REPORT

2024 Annual Groundwater Monitoring and Corrective Action Report

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

January 31, 2025 Project Number: 23009-24

Submitted to:



Ameren Missouri 1901 Chouteau Avenue St. Louis, Missouri 63103 Submitted by:



Rocksmith Geoengineering, LLC 2320 Creve Coeur Mill Rd Maryland Heights, MO 63043



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, 2024, through December 31, 2024, including verification results related to late 2023 sampling.

Throughout 2024, 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 2024, SSIs were determined for the November 2023 and May 2024 sampling events and a summary of the SSIs for the past year is provided in **Table 1**.

Table 1 - Summary of 2024 SCL4A Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt	Parameters Collected	Verified SSIs	SSI Determination Date	ASD Completion Date	
023 Sampling /ent	Detection Monitoring, November 10-13, 2023	December 27, 2023	Appendix III, Major Cations and Anions	Chloride: TMW-2, TMW-3	March 26,	June 24,	
November 2 Ev	Verification Sampling, February 7, 2024	February 23, 2024	Detected Appendix III parameters ^{(See} _{Note 1)}	<u></u>	2024	2024	
impling Event	Detection Monitoring, May 28-30, 2024	July 9, 2024	Appendix III, Major Cations and Anions	<u>Calcium:</u> TMW-1, TMW-2	October 7,	January 3,	
May 2024 Sa	Verification Sampling, July 29-30, 2024	August 13, 2024	Detected Appendix III parameters	<u>Chloride:</u> TMW-1, TMW-3	2024	2025	
November 2024 Sampling Event	Detection Monitoring, November 14-20, 2024	December 23, 2024	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sa completed in 2025.		on Sampling are	

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.



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. Alternative Source Demonstrations (ASDs) were prepared for each of these sampling events and are discussed further in this Annual Report.

No new wells were installed or decommissioned in the SCL4A monitoring system in 2024.



Table of Contents

1.0	Installation or Decomissioning of Monitoring Wells	1
2.0	Groundwater Sampling Results and Discussion	1
2.1	Detection Monitoring Program	1
2.2	Groundwater Elevation, Flow Rate and Direction	2
2.3	Sampling Issues	2
3.0	Activities Planned for 2025	2

TABLES

 Table 1 - Summary of 2024 SCL4A Sampling Events, Previous Year Verification, and Statistical Evaluations (in text)

Table 2 - Summary of Groundwater Sampling Dates (in text)

Table 3 - November 2023 Detection Monitoring Results

Table 4 - May 2024 Detection Monitoring Results

Table 5 - November 2024 Detection Monitoring Results

FIGURES

Figure 1 - Sioux Energy Center Groundwater Monitoring Programs and Sample Location Map

APPENDICES

Appendix A - Laboratory Analytical Data

Appendix B - Alternative Source Demonstration – November 2023 Sampling Event

Appendix C - Alternative Source Demonstration - May 2024 Sampling Event

Appendix D - 2024 Potentiometric Surface Maps



1.0 INSTALLATION OR DECOMISSIONING 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 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 2024 as a part of the CCR Rule monitoring program for the SCL4A.

2.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the SCL4A CCR Unit in 2024. **Table 2** below provides a summary of the groundwater samples collected in 2024 including the number of samples, the date of sample collection, and the monitoring program for which the samples were collected.

Table 2 – Summary of Groundwater Sampling Dates

	Groundwater Monitoring Wells							
Sampling Event	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3	Monitoring Program	
			Date of Samp	ole Collection				
February 2024 Verification Sampling	-	-	-	2/8/2024	2/7/2024	2/7/2024	Detection	
May 2024 Sampling Event	5/28/2024	5/28/2024	5/28/2024	5/30/2024	5/29/2024	5/29/2024	Detection	
July 2024 Verification Sampling	-	-	-	7/29/2024	7/30/2024	7/30/2024	Detection	
November 2024 Sampling Event	11/20/2024	11/20/2024	11/14/2024	11/20/2024	11/19/2024	11/19/2024	Detection	
Total Number of Samples Collected	2	2	2	4	4	4	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.

5) TMW-1 was re-sampled in February 2024 following one initial exceedance identified in November 2023. This occurred prior to updating prediction limits in March 2024 using data through May 2023. Using updated limits, the November 2023 results no longer contained any exceedances, and therefore, February 2024 verification sampling results at TMW-1 are not included in **Table 3**.

2.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 10-13, 2023. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2023 event were not completed until 2024 and are included in this report. Detections above respective prediction limits for some Appendix III analytes triggered a verification sampling event, which was completed on February 7, 2024, and verified two SSIs. **Table 3** summarizes the results and statistical analysis of the November 2023 Detection Monitoring event. Laboratory analytical data from the February 2024 verification sampling event through the November 2024 sampling event



are provided in **Appendix A**. Laboratory Analytical data for the November 2023 Detection Monitoring event are provided in the 2023 Groundwater Monitoring and Corrective Action Annual Report for the SCL4A.

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 SSIs and is provided in **Appendix B**. This ASD demonstrates that the SSIs at monitoring wells TMW-2 & TMW-3 are not caused by the SCL4A CCR Unit, and therefore, the SCL4A CCR Unit remains in Detection Monitoring.

