS	1	PASI-PA
		EPA 904.0	JSM	1	PASI-PA
		SM 2320B	LDB	1	PASI-K
		SM 2540C	TNB	1	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 300.0	KB	3	PASI-K

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

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-TMW-1 **Lab ID: 60396339001** Collected: 03/29/22 11:05 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**76.8J**	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:01	7440-42-8	
Calcium	**103000**	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:38	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:01	7439-89-6	
Magnesium	**18200**	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:01	7439-95-4	
Manganese	**254**	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:01	7439-96-5	
Potassium	**4440**	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:01	7440-09-7	
Sodium	**3150**	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:01	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**284**	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**365**	mg/L	5.0	5.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.2**	mg/L	1.0	0.53	1		04/01/22 20:51	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.12	1		04/01/22 20:51	16984-48-8	
Sulfate	**64.9**	mg/L	5.0	2.8	5		04/01/22 21:05	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-TMW-2 **Lab ID: 60396339002** Collected: 03/29/22 09:13 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**84.9J**	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:04	7440-42-8	
Calcium	**124000**	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:12	7440-70-2	M1
Iron	**1140**	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:04	7439-89-6	
Magnesium	**22100**	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:04	7439-95-4	
Manganese	**372**	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:04	7439-96-5	
Potassium	**5310**	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:04	7440-09-7	
Sodium	**3820**	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:04	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**328**	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**447**	mg/L	10.0	10.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.4**	mg/L	1.0	0.53	1		04/01/22 21:18	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	0.12	1		04/01/22 21:18	16984-48-8	
Sulfate	**79.0**	mg/L	5.0	2.8	5		04/01/22 22:14	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-TMW-3 **Lab ID: 60396339003** Collected: 03/29/22 10:15 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**95.6J**	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:23	7440-42-8	
Calcium	**132000**	ug/L	400	143	2	04/04/22 09:58	04/06/22 11:25	7440-70-2	
Iron	**1630**	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:23	7439-89-6	
Magnesium	**23900**	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:23	7439-95-4	
Manganese	**455**	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:23	7439-96-5	
Potassium	**6280**	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:23	7440-09-7	
Sodium	**4620**	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:23	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**406**	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**476**	mg/L	10.0	10.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.4**	mg/L	1.0	0.53	1		04/01/22 23:37	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	0.12	1		04/01/22 23:37	16984-48-8	
Sulfate	**51.0**	mg/L	5.0	2.8	5		04/01/22 23:51	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-SCL4A-DUP-1 **Lab ID: 60396339004** Collected: 03/29/22 08:00 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**75.5J**	ug/L	100	7.1	1	04/04/22 09:58	04/06/22 11:27	7440-42-8	
Calcium	**107000**	ug/L	400	143	2	04/04/22 09:58	04/06/22 12:01	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/04/22 09:58	04/06/22 11:27	7439-89-6	
Magnesium	**18100**	ug/L	50.0	11.7	1	04/04/22 09:58	04/06/22 11:27	7439-95-4	
Manganese	**249**	ug/L	5.0	1.1	1	04/04/22 09:58	04/06/22 11:27	7439-96-5	
Potassium	**4420**	ug/L	500	224	1	04/04/22 09:58	04/06/22 11:27	7440-09-7	
Sodium	**3250**	ug/L	500	166	1	04/04/22 09:58	04/06/22 11:27	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**276**	mg/L	20.0	4.6	1		04/05/22 11:07		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**357**	mg/L	10.0	10.0	1		03/31/22 14:25		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.1**	mg/L	1.0	0.53	1		04/02/22 00:05	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	0.12	1		04/02/22 00:05	16984-48-8	
Sulfate	**65.7**	mg/L	5.0	2.8	5		04/02/22 00:19	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-SCL4A-FB-1 **Lab ID: 60396339005** Collected: 04/01/22 14:20 Received: 04/02/22 03:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**<7.1**	ug/L	100	7.1	1	04/07/22 13:51	04/09/22 15:57	7440-42-8	
Calcium	**<71.3**	ug/L	200	71.3	1	04/07/22 13:51	04/09/22 15:57	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/07/22 13:51	04/09/22 15:57	7439-89-6	
Magnesium	**15.4J**	ug/L	50.0	11.7	1	04/07/22 13:51	04/09/22 15:57	7439-95-4	
Manganese	**<1.1**	ug/L	5.0	1.1	1	04/07/22 13:51	04/09/22 15:57	7439-96-5	
Potassium	**<224**	ug/L	500	224	1	04/07/22 13:51	04/09/22 15:57	7440-09-7	
Sodium	**<166**	ug/L	500	166	1	04/07/22 13:51	04/10/22 14:28	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<4.6**	mg/L	20.0	4.6	1		04/08/22 12:27		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		04/07/22 16:12		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**<0.53**	mg/L	1.0	0.53	1		04/08/22 11:12	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		04/08/22 11:12	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		04/08/22 11:12	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-UG-3 **Lab ID: 60396333016** Collected: 04/01/22 13:59 Received: 04/02/22 03:00 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**184**	ug/L	100	7.1	1	04/07/22 16:00	04/09/22 20:13	7440-42-8	
Calcium	**120000**	ug/L	400	143	2	04/07/22 16:00	04/11/22 20:09	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/07/22 16:00	04/09/22 20:13	7439-89-6	
Magnesium	**24500**	ug/L	50.0	11.7	1	04/07/22 16:00	04/09/22 20:13	7439-95-4	
Manganese	**1120**	ug/L	5.0	1.1	1	04/07/22 16:00	04/09/22 20:13	7439-96-5	
Potassium	**5970**	ug/L	500	224	1	04/07/22 16:00	04/11/22 15:19	7440-09-7	
Sodium	**52900**	ug/L	500	166	1	04/07/22 16:00	04/11/22 15:19	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**393**	mg/L	20.0	4.6	1		04/13/22 19:14		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**612**	mg/L	10.0	10.0	1		04/07/22 16:12		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**73.5**	mg/L	10.0	5.3	10		04/15/22 18:49	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	0.12	1		04/15/22 18:06	16984-48-8	
Sulfate	**18.6**	mg/L	1.0	0.55	1		04/15/22 18:06	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-BMW-1S **Lab ID: 60396337002** Collected: 03/29/22 14:00 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**68.0J**	ug/L	100	7.1	1	04/07/22 13:51	04/09/22 16:38	7440-42-8	
Calcium	**173000**	ug/L	400	143	2	04/07/22 13:51	04/11/22 18:22	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/07/22 13:51	04/09/22 16:38	7439-89-6	
Magnesium	**30000**	ug/L	50.0	11.7	1	04/07/22 13:51	04/09/22 16:38	7439-95-4	
Manganese	**675**	ug/L	5.0	1.1	1	04/07/22 13:51	04/09/22 16:38	7439-96-5	
Potassium	**470J**	ug/L	500	224	1	04/07/22 13:51	04/09/22 16:38	7440-09-7	
Sodium	**4900**	ug/L	1000	332	2	04/07/22 13:51	04/11/22 18:22	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**505**	mg/L	20.0	4.6	1		04/05/22 10:05		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**591**	mg/L	10.0	10.0	1		04/01/22 17:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.5**	mg/L	1.0	0.53	1		04/01/22 18:04	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	0.12	1		04/01/22 18:04	16984-48-8	
Sulfate	**44.9**	mg/L	5.0	2.8	5		04/01/22 18:18	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-BMW-3S **Lab ID: 60396337003** Collected: 03/29/22 12:20 Received: 03/30/22 04:23 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**70.7J**	ug/L	100	7.1	1	04/07/22 13:51	04/09/22 16:40	7440-42-8	
Calcium	**147000**	ug/L	400	143	2	04/07/22 13:51	04/11/22 18:29	7440-70-2	
Iron	**<21.1**	ug/L	50.0	21.1	1	04/07/22 13:51	04/09/22 16:40	7439-89-6	
Magnesium	**24100**	ug/L	50.0	11.7	1	04/07/22 13:51	04/09/22 16:40	7439-95-4	
Manganese	**215**	ug/L	5.0	1.1	1	04/07/22 13:51	04/09/22 16:40	7439-96-5	
Potassium	**569**	ug/L	500	224	1	04/07/22 13:51	04/09/22 16:40	7440-09-7	
Sodium	**6270**	ug/L	500	166	1	04/07/22 13:51	04/10/22 15:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**428**	mg/L	20.0	4.6	1		04/05/22 10:05		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**508**	mg/L	10.0	10.0	1		04/01/22 17:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**11.8**	mg/L	1.0	0.53	1		04/01/22 18:32	16887-00-6	
Fluoride	**0.36**	mg/L	0.20	0.12	1		04/01/22 18:32	16984-48-8	
Sulfate	**47.8**	mg/L	5.0	2.8	5		04/01/22 18:46	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 779353
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396339001, 60396339002, 60396339003, 60396339004

METHOD BLANK: 3108936 Matrix: Water
Associated Lab Samples: 60396339001, 60396339002, 60396339003, 60396339004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/05/22 18:01	
Calcium	ug/L	<71.3	200	71.3	04/05/22 18:01	
Iron	ug/L	<21.1	50.0	21.1	04/05/22 18:01	
Magnesium	ug/L	<11.7	50.0	11.7	04/05/22 18:01	
Manganese	ug/L	<1.1	5.0	1.1	04/05/22 18:01	
Potassium	ug/L	<224	500	224	04/05/22 18:01	
Sodium	ug/L	<166	500	166	04/05/22 18:01	

LABORATORY CONTROL SAMPLE: 3108937

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	950	95	85-115	
Calcium	ug/L	10000	9980	100	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9570	96	85-115	
Sodium	ug/L	10000	9750	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3108938 3108939

Parameter	Units	60396339002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	84.9J	1000	1000	1080	1080	100	100	70-130	0	20	
Calcium	ug/L	124000	10000	10000	133000	127000	89	37	70-130	4	20	M1
Iron	ug/L	1140	10000	10000	11300	11200	102	100	70-130	1	20	
Magnesium	ug/L	22100	10000	10000	30500	30000	84	79	70-130	2	20	
Manganese	ug/L	372	1000	1000	1390	1380	102	101	70-130	1	20	
Potassium	ug/L	5310	10000	10000	15900	15800	106	105	70-130	1	20	
Sodium	ug/L	3820	10000	10000	14600	14600	107	108	70-130	0	20	

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

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780187
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396337002, 60396337003, 60396339005

METHOD BLANK: 3111909 Matrix: Water
Associated Lab Samples: 60396337002, 60396337003, 60396339005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/09/22 15:48	
Calcium	ug/L	<71.3	200	71.3	04/09/22 15:48	
Iron	ug/L	<21.1	50.0	21.1	04/09/22 15:48	
Magnesium	ug/L	<11.7	50.0	11.7	04/09/22 15:48	
Manganese	ug/L	<1.1	5.0	1.1	04/09/22 15:48	
Potassium	ug/L	<224	500	224	04/09/22 15:48	
Sodium	ug/L	<166	500	166	04/12/22 13:11	

LABORATORY CONTROL SAMPLE: 3111910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	978	98	85-115	
Calcium	ug/L	10000	9160	92	85-115	
Iron	ug/L	10000	9920	99	85-115	
Magnesium	ug/L	10000	9930	99	85-115	
Manganese	ug/L	1000	963	96	85-115	
Potassium	ug/L	10000	11100	111	85-115	
Sodium	ug/L	10000	11000	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3111911 3111912

Parameter	Units	60396338004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	93.3J	1000	1000	1090	1100	100	101	70-130	1	20	
Calcium	ug/L	163000	10000	10000	171000	172000	72	86	70-130	1	20	
Iron	ug/L	2250	10000	10000	12100	12100	99	98	70-130	1	20	
Magnesium	ug/L	28300	10000	10000	36300	35800	80	75	70-130	1	20	
Manganese	ug/L	1110	1000	1000	2100	2080	99	96	70-130	1	20	
Potassium	ug/L	6150	10000	10000	17900	17700	117	116	70-130	1	20	
Sodium	ug/L	5150	10000	10000	16800	16700	116	116	70-130	0	20	

MATRIX SPIKE SAMPLE: 3111913

Parameter	Units	60396338008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	113	1000	1140	103	70-130	
Calcium	ug/L	97300	10000	119000	216	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

MATRIX SPIKE SAMPLE: 3111913

Parameter	Units	60396338008 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	<21.1	10000	9940	99	70-130	
Magnesium	ug/L	21400	10000	30000	87	70-130	
Manganese	ug/L	14.8	1000	995	98	70-130	
Potassium	ug/L	5150	10000	17700	126	70-130	
Sodium	ug/L	43400	10000	56900	135	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780254
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60396333016

METHOD BLANK: 3112107 Matrix: Water
Associated Lab Samples: 60396333016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<7.1	100	7.1	04/20/22 18:03	
Calcium	ug/L	<71.3	200	71.3	04/09/22 19:27	
Iron	ug/L	<21.1	50.0	21.1	04/09/22 19:27	
Magnesium	ug/L	13.2J	50.0	11.7	04/09/22 19:27	
Manganese	ug/L	1.3J	5.0	1.1	04/09/22 19:27	
Potassium	ug/L	<224	500	224	04/09/22 19:27	
Sodium	ug/L	<166	500	166	04/09/22 19:27	

LABORATORY CONTROL SAMPLE: 3112108

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	999	100	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10400	104	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10600	106	85-115	
Sodium	ug/L	10000	11000	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3112111 3112112

Parameter	Units	60396333011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	87.1J	1000	1000	1100	1100	101	101	70-130	0	20	
Calcium	ug/L	105000	10000	10000	118000	114000	132	93	70-130	3	20	M1
Iron	ug/L	6090	10000	10000	16300	16400	102	103	70-130	1	20	
Magnesium	ug/L	26000	10000	10000	33800	33900	78	79	70-130	0	20	
Manganese	ug/L	378	1000	1000	1370	1370	99	100	70-130	0	20	
Potassium	ug/L	3480	10000	10000	13900	14300	105	108	70-130	2	20	
Sodium	ug/L	9380	10000	10000	19900	19900	105	106	70-130	0	20	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 779612 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396337002, 60396337003, 60396339001, 60396339002, 60396339003, 60396339004

METHOD BLANK: 3109702 Matrix: Water
Associated Lab Samples: 60396337002, 60396337003, 60396339001, 60396339002, 60396339003, 60396339004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	04/05/22 09:48	

LABORATORY CONTROL SAMPLE: 3109703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	490	98	90-110	

SAMPLE DUPLICATE: 3109704

Parameter	Units	60395733004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	154	152	1	10	

SAMPLE DUPLICATE: 3109705

Parameter	Units	60396339002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	328	330	0	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780151
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60396339005

METHOD BLANK: 3111773 Matrix: Water
Associated Lab Samples: 60396339005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	04/08/22 11:08	

LABORATORY CONTROL SAMPLE: 3111774

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	490	98	90-110	

SAMPLE DUPLICATE: 3111775

Parameter	Units	60396168004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	604	603	0	10	

SAMPLE DUPLICATE: 3112713

Parameter	Units	60396338004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	460	461	0	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780896
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60396333016

METHOD BLANK: 3114512 Matrix: Water
Associated Lab Samples: 60396333016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	04/13/22 16:56	

LABORATORY CONTROL SAMPLE: 3114513

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	491	98	90-110	

SAMPLE DUPLICATE: 3114516

Parameter	Units	60396332004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	95.3	95.7	0	10	

SAMPLE DUPLICATE: 3114517

Parameter	Units	60396333011 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	291	288	1	10	

SAMPLE DUPLICATE: 3114518

Parameter	Units	60396735001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	437	442	1	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 778990
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396339001, 60396339002, 60396339003, 60396339004

METHOD BLANK: 3107469 Matrix: Water
Associated Lab Samples: 60396339001, 60396339002, 60396339003, 60396339004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	03/31/22 14:23	

LABORATORY CONTROL SAMPLE: 3107470

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120	

SAMPLE DUPLICATE: 3107471

Parameter	Units	60396339004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	357	366	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 779231
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396337002, 60396337003

METHOD BLANK: 3108391 Matrix: Water
Associated Lab Samples: 60396337002, 60396337003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/01/22 17:19	

LABORATORY CONTROL SAMPLE: 3108392

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	966	97	80-120	

SAMPLE DUPLICATE: 3108393

Parameter	Units	60396337001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	621	613	1	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780233
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396333016, 60396339005

METHOD BLANK: 3112059 Matrix: Water
Associated Lab Samples: 60396333016, 60396339005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/07/22 16:11	

LABORATORY CONTROL SAMPLE: 3112060

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	972	97	80-120	

SAMPLE DUPLICATE: 3112061

Parameter	Units	60396333011 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	534	515	4	10	

SAMPLE DUPLICATE: 3112062

Parameter	Units	60396338004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	578	589	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 779018
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60396337002, 60396337003, 60396339001, 60396339002, 60396339003, 60396339004

METHOD BLANK: 3107513 Matrix: Water
Associated Lab Samples: 60396337002, 60396337003, 60396339001, 60396339002, 60396339003, 60396339004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	04/02/22 01:00	
Fluoride	mg/L	<0.12	0.20	0.12	04/02/22 01:00	
Sulfate	mg/L	<0.55	1.0	0.55	04/02/22 01:00	

LABORATORY CONTROL SAMPLE: 3107514

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.5	102	90-110	
Sulfate	mg/L	5	4.8	97	90-110	

MATRIX SPIKE SAMPLE: 3107517

Parameter	Units	60396337001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	33.4	50	77.9	89	80-120	
Fluoride	mg/L	<0.12	2.5	2.8	108	80-120	
Sulfate	mg/L	65.0	50	114	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3107518 3107519

Parameter	Units	60396339002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.4	5	5	8.0	8.0	92	92	80-120	0	15	
Fluoride	mg/L	0.34	2.5	2.5	3.0	3.0	105	106	80-120	1	15	
Sulfate	mg/L	79.0	25	25	105	108	106	115	80-120	2	15	E

SAMPLE DUPLICATE: 3107520

Parameter	Units	60396339002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	3.4	3.4	0	15	
Fluoride	mg/L	0.34	0.35	1	15	
Sulfate	mg/L	79.0	78.9	0	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 780287
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60396339005

METHOD BLANK: 3112201 Matrix: Water
Associated Lab Samples: 60396339005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	04/08/22 10:44	
Fluoride	mg/L	<0.12	0.20	0.12	04/08/22 10:44	
Sulfate	mg/L	<0.55	1.0	0.55	04/08/22 10:44	

LABORATORY CONTROL SAMPLE: 3112202

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	2.6	105	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3112203 3112204

Parameter	Units	60396338004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	8.5	5	5	13.4	13.4	97	98	80-120	0	15	
Fluoride	mg/L	0.38	2.5	2.5	3.0	3.0	103	107	80-120	3	15	
Sulfate	mg/L	63.9	25	25	87.8	86.6	95	91	80-120	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3112206 3112207

Parameter	Units	60396332004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	15.5	5	5	20.8	20.8	105	105	80-120	0	15	E
Fluoride	mg/L	0.77	2.5	2.5	3.5	3.5	110	111	80-120	1	15	
Sulfate	mg/L	773	500	500	1300	1290	104	104	80-120	0	15	

SAMPLE DUPLICATE: 3112205

Parameter	Units	60396338004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	8.5	8.5	0	15	
Fluoride	mg/L	0.38	0.37	1	15	
Sulfate	mg/L	63.9	62.0	3	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

SAMPLE DUPLICATE: 3112208

Parameter	Units	60396332004 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	15.5	15.5	0	15	
Fluoride	mg/L	0.77	0.78	2	15	
Sulfate	mg/L	773	781	1	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 781385
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60396333016

METHOD BLANK: 3116408 Matrix: Water
Associated Lab Samples: 60396333016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	04/15/22 13:11	
Fluoride	mg/L	<0.12	0.20	0.12	04/15/22 13:11	
Sulfate	mg/L	<0.55	1.0	0.55	04/15/22 13:11	

METHOD BLANK: 3119073 Matrix: Water
Associated Lab Samples: 60396333016

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.66J	1.0	0.53	04/18/22 09:21	
Fluoride	mg/L	<0.12	0.20	0.12	04/18/22 09:21	
Sulfate	mg/L	<0.55	1.0	0.55	04/18/22 09:21	

LABORATORY CONTROL SAMPLE: 3116409

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 3119074

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3116410 3116411

Parameter	Units	60397013002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	82.8	25	25	115	106	130	95	80-120	8	15	E,M1
Fluoride	mg/L	ND	12.5	12.5	16.3	13.2	130	106	80-120	21	15	M1,R1
Sulfate	mg/L	41.0	25	25	72.3	65.1	125	97	80-120	10	15	M1

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-UG-3 **Lab ID: 60396333016** Collected: 04/01/22 13:59 Received: 04/02/22 03:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.372 ± 0.429 (0.697) C:NA T:86%**	pCi/L	04/28/22 13:00	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.975 ± 0.457 (0.768) C:71% T:86%**	pCi/L	04/20/22 16:29	15262-20-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-BMW-1S **Lab ID: 60396337002** Collected: 03/29/22 14:00 Received: 03/30/22 04:23 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.283 ± 0.264 (0.347) C:NA T:88%**	pCi/L	04/28/22 13:28	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.467 ± 0.635 (1.36) C:76% T:88%**	pCi/L	04/20/22 21:46	15262-20-1	

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ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Sample: S-BMW-3S **Lab ID: 60396337003** Collected: 03/29/22 12:20 Received: 03/30/22 04:23 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0831 ± 0.379 (0.225) C:NA T:93%**	pCi/L	04/27/22 16:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**-0.0142 ± 0.558 (1.30) C:72% T:86%**	pCi/L	04/26/22 16:48	15262-20-1	

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 496688
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60396333016, 60396337002

METHOD BLANK: 2403505 Matrix: Water
Associated Lab Samples: 60396333016, 60396337002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.670 ± 0.346 (0.587) C:76% T:90%	pCi/L	04/20/22 16:30	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 497782
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60396337003

METHOD BLANK: 2409269 Matrix: Water
Associated Lab Samples: 60396337003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.264 ± 0.311 (0.655) C:80% T:88%	pCi/L	04/26/22 13:21	

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

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 496687
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60396333016, 60396337002

METHOD BLANK: 2403504 Matrix: Water
Associated Lab Samples: 60396333016, 60396337002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0453 ± 0.235 (0.544) C:NA T:90%	pCi/L	04/28/22 12:28	

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.

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QUALITY CONTROL - RADIOCHEMISTRY

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

QC Batch: 497781
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 60396337003

METHOD BLANK: 2409265 Matrix: Water
Associated Lab Samples: 60396337003

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0680 ± 0.310 (0.184) C:NA T:94%	pCi/L	04/27/22 16:06	

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

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QUALIFIERS

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

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.

Act - Activity

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

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SEC SCL4A
Pace Project No.: 60396339

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60396337002	S-BMW-1S	EPA 200.7	780187	EPA 200.7	780329
60396337003	S-BMW-3S	EPA 200.7	780187	EPA 200.7	780329
60396339001	S-TMW-1	EPA 200.7	779353	EPA 200.7	779414
60396339002	S-TMW-2	EPA 200.7	779353	EPA 200.7	779414
60396339003	S-TMW-3	EPA 200.7	779353	EPA 200.7	779414
60396339004	S-SCL4A-DUP-1	EPA 200.7	779353	EPA 200.7	779414
60396333016	S-UG-3	EPA 200.7	780254	EPA 200.7	780345
60396339005	S-SCL4A-FB-1	EPA 200.7	780187	EPA 200.7	780329
60396337002	S-BMW-1S	EPA 903.1	496687		
60396337003	S-BMW-3S	EPA 903.1	497781		
60396333016	S-UG-3	EPA 903.1	496687		
60396337002	S-BMW-1S	EPA 904.0	496688		
60396337003	S-BMW-3S	EPA 904.0	497782		
60396333016	S-UG-3	EPA 904.0	496688		
60396337002	S-BMW-1S	SM 2320B	779612		
60396337003	S-BMW-3S	SM 2320B	779612		
60396339001	S-TMW-1	SM 2320B	779612		
60396339002	S-TMW-2	SM 2320B	779612		
60396339003	S-TMW-3	SM 2320B	779612		
60396339004	S-SCL4A-DUP-1	SM 2320B	779612		
60396333016	S-UG-3	SM 2320B	780896		
60396339005	S-SCL4A-FB-1	SM 2320B	780151		
60396337002	S-BMW-1S	SM 2540C	779231		
60396337003	S-BMW-3S	SM 2540C	779231		
60396339001	S-TMW-1	SM 2540C	778990		
60396339002	S-TMW-2	SM 2540C	778990		
60396339003	S-TMW-3	SM 2540C	778990		
60396339004	S-SCL4A-DUP-1	SM 2540C	778990		
60396333016	S-UG-3	SM 2540C	780233		
60396339005	S-SCL4A-FB-1	SM 2540C	780233		
60396337002	S-BMW-1S	EPA 300.0	779018		
60396337003	S-BMW-3S	EPA 300.0	779018		
60396339001	S-TMW-1	EPA 300.0	779018		
60396339002	S-TMW-2	EPA 300.0	779018		
60396339003	S-TMW-3	EPA 300.0	779018		
60396339004	S-SCL4A-DUP-1	EPA 300.0	779018		
60396333016	S-UG-3	EPA 300.0	781385		
60396339005	S-SCL4A-FB-1	EPA 300.0	780287		

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WO# : 60396339

60396339

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample Con		
	Revision: 2	Effective Date: 01/12/2022	Issued By: Lenexa

Client Name: Holder

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: T299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** 1.1 **Corr. Factor** -0.2 **Corrected** 0.9

Date and initials of person examining contents: DN 3/30/22

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☑No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:** 55192	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	Golder Associates
Address:	701 Emerson Road, Suite 250 Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schneider, Ryan Feldman, Brendan Talbert
Purchase Order No.:	COC #11
Project Name:	Ameren Sioux Energy Center SCL4A
Project Number:	153140604. 0003

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates USA, Inc.
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	App III and Cat/An Metals	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N		60396339
1	S-TMW-1	WT	G			3/29/22	1105		2	1		1							/	/	/	/		BP3N BP1U
2	S-TMW-2	WT	G			"	0913		"	"		"							"	"	"	"		3BP3N 3BP1U
3	S-TMW-3	WT	G			"	1015		"	"		"							"	"	"	"		↓ ↓
4	S-UG-3	WT	G																					
5	S-SCL4A-DUP-1	WT	G			3/29/22	—		2	1		1							/	/	/	/		↓ ↓
6	S-SCL4A-FB-1	WT	G																					
7	S-SCL4A-MS-1	WT	G			3/29/22	0913		2	1		1							/	/	/	/		
8	S-SCL4A-MSD-1	WT	G			"	0913		"	"		"							"	"	"	"		
9	S-BMW-1S	WT	G				1400																	
10	S-BMW-3S	WT	G			"	1220		"	"		"							"	"	"	"		
11		WT	G																					
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: B, Ca, Fe, Mn, Mg, K, Na	[illegible] Golder	3/29/22	1630	Angela McManus	3/29	1630				
	Angela McManus	3/29	1630	[signature]	3/30	0423	0.9	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 03/29/22

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

Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample Conditic		
	Revision: 2	Effective Date: 01/12/2022	Issued

WO# : 60396339

60396339

Client Name: Golder Assoc

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

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

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

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

Thermometer Used: T299 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): **As-read** _____ **Corr. Factor** -0.2 **Corrected** _____

Date and initials of person examining contents: VBB 4/2/22

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	Did not recieve Volume for S-UG-3
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WA	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) **LOT#:** 55192	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	Golder Associates
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schneider, Ryan Feldman, Brendan Talbert
Purchase Order No.:	COC #11
Project Name:	Ameren Sioux Energy Center SCL4A
Project Number:	153140604. 0003

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates USA, Inc.
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	App III and Cat/An Metals	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Y/N	N	N	N	N		60396339
1	S-TMW-1	WT	G																					
2	S-TMW-2	WT	G																					
3	S-TMW-3	WT	G																					
4	S-UG-3	WT	G			4/1/22	1359		2	1		1							X	X	X	X		
5	S-SCL4A-DUP-1	WT	G																					
6	S-SCL4A-FB-1	WT	G			4/1/22	1420		2	1		1							X	X	X	X		
7	S-SCL4A-MS-1	WT	G																					
8	S-SCL4A-MSD-1	WT	G																					
9	S-BMW-1S	WT	G																					
10	S-BMW-3S	WT	G																					
11		WT	G																					
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*EPA 200.7: B, Ca, Fe, Mn, Mg, K, Na	Eric Schneider/Golder	4/1/22	1640	Vesta Pace	4/2/22	0300	2.2	Y	Y	Y
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 04/01/22

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

MEMORANDUM

DATE June 21, 2022 **Project No.** 153140604.0003

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL ann.muehlfarth@wsp.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING - DATA PACKAGE 60396339

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).

701 Emerson Road, Suite 250,
Creve Coeur, Missouri, USA 63141

T: +1 314 984-8800 F: +1 314 984-8770

golder.com

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder / WSP
Project Manager: J. Ingram
Project Name: Ameren SEC - SCL4A
Project Number: 153140604.0003
Reviewer: A. Muehlfarth
Validation Date: 6/21/2022

Laboratory: Pace Analytical Services
SDG #: 60396339
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-FB-1, S-UG-3, S-BMW-1S, S-BMW-3S

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			3/29/2022 - 4/1/2022
b) Sampling team indicated?	x			BTT/EMS/GTM
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See Notes
b) Were analytes detected in the field blank(s)?	x			See Notes
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			S-SCL4A-DUP-1 @ S-TMW-1
b) Were field dup. precision criteria met (note RPD)?	x			Max RPD: 5.7% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?	x			Max RPD: 4% [<10%]

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?			x	
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		See Notes
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?	x			
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?		x		See Notes

Comments/Notes:

Calcium, sulfate, and sodium analyzed at a dilution in several samples. No qualification necessary.

Blanks:

3112107: Magnesium (13.2J), manganese (1.3J). Associated with sample -33016. Results >RL and 10x blank, no qualification necessary.

3119073: Chloride (0.66J). Associated with sample -33016. Result >RL and 10x blank, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

2403505: Radium-228 (0.670 ± 0.346). Associate with samples -33016, -37002. Results qualified as estimates. NDs not qualified.

S-SCL4A-FB-1 @ S-UG-3: Magnesium (15.4J). Result >RL and 10x blank, no qualification necessary.

MS/MSD:

3108938/3108939: MSD % recovery low for calcium. Associated with sample -39002. Only 1 QC indicator out, no qualification necessary.

3111913: MS % recovery high for calcium. MS performed on unrelated sample, no qualification necessary.

3111913: MS % recovery high for sodium. MS performed on unrelated sample, no qualification necessary.

3112111/3112112: MS % recovery high for calcium. MS performed on unrelated sample, no qualification necessary.

3116410/3116411: MS % recovery high for chloride and sulfate. MS % recovery high and RPD high for fluoride. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UG-3	Radium-228	0.975 ± 0.457	J	Detected in MB

Signature: Ann Muehlfarth Date: 6/21/2022

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

June 17, 2022

Jeffrey Ingram
Golder Associates
701 Emerson Road, Suite 250
Saint Louis, MO 63141

RE: Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on June 08, 2022. 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

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Ryan Feldmann, Golder
Mark Haddock, Golder Associates
Eric Schneider, Golder Associates
Brendan Talbert, Golder Associates

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CERTIFICATIONS

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

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 #: T104704407-21-15
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60402314001	**S-TMW-1**	Water	06/06/22 15:30	06/08/22 05:26
60402314002	**S-SCL4A-DUP-1**	Water	06/06/22 00:00	06/08/22 05:26
60402314003	**S-SCL4A-FB-1**	Water	06/06/22 15:45	06/08/22 05:26

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SAMPLE ANALYTE COUNT

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60402314001	**S-TMW-1**	EPA 300.0	KB	1	PASI-K
60402314002	**S-SCL4A-DUP-1**	EPA 300.0	KB	1	PASI-K
60402314003	**S-SCL4A-FB-1**	EPA 300.0	KB	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Sample: S-TMW-1 **Lab ID: 60402314001** Collected: 06/06/22 15:30 Received: 06/08/22 05:26 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Sulfate	**50.5**	mg/L	5.0	2.8	5		06/10/22 18:44	14808-79-8	M1,R1

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Sample: S-SCL4A-DUP-1 **Lab ID: 60402314002** Collected: 06/06/22 00:00 Received: 06/08/22 05:26 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Sulfate	**45.7**	mg/L	5.0	2.8	5		06/10/22 19:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Sample: S-SCL4A-FB-1 **Lab ID: 60402314003** Collected: 06/06/22 15:45 Received: 06/08/22 05:26 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Sulfate	**<0.55**	mg/L	1.0	0.55	1		06/10/22 20:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

QC Batch: 791498
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60402314001, 60402314002, 60402314003

METHOD BLANK: 3153961 Matrix: Water
Associated Lab Samples: 60402314001, 60402314002, 60402314003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Sulfate	mg/L	<0.55	1.0	0.55	06/10/22 18:17	

LABORATORY CONTROL SAMPLE: 3153962

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3153963 3153964

Parameter	Units	60402314001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	50.5	25	250	70.2	427	79	151	80-120	144	15	E,M1, R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3153966 3153967

Parameter	Units	60402318001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	52.0	25	25	74.2	74.4	89	90	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3153969 3153970

Parameter	Units	60402319001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	43.4	50	50	90.1	89.4	94	92	80-120	1	15	

SAMPLE DUPLICATE: 3153965

Parameter	Units	60402314001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	50.5	48.4	4	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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QUALITY CONTROL DATA

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

SAMPLE DUPLICATE: 3153968

Parameter	Units	60402318001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	52.0	50.1	4	15	

SAMPLE DUPLICATE: 3153971

Parameter	Units	60402319001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfate	mg/L	43.4	43.1	1	15	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

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

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN VERIFICATION SCL4A
Pace Project No.: 60402314

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60402314001	**S-TMW-1**	EPA 300.0	791498		
60402314002	**S-SCL4A-DUP-1**	EPA 300.0	791498		
60402314003	**S-SCL4A-FB-1**	EPA 300.0	791498		

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Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample C	WO#: 60402314
	Revision: 2	Effective Date: 01/12/2022

Client Name: Golder

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 ☑ Ziplock

Thermometer Used: T301 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 1.4 **Corr. Factor** -1.0 **Corrected** 0.4