Detection Monitoring samples were collected May 28-30, 2024, and testing was completed for all Appendix III analytes, as well as major cations and anions. Detections above respective prediction limits for some Appendix III analytes triggered a verification sampling event, which was completed on July 29-30, 2024, and verified four SSIs. **Table 4** summarizes the results and statistical analysis of the May 2024 Detection Monitoring event. Laboratory analytical data from this sampling event is included in **Appendix A**. The SSIs at TMW-1, TMW-2, and TMW-3 are not caused by the SCL4A CCR unit as demonstrated by the ASD provided in **Appendix C**.

A Detection Monitoring sampling event was completed November 14-20, 2024, and testing was completed for all Appendix III analytes, as well as major cations and anions. Statistical analysis to evaluate for SSIs in the November 2024 data was not completed in 2024 and the results will be provided in the 2025 Annual Report. **Table 5** summarizes the results of the November 2024 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 D**. 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 most often flowed from north to south. The overall net groundwater flow direction in the alluvial aquifer at the SEC was south-southeast in 2024 as a result of river levels in the Missouri and Mississippi Rivers. From 2016 through 2022, horizontal gradients have ranged from 0.00006 to 0.001 feet/foot with an estimated net annual groundwater movement of approximately four feet per year in the prevailing downgradient direction. From July 2022 to February 2024, due to relatively low Missouri River levels, there was a more prevalent southward flow direction at a rate of approximately 43 feet per year. Based on water levels collected beginning in May 2024 throughout the rest of the year, groundwater flow varied north and south with a net eastward direction, averaging approximately 7 feet per year.

2.3 Sampling Issues

No notable sampling issues were encountered at the SCL4A in 2024.

3.0 ACTIVITIES PLANNED FOR 2025

Detection Monitoring is scheduled to continue on a semi-annual basis in the second and fourth quarters of 2025. Statistical analysis of the November 2024 Detection Monitoring data will be completed in 2025 and will be included in the 2025 Annual Report. As outlined in the Statistical Analysis plan for the site, updates to the



statistical limits should be completed once four to eight new sample results are available. After the first semiannual sampling event in 2025, there will be at least 4 new results for each Appendix III parameter. Therefore, background updates are planned to be completed in 2025.

An additional monitoring well is planned to be installed on the east side of SCL4A in 2025.



Tables



Table 3November 2023 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROU	INDWATER M	ONITORING V	VELLS		
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
			No	ovember 2023	Detection M	onitoring Res	ults				
DATE	NA	11/10/2023	11/10/2023	NA	11/13/2023	NA	11/13/2023	NA	11/13/2023	NA	11/13/2023
рН	SU	7.04	7.14	6.678-7.373	7.04	6.531-7.438	7.11	6.71-7.226	6.96	6.573-7.424	7.01
BORON, TOTAL	μg/L	57.9 J	58.9 J	1,105	638	DQR	80.2 J	101.4	85.9 J	109	96.1 J
CALCIUM, TOTAL	μg/L	136,000	114,000	171,791	107,000	118,531	107,000	132,299	123,000	145,416	134,000
CHLORIDE, TOTAL	mg/L	7.2	13.4	84.34	34.5	4.359	2.3	4.531	5.8	3.383	5.1
FLUORIDE, TOTAL	mg/L	ND	ND	0.39	ND	0.4613	ND	0.4211	ND	0.37	ND
SULFATE, TOTAL	mg/L	46.9	12.3	136.3	65.0	62.35	54.8	86.88	28.8	65.78	40.9
TOTAL DISSOLVED SOLIDS	mg/L	475	398	661.4	504	452.6	368	518	430	493	475
			F	ebruary 2024	Verification S	Sampling Ever	nt				
DATE	NA								2/7/2024		2/7/2024
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L										
CHLORIDE, TOTAL	mg/L								9.1		9.1
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:

1. Unit Abbreviations: $\mu g/L$ - 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.

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: GTM Checked By: ANT Reviewed By: MNH

Table 4 May 2024 Detection Monitoring Results SCL4A - Landfill Cell 4A Sioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROU	JNDWATER M	IONITORING W	/ELLS		
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
				May 2024 [Detection Mo	nitoring Result	s				
DATE	NA	5/28/2024	5/28/2024	NA	5/28/2024	NA	5/30/2024	NA	5/29/2024	NA	5/29/2024
рН	SU	6.86	6.95	6.678-7.373	7.00	6.531-7.438	7.16	6.71-7.226	7.08	6.573-7.424	6.97
BORON, TOTAL	μg/L	58.1 J	54.1 J	1,105	345	DQR	85.5 J	101.4	84.0 J	109	56.8 J
CALCIUM, TOTAL	μg/L	133,000	116,000	171,791	129,000	118,531	124,000 J	132,299	135,000	145,416	113,000
CHLORIDE, TOTAL	mg/L	10.1	11.1	84.34	28.0	4.359	12.8 J	4.531	4.0	3.383	14.2
FLUORIDE, TOTAL	mg/L	ND	ND	0.39	ND	0.4613	ND	0.4211	ND	0.37	ND
SULFATE, TOTAL	mg/L	37.7	19.7	136.3	81.8	62.35	57.6 J	86.88	34.0 J	65.78	42.4
TOTAL DISSOLVED SOLIDS	mg/L	470	529	661.4	517	452.6	465	518	453	493	433
				July 2024	Verification S	ampling Event				-	
DATE	NA						7/29/2024		7/30/2024		7/30/2024
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L						125,000 J		134,000		
CHLORIDE, TOTAL	mg/L						9.0 J				19.1
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L						440				

NOTES:

1. Unit Abbreviations: $\mu g/L$ - 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. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).

7. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.

8. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

9. 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: JTR Checked By: JTA Reviewed By: MNH

Table 5November 2024 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS				
ANALYTE	UNITS	BMW-1S	BMW-3S	UG-3	TMW-1	TMW-2	TMW-3	
		Novembe	r 2024 Detection	Monitoring Eve	ant .			
		Novembe	1 2024 Detection	T WORTCOTTING LVC				
DATE	NA	11/20/2024	11/20/2024	11/14/2024	11/20/2024	11/19/2024	11/19/2024	
рН	SU	6.57	6.72	6.94	7.16	6.81	6.75	
BORON, TOTAL	μg/L	61.9 J	57.3 J	418	83.6 J	87.2 J	93.4 J	
CALCIUM, TOTAL	μg/L	175,000	113,000	120,000	118,000	134,000	128,000	
CHLORIDE, TOTAL	mg/L	14.2	13.1	19.7 J	3.8	5.8	18.7	
FLUORIDE, TOTAL	mg/L	ND	ND	0.47 J	0.37	0.33	0.32 J	
SULFATE, TOTAL	mg/L	37.1	17.1	79.1 J	63.3	27.7	43.7	
TOTAL DISSOLVED SOLIDS	mg/L	613	413	497	460	462	467	

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: JTR Checked By: VAH Reviewed By: MNH

Figures





SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND SAMPLE LOCATION MAP

Legend

62	Sioux Energy Center Property Boundary
CCR	Units
	SCPA - Bottom Ash Surface Impoundment (Closed)
	SCPB - Fly Ash Surface Impoundment (Closed)
Utility	/ Waste Landfill Cells
	SCPC - FGD Surface Impoundment (Closed)
	SCL4A - Dry CCR Disposal Area
	SCPD - FGD Surface Impoundment
Monit	toring 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

- \oplus SCL4A and Corrective Action Monitoring Well
- \$ SCL4A Detection Monitoring Well
- ¢ Monitoring Well Used for Water Level Elevation Measurements Only

NOTES

- All boundaries and locations are approximate.
 FGD Flue Gas Desulfurization.
- 3. CCR Coal Combustion Residuals.

REFERENCES

1. Ameren Missouri Sioux Energy Center, Sioux Property Control Map, February 2011.



PROJEC

CCR RULE GROUNDWATER MONITORI	NG PROGRAM
CLIENT AMEREN MISSOURI SIQUX ENERGY CENTER	Ameren

YYYY-MM-DD 2024-12-04
PROJECT No: 23009-24
FIGURE 1

Appendix A Laboratory Analytical Data





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

February 23, 2024

Mark Haddock Rocksmith Geoengineering, LLC. 2320 Creve Coeur Mill Road Maryland Heights, MO 63043

RE: Project: AMEREN SCL4A-VERIFICATION SAMP Pace Project No.: 60446913

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on February 09, 2024. 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,

Jame Church

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC. Lisa Meyer, Ameren Grant Morey, Rocksmith Geoengineering, LLC.





CERTIFICATIONS

Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219 Missouri Inorganic Drinking Water Certification #: 10090 Arkansas Drinking Water Arkansas Certification #: 88-00679 Illinois Certification #: 2000302023-5 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 #: T104704407-23-17 Utah Certification #: KS000212022-12 Illinois Certification #: 004592 Kansas Field Laboratory Accreditation: # E-92587 Missouri SEKS Micro Certification: 10070



SAMPLE SUMMARY

Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60446913001	S-TMW-1	Water	02/08/24 04:57	02/09/24 05:30
60446913002	S-TMW-2	Water	02/07/24 13:45	02/09/24 05:30
60446913003	S-TMW-3	Water	02/07/24 12:38	02/09/24 05:30
60446913004	S-SCL4A-DUP-1	Water	02/08/24 00:00	02/09/24 05:30
60446913005	S-SCL4A-FB-1	Water	02/07/24 12:45	02/09/24 05:30



SAMPLE ANALYTE COUNT

Project:AMEREN SCL4A-VERIFICATION SAMPPace Project No.:60446913

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60446913001	S-TMW-1	EPA 300.0	PL, RKA	2	PASI-K
60446913002	S-TMW-2	EPA 300.0	PL, RKA	2	PASI-K
60446913003	S-TMW-3	EPA 300.0	PL, RKA	2	PASI-K
60446913004	S-SCL4A-DUP-1	EPA 300.0	PL, RKA	2	PASI-K
60446913005	S-SCL4A-FB-1	EPA 300.0	RKA	2	PASI-K

PASI-K = Pace Analytical Services - Kansas City



Project: AIVIEREN SCL4A-VERIFICATION SAIVIP	Project:	AMEREN SCL4A-VERIFICATION SAMP
---	----------	--------------------------------

Pace Project No.: 60446913

Sample: S-TMW-1	Lab ID:	60446913001	Collecte	d: 02/08/24	4 04:57	Received: 02	2/09/24 05:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3	00.0 - Kansas C	ity					
Chloride Sulfate	4.5 70.0	mg/L mg/L	1.0 10.0	0.53 5.5	1 10		02/21/24 12:50 02/22/24 15:58	16887-00-6 14808-79-8	



Project:	AMEREN SCL4A-VERIFICATION SAMP
1 10/000	

Pace Project No.: 60446913

Sample: S-TMW-2	Lab ID:	60446913002	Collecte	d: 02/07/24	13:45	Received: 02	/09/24 05:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3 ytical Services	00.0 - Kansas C	ity					
Chloride Sulfate	9.1 37.5	mg/L mg/L	1.0 10.0	0.53 5.5	1 10		02/21/24 13:02 02/22/24 17:43	16887-00-6 14808-79-8	



Project:	AMEREN SCL4A-VERIFICATION SAMP
1 10/001.	