Date and initials of person examining contents: 06-08-2022 n

Temperature should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

Pace Analytical
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CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Jeffrey Ingram	Attention:	
Address:	13515 Barrett Parkway Dr., Ste 260	Copy To:	Eric Schnieder, Ryan Feldman, Brendan Talbert	Company Name:	Golder Associates Inc
	Ballwin, MO 63021			Address:	
Email To:	jeffrey_ingram@golder.com	Purchase Order No.:		Pace Quote Reference:	
Phone:	636-724-9191 Fax: 636-724-9323	Project Name:	Ameren - Verification Sampling – SCL4A	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153140603	Pace Profile #:	9285, line 1

REGULATORY AGENCY

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

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

Section D Required Client Information

Valid Matrix Codes

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: Boron	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N		
1	S-SCL4A-MS-1	WT	G			6-6-22	1530		1	1									✓			604023/4
2	S-SCL4A-MSD-1	WT	G				1530		1	1									✓			
3	S-SCL4A-DUP-1	WT	G				—		1	1									✓			
4	S-SCL4A-FB-1	WT	G				1545		1	1									✓			
5	S-TMW-1	WT	G				1530		1	1									✓			
6		WT	G																			
7		WT	G																			
8		WT	G																			
9		WT	G																			
10		WT	G																			
11		WT	G																			
12		WT	G																			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
	Grant Morey / Golder	6-7-22	1151	Angela McManus	6-7-	1151				
	Angela McManus	6-7	1151		6-7-22	0526	0.4	Y	Y	Y

SAMPLER NAME AND SIGNATURE		Temp In °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Grant Morey				
SIGNATURE of SAMPLER:	Grant Morey				
DATE Signed (MM/DD/YY):	06-07-22				

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

MEMORANDUM

DATE June 21, 2022 **Project No.** 153140604.0003

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

FROM Annie Muehlfarth **EMAIL ann.muehlfarth@wsp.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – VERIFICATION SAMPLING - DATA PACKAGE 60402314

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J, J+ for estimates biased high, and J- for estimates biased low).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder / WSP
Project Manager: J. Ingram
Project Name: Ameren SEC - SCL4A VS
Project Number: 153140604.003
Reviewer: A. Muehlfarth
Validation Date: 6/21/2022

Laboratory: Pace Analytical Services
SDG #: 60402314
Analytical Method (type and no.): EPA (300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐ _____
Sample Names S-TMW-1, S-SCL4A-DUP-1, S-SCL4A-FB-1

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			6/6/2022
b) Sampling team indicated?	x			
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies: _____

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?	x			
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See Notes
g) Were any matrix problems noted?	x			See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	S-SCL4A-FB-1 @ S-TMW-1
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	☒	☐	☐	
b) Were the proper analytes included in the LCS?	☒	☐	☐	
c) Was the LCS accuracy criteria met?	☒	☐	☐	

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	S-SCL4A-DUP-1 @ S-TMW-1
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 10.0% [<20%]
c) Were lab duplicates analyzed (note original and duplicate samples)?	☒	☐	☐	
d) Were lab dup. precision criteria met (note RPD)?	☒	☐	☐	Max RPD: 4% [<15%]

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?	☐	☐	☒	
b) Was the %D within control limits?	☐	☐	☒	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?	☐	☒	☐	See Notes
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
b) Was MSD accuracy criteria met?	☐	☒	☐	See Notes
Recovery could not be calculated since sample contained high concentration of analyte?	☐	☐	☒	
c) Were MS/MSD precision criteria met?	☐	☒	☐	See Notes

Comments/Notes:

Sulfate analyzed at a dilution, no qualification necessary.

MS/MSD:

3153963/3153964: MS % recovery low, MSD % recovery high, and RPD high for sulfate. Associated with sample -001.

Result qualified as an estimate.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-1	Sulfate	50.5	J	MS/MSD recoveries and RPD outside of control limits

Signature: _____ Ann Muehlfarth _____ Date: 6/21/2022

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

November 22, 2022

Jeffrey Ingram
WSP Golder
701 Emerson Road
Suite 250
Saint Louis, MO 63141

RE: Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between October 20, 2022 and October 21, 2022. 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

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

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Mark Haddock, Golder Associates
Lisa Meyer, Ameren
Grant Morey, WSP Golder
Ann Muehlfarth, WSP Golder
Eric Schneider, WSP Golder

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CERTIFICATIONS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 22-031-0
Illinois Certification #: 2000302021-3
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212023-1
Oklahoma Certification #: 2022-057
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-21-15
Utah Certification #: KS000212022-12
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60413641001	**S-TMW-1**	Water	10/20/22 13:03	10/21/22 17:48
60413641002	**S-TMW-2**	Water	10/20/22 11:46	10/21/22 17:48
60413641003	**S-TMW-3**	Water	10/20/22 10:46	10/21/22 17:48
60413641004	**S-SCL4A-DUP-1**	Water	10/20/22 00:00	10/21/22 17:48
60413641005	**S-SCL4A-FB-1**	Water	10/20/22 13:13	10/21/22 17:48
60413477022	**S-UG-3**	Water	10/21/22 09:27	10/21/22 17:48
60413477005	**S-BMW-1S**	Water	10/18/22 15:35	10/20/22 04:13
60413477004	**S-BMW-3S**	Water	10/18/22 14:06	10/20/22 04:13

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SAMPLE ANALYTE COUNT

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60413641001	**S-TMW-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413641002	**S-TMW-2**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413641003	**S-TMW-3**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413641004	**S-SCL4A-DUP-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413641005	**S-SCL4A-FB-1**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413477022	**S-UG-3**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413477005	**S-BMW-1S**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K
60413477004	**S-BMW-3S**	EPA 200.7	MA1	7	PASI-K
		SM 2320B	SZ	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	RKA	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-TMW-1 **Lab ID: 60413641001** Collected: 10/20/22 13:03 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**72.7J**	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 14:50	7440-42-8	B
Calcium	**95000**	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 14:50	7440-70-2	
Iron	**12.0J**	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 14:50	7439-89-6	
Magnesium	**16600**	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 14:50	7439-95-4	
Manganese	**395**	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 14:50	7439-96-5	
Potassium	**4400**	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 14:50	7440-09-7	
Sodium	**2820**	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 14:50	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**270**	mg/L	20.0	4.6	1		10/27/22 17:23		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**407**	mg/L	5.0	5.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**2.7**	mg/L	1.0	0.53	1		11/07/22 21:44	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.12	1		11/07/22 21:44	16984-48-8	
Sulfate	**53.5**	mg/L	5.0	2.8	5		11/07/22 22:31	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-TMW-2 **Lab ID: 60413641002** Collected: 10/20/22 11:46 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**83.7J**	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 14:58	7440-42-8	
Calcium	**118000**	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 14:58	7440-70-2	
Iron	**1920**	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 14:58	7439-89-6	
Magnesium	**21400**	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 14:58	7439-95-4	
Manganese	**446**	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 14:58	7439-96-5	
Potassium	**4760**	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 14:58	7440-09-7	
Sodium	**3540**	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 14:58	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**365**	mg/L	20.0	4.6	1		10/28/22 14:27		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<10.0**	mg/L	10.0	10.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.3**	mg/L	1.0	0.53	1		11/08/22 16:18	16887-00-6	B
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/08/22 16:18	16984-48-8	
Sulfate	**35.8**	mg/L	5.0	2.8	5		11/08/22 17:21	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-TMW-3 **Lab ID: 60413641003** Collected: 10/20/22 10:46 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**90.5J**	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:04	7440-42-8	
Calcium	**136000**	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:04	7440-70-2	
Iron	**1640**	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:04	7439-89-6	
Magnesium	**25200**	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:04	7439-95-4	
Manganese	**663**	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:04	7439-96-5	
Potassium	**6230**	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:04	7440-09-7	
Sodium	**4490**	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:04	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**415**	mg/L	20.0	4.6	1		10/28/22 14:41		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**838**	mg/L	10.0	10.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**2.6**	mg/L	1.0	0.53	1		11/07/22 22:47	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/07/22 22:47	16984-48-8	
Sulfate	**44.9**	mg/L	5.0	2.8	5		11/07/22 23:03	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-SCL4A-DUP-1 **Lab ID: 60413641004** Collected: 10/20/22 00:00 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**89.7J**	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:06	7440-42-8	
Calcium	**137000**	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:06	7440-70-2	
Iron	**1630**	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:06	7439-89-6	
Magnesium	**25700**	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:06	7439-95-4	
Manganese	**673**	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:06	7439-96-5	
Potassium	**6240**	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:06	7440-09-7	
Sodium	**4420**	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:06	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B								
	Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**419**	mg/L	20.0	4.6	1		10/28/22 14:47		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
	Pace Analytical Services - Kansas City								
Total Dissolved Solids	**409**	mg/L	10.0	10.0	1		10/27/22 16:15		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
	Pace Analytical Services - Kansas City								
Chloride	**2.7**	mg/L	1.0	0.53	1		11/07/22 23:19	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	0.12	1		11/07/22 23:19	16984-48-8	
Sulfate	**44.6**	mg/L	5.0	2.8	5		11/07/22 23:35	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-SCL4A-FB-1 **Lab ID: 60413641005** Collected: 10/20/22 13:13 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**<4.2**	ug/L	100	4.2	1	11/01/22 10:08	11/10/22 15:14	7440-42-8	
Calcium	**<33.7**	ug/L	200	33.7	1	11/01/22 10:08	11/10/22 15:14	7440-70-2	
Iron	**10.5J**	ug/L	50.0	5.6	1	11/01/22 10:08	11/10/22 15:14	7439-89-6	B
Magnesium	**<27.1**	ug/L	50.0	27.1	1	11/01/22 10:08	11/10/22 15:14	7439-95-4	
Manganese	**<0.24**	ug/L	5.0	0.24	1	11/01/22 10:08	11/10/22 15:14	7439-96-5	
Potassium	**<87.6**	ug/L	500	87.6	1	11/01/22 10:08	11/10/22 15:14	7440-09-7	
Sodium	**<73.2**	ug/L	500	73.2	1	11/01/22 10:08	11/10/22 15:14	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<4.6**	mg/L	20.0	4.6	1		10/28/22 14:54		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**<5.0**	mg/L	5.0	5.0	1		10/27/22 16:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**0.60J**	mg/L	1.0	0.53	1		11/07/22 23:50	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/07/22 23:50	16984-48-8	
Sulfate	**<0.55**	mg/L	1.0	0.55	1		11/07/22 23:50	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-UG-3 **Lab ID: 60413477022** Collected: 10/21/22 09:27 Received: 10/21/22 17:48 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**302**	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 14:02	7440-42-8	
Calcium	**126000**	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 14:02	7440-70-2	
Iron	**10.9J**	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 14:02	7439-89-6	
Magnesium	**24000**	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 14:02	7439-95-4	
Manganese	**744**	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 14:02	7439-96-5	
Potassium	**5330**	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 14:02	7440-09-7	
Sodium	**27600**	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 14:02	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**353**	mg/L	20.0	4.6	1		10/28/22 16:38		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**496**	mg/L	10.0	10.0	1		10/28/22 12:17		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**39.5**	mg/L	5.0	2.6	5		11/07/22 16:58	16887-00-6	
Fluoride	**<0.12**	mg/L	0.20	0.12	1		11/07/22 16:43	16984-48-8	
Sulfate	**44.1**	mg/L	5.0	2.8	5		11/07/22 16:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-BMW-1S **Lab ID: 60413477005** Collected: 10/18/22 15:35 Received: 10/20/22 04:13 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**73.0J**	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 13:03	7440-42-8	
Calcium	**168000**	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 13:03	7440-70-2	
Iron	**32.9J**	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 13:03	7439-89-6	
Magnesium	**33400**	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 13:03	7439-95-4	
Manganese	**1550**	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 13:03	7439-96-5	
Potassium	**431J**	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 13:03	7440-09-7	
Sodium	**5020**	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 13:03	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**479**	mg/L	20.0	4.6	1		10/26/22 15:39		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**711**	mg/L	10.0	10.0	1		10/25/22 10:49		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**9.2**	mg/L	1.0	0.53	1		11/04/22 12:42	16887-00-6	
Fluoride	**0.20J**	mg/L	0.20	0.12	1		11/04/22 12:42	16984-48-8	
Sulfate	**61.1**	mg/L	5.0	2.8	5		11/04/22 12:57	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Sample: S-BMW-3S **Lab ID: 60413477004** Collected: 10/18/22 14:06 Received: 10/20/22 04:13 Matrix: Water

Parameters	Results	Units	PQL	MDL	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	**84.2J**	ug/L	100	4.2	1	10/28/22 16:57	11/10/22 13:01	7440-42-8	
Calcium	**131000**	ug/L	200	33.7	1	10/28/22 16:57	11/10/22 13:01	7440-70-2	
Iron	**20.0J**	ug/L	50.0	5.6	1	10/28/22 16:57	11/10/22 13:01	7439-89-6	
Magnesium	**23900**	ug/L	50.0	27.1	1	10/28/22 16:57	11/10/22 13:01	7439-95-4	
Manganese	**210**	ug/L	5.0	0.24	1	10/28/22 16:57	11/10/22 13:01	7439-96-5	
Potassium	**525**	ug/L	500	87.6	1	10/28/22 16:57	11/10/22 13:01	7440-09-7	
Sodium	**5490**	ug/L	500	73.2	1	10/28/22 16:57	11/10/22 13:01	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**390**	mg/L	20.0	4.6	1		10/26/22 15:32		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**467**	mg/L	10.0	10.0	1		10/25/22 10:48		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**11.7**	mg/L	1.0	0.53	1		11/04/22 12:13	16887-00-6	
Fluoride	**0.22**	mg/L	0.20	0.12	1		11/04/22 12:13	16984-48-8	
Sulfate	**27.8**	mg/L	5.0	2.8	5		11/04/22 12:28	14808-79-8	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815417
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477004, 60413477005

METHOD BLANK: 3242907 Matrix: Water
Associated Lab Samples: 60413477004, 60413477005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<4.2	100	4.2	11/10/22 12:46	
Calcium	ug/L	<33.7	200	33.7	11/10/22 12:46	
Iron	ug/L	<5.6	50.0	5.6	11/10/22 12:46	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 12:46	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 12:46	
Potassium	ug/L	<87.6	500	87.6	11/10/22 12:46	
Sodium	ug/L	<73.2	500	73.2	11/10/22 12:46	

LABORATORY CONTROL SAMPLE: 3242908

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	10100	101	85-115	
Magnesium	ug/L	10000	10400	104	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10000	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3242909 3242910

Parameter	Units	60413477002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	7150	1000	1000	8000	8170	85	102	70-130	2	20	
Calcium	ug/L	73500	10000	10000	82500	83700	90	101	70-130	1	20	
Iron	ug/L	2640	10000	10000	12700	12700	100	100	70-130	0	20	
Magnesium	ug/L	15600	10000	10000	25500	25600	99	100	70-130	0	20	
Manganese	ug/L	340	1000	1000	1340	1350	100	101	70-130	1	20	
Potassium	ug/L	6740	10000	10000	16800	17000	101	103	70-130	1	20	
Sodium	ug/L	22600	10000	10000	32200	32200	97	96	70-130	0	20	

MATRIX SPIKE SAMPLE: 3242911

Parameter	Units	60413477013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	65.7J	1000	1030	96	70-130	
Calcium	ug/L	124000	10000	128000	41	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

MATRIX SPIKE SAMPLE: 3242911

Parameter	Units	60413477013 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	7820	10000	17400	96	70-130	
Magnesium	ug/L	31500	10000	40000	85	70-130	
Manganese	ug/L	523	1000	1500	97	70-130	
Potassium	ug/L	3910	10000	13900	100	70-130	
Sodium	ug/L	5600	10000	15800	102	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815419
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413477022

METHOD BLANK: 3242917 Matrix: Water
Associated Lab Samples: 60413477022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<4.2	100	4.2	11/10/22 13:35	
Calcium	ug/L	<33.7	200	33.7	11/10/22 13:35	
Iron	ug/L	<5.6	50.0	5.6	11/10/22 13:35	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 13:35	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 13:35	
Potassium	ug/L	<87.6	500	87.6	11/10/22 13:35	
Sodium	ug/L	<73.2	500	73.2	11/10/22 13:35	

LABORATORY CONTROL SAMPLE: 3242918

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	955	95	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	9920	99	85-115	
Magnesium	ug/L	10000	10000	100	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9960	100	85-115	
Sodium	ug/L	10000	9970	100	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3242919 3242920

Parameter	Units	60413477016 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	76.5J	1000	1000	1040	1030	97	95	70-130	1	20	
Calcium	ug/L	273000	10000	10000	288000	285000	151	127	70-130	1	20	M1
Iron	ug/L	16000	10000	10000	26200	26000	102	100	70-130	1	20	
Magnesium	ug/L	72700	10000	10000	84300	83800	116	111	70-130	1	20	
Manganese	ug/L	1280	1000	1000	2280	2260	100	98	70-130	1	20	
Potassium	ug/L	6000	10000	10000	16500	16200	105	102	70-130	2	20	
Sodium	ug/L	25300	10000	10000	35600	35200	104	99	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815804
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413641001