Pace Project No.: 60446913

Sample: S-TMW-3	Lab ID:	60446913003	Collecte	d: 02/07/24	12:38	Received: 02	/09/24 05:30 Ma	atrix: Water	,
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Analy	Method: EPA 3 /tical Services	00.0 - Kansas C	ity					
Chloride Sulfate	9.1 37.7	mg/L mg/L	1.0 5.0	0.53 2.8	1 5		02/21/24 13:52 02/22/24 18:44	16887-00-6 14808-79-8	



Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

Sample: S-SCL4A-DUP-1	Lab ID:	60446913004	Collected	d: 02/08/24	00:00	Received: 02	/09/24 05:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3	00.0 - Kansas Ci	ity					
Chloride Sulfate	4.6 69.8	mg/L mg/L	1.0 10.0	0.53 5.5	1 10		02/21/24 14:42 02/22/24 18:56	16887-00-6 14808-79-8	



Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

Sample: S-SCL4A-FB-1	Lab ID:	60446913005	Collecte	d: 02/07/24	12:45	Received: 02	/09/24 05:30 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3 ytical Services	00.0 - Kansas C	ity					
Chloride Sulfate	<0.53 0.72J	mg/L mg/L	1.0 1.0	0.53 0.55	1 1		02/21/24 14:54 02/21/24 14:54	16887-00-6 14808-79-8	



QUALITY CONTROL DATA

Project:	AMER	EN SCL4A-	/ERIFICATION S	SAMP									
Pace Project No.:	604469	913											
QC Batch:	8838	36		Analy	sis Method	d:	EPA 300.0						
QC Batch Method:	EPA :	300.0		Analy	sis Descrip	ption:	300.0 IC An	ions					
				Labo	ratory:		Pace Analy	tical Servi	ces - Kansas	s City			
Associated Lab Sar	mples:	604469130	001, 6044691300	02, 6044691	3003, 6044	46913004	, 604469130	05		-			
METHOD BLANK:	349868	39			Matrix: Wa	ater							
Associated Lab Sar	mples:	604469130	001, 6044691300	02, 6044691	3003, 6044	46913004	, 604469130	05					
				Blar	nk I	Reporting							
Parar	neter		Units	Res	ult	Limit	MD	L	Analyzed	Qu	ualifiers		
Chloride			mg/L		<0.53	1	1.0	0.53	02/21/24 12:	01			
Sulfate			mg/L		<0.55	1	1.0	0.55	02/21/24 12:	01			
			2408600										
LABORATORT COI	NIKOL	SAIVIF LL.	3490090	Snike	LC	s	LCS	%	Rec				
Parar	neter		Units	Conc.	Res	sult	% Rec	Lin	nits (Qualifiers			
Chloride			ma/l		5	4 8	9	 6	90-110		_		
Sulfate			mg/L		5	5.3	10	6	90-110				
			-										
MATRIX SPIKE & M	ATRIX	SPIKE DUP	LICATE: 3498	691		349869)2						
			60446012002	MS	MSD	MS	MCD	MC	MCD	% Boo		Mox	
Paramete	r	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride		ma/L	9.1	50	50	58.1	57.3	98	3 96	80-120	1	15	
Sulfate		mg/L	37.5	50	50	87.7	86.8	100) 99	80-120	1	15	
MATRIX SPIKE & M	ATRIX	SPIKE DUP	LICATE: 3498	694		349869	95						
				MS	MSD								
Paramete	r	l Inite	60446916001 Result	Spike	Spike	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec	RPD	Max	Qual
	·							70 1000					Quai
Sulfate		mg/∟	44.3	50 50	50 50	90.1	1 89.3 R 122	9/ 10/	2 90 D 08	80-120	1	15	
Guilate		ing/∟	72.0	50	50	120) 122	100	90	00-120		15	
MATRIX SPIKE & M	ATRIX	SPIKE DUP	LICATE: 3498	697		349869)8						
				MS	MSD								
			60446940001	Spike	Spike	MS	MSD	MS	MSD	% Rec	000	Max	
Paramete	ſ	Units	Kesult	Conc.	Conc.	Result	Kesult	% Rec	% Kec	LIMITS	RPD	RPD	Qual
Chloride		mg/L	<5.3	50	50	52.6	5 52.7	96	6 96	80-120	0	15	
Sulfate		mg/L	72.8	50	50	122	2 121	98	3 97	80-120	1	15	

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



QUALITY CONTROL DATA

Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

SAMPLE DUPLICATE: 3498693						
		60446913002	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	9.1	9.1	0	15	
Sulfate	mg/L	37.5	39.0	4	15	
SAMPLE DUPLICATE: 3498696						
		60446916001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	44.3	43.0	3	15	
Sulfate	mg/L	72.6	69.8	4	15	
SAMPLE DUPLICATE: 3498699						
		60446940001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	<5.3	<5.3		15	
Sulfate	mg/L	72.8	70.9	3	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.



QUALIFIERS

Project: AMEREN SCL4A-VERIFICATION SAMP

Pace Project No.: 60446913

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.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:AMEREN SCL4A-VERIFICATION SAMPPace Project No.:60446913

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60446913001	S-TMW-1	EPA 300.0	883836		
60446913002	S-TMW-2	EPA 300.0	883836		
60446913003	S-TMW-3	EPA 300.0	883836		
60446913004	S-SCL4A-DUP-1	EPA 300.0	883836		
60446913005	S-SCL4A-FB-1	EPA 300.0	883836		

	DO# THE EN			WO#:60446913	
Pace	DC#_Title: EN	/-FRM-LENE-000	9_Sample C	60446913	
ANALY HEAL SERVICES	Revision: 2	Effective Date:	01/12/2022	Issued By: Lenexa	
Client Name:	OCKSMith	Geoeng			
Courier: FedEx 🗆 UPS			CI 🗆 🛛 Pac	e 🗆 Xroade 🖸 Client 🗆 Other 🗆	
Fracking #:		Pace Shipping L	abel Used?		
Custody Seal on Cooler/Box	Present: Yes	No 🗆 Seals inta	ct: Yes 🗂 N	10 D	
Packing Material: Bubble	e Wrap 🗆 🛛 Bubb	le Bags 🗆 💦	Foam □	None 🗆 Other 🗆	
Thermometer Used: $\frac{72}{7}$	-78	Type of Ice: Wet	Blue None	Date and initials of person	
Cooler Temperature (°C):	As-read 1-2/15 C	corr. Factor ර	Corrected	9.911-2 examining contents:	_
emperature should be above free	zing to 6°C	_!:	_	po signey	
Unain of Custody present:			o ∐N/A		
Chain of Custody relinquished		Yes N	o 🗆 N/A		_
Samples arrived within holding	time:	Yes N	o □N/A		_
Short Hold Time analyses (<7	72hr):		0 🗆 N/A		
Rush Turn Around Time requ	iested:		o 🗆 N/A		
Sufficient volume:		Yes DN	o □N/A		
Correct containers used:			o □N/A		
Pace containers used:			o □N/A		
Containers intact:			o □N/A		_
Jnpreserved 5035A / TX1005/*	1006 soils frozen in 4	Bhrs? □Yes □N			_
iltered volume received for dis	solved tests?				-
Sample labels match COC: Dat	to / time / ID / analyse				
ample labels match COC. Dat					_
containers requiring pH present	es? Matrix:			sample IDs volumes lot #'s of preservative and	the
HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH>9 Su	Ifide, NaOH>10 Cyanide		date/	time added.	unc
Exceptions: VOA, Micro, O&G, KS	STPH, OK-DRO)	LOT#: 6718	2		
ead acetate strip turns dark? (Record only)	□Yes □No	o		
otassium iodide test strip turns	s blue/purple? (Prese	rve) 🗍 Yes 🗌 No	o		
rip Blank present:		Yes No			
leadspace in VOA vials (>6mr	n):	□Yes □No			
amples from USDA Regulated	Area: State:	⊡Yes □No			
dditional labels attached to 50	35A / TX1005 vials in	the field? Tyes The			
lient Notification/ Resolution	1: Co	py COC to Client? Y	/ N	Field Data Required? Y / N	
erson Contacted:	· · · · · · · · · · · · · · · · · · ·	Date/Time:			
comments/ Resolution:					
Project Manager Review:			Dete:		