METHOD BLANK: 3244375 Matrix: Water
Associated Lab Samples: 60413641001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	11.1J	100	4.2	11/10/22 14:11	
Calcium	ug/L	<33.7	200	33.7	11/10/22 14:11	
Iron	ug/L	<5.6	50.0	5.6	11/10/22 14:11	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 14:11	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 14:11	
Potassium	ug/L	<87.6	500	87.6	11/10/22 14:11	
Sodium	ug/L	<73.2	500	73.2	11/10/22 14:11	

LABORATORY CONTROL SAMPLE: 3244376

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	9950	99	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	9980	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3244377 3244378

Parameter	Units	60413638002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	184	1000	1000	1150	1140	97	95	70-130	1	20	
Calcium	ug/L	122000	10000	10000	122000	121000	-7	-12	70-130	0	20	M1
Iron	ug/L	19.9J	10000	10000	10100	9930	100	99	70-130	1	20	
Magnesium	ug/L	25300	10000	10000	33300	33000	80	77	70-130	1	20	
Manganese	ug/L	150	1000	1000	1150	1140	100	99	70-130	1	20	
Potassium	ug/L	5290	10000	10000	15300	15100	100	98	70-130	2	20	
Sodium	ug/L	62200	10000	10000	67500	68600	53	64	70-130	2	20	M1

MATRIX SPIKE SAMPLE: 3244379

Parameter	Units	60413641001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	72.7J	1000	1040	96	70-130	
Calcium	ug/L	95000	10000	103000	77	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

MATRIX SPIKE SAMPLE: 3244379

Parameter	Units	60413641001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	12.0J	10000	10000	100	70-130	
Magnesium	ug/L	16600	10000	26300	98	70-130	
Manganese	ug/L	395	1000	1380	99	70-130	
Potassium	ug/L	4400	10000	14400	100	70-130	
Sodium	ug/L	2820	10000	13100	102	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815805
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413641002, 60413641003, 60413641004, 60413641005

METHOD BLANK: 3244380 Matrix: Water
Associated Lab Samples: 60413641002, 60413641003, 60413641004, 60413641005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<4.2	100	4.2	11/10/22 14:54	
Calcium	ug/L	<33.7	200	33.7	11/10/22 14:54	
Iron	ug/L	7.8J	50.0	5.6	11/10/22 14:54	
Magnesium	ug/L	<27.1	50.0	27.1	11/10/22 14:54	
Manganese	ug/L	<0.24	5.0	0.24	11/10/22 14:54	
Potassium	ug/L	<87.6	500	87.6	11/10/22 14:54	
Sodium	ug/L	<73.2	500	73.2	11/10/22 14:54	

LABORATORY CONTROL SAMPLE: 3244381

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	964	96	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	9970	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3244382 3244383

Parameter	Units	60413641002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	83.7J	1000	1000	1040	1030	96	95	70-130	1	20	
Calcium	ug/L	118000	10000	10000	129000	127000	105	91	70-130	1	20	
Iron	ug/L	1920	10000	10000	11900	11700	100	98	70-130	2	20	
Magnesium	ug/L	21400	10000	10000	31600	31400	102	100	70-130	0	20	
Manganese	ug/L	446	1000	1000	1450	1430	101	99	70-130	1	20	
Potassium	ug/L	4760	10000	10000	15000	14700	102	99	70-130	2	20	
Sodium	ug/L	3540	10000	10000	14100	13700	106	101	70-130	3	20	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 814616
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477004, 60413477005

METHOD BLANK: 3239748 Matrix: Water
Associated Lab Samples: 60413477004, 60413477005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	10/26/22 14:59	

LABORATORY CONTROL SAMPLE: 3239749

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	495	99	90-110	

SAMPLE DUPLICATE: 3239750

Parameter	Units	60413477001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	241	234	3	10	

SAMPLE DUPLICATE: 3239751

Parameter	Units	60413480006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	393	398	1	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815002
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413641001

METHOD BLANK: 3241292 Matrix: Water
Associated Lab Samples: 60413641001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	10/27/22 14:32	

LABORATORY CONTROL SAMPLE: 3241293

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	486	97	90-110	

SAMPLE DUPLICATE: 3241294

Parameter	Units	60413477006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	372	371	0	10	

SAMPLE DUPLICATE: 3241295

Parameter	Units	60413480003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	610	613	0	10	

SAMPLE DUPLICATE: 3241296

Parameter	Units	60413797001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	4.7J		10	

SAMPLE DUPLICATE: 3241297

Parameter	Units	60413477016 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	462	476	3	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815255 — Analysis Method: SM 2320B
QC Batch Method: SM 2320B — Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477022, 60413641002, 60413641003, 60413641004, 60413641005

METHOD BLANK: 3242335 — Matrix: Water
Associated Lab Samples: 60413477022, 60413641002, 60413641003, 60413641004, 60413641005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	20.0	4.6	10/28/22 13:56	

LABORATORY CONTROL SAMPLE: 3242336

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	489	98	90-110	

SAMPLE DUPLICATE: 3242337

Parameter	Units	60414043001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	501	507	1	10	

SAMPLE DUPLICATE: 3242338

Parameter	Units	60413641002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	365	371	1	10	

SAMPLE DUPLICATE: 3242339

Parameter	Units	60413642002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	453	454	0	10	

SAMPLE DUPLICATE: 3242340

Parameter	Units	60413642005 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<4.6	<4.6		10	

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Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 814499
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477004, 60413477005

METHOD BLANK: 3239207 Matrix: Water
Associated Lab Samples: 60413477004, 60413477005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	10/25/22 10:47	

LABORATORY CONTROL SAMPLE: 3239208

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	884	88	80-120	

SAMPLE DUPLICATE: 3239209

Parameter	Units	60413307001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2630	2720	3	10	

SAMPLE DUPLICATE: 3239210

Parameter	Units	60413477004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	467	467	0	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 814996
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413641001, 60413641002, 60413641003, 60413641004, 60413641005

METHOD BLANK: 3241273 Matrix: Water
Associated Lab Samples: 60413641001, 60413641002, 60413641003, 60413641004, 60413641005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	10/27/22 16:14	

LABORATORY CONTROL SAMPLE: 3241274

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	985	98	80-120	

SAMPLE DUPLICATE: 3241275

Parameter	Units	60413477016 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1330	1310	2	10	

SAMPLE DUPLICATE: 3241276

Parameter	Units	60413641002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	<10.0	503		10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 815260
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413477022

METHOD BLANK: 3242365 Matrix: Water
Associated Lab Samples: 60413477022

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	10/28/22 12:15	

LABORATORY CONTROL SAMPLE: 3242366

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	984	98	80-120	

SAMPLE DUPLICATE: 3242367

Parameter	Units	60411568006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	876	879	0	10	H1

SAMPLE DUPLICATE: 3242368

Parameter	Units	60413638002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	649	638	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 816402
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477004, 60413477005

METHOD BLANK: 3246987 Matrix: Water
Associated Lab Samples: 60413477004, 60413477005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/04/22 08:54	
Fluoride	mg/L	<0.12	0.20	0.12	11/04/22 08:54	
Sulfate	mg/L	<0.55	1.0	0.55	11/04/22 08:54	

METHOD BLANK: 3250187 Matrix: Water
Associated Lab Samples: 60413477004, 60413477005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.61J	1.0	0.53	11/07/22 15:06	
Fluoride	mg/L	<0.12	0.20	0.12	11/07/22 15:06	
Sulfate	mg/L	<0.55	1.0	0.55	11/07/22 15:06	

LABORATORY CONTROL SAMPLE: 3246988

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.2	104	90-110	

LABORATORY CONTROL SAMPLE: 3250188

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.5	99	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3246989 3246990

Parameter	Units	60413480003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	86.4	100	100	177	168	91	81	80-120	6	15	
Fluoride	mg/L	0.41	2.5	2.5	3.0	2.9	102	100	80-120	1	15	
Sulfate	mg/L	285	100	100	436	386	151	100	80-120	12	15	E,M1

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

SAMPLE DUPLICATE: 3246991

Parameter	Units	60413480003 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	86.4	85.8	1	15	
Fluoride	mg/L	0.41	0.48	15	15	
Sulfate	mg/L	285	279	2	15	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 816676
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60413477022, 60413641001, 60413641003, 60413641004, 60413641005

METHOD BLANK: 3248347 Matrix: Water
Associated Lab Samples: 60413477022, 60413641001, 60413641003, 60413641004, 60413641005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/07/22 09:09	
Fluoride	mg/L	<0.12	0.20	0.12	11/07/22 09:09	
Sulfate	mg/L	<0.55	1.0	0.55	11/07/22 09:09	

LABORATORY CONTROL SAMPLE: 3248348

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3248350 3248351

Parameter	Units	60413810035 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	33.6	50	50	79.3	78.1	92	89	80-120	2	15	
Fluoride	mg/L	ND	2.5	2.5	2.7	2.8	108	110	80-120	2	15	
Sulfate	mg/L	50.5	50	50	102	98.8	102	97	80-120	3	15	

SAMPLE DUPLICATE: 3248349

Parameter	Units	60413810035 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	33.6	41.6	21	15	D6
Fluoride	mg/L	ND	<0.12		15	
Sulfate	mg/L	50.5	65.6	26	15	D6

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

QC Batch: 816964
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60413641002

METHOD BLANK: 3249328 Matrix: Water
Associated Lab Samples: 60413641002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	0.60J	1.0	0.53	11/08/22 13:08	
Fluoride	mg/L	<0.12	0.20	0.12	11/08/22 13:08	
Sulfate	mg/L	<0.55	1.0	0.55	11/08/22 13:08	

METHOD BLANK: 3251681 Matrix: Water
Associated Lab Samples: 60413641002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/09/22 08:54	
Fluoride	mg/L	<0.12	0.20	0.12	11/09/22 08:54	
Sulfate	mg/L	<0.55	1.0	0.55	11/09/22 08:54	

METHOD BLANK: 3252685 Matrix: Water
Associated Lab Samples: 60413641002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.53	1.0	0.53	11/10/22 08:54	
Fluoride	mg/L	<0.12	0.20	0.12	11/10/22 08:54	
Sulfate	mg/L	<0.55	1.0	0.55	11/10/22 08:54	

LABORATORY CONTROL SAMPLE: 3249329

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 3251682

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	93	90-110	
Fluoride	mg/L	2.5	2.7	107	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

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QUALITY CONTROL DATA

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

LABORATORY CONTROL SAMPLE: 3252686

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.6	105	90-110	
Sulfate	mg/L	5	4.9	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3249331 3249332

Parameter	Units	60413638002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	59.2	25	25	86.7	87.5	110	113	80-120	1	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.8	2.9	112	115	80-120	3	15	
Sulfate	mg/L	47.3	25	25	75.9	76.2	114	116	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3249333 3249334

Parameter	Units	60413641002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	3.3	5	5	8.1	8.3	96	101	80-120	3	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.9	3.0	112	118	80-120	5	15	
Sulfate	mg/L	35.8	25	25	63.5	63.9	111	112	80-120	1	15	

SAMPLE DUPLICATE: 3249330

Parameter	Units	60413638002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	59.2	59.6	1	15	
Fluoride	mg/L	<0.12	<0.12		15	
Sulfate	mg/L	47.3	47.6	1	15	

SAMPLE DUPLICATE: 3249335

Parameter	Units	60413641002 Result	Dup Result	RPD	Max RPD	Qualifiers
Chloride	mg/L	3.3	3.2	1	15	
Fluoride	mg/L	<0.12	0.43		15	
Sulfate	mg/L	35.8	35.7	0	15	

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QUALIFIERS

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

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

B	Analyte was detected in the associated method blank.
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.
H1	Analysis conducted outside the EPA method holding time.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SEC SCL4A
Pace Project No.: 60413641

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60413477004	**S-BMW-3S**	EPA 200.7	815417	EPA 200.7	815453
60413477005	**S-BMW-1S**	EPA 200.7	815417	EPA 200.7	815453
60413477022	**S-UG-3**	EPA 200.7	815419	EPA 200.7	815455
60413641001	**S-TMW-1**	EPA 200.7	815804	EPA 200.7	815888
60413641002	**S-TMW-2**	EPA 200.7	815805	EPA 200.7	815889
60413641003	**S-TMW-3**	EPA 200.7	815805	EPA 200.7	815889
60413641004	**S-SCL4A-DUP-1**	EPA 200.7	815805	EPA 200.7	815889
60413641005	**S-SCL4A-FB-1**	EPA 200.7	815805	EPA 200.7	815889
60413477004	**S-BMW-3S**	SM 2320B	814616		
60413477005	**S-BMW-1S**	SM 2320B	814616		
60413477022	**S-UG-3**	SM 2320B	815255		
60413641001	**S-TMW-1**	SM 2320B	815002		
60413641002	**S-TMW-2**	SM 2320B	815255		
60413641003	**S-TMW-3**	SM 2320B	815255		
60413641004	**S-SCL4A-DUP-1**	SM 2320B	815255		
60413641005	**S-SCL4A-FB-1**	SM 2320B	815255		
60413477004	**S-BMW-3S**	SM 2540C	814499		
60413477005	**S-BMW-1S**	SM 2540C	814499		
60413477022	**S-UG-3**	SM 2540C	815260		
60413641001	**S-TMW-1**	SM 2540C	814996		
60413641002	**S-TMW-2**	SM 2540C	814996		
60413641003	**S-TMW-3**	SM 2540C	814996		
60413641004	**S-SCL4A-DUP-1**	SM 2540C	814996		
60413641005	**S-SCL4A-FB-1**	SM 2540C	814996		
60413477004	**S-BMW-3S**	EPA 300.0	816402		
60413477005	**S-BMW-1S**	EPA 300.0	816402		
60413477022	**S-UG-3**	EPA 300.0	816676		
60413641001	**S-TMW-1**	EPA 300.0	816676		
60413641002	**S-TMW-2**	EPA 300.0	816964		
60413641003	**S-TMW-3**	EPA 300.0	816676		
60413641004	**S-SCL4A-DUP-1**	EPA 300.0	816676		
60413641005	**S-SCL4A-FB-1**	EPA 300.0	816676		

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Pace ANALYTICAL SERVICES	DC#_Title: ENV-FRM-LENE-0009_Sample	WO# : 60413641
	Revision: 2	Effective Date: 01/12/202

Client Name: WSP Golder

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-299 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): As-read 1.9/0.4/14.9/14.8/0.7/ Corr. Factor 0 Corrected 1.9/0.4/14.9/14.8/0.7/0.6

Date and initials of person examining contents: BC 10/22

Temperature should be above freezing to 6°C 0.6

Chain of Custody present:	☒Yes ☐No ☐N/A	S-WG-3 on COC #8
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☒No ☐N/A	
Filtered volume received for dissolved tests?	☐Yes ☒No ☐N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT#: 610600	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☒No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☒No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☒No ☐N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☒No ☐N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ Date: _____

Qualtrax Document ID: 30468

Page 1 of 1

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CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	WSP Golder
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey.ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schneider
Purchase Order No.:	COC #11
Project Name:	Ameren Sioux Energy Center SCL4A
Project Number:	153140604. 0003

Section C Invoice Information:

Attention:	
Company Name:	WSP Golder
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

Valid Matrix Codes

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	App III and Cat/An Metals	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																			N	N	N	N		
1	S-TMW-1	WT	G			10-20-22	1303		2	1		1							✓	✓	✓	✓		60413641
2	S-TMW-2	WT	G			"	1146		2	1		1							✓	✓	✓	✓		
3	S-TMW-3	WT	G			"	1046		2	1		1							✓	✓	✓	✓		
4	S-UG-3	WT	G			10-21-22	0927		~~4~~ 2	1		~~2~~							✓	✓	✓	✓		2 containers for this COC
5	S-SCL4A-DUP-1	WT	G			10-20-22	—		2	1		1							✓	✓	✓	✓		
6	S-SCL4A-FB-1	WT	G			"	1313		2	1		1							✓	✓	✓	✓		
7	S-SCL4A-MS-1	WT	G			"	1146		2	1		1							✓	✓	✓	✓		Collected @ S-TMW-2
8	S-SCL4A-MSD-1	WT	G			"	1146		2	1		1							✓	✓	✓	✓		Collected @ S-TMW-2
9	S-BMW-1S	WT	G																					
10	S-BMW-3S	WT	G																					
11		WT	G																					
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*EPA 200.7: B, Ca, Fe, Mn, Mg, K, Na	Grant Morey / Golder	10-21-22	1500	[illegible]	10/21/22	1748	0.9 1.9 / 0.4 14.9 / 0.7 14.8

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Grant Morey				
SIGNATURE of SAMPLER:	[signature]	DATE Signed (MM/DD/YY):	10/21/22		

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

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

Client: WSP Golder Profile # 9285

Site: COC # 11 SCL4A Notes

COC Line Item	Matrix	VG9H	DG9H	DG9Q	VG9U	DG9U	DG9M	DG9B	BG1U	AG1H	AG1U	AG2U	AG3S	AG4U	AG5U	JGFU	WGKU	WGDU	BP1U	BP2U	BP3U	BP1N	BP3N	BP3F	BP3S	BP3C	BP3Z	WPDU	ZPLC	Other		
1	WT																		1				1									
2	WT																		13				13									
3	WT																		1				1									
4	WT																		1				1									
5	WT																		1				1									
6	WT																		1				1									
7																																
8																																
9																																
10																																
11																																
12																																