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

Section A Required C	 Client Information: 	Section B Required Pr	roject In	lformati	tion:				Set	ction C	nation.									-	Page: 1		1	
Company.	Rocksmith Geoengineering, LLC	Report To:	Mark F	Haddo	ock				Atte	Intion:						Γ				1				
Address	5233 Roanoke Drive	Copy To:	Jeffeny	/ Ingr	am, Gra	nt Morey			Con	npany Na	me: R	3ocksmi	ith				REGU	LATO	2Y AGEN	۲ ۲				0
	St. Charles, MO 63304								Add	ress:								PDES	L B B	SOUND	WATER	DRIN	KING WATER	Τ
Email To:	mark.haddock@rocksmithgeo.com	Purchase O	rder No.	ŏ	OC #4				Paci	e Quote								ST	RC	RA		OTHE	н К	
Phone: 3	314-974-5678 Fax:	Project Nam	e: A	merei	In SCL4	A - Verifi	cation Sa	mpling	Paci	e Project	Jami	ie Chun	c				Site L	.ocatio	E					
Requested	d Due Date/TAT: Standard	Project Num	ber. C	OC#	4				Paci	e Profile #	1585	56, line	-					STATE		δ				
															Requ	ested ,	Analys	is Filte	red (Y/N	-				1000
US CC	Section D Valid Matrix C tequired Client Information MATRIX	Codes CODE	(fiel o) :			COLLE	ECTED		-	-	Prese	ervative	ŝ	Z 1 N /λ	z	z z	z z	Z	z z					
	NERINANA WATER WATER WATER PERODUCT SOLUSOLD OL	o به م م	seboo bilev ees)=) ศ _ี พุทธะ	COMPOSITE	START	COMPOS	SITE CAB	S OLLECTION					t							(N/A);			
# WƏT	SAMPLE ID (A-Z, 0-9 / ,-) Sample IDS MUST BE UNIQUE	AR TS TS							STA TEMP AT C	hpreserved	IOI IOO ³	10 ² C ² C ² P)ther Methanol	Analysis Test	hloride						sesidual Chlorine	Nho	16913	
-	S-TMW-1			0	DAIE		2-8-24	19957	# -	1		1) V	د اد 1	20		-				1	acelring	ect No./ Lab	
2	S-TMW-2		14	0			42-7-24	1345	1	1					1		-							
ę	S-TMW-3		TW	0			2-7-24	1238		-				1.	1									
4	S-SCL4A-DUP-1		WT V	0			P6-8-24	1		-				1	7									
S	S-SCL4A-FB-1		MT (U	Y		2-7-24	1245	-	1					1									
9	S-SCL4A-MS-1		۲ ۲	U	/		HC-L-e	1345	-	-		_		2	14		_		_		Colle	a bad a	MWL-S	1-2
7	S-SCL4A-MSD-1		5 5	U	4		46-1-6	1345		-		_		•	5		-					13		
80			۲. ۲.	U	-				-								-				_			Ĩ
б С			5 5	0 0	T				-	-	-						-				-			
1			MT IN	0 0					-					1		-	-							
12			WT	0					-											E				
	ADDITIONAL COMMENTS		RELINC	GUISH	IED BY / /	VEFILIATIC	NC	DATE		TIME	-	A	CLEPTE	DBYIA	FFILIA1	NOLI	-	DATE	TIM	ш	S	AMPLE CI	ONDITIONS	
		K	J.	1	S	1 lec	12×2	2.8.2	-	340	7	R	n	When	a	1		0	SO	20	5	X	へ 入	
																				-	2		*	
		_							-								-			-	-	-		
Page						SAMPLEI	R NAME A	ND SIGNAT	URE												ou Ou		ueio	
ə 15							PRINT Nam	e of SAMPL	ER:	020	F	Non	3								ni qn bevie	ipotsr		(N/A
of 1							SIGNATUR	E of SAMPL	ER:	L.	1	When	7		DATE S (MM/DD	igned (VYY):	69	081	5		Rec	0)
6													1											

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

"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.

Profile # /SCS6-/ Notes	ВЬЗС ВЬЗС ВЬЗК ВЬЗИ ВЬЗИ ВЬЗИ ВЬЗИ ВЬЗИ ВЬЗИ ВБЗИ ВБЗИ <th>BP1C 11L VAOH plastic</th> <th>BP1N 1L -INO3 plastic SP51 12</th> <th>BP1S 1L -12SO4 plastic ZPLC Zit</th> <th>BP17 11 NaOH 75 Accession AF Aii</th> <th>BP2C 500mL NAOH plastic IC All</th> <th>BP2N 500mL HNO3 plastic [1] Su</th> <th>glass BP2S 500mL H2SO4 plastic</th> <th>BP2U 500mL unpreserved plastic</th> <th>BP2Z 500mL NaOH, Zn Acetate</th> <th>RP3F 26/ml HNO2 clocks 62/d filesed MVT 100</th> <th>BP3N 250mL HNO3 plastic - lieto illete WI WI</th> <th>BP3U 250mL unpreserved plastic NAI No</th> <th>BP3S 250mL H2SO4 plastic OL OL</th> <th>BP3Z 250mL NaOH, Zn Acetate WP Wi</th> <th>BP4U 125mL unpreserved plastic [DW Dr</th> <th>BP4N 125mL HNO3 plastic</th> <th>WPDU 1602 unbresserved blstic</th>	BP1C 11L VAOH plastic	BP1N 1L -INO3 plastic SP51 12	BP1S 1L -12SO4 plastic ZPLC Zit	BP17 11 NaOH 75 Accession AF Aii	BP2C 500mL NAOH plastic IC All	BP2N 500mL HNO3 plastic [1] Su	glass BP2S 500mL H2SO4 plastic	BP2U 500mL unpreserved plastic	BP2Z 500mL NaOH, Zn Acetate	RP3F 26/ml HNO2 clocks 62/d filesed MVT 100	BP3N 250mL HNO3 plastic - lieto illete WI WI	BP3U 250mL unpreserved plastic NAI No	BP3S 250mL H2SO4 plastic OL OL	BP3Z 250mL NaOH, Zn Acetate WP Wi	BP4U 125mL unpreserved plastic [DW Dr	BP4N 125mL HNO3 plastic	WPDU 1602 unbresserved blstic
hunan 411111 xan	B650 U158 B611 B611 A611	WGKU 802 clear soil jar	WGFU 4oz clear soil jar	JGFU 402 unbreserved amber wide	AGOU 100mL unores amber glass	AG1H 1L HCI amber glass	AG1S 1L H2SO4 amber glass	AG1T 1L Na Thiosulfate clear/amber	AGTU Tlitter unpres amber glass	AG2S 500ml H2SO4 amber glass	AG3S 250mL H2SO4 amber class	AG2U 500mL unpres amber glass	AG3U 250mL unpres amber glass	AG4U 125mL unpres amber glass	AG5U [100mL unpres amber glass			
Site:	B690 D690 W690 D690 N690 D690 N690 D690 H690 D690	40mL bisulfate clear vial	40ml MeOH clear vial	40mL TSP amber vial	40mL H2SO4 amber vial	40mL Na Thio amber vial	40mL amber unpreserved	40mL HCI clear vial 40ml Na Thio clear viat	40ml unneserved clear vial	1liter H2SO4 clear glass	fliter unpres glass	250mL HCL Clear glass	250mL Unpres Clear glass	16oz clear soil jar				