Container Codes

Glass			
DG9B	40mL bisulfate clear vial	WGKU	8oz clear soil jar
DG9H	40mL HCl amber voa vial	WGFU	4oz clear soil jar
DG9M	40mL MeOH clear vial	WG2U	2oz clear soil jar
DG9Q	40mL TSP amber vial	JGFU	4oz unpreserved amber wide
DG9S	40mL H2SO4 amber vial	AG0U	100mL unores amber glass
DG9T	40mL Na Thio amber vial	AG1H	1L HCl amber glass
DG9U	40mL amber unpreserved	AG1S	1L H2SO4 amber glass
VG9H	40mL HCl clear vial	AG1T	1L Na Thiosulfate clear/amber glass
VG9T	40mL Na Thio. clear vial	AG1U	1liter unpres amber glass
VG9U	40mL unpreserved clear vial	AG2N	500mL HNO3 amber glass
BG1S	1liter H2SO4 clear glass	AG2S	500mL H2SO4 amber glass
BG1U	1liter unpres glass	AG3S	250mL H2SO4 amber glass
BG3H	250mL HCL Clear glass	AG2U	500mL unpres amber glass
BG3U	250mL Unpres Clear glass	AG3U	250mL unpres amber glass
WGDU	16oz clear soil jar	AG4U	125mL unpres amber glass
		AG5U	100mL unpres amber glass

Plastic	
BP1C	1L NAOH plastic
BP1N	1L HNO3 plastic
BP1S	1L H2SO4 plastic
BP1U	1L unpreserved plastic
BP1Z	1L NaOH, Zn Acetate
BP2C	500mL NAOH plastic
BP2N	500mL HNO3 plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Acetate
BP3C	250mL NaOH plastic
BP3F	250mL HNO3 plastic - field filtered
BP3N	250mL HNO3 plastic
BP3U	250mL unpreserved plastic
BP3S	250mL H2SO4 plastic
BP3Z	250mL NaOH, Zn Acetate
BP4U	125mL unpreserved plastic
BP4N	125mL HNO3 plastic
BP4S	125mL H2SO4 plastic
WPDU	16oz unpresserved plstic

Misc.	
I	Wipe/Swab
SP5T	120mL Coliform Na Thiosulfate
ZPLC	Ziploc Bag
AF	Air Filter
C	Air Cassettes
R	Terracore Kit
U	Summa Can

Matrix	
WT	Water
SL	Solid
NAL	Non-aqueous Liquid
OL	OIL
WP	Wipe
DW	Drinking Water

Work Order Number: 60413641

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

Company:	WSP Golder
Address:	701 Emerson Road, Suite 250
	Creve Coeur, Missouri, 63141
Email To:	jeffrey_ingram@golder.com
Phone: 636-724-9191	Fax: 636-724-9323
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schneider
Purchase Order No.:	COC #11
Project Name:	Ameren Sioux Energy Center SCL4A
Project Number:	153140604. 0003

Section C Invoice Information:

Attention:	
Company Name:	WSP Golder
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

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

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WASTE WATER	WW
PRODUCT	P
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Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	App III and Cat/An Metals	Chloride/Fluoride/Sulfate	TDS	Alkalinity	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	S-TMW-1	WT	G															N						
2	S-TMW-2	WT	G															N						
3	S-TMW-3	WT	G															N						
4	S-UG-3	WT	G															N						
5	S-SCL4A-DUP-1	WT	G																					
6	S-SCL4A-FB-1	WT	G																					
7	S-SCL4A-MS-1	WT	G																					
8	S-SCL4A-MSD-1	WT	G																					
9	S-BMW-1S	WT	G			10-18-22	1535		2	1		1						✓	✓	✓	✓				
10	S-BMW-3S	WT	G			10-18-22	1406		2	1		1						✓	✓	✓	✓				
11		WT	G																					
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
*EPA 200.7: B, Ca, Fe, Mn, Mg, K, Na	Shawn Abrahamsen	10/19/22	1530				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Grant Morey

SIGNATURE of SAMPLER: Grant Morey

DATE Signed (MM/DD/YY): 10/19/22

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

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

MEMORANDUM

DATE January 10, 2023 **Project No.** 153140604

TO Project File
WSP USA Inc.

CC Amanda Derhake, Jeff Ingram

FROM Rahel Pommerenke **EMAIL rahel.pommerenke@wsp.com**

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCL4A – DETECTION MONITORING – DATA PACKAGE 60413641

The following is a summary of instances where quality control criteria in the functional guidelines were not met and data qualification was required:

- When a compound was detected in a blank (i.e. method, field), and the blank comparison criterion was not met, associated sample results were qualified as estimates (J) or non-detects (U).
- When a compound was detected in a sample result between the MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- When duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: WSP USA Inc.
Project Manager: J. Ingram
Project Name: Ameren SEC - SCL4A
Project Number: 153140604
Reviewer: R.Pommerenke
Validation Date: 1/10/2023

Laboratory: Pace Analytical Services
SDG #: 60413641
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-FB-1, S-UG-3, S-BMW-1S, S-BMW-3S

NOTE: Please provide calculation in Comment areas or on the back (if on the back please indicate in comment areas).

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			10/18/2022, 10/20/2022 - 10/21/2022
b) Sampling team indicated?	x			PCS/GTM/SMA
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See notes.
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

Chain-of-Custody (COC)	YES	NO	NA	COMMENTS
a) Was the COC properly completed?	x			
b) Was the COC signed by both field and laboratory personnel?		x		See notes.
c) Were samples received in good condition?	x			

General (reference QAPP or Method)	YES	NO	NA	COMMENTS
a) Were hold times met for sample pretreatment?	x			
b) Were hold times met for sample analysis?	x			
c) Were the correct preservatives used?	x			
d) Was the correct method used?	x			
e) Were appropriate reporting limits achieved?	x			
f) Were any sample dilutions noted?	x			See notes.
g) Were any matrix problems noted?	x			See notes.

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	YES	NO	NA	COMMENTS
a) Were analytes detected in the method blank(s)?	x			See notes.
b) Were analytes detected in the field blank(s)?	x			See notes.
c) Were analytes detected in the equipment blank(s)?			x	
d) Were analytes detected in the trip blank(s)?			x	

Laboratory Control Sample (LCS)	YES	NO	NA	COMMENTS
a) Was a LCS analyzed once per SDG?	x			
b) Were the proper analytes included in the LCS?	x			
c) Was the LCS accuracy criteria met?	x			

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			S-SCL4A-DUP-1 @ S-TMW-3
b) Were field dup. precision criteria met (note RPD)?		x		See notes.
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?		x		See notes.

Blind Standards	YES	NO	NA	COMMENTS
a) Was a blind standard used (indicate name, analytes included and concentrations)?			x	
b) Was the %D within control limits?			x	

Matrix Spike/Matrix Spike Duplicate (MS/MSD)	YES	NO	NA	COMMENTS
a) Was MS accuracy criteria met?		x		See notes.
Recovery could not be calculated since sample contained high concentration of analyte?			x	
b) Was MSD accuracy criteria met?		x		See notes.
Recovery could not be calculated since sample contained high concentration of analyte?			x	
c) Were MS/MSD precision criteria met?	x			Max RPD (12%) < 15%

Comments/Notes:

COC:

COC No 12 containing S-BMW-1S and S-BMW-3S was not signed by laboratory personnel. No qualification necessary.

Dilutions:

Chloride and Sulfate analyzed at a dilution. No qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Blanks:

MB3244375: Boron (11.1J). Associated with 60413641001.

Result < RL: reported as ND at RL.

MB3244380: Iron (7.8J). Associated with 60413641002 through -005.

Results > 10 x blank and > RL: no qualification necessary. Results < RL reported as ND at RL.

MB3250187: Chloride (0.61J). Associated with 60413477004 and -005.

Result > 10 x blank and > RL: no qualification necessary.

MB3249328: Chloride (0.60J). Associated with 60413641002.

Result < 10 x blank but > RL: qualified as estimate.

S-SCL4A-FB-1 @ S-TMW-1: Iron (10.5J), Chloride (0.60J).

Result < 10 x blank but > RL: qualified as estimate. Result < RL: reported as ND at RL.

Duplicates:

S-SCL4A-DUP-1 @ S-TMW-3: RPD limit (20%) exceeded for Total Dissolved Solids (68.8%). Fluoride ND in parent, detect in DUP.

Sample Duplicate 3241296: Alkalinity detected in DUP but ND in parent sample. Performed on unrelated sample:

no qualification necessary.

Sample Duplicate 3241276: Total Dissolved Solids detected in DUP but ND in parent sample. Associated with 60413641002.

Sample Duplicate 3248349: RPD limit (15%) exceeded for Chloride (21%) and Sulfate (26%).

Performed on unrelated sample: no qualification necessary.

Sample Duplicate 3249335: Fluoride detected in DUP but ND in parent sample. Associated with 60413641002.

MS/MSD:

3242911: MS % recovery low for Calcium. Performed on unrelated sample: no qualification necessary.

3242919/3242920: MS % recovery high for calcium. Performed on unrelated sample: no qualification necessary.

3244377/3244378: MS/MSD % recovery low (<10%) for calcium. MS/MSD % recovery low for sodium.

Performed on unrelated sample: no qualification necessary.

3246989/3246990: MS % recovery high for Sulfate. Performed on unrelated sample: no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-SCL4A-DUP-1	Fluoride	0.34	J	Detected in dup, ND in parent sample.
"	Total Dissolved Solids	409	J	DUP RPD exceeds control limits.
S-SCL4A-FB-1	Iron	50.0	U	Detected in MB, result < RL.
S-TMW-1	Boron	100	U	Detected in MB, result < RL.
"	Chloride	2.7	J	Detected in FB, 10 x blank > result > RL.
"	Iron	50.0	U	Detected in FB, result < RL.
S-TMW-2	Chloride	3.3	J	Detected in MB, 10x blank > result > RL.
"	Total Dissolved Solids	10.0	UJ	Detected in lab DUP but ND in parent sample.
S-TMW-3	Fluoride	0.12	UJ	Detected in DUP/lab duplicate, but ND in parent sample.
"	Total Dissolved Solids	838	J	DUP RPD exceeds control limits

Signature: _____ Date: 1/10/2023

APPENDIX B

Alternative Source Demonstration - March/April 2022 Sampling Event

REPORT

SCL4A - Alternative Source Demonstration

Sioux Energy Center, St. Charles County, Missouri, USA

Submitted to:

Ameren Missouri

1901 Chouteau Avenue, St. Louis, MO, 63103

Submitted by:

Golder Associates USA Inc.

701 Emerson Road, Suite 250, Creve Coeur, Missouri, 63141

+1 314 984 8800

153140604

November 11, 2022

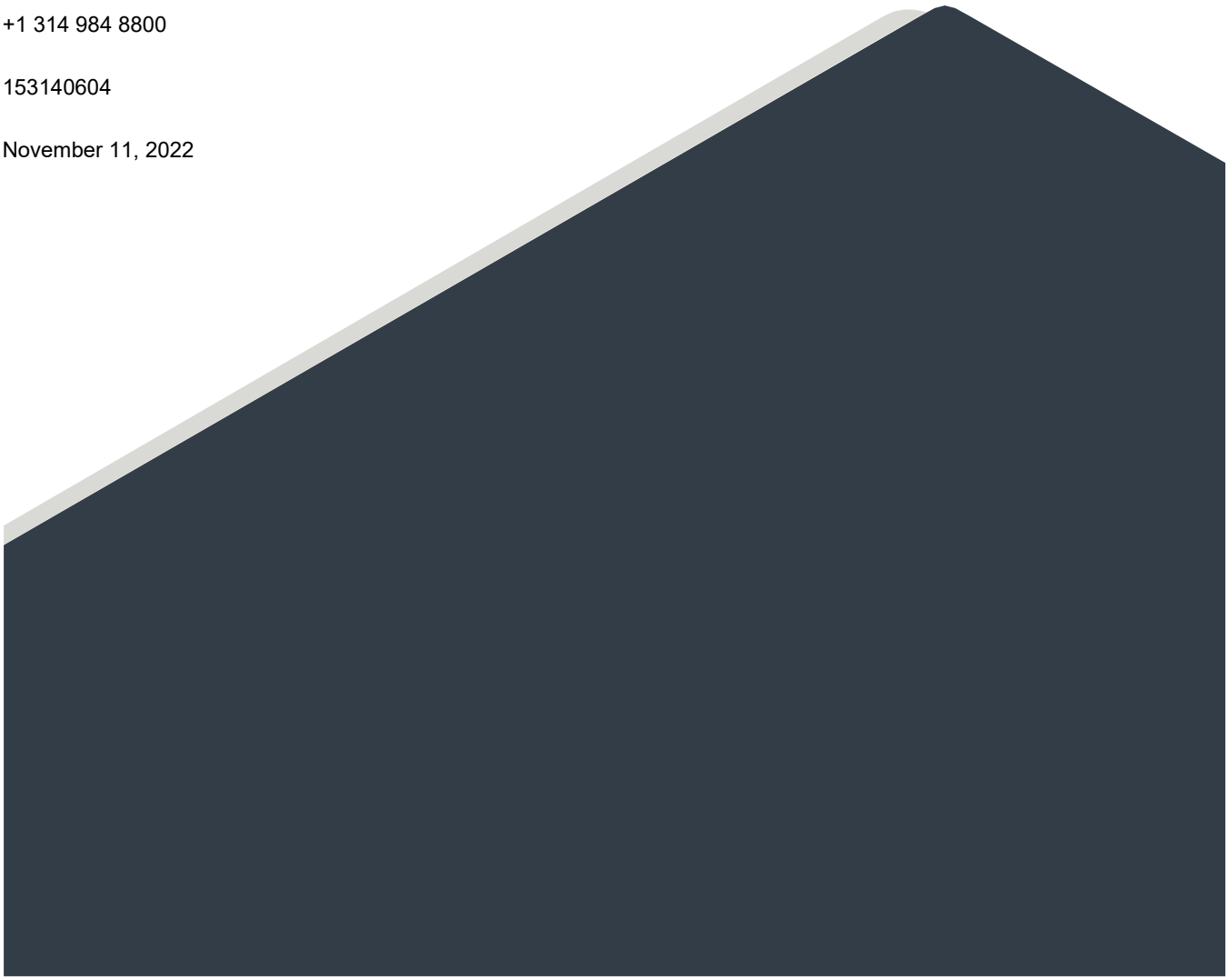

Table of Contents

TABLES

FIGURES

1.0 CERTIFICATION STATEMENT

This *SCL4A – Alternative Source Demonstration, Sioux Energy Center, St. Charles County, Missouri, USA* has been prepared to comply with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Golder Associates Inc.

I hereby certify that this *SCL4A – Alternative Source Demonstration, Sioux Energy Center, St. Charles County, Missouri, USA* located at 8501 Missouri 94, West Alton, Missouri 63386 has been prepared to meet the requirements of 40 CFR §257.94(e)(2).

GOLDER ASSOCIATES USA INC.

_____

Mark Haddock, P.E., R.G.

Principal, Practice Leader

2.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), this SCL4A – Alternative Source Demonstration has been prepared to document an Alternative Source Demonstration (ASD) for Statistically Significant Increases (SSI) identified for Ameren Missouri's (Ameren) Sioux Energy Center (SEC), Utility Waste Landfill (UWL) Cell 4A - SCL4A. This document satisfies the requirements of §257.94(e)(2), which allows the owner or operator to demonstrate that a source other than the CCR Unit has caused the SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.0 SITE DESCRIPTION AND BACKGROUND

Ameren owns and operates the SEC in St. Charles County, Missouri, located approximately 12 miles west-northwest of the confluence of the Mississippi and Missouri Rivers. **Figure 1** depicts the site location and layout, including the location of the SCL4A. The SEC is approximately 1,100 acres and is located in the floodplain between the Mississippi and Missouri Rivers. The SEC is bounded to the north by wooded areas associated with the Mississippi River, to the south by a railroad, and to the east and west by agricultural fields.

3.1 Geological and Hydrogeological Setting

Hydrogeologically, the SCL4A lies between the Mississippi River to the north and the Missouri River to the south. Flow and deposition from these rivers have resulted in thick alluvial deposits which lie unconformably on top of bedrock. These alluvial deposits, which can range from approximately 100 to 130 feet thick, make up the uppermost aquifer called the alluvial aquifer. Overall, this aquifer is described as a fining upwards sequence of stratified sands and gravels with varying amounts of silts and clays. Drilling in the alluvial aquifer identified different sub-units, including floodplain deposits, natural levee deposits, and channel deposits along with volumetrically less important loess deposits. Grain sizes of these alluvial deposits are highly variable.

Beneath the alluvial aquifer lies the bedrock aquifer. Bedrock in this region includes Mississippian-aged rocks of the Meramecian Series. Formations include primarily limestone, dolomite, and shale and are comprised of the Salem Formation overlying the Warsaw Formation and the Burlington-Keokuk Formation.

3.2 Utility Waste Landfill Cell 4A – SCL4A

UWL Cell 4A is referred to by Ameren as the SCL4A, or "Landfill Cell 4A." The SCL4A is approximately 15 acres in size and is located south of the generating plant on the south side of Highway 94 (**Figure 1**). The CCR Unit manages CCR from the SEC including "fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels" (Gredell and Reitz & Jens, 2014). These wastes are managed using a dry disposal process and are moisture conditioned (30-40% moisture content) to minimize dust and facilitate disposal. The CCR waste is trucked across Highway 94 from the plant and disposed in the SCL4A.

The SCL4A was constructed with a composite liner system consisting of two feet of compacted clay soil with a hydraulic conductivity of less than 1 X 10^{-7} centimeters per second (cm/sec) overlain by a 60-mil HDPE geomembrane liner. Information on the design of the UWL is available in the 2014 Proposed Construction Permit Modification, Construction Permit Number 0918301 (Gredell and Reitz & Jens, 2014).

A groundwater monitoring well network was installed in 2007 and 2008 in order to permit the UWL construction. This monitoring well network was approved by the Missouri Department of Natural Resources (MDNR) and consists of 16 monitoring wells ringing the current and proposed future extents of the UWL (**Figure 1**). These monitoring wells are installed in the uppermost portions of the alluvial aquifer, just below the seasonal low elevation for groundwater. Quarterly groundwater samples have been collected at UG-3 since June 2008 for the analysis of state required UWL parameters, and TMW-1, TMW-2, and TMW-3 have been sampled since May 2016 for CCR Rule sampling events.

The permit for the Sioux UWL was issued July 30, 2010 (permit #0918301) for the SCPC (Cell 1). Nine (9) sampling events were performed prior to July 30, 2010 and represent groundwater quality prior to CCR placement in the SCPC. The SCL4A was the second cell that was constructed at this UWL. The SCL4A construction was not completed until 2014 and no CCR was placed in the unit until after the final revisions to the Proposed Construction Permit Modification on August 16, 2014. The results from these pre-disposal monitoring events are used, in conjunction with other site information, in the ASD presented below.

3.3 CCR Rule Groundwater Monitoring

As required by the CCR Rule, the following were completed prior to the October 17, 2017 deadline; (1) a groundwater monitoring well system was installed and certified by a Professional Engineer, (2) a Statistical Method Certification was prepared and certified by a Professional Engineer, (3) a Groundwater Monitoring Plan (GMP) was prepared recording the design, installation, development, sampling procedures, as well as statistical methods, and placed in the owner's operating record, and (4) the required eight (8) baseline groundwater sampling events were completed for all Appendix III and Appendix IV parameters of the CCR Rule.

The groundwater monitoring system for the SCL4A consists of six (6) monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. One (1) existing monitoring well (UG-3) was installed by Gredell Engineering Resources, Inc., in December 2007 as a part of the state UWL monitoring program. The remaining monitoring wells (TMW-1, TMW-2, TMW-3, BMW-1S, and BMW-3S) were installed by Golder in 2015 and 2016 for CCR Rule groundwater monitoring purposes. More information on the design and installation of the monitoring wells is provided in the SCL4A GMP and the SCL4A 2017 Annual Report.

Between May 2016 and June 2017, eight (8) baseline sampling events were completed for the SCL4A. After baseline sampling, the first Detection Monitoring event was completed in November 2017 and Detection Monitoring has continued on a semi-annual basis thereafter. Laboratory testing was performed for the following Appendix III constituents during Detection Monitoring:

- Boron
- Calcium
- Chloride
- pH
- Sulfate
- Total dissolved solids (TDS)
- Fluoride

In January 2018, background results from the eight (8) baseline sampling events were used to calculate statistical upper prediction limits (UPLs). These UPLs were then compared to the Detection Monitoring results from the November 2017 samples and subsequent semi-annual detection monitoring sampling events. After at least four (4) sampling events, approximately every two years, these UPLs are updated to incorporate recent data, described in greater detail in Section 4.0. If results from Detection Monitoring were higher than the calculated UPL, it was considered an initial exceedance, in which case a verification sample was then collected and tested in accordance with the SCL4A Statistical Analysis Plan. The following provide a summary of the detection monitoring results to date:

- In November 2017, there were no initial exceedances.
- In May 2018, three (3) initial exceedances were identified including chloride at UG-3; as well as sulfate and TDS at TMW-2. Verification sampling results confirmed all three (3) SSIs. All three (3) SSIs were determined to be from an alternate source and the ASD for the May 2018 sampling event can be found in the 2018 Annual Report for the SCL4A.
- In November 2018, one (1) initial exceedance was identified, sulfate at TMW-2. Verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2018 event.
- In May 2019, six (6) initial exceedances were identified including boron, calcium, chloride, and TDS at UG-3; as well as sulfate and TDS at TMW-2. Verification sampling results confirmed all six (6) SSIs. All six (6) SSIs were determined to be from an alternate source and the ASD for the May 2019 sampling event can be found in the 2019 Annual Report for the SCL4A.
- In November 2019, five (5) initial exceedances were identified including sulfate and TDS at UG-3; as well as chloride, sulfate, and TDS at TMW-2. Only the initial three (3) exceedances at TMW-2 were verified in the subsequent verification sampling event. All three (3) SSIs were determined to be from an alternative source, as described in the ASD for the November 2019 sampling event, dated June 5, 2020.
- In April 2020, three (3) initial exceedances were identified including fluoride at UG-3; as well as sulfate and TDS at TMW-2. Only fluoride at UG-3 was confirmed by verification sampling and this SSI was determined to be from an alternative source and is described in the ASD for the April 2020 sampling event, which can be found in the 2020 Annual Report for the SCL4A.
- In November 2020, four (4) initial exceedances were identified including calcium and fluoride at TMW-1, TDS at TMW-2, and fluoride at TMW-3. Subsequent verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2020 event.
- In April 2021, three (3) initial exceedances were identified including fluoride at UG-3, fluoride at TMW-2, and sulfate at TMW-2. Only sulfate at TMW-2 was confirmed by verification sampling. This SSI was determined to be from an alternative source, as described in the ASD for the April 2021 sampling event, which can be found in the 2021 Annual Report for the SCL4A.
- In November 2021, one (1) initial exceedance was identified, fluoride at TMW-1. Verification sampling did not confirm the initial exceedance and no SSIs were identified for the November 2021 event.
- In March-April 2022, one (1) initial exceedance was identified, sulfate at TMW-1. Verification sampling results confirmed this SSI at TMW-1. The results from the March/April detection monitoring event are summarized in **Table 1.**

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASE

The March 2022 SSI for sulfate occurred at monitoring well TMW-1. TMW-1 is screened in the upper portion of the alluvial aquifer just below the average seasonal low for groundwater. As shown in **Figure 1**, TMW-1 is located south of the SCL4A and Highway 94, and north of Dwiggins Road.

Based on Golder's review of the pre-disposal data (discussed in Section 3.2 above), as well as our comparison of those pre-disposal data with the results from the eight CCR Rule baseline events, it was concluded that the groundwater at the SCL4A contained low-level pre-existing impacts from CCR that pre-date SCL4A operation. As a result of these pre-existing impacts, the SCL4A statistical analysis plan uses intrawell upper prediction limits (UPL) to determine SSIs. Intrawell UPLs are calculated from historical data within a particular well, and not by pooling data from the background wells, such that individual limits are calculated for each constituent in each well in the monitoring program.

The intrawell UPL for sulfate at TMW-1 was 46.3 milligrams per liter (mg/L) based on the results from the initial eight (8) baseline sampling events that ranged from 23.2 to 38.0 mg/L, as summarized in **Table 2** and **Figure 2**. The results from this small dataset were normally distributed, and a calculated UPL was used. In August 2019, the baseline dataset was expanded to include the next four (4) sampling events, and the UPL changed from 46.3 to 50.29 mg/L. In August 2021, the baseline data set was further expanded to include the subsequent four (4) or more sampling events, and the UPL changed from 50.29 to 49.87 mg/L. During the March/April 2022 detection monitoring event, a concentration of 64.9 mg/L was reported for sulfate in TMW-1, which was confirmed in June 2022 by a verification result of 50.5 J mg/L, which slightly exceeds the current UPL of 49.7 mg/L.

Table 2: Review of Statistically Significant Increase

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	June 2021 Updated UPL	Baseline Sampling Event Range	Detection Monitoring Sampling Range (November 2017 - November 2021)	March 2022 Result	June 2022 Result
Sulfate (mg/L)	TMW-1	46.3	50.29	49.87	23.2 - 38.0	33.8 - 47.7	64.9	50.5 J

Notes:

1) mg/L – milligrams per liter.
2) UPL – upper prediction limit.
3) UPLs calculated using Sanitas™ software.
4) UWL – Utility Waste Landfill.
5) J – result is an estimated value.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Several different lines of evidence indicate that the SSI at the SCL4A is not caused by a release from the SCL4A, but rather from an alternative source. The following section describes the different lines of evidence, listed below, that demonstrate this position.

- Documentation of pre-existing, low-level concentrations of CCR indicators in groundwater that pre-date the SCL4A operation, especially on the northern side of the SCL4A.
- Review of concentrations in nearby and background monitoring wells.

- Review of historical and current sulfate concentrations at TMW-1.
- Documentation of the construction of the SCL4A with a 60-mil geomembrane liner and a 2-foot thick clay barrier.

5.1 CCR Indicators

Several types of CCR byproducts are generated by coal-fired power plants. The different types of CCR typically display distinct geochemical signatures and indicator parameters. **Table 3** below describes the different types of CCRs and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017).

Table 3: Types of CCR and Typical Indicator Parameters

Type of CCR	Description of CCR (USEPA 2018)	Key Indicators (EPRI 2011, 2012, 2017)
Fly Ash	Fine grained, powdery material composed mostly of silica made from the burning of finely ground coal in the boiler.	■ Boron ■ Molybdenum ■ Lithium ■ Sulfate ■ Bromide ■ Potassium ■ Sodium ■ Fluoride
Boiler Slag / Bottom Ash	Molten bottom ash from the slag tap and cyclone type furnaces that turns into pellets that have a smooth glassy appearance after quenching with water.	
Flue Gas Desulfurization Material (FGD)	A material leftover from the process of reducing sulfur dioxide emissions from a coal-fired boiler that can be a wet sludge consisting of calcium sulfite or calcium sulfate or a dry powdered material that is a mixture of sulfites and sulfates.	■ Sulfate ■ Fluoride ■ Calcium ■ Boron ■ Bromide ■ Chloride

Notes:

1) Fly ash and boiler slag/bottom ash typically have the same indicator parameters.
2) Definitions from USEPA website, available at https://www.epa.gov/coalash/coal-ash-basics.
3) Key indicators from EPRI 2011, 2012, and 2017 as well as Gredell and Reitz & Jens, 2014.

As described above, the SCL4A has historically received fly ash. FGD type wastes at the SEC are managed at the SCPC, located to the west of the SCL4A.

5.2 Evaluation of SSI

5.2.1 Boron Concentrations

Boron is typically the key indicator for fly ash and boiler slag/bottom ash impacts because it is typically present in the leachate from these types of waste, is not a common anthropogenic contaminant, and is non-reactive and mobile in most hydrogeological environments (EPRI 2012). This non-reactive and mobile nature makes boron an early indicator of impacts from a CCR Unit. If groundwater was impacted by the SCL4A, current boron

concentrations should be statistically elevated with respect to pre-CCR placement, background monitoring wells, and compared to those in the baseline sampling.

Figure 2 displays historical boron concentrations at TMW-1, as well as background wells BMW-1S and BMW-3S and nearby wells TMW-2 and TMW-3. If the SSI at TMW-1 was caused by impacts from the SCL4A, boron concentrations would be expected to increase as a first indicator of CCR influence on the groundwater. **Figure 2** demonstrates that current boron concentrations are similar to those from previous sampling events and are similar to background levels. This information displays that TMW-1 does not have boron impacts, and therefore, a source other than CCR is likely the cause of the SSI at TMW-1.

5.2.2 Sulfate Concentrations

Sulfate, much like boron, is a key indicator for potential CCR impacts because sulfate is highly mobile in most hydrogeological environments, except where conditions are strongly reducing. The groundwater around the SCL4A does not demonstrate strongly reducing conditions, such as negative oxidation reduction potential (ORP) and dissolved iron concentrations above 1 mg/L. No hydrogen sulfide odors have been reported at the SCL4A. Therefore, if the SSI was caused by impacts from the SCL4A, it would be expected that sulfate values would increase following placement of CCR, along with boron values. Given that boron concentrations are not indicative of CCR impacts, it follows that the elevated sulfate values in well TMW-1 are from an alternative source.

As displayed on **Figure 3**, during baseline sampling at TMW-1, sulfate ranged from 23.2 to 38.0 mg/L. During the subsequent sampling events, sulfate concentrations at TMW-1 have ranged from 33.8 to 64.9 mg/L. The time series plot on **Figure 3** shows the high degree of variability in sulfate concentrations at the TMW wells south of the SCL4A since the onset of baseline monitoring. This figure provides further evidence that the limited number of data points used to calculate the intrawell UPL for sulfate at TMW-1 do not accurately reflect the natural geochemical variability within the groundwater. Two other compliance monitoring wells are located approximately 325 and 650 feet to the east of TMW-1 as displayed in **Figure 1**: TMW-2 and TMW-3, respectively. Sulfate concentrations in these monitoring wells ranged from 26.4 to 85.8 mg/L and UPLs for these monitoring wells are 80.98 mg/L at TMW-2 and 60.9 mg/L at TMW-3. Based on the sulfate concentration range of the nearby wells, the sulfate concentration in TMW-1 for April 2022 is within the range of historical concentrations for adjacent wells, which indicates that the SSI for sulfate in TMW-1 is likely the result of a limited baseline sampling period that did not capture the full range of natural geochemical variability within the shallow zone of the alluvial aquifer at TMW-1.

To further investigate the geochemical variability of sulfate in the area of the SCL4A, the historical data from the state UWL wells [located on the south side of the UWL, outside the zone of impact from the SCPA] were reviewed. These UWL wells (labeled “DG-xx”) were installed and sampled on multiple occasions prior to the receipt of CCR at the SCL4A. These DG-xx monitoring wells are screened at approximately the same depth as TMW-1 in the shallow zone of the alluvial aquifer. **Figure 4** displays a box and whisker plot of the natural variability of the sulfate concentrations within the alluvial aquifer prior to the receipt of CCR in the SCL4A for these wells. As shown on **Figure 4**, the recent results from TMW-1 are within range of concentrations for the DG-xx wells, which represent groundwater quality from a period that occurred prior to the receipt of CCR in SCL4A.

The lines of evidence listed above indicate that the sulfate concentration in TMW-1 in March-April 2022 is not the result of a release from the SCL4A, but instead can be attributed to pre-existing impacts and variability in the alluvial aquifer combined with the limited dataset used for the calculation of the previous sulfate UPLs in TMW-1.

6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCL4A IMPACT

Based on the information presented in Section 5, above, the SSI reported for the March-April 2022 monitoring event at TMW-1 is not a result of impacts from the SCL4A. The SSI appears to be a result of numerous factors, including (1) pre-existing low concentrations of CCR indicators from the upgradient SCPA that predate the SCL4A, (2) relatively low calculated UPLs, and (3) a relatively small set of baseline data that do not reflect the full natural temporal and spatial variability within the aquifer. Only sixteen (16) samples have been used thus far to calculate the intrawell UPLs in TMW-1. It can take many years of data gathering to observe the range of variability in groundwater concentrations that are representative of natural conditions or pre-existing impacts for any given aquifer. The results gathered thus far may not have captured the full extent of the spatial and temporal variability in the downgradient alluvial aquifer monitoring wells at the SEC.

Along with the lines of evidence listed above, SCL4A is constructed with 2-feet of compacted clay baseliner which is overlain by a 60-mil HDPE liner. Documented construction of SCL4A with these components act to limit the potential that the SSI reported for sulfate in TMW-1 during April 2022 is a result of influence from the SCL4A. The SSI observed in TMW-1 is not caused by impacts from the SCL4A, but is a result of natural variability and pre-existing impacts within the alluvial aquifer at the site.