Pace Analytical Services, LLC

Qualtrax Document ID: 30422

Page 1 of 1



Memorandum March 19, 2024

То:	Project File Rocksmith Geoengineering, LLC	Project Number: 23009
CC:	Mark Haddock, Jeffrey Ingram	
From:	Grant Morey	Email: Grant.Morey@Rocksmithgeo.com
RE:	Data Validation Summary, Sioux Energy Center – SC	CL4A Verification – Data Package 60446913

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 sample result between the Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: <u>Rocksmith Geoengineering</u>	_ Project Manager: <u>J. Ingram</u>
Project Name: Ameren SCL4A Verification	Project Number: 23009
Reviewer: G. Morey	Validation Date: 3/19/2024
Laboratory: <u>Pace Analytical</u> Analytical Method (type and no.): <u>EPA 300.0 (Anions)</u>	SDG #: <u>60446913</u>
Matrix: 🗌 Air 🗌 Soil/Sed. 🔳 Water 🗌 Waste	□
Sample Names S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S	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 I	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	х			2/7/2024 - 2/8/2024
b)	Sampling team indicated?	х			GTM/ANT
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, Spec Cond, Turb, Temp, DO, ORP
h)	Field Calibration within control limits?	x			
i)	Notations of unacceptable field conditions/performa	nces fr	om field lo	ogs or field r	notes?
			×		
j)	Does the laboratory narrative indicate deficiencies?			x	No lab narrative.
	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?	×			
c)	Were samples received in good condition?	×			
,					
Genera	al (reference QAPP or Method)	YES	NO	NA	COMMENTS
a)	Were hold times met for sample pretreatment?	х			
b)	Were hold times met for sample analysis?	x			
c)	Were the correct preservatives used?	х			
d)	Was the correct method used?	×			
e)	Were appropriate reporting limits achieved?	х			
f)	Were any sample dilutions noted?	×			See notes
	Word any dample anatone netod.				

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)?	x			See notes
c)	Were analytes detected in the equipment blank(s)?			x	
d)	Were analytes detected in the trip blank(s)?			х	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	х			
b)	Were the proper analytes included in the LCS?	×			
c)	Was the LCS accuracy criteria met?	X			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	sample n	ames)?	
		x			S-SCL4A-DUP-1 @ S-TMW-1
b)	Were field dup. precision criteria met (note RPD)?	×			
c)	Were lab duplicates analyzed (note original and dup	olicate	samples)?)	
		х			
d)	Were lab dup. precision criteria met (note RPD)?	X			
Blind S	tandards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			X	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			х	
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?			X	
b)	Was MSD accuracy criteria met?	X			
	Recovery could not be calculated since sample contained high concentration of analyte?			×	
c)	Were MS/MSD precision criteria met?	X			

Comments/Notes:

General:

Sulfate diluted for several samples, no qualification necessary.

Field blank:

S-SCL4A-FB-1 @ S-TMW-3: sulfate (0.72J). Result > RL and 10x blank, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

	<u> </u>
Signature: Grant Morey 3/19/2024	



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

July 09, 2024

Mark Haddock Rocksmith Geoengineering, LLC. 2320 Creve Coeur Mill Road Maryland Heights, MO 63043

RE: Project: AMEREN SCL4A Pace Project No.: 60453818

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between May 30, 2024 and June 01, 2024. 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,

Church

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC. Lisa Meyer, Ameren Grant Morey, Rocksmith Geoengineering, LLC.





CERTIFICATIONS

Project: AMEREN SCL4A Pace Project No.: 60453818

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219 Arkansas Certification #: 88-00679 Illinois Certification #: 2000302023-6 Colorado Division of Oil and Public Safety Iowa Certification #: 118 Kansas Field Laboratory Certification #: E-92587 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Missouri Inorganic Drinking Water Certification Nevada Certification #: KS000212024-1 Oklahoma Certification #: 2023-073 Texas Certification #: T104704407-23-17 Utah Certification #: KS000212022-13


SAMPLE SUMMARY

Project: AMEREN SCL4A Pace Project No.: 60453818

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60453818001	S-TMW-2	Water	05/29/24 12:13	05/30/24 05:35
60453818002	S-TMW-3	Water	05/29/24 14:04	05/30/24 05:35
60453818003	S-SCL4A-DUP-1	Water	05/29/24 00:00	05/30/24 05:35
60453818004	S-SCL4A-FB-1	Water	05/29/24 14:10	05/30/24 05:35
60453818005	S-TMW-1	Water	05/30/24 09:30	06/01/24 07:05
60453812011	S-UG-3	Water	05/28/24 15:44	05/30/24 05:35
60453812001	S-BMW-1S	Water	05/28/24 11:35	05/30/24 05:35
60453812002	S-BMW-3S	Water	05/28/24 14:20	05/30/24 05:35