7.0 REFERENCES

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Tables

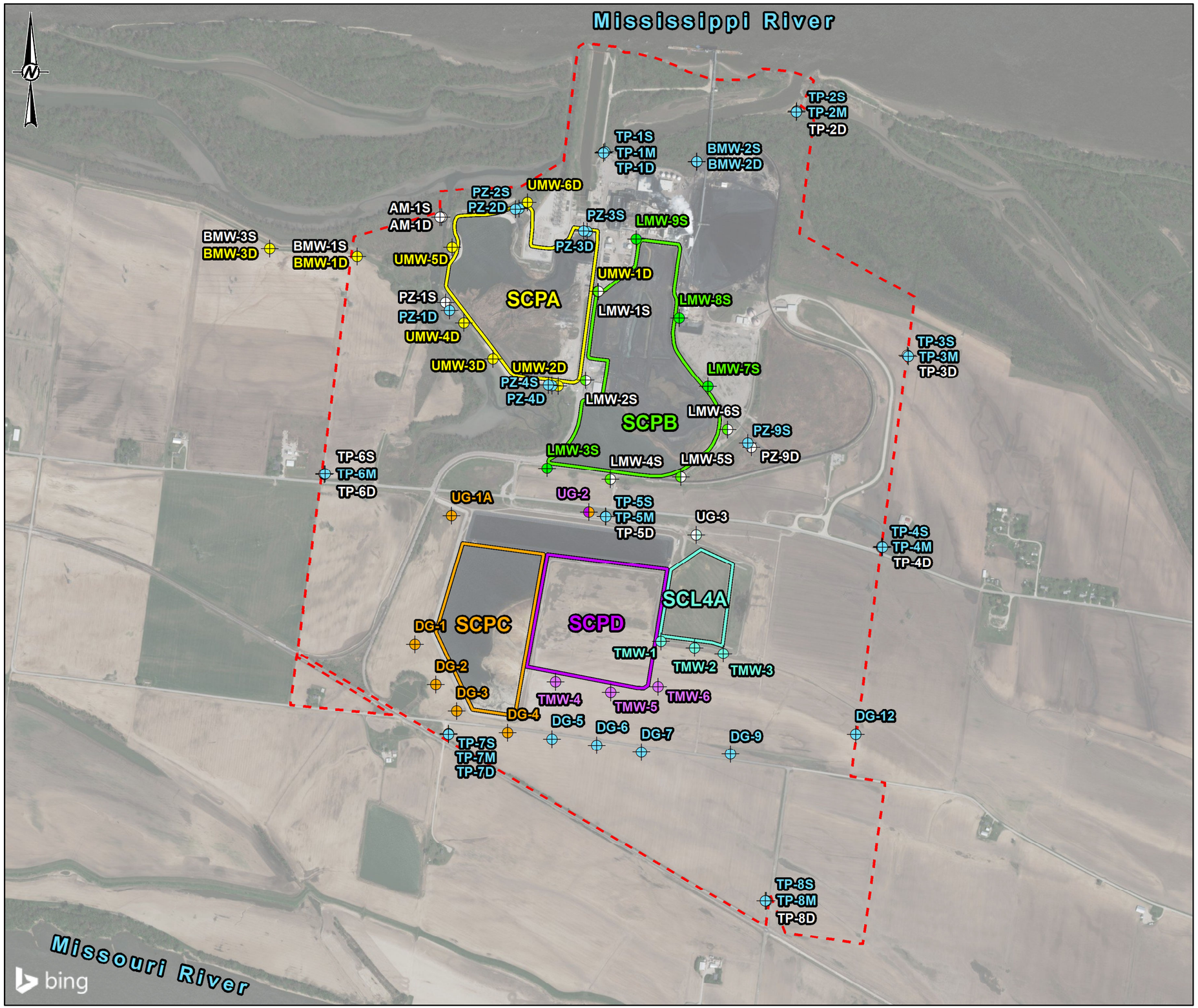
Table 1
March/April 2022 Detection Monitoring Results
SCL4A - Landfill Cell 4A
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS							
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-3	UG-3	Prediction Limit TMW-1	TMW-1	Prediction Limit TMW-2	TMW-2	Prediction Limit TMW-3	TMW-3
March-April 2022 Detection Monitoring Event											
DATE	NA	3/29/2022	3/29/2022	NA	4/1/2022	NA	3/29/2022	NA	3/29/2022	NA	3/29/2022
pH	SU	6.80	6.94	6.659-7.397	6.94	6.356-7.504	7.10	6.601-7.399	6.95	6.41-7.31	6.92
BORON, TOTAL	µg/L	68.0 J	70.7 J	1,200	184	DQR	76.8 J	104.4	84.9 J	110.6	95.6 J
CALCIUM, TOTAL	µg/L	173,000	147,000	172,812	120,000	119,842	103,000	133,759	124,000	146,661	132,000
CHLORIDE, TOTAL	mg/L	8.5	11.8	85.54	73.5	4.199	3.2	4.641	3.4	3.1	2.4
FLUORIDE, TOTAL	mg/L	0.30	0.36	0.3954	0.35	0.4537	0.36	0.4229	0.34	0.3773	0.30
SULFATE, TOTAL	mg/L	44.9	47.8	139.9	18.6	49.87	64.9	80.98	79.0	60.9	51.0
TOTAL DISSOLVED SOLIDS	mg/L	591	508	671.3	612	462.8	365	513	447	505.4	476
June 2022 Verification Sampling Event											
DATE	NA						6/6/2022				
pH	SU										
BORON, TOTAL	µg/L										
CALCIUM, TOTAL	µg/L										
CHLORIDE, TOTAL	mg/L										
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L						50.5 J				
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in yellow indicate a Statistically Significant Increase (SSI).
6. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
7. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

Prepared By: GTM
Checked By: BTT
Reviewed By: MNH

Figures



LEGEND

Sioux Energy Center Property Boundary

CCR Units

- SCPA - Unlined Bottom Ash Surface Impoundment
- SCPB - Lined Fly Ash Surface Impoundment

Utility Waste Landfill (UWL)

- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
- SCPD - WFGD Surface Impoundment

Monitoring Well Networks

- Corrective Action Monitoring Well
- SCPA Detection and Assessment Monitoring Well
- SCPB and Corrective Action Monitoring Well
- SCPB Detection Monitoring Well
- SCPC Detection Monitoring Well
- SCPD and SCPC Detection Monitoring Well
- SCPD Detection Monitoring Well
- SCL4A and Corrective Action Monitoring Well
- SCL4A Detection Monitoring Well
- Monitoring Well Used for Water Level Elevation Measurements Only

0 1,000 2,000 3,000

Feet

NOTE(S)

1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2.) WFGD - WET FLUE GAS DESULFURIZATION
3.) CCR - COAL COMBUSTION RESIDUALS

REFERENCE(S)

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAM AND SAMPLE LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2022-10-27
DESIGNED	JSI
PREPARED	JSI
REVIEWED	EMS
APPROVED	MNH

PROJECT NO.	CONTROL	REV.	FIGURE
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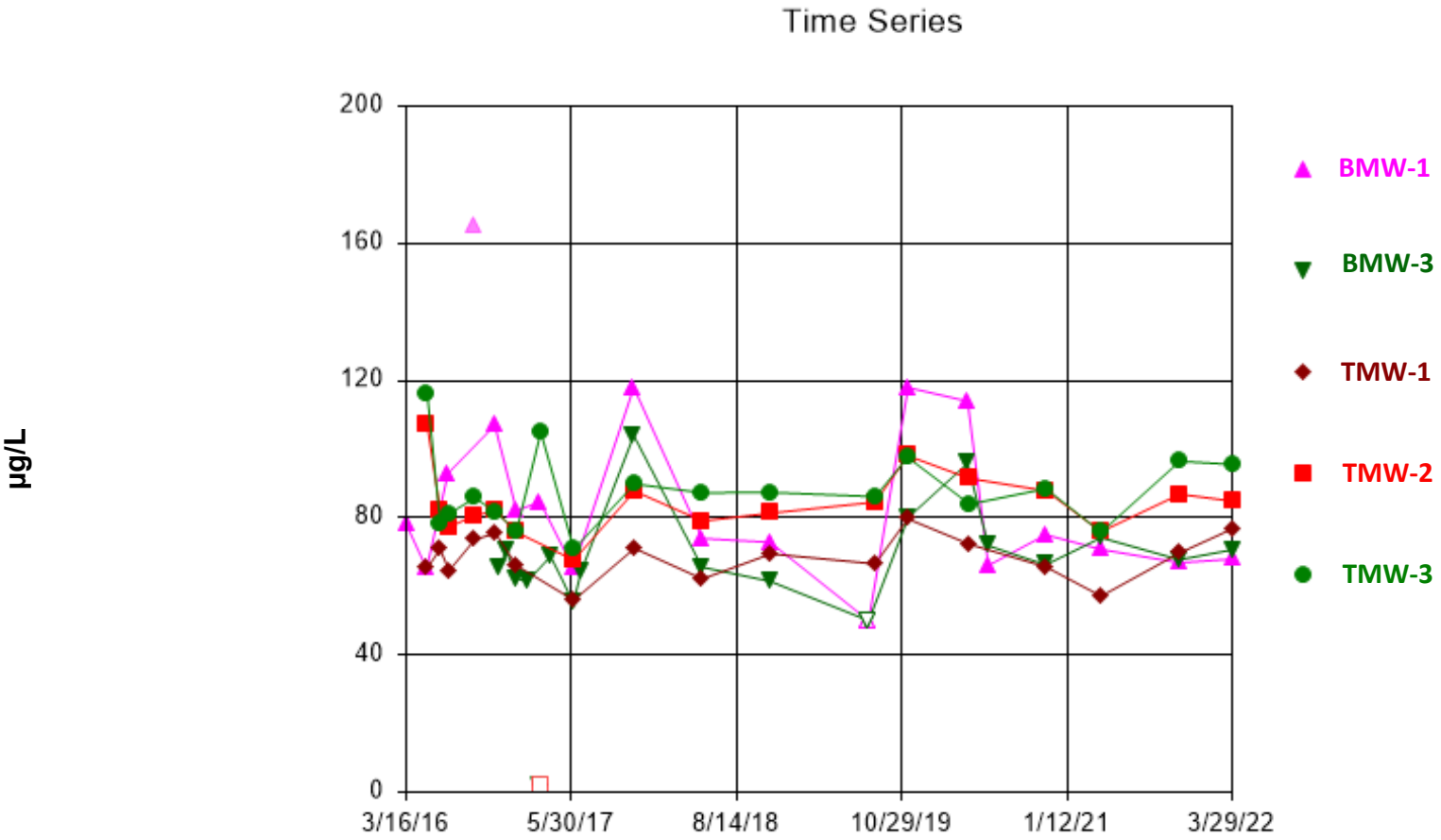
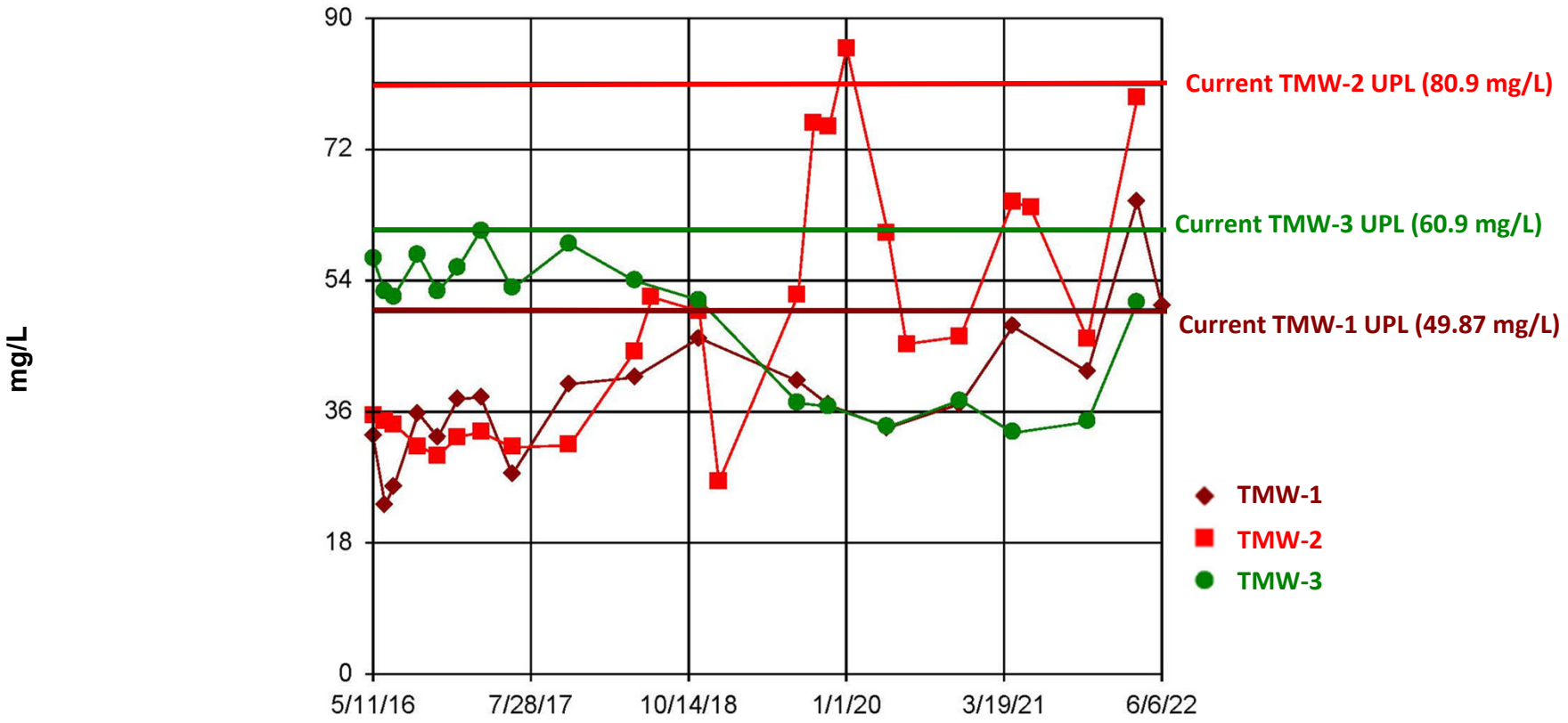


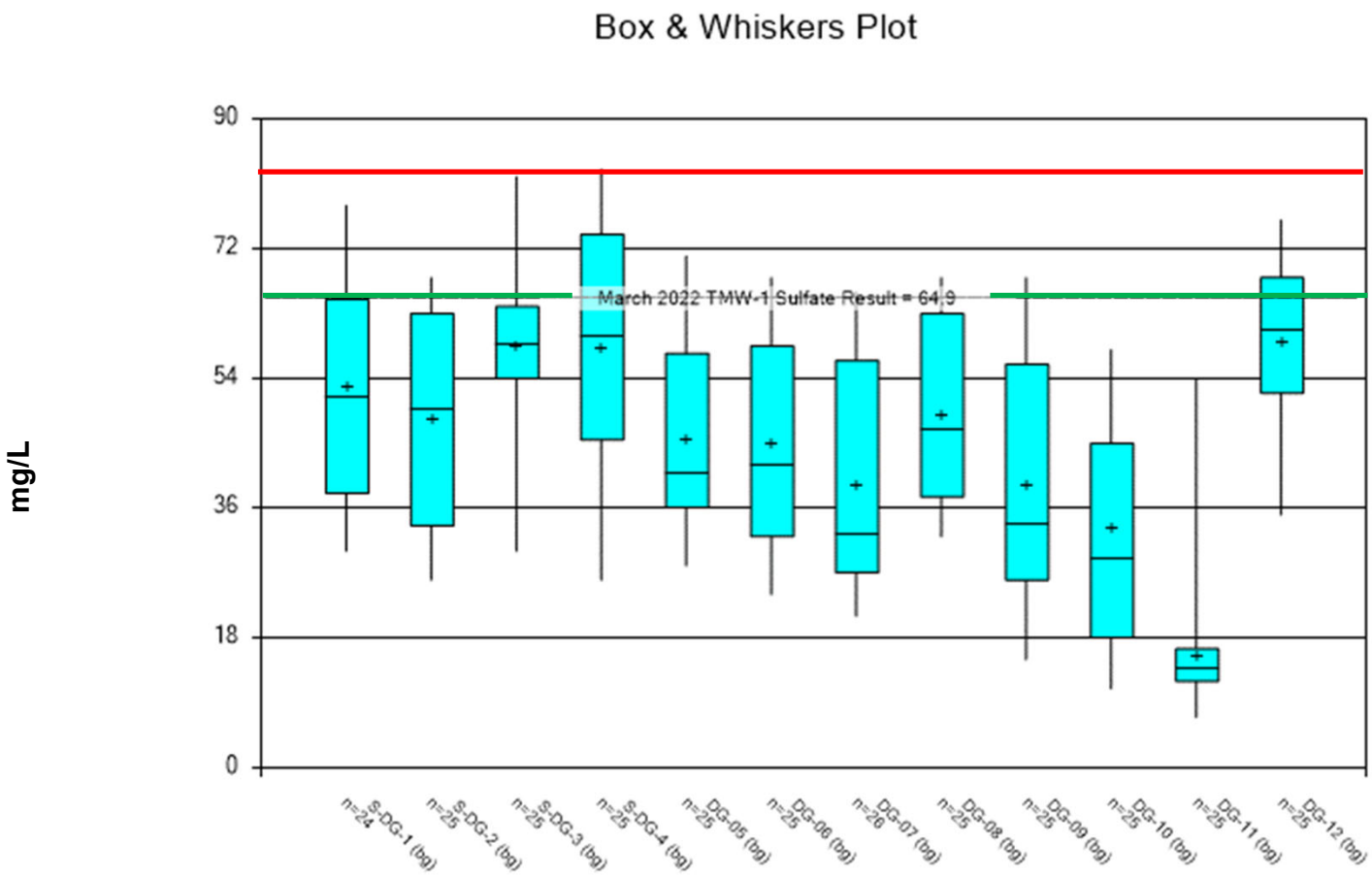
Notes
1) µg/L – Micrograms per liter.
2) Points not connected to lines are considered outliers as specified in the Statistical Analysis Plan for the SCL4A.

CLIENT/PROJECT										TITLE
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER						**Time Series Plot for Boron Concentrations**
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
GTM	EMS	MNH	2022-08-18	N/A	N/A	153140604.0003	N/A	N/A	N/A	**2**



Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.