SAMPLE ANALYTE COUNT

Project: AMEREN SCL4A Pace Project No.: 60453818

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory	
60453818001	S-TMW-2	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453818002	S-TMW-3	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453818003	S-SCL4A-DUP-1	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453818004	S-SCL4A-FB-1	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453818005	S-TMW-1	EPA 200.7	ARMN	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453812011	S-UG-3	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453812001	S-BMW-1S	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	
60453812002	S-BMW-3S	EPA 200.7	JXD	7	PASI-K	
		SM 2320B	SR1	1	PASI-K	
		SM 2540C	KVI	1	PASI-K	
		EPA 300.0	PL	3	PASI-K	

PASI-K = Pace Analytical Services - Kansas City



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-TMW-2	Lab ID:	60453818001	Collecte	d: 05/29/24	12:13	Received: 05/	30/24 05:35 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	84.0J	ug/L	100	6.4	1	06/05/24 14:26	06/07/24 12:55	7440-42-8	
Calcium	135000	ug/L	200	26.9	1	06/05/24 14:26	06/07/24 12:55	7440-70-2	
Iron	1730	ug/L	50.0	9.1	1	06/05/24 14:26	06/07/24 12:55	7439-89-6	
Magnesium	23900	ug/L	50.0	20.1	1	06/05/24 14:26	06/07/24 12:55	7439-95-4	
Manganese	538	ug/L	5.0	0.39	1	06/05/24 14:26	06/07/24 12:55	7439-96-5	
Potassium	5230	ug/L	500	69.7	1	06/05/24 14:26	06/07/24 12:55	7440-09-7	
Sodium	3880	ug/L	500	115	1	06/05/24 14:26	06/07/24 12:55	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	438	mg/L	20.0	10.5	1		06/06/24 17:03		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	453	mg/L	10.0	10.0	1		06/04/24 12:48		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	4.0	mg/L	1.0	0.53	1		06/13/24 05:48	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		06/13/24 05:48	16984-48-8	N2
Sulfate	34.0	mg/L	10.0	5.5	10		06/13/24 06:05	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-TMW-3	Lab ID:	60453818002	Collected	d: 05/29/24	14:04	Received: 05/	30/24 05:35 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Analy	tical Services	- Kansas C	ity					
Boron	56.8J	ug/L	100	6.4	1	06/05/24 15:40	06/07/24 16:01	7440-42-8	
Calcium	113000	ug/L	200	26.9	1	06/05/24 15:40	06/07/24 16:01	7440-70-2	
Iron	32.7J	ug/L	50.0	9.1	1	06/05/24 15:40	06/07/24 16:01	7439-89-6	
Magnesium	20600	ug/L	50.0	20.1	1	06/05/24 15:40	06/07/24 16:01	7439-95-4	
Manganese	142	ug/L	5.0	0.39	1	06/05/24 15:40	06/07/24 16:01	7439-96-5	
Potassium	677	ug/L	500	69.7	1	06/05/24 15:40	06/07/24 16:01	7440-09-7	В
Sodium	6610	ug/L	500	115	1	06/05/24 15:40	06/07/24 16:01	7440-23-5	
2320B Alkalinity	Analytical								
	Pace Analy	tical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	390	mg/L	20.0	10.5	1		06/07/24 13:42		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Analy	tical Services	- Kansas C	ity					
Total Dissolved Solids	433	mg/L	10.0	10.0	1		06/04/24 12:49		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Analy	tical Services	- Kansas C	ity					
Chloride	14.2	mg/L	1.0	0.53	1		06/13/24 06:23	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		06/13/24 06:23	16984-48-8	N2
Sulfate	42.4	mg/L	10.0	5.5	10		06/13/24 06:40	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-SCL4A-DUP-1	Lab ID: 60453818003		Collected: 05/29/24 00:00			Received: 05/	30/24 05:35 Ma	atrix: 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 Anal	vtical Services	- Kansas C	ity								
Boron	85.4J	ug/L	100	6.4	1	06/05/24 15:40	06/07/24 16:03	7440-42-8				
Calcium	132000	ug/L	200	26.9	1	06/05/24 15:40	06/07/24 16:03	7440-70-2				
Iron	1700	ug/L	50.0	9.1	1	06/05/24 15:40	06/07/24 16:03	7439-89-6				
Magnesium	24000	ug/L	50.0	20.1	1	06/05/24 15:40	06/07/24 16:03	7439-95-4				
Manganese	544	ug/L	5.0	0.39	1	06/05/24 15:40	06/07/24 16:03	7439-96-5				
Potassium	5250	ug/L	500	69.7	1	06/05/24 15:40	06/07/24 16:03	7440-09-7				
Sodium	4070	ug/L	500	115	1	06/05/24 15:40	06/07/24 16:03	7440-23-5				
2320B Alkalinity	Analytical Method: SM 2320B											
	Pace Anal	vtical Services	- Kansas C	ity								
Alkalinity, Total as CaCO3	432	mg/L	20.0	10.5	1		06/07/24 13:48					
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C									
	Pace Analy	vtical Services	- Kansas C	ity								
Total Dissolved Solids	452	mg/L	10.0	10.0	1		06/04/24 12:49					
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0									
	Pace Anal	vtical Services	- Kansas C	ity								
Chloride	4.0	mg/L	1.0	0.53	1		06/12/24 16:04	16887-00-6				
Fluoride	<0.12	mg/L	0.20	0.12	1		06/12/24 16:04