CLIENT/PROJECT								TITLE	
AMEREN MISSOURI **SIOUX ENERGY CENTER**				WSP GOLDER				**Time Series Plot for Sulfate Concentrations South of the SCL4A**	
DRAWN GTM	CHECKED EMS	REVIEWED MNH	DATE 2022-08-18	SCALE N/A	FILE NO. N/A	JOB NO. 153140604.0003	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **3**



Pre-CCR Downgradient UPL (83.0 mg/L)

TMW-1 March 2022 Sulfate Result (64.9 mg/L)

Notes
1) mg/L – Milligrams per liter.
2) UPL – Upper Prediction Limit.
3) CCR – Coal Combustion Residuals.

CLIENT/PROJECT							TITLE		
AMEREN MISSOURI SIOUX ENERGY CENTER				GOLDER			**Pre-CCR Sulfate Plots – Downgradient Monitoring Wells**		
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
GTM	EMS	MNH	2022-08-18	N/A	N/A	153140604.0003	N/A	N/A	N/A	**4**

APPENDIX C

2022 Potentiometric Surface Maps

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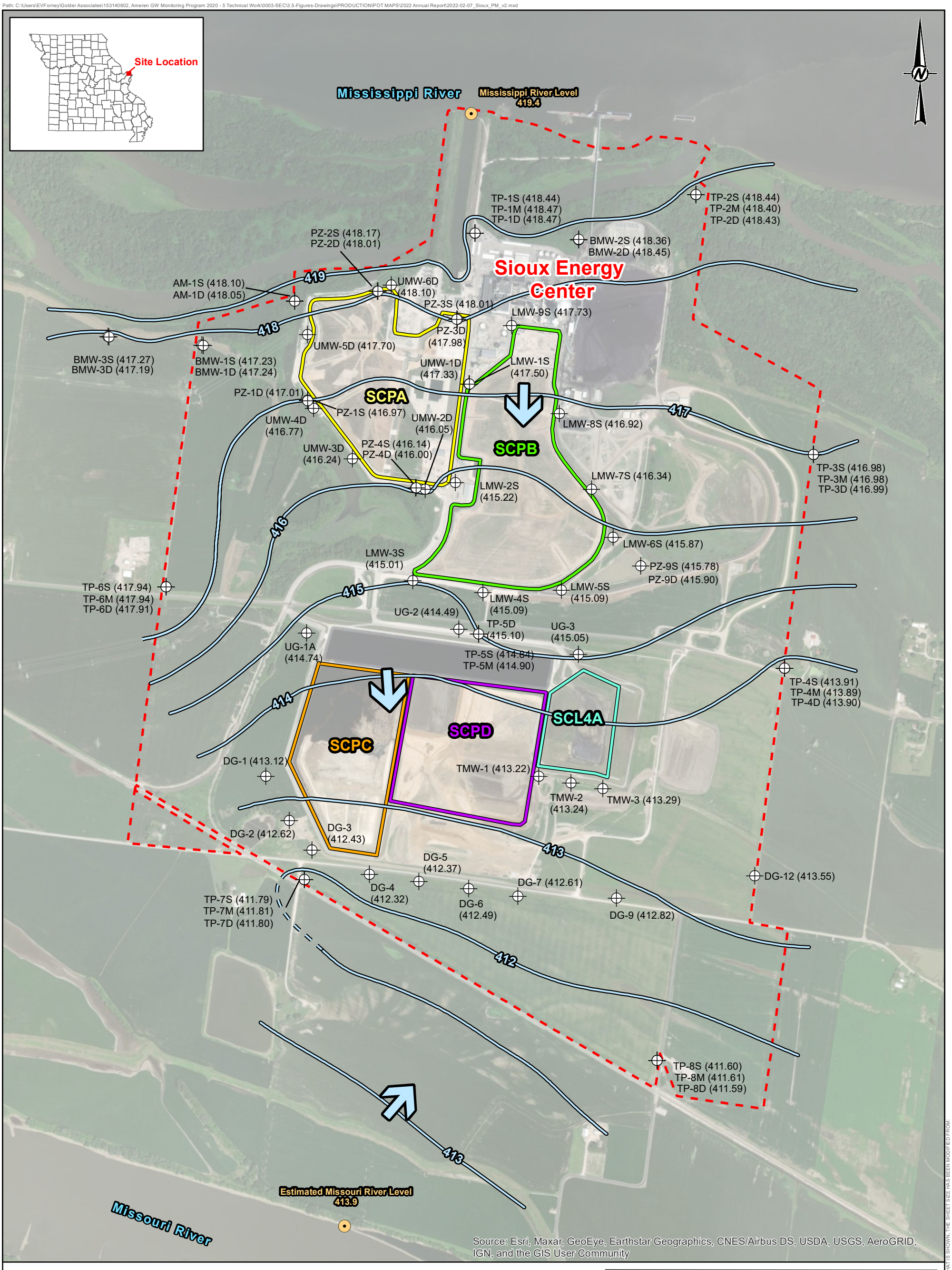

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
- Proposed SCPD - WFGD Surface Impoundment

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer
- Groundwater Flow Direction

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) WFGD - WET FLU GAS DESULFURIZATION.

REFERENCES

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

0 500 1,000 1,500 2,000 Feet

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
FEBRUARY 7, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-27
PREPARED	GTM
DESIGN	JSI
REVIEW	SSS
APPROVED	MNH

PROJECT No. 153140604
PHASE 0003
FIGURE **C1**

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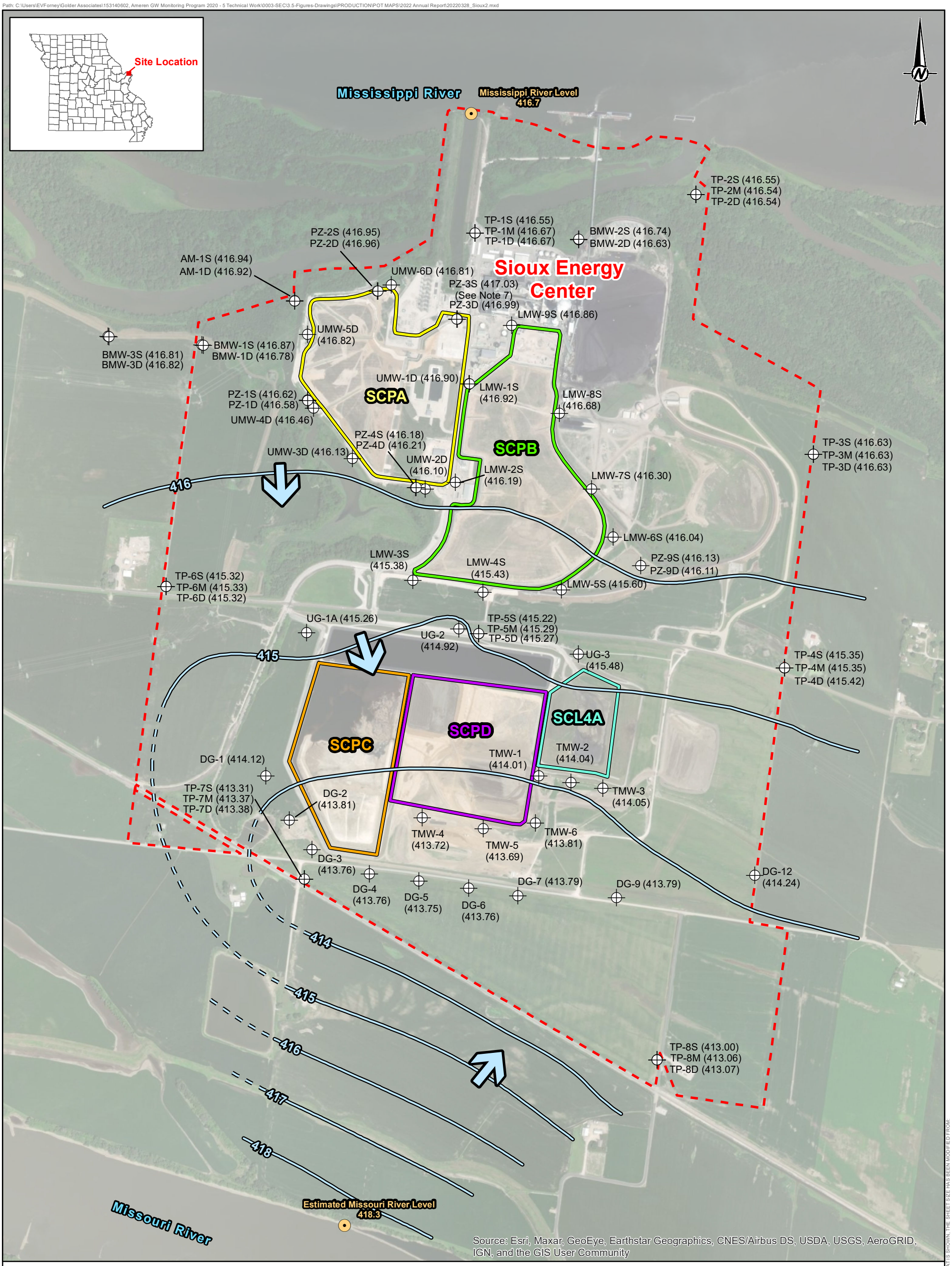

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
- Proposed SCPD - WFGD Surface Impoundment

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer
- Groundwater Flow Direction

0 500 1,000 1,500 2,000 Feet

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) WFGD - WET FLUE GAS DESULFURIZATION.
7.) PZ-3S NOT USED IN POTENTIOMETRIC SURFACE MAP.

REFERENCES

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
MARCH 28, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-27
PREPARED	JSI
DESIGN	JSI
REVIEW	BTT
APPROVED	MNH

PROJECT No. 153140604
PHASE 0003
FIGURE **C2**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
1 in
0

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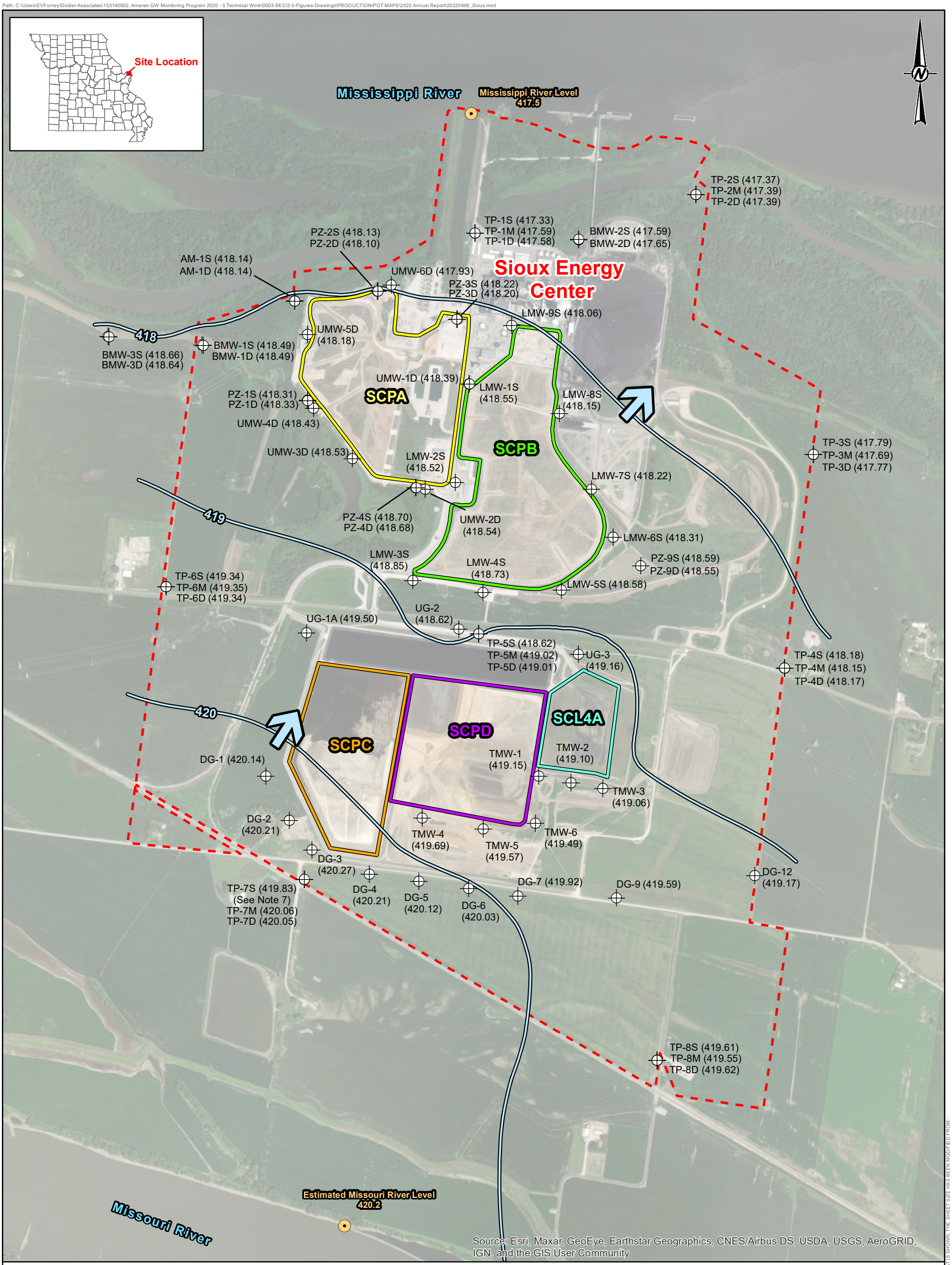

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
- Proposed SCPD - WFGD Surface Impoundment

Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer
- Groundwater Flow Direction

0 500 1,000 1,500 2,000 Feet

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) WFGD - WET FLUE GAS DESULFURIZATION.
7.) TP-7S NOT USED IN POTENTIOMETRIC SURFACE MAP CONTOURING.

REFERENCES

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP, FEBRUARY 2011.
2.) COORDINATE SYSTEM: NAD 1983 STATE PLANE MISSOURI EAST FIPS 2,401 FEET.
3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450).

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JUNE 6, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-27
PREPARED	GTM
DESIGN	JSI
REVIEW	ETF
APPROVED	MNH

PROJECT No. 153140604
PHASE 0003
FIGURE **C3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in 0

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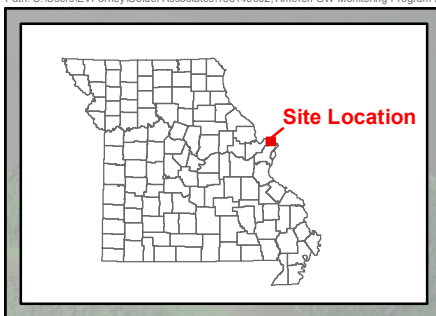

Mississippi River

Mississippi River Level
419.5

Sioux Energy Center

SCPA

SCPB

SCPC

SCPD

SCL4A

419

418

417

416

415

414

413

TP-2S (418.68)
TP-2M (418.68)
TP-2D (418.67)

TP-1S (418.97)
TP-1M (418.48)
TP-1D (418.40)

BMW-2S (418.32)
BMW-2D (418.44)

UMW-6D
(418.12)

AM-1S (418.10)
AM-1D (418.06)

PZ-2S (418.28)
PZ-2D (418.30)

PZ-3S (418.11)
PZ-3D (418.10)

LMW-9S (417.81)

UMW-5D (417.74)

BMW-3S (417.33)
BMW-3D (417.36)

BMW-1S (417.35)
BMW-1D (417.37)

PZ-1S (417.19)
PZ-1D (417.15)

UMW-4D (416.93)

UMW-1D (417.42)
LMW-1S (417.47)

LMW-8S (417.02)

TP-3S (417.15)
TP-3M (417.10)
TP-3D (417.10)

UMW-3D (416.39)

PZ-4S (416.38)
PZ-4D (416.42)

LMW-2S (416.44)

UMW-2D (416.31)

LMW-7S (416.57)

LMW-6S (416.17)

PZ-9S (416.20)

TP-6S (415.23)
TP-6M (415.24)
TP-6D (415.23)

LMW-3S (415.34)

LMW-4S (415.43)

LMW-5S (415.68)

UG-1A (415.14)

UG-2 (414.86)

TP-5S (415.22)
TP-5M (415.25)
TP-5D (415.31)

UG-3 (415.45)

TP-4S (415.50)
TP-4M (415.49)
TP-4D (415.47)

TMW-1 (413.80)

DG-1 (413.74)

TMW-2
(413.85)

TMW-3
(413.91)

DG-2 (413.26)

TMW-4
(413.32)

TMW-5
(413.42)

TMW-6 (413.59)

DG-3 (413.11)

DG-4 (412.98)

DG-5 (413.08)

DG-6 (413.18)

DG-7 (413.28)

DG-9 (413.55)

DG-12 (414.15)

TP-7S (412.52)
TP-7M (412.45)
TP-7D (412.45)

TP-8S (412.30)
TP-8M (412.32)
TP-8D (412.32)

Missouri River

Estimated Missouri River Level
413.1

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundment
- SCL4A - Dry CCR Disposal Area
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Groundwater Elevation Contour (FT MSL)

- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations

- River Gauge Location
- Monitoring Well or Piezometer
- Groundwater Flow Direction

0 500 1,000 1,500 2,000 Feet

NOTES

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REFERENCES

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CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
OCTOBER 17, 2022 POTENTIOMETRIC SURFACE MAP

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-27
PREPARED	ETF
DESIGN	JSI
REVIEW	RJF
APPROVED	MNH

PROJECT No. 153140604
PHASE 0003B
FIGURE **C4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
0 1in

wsp.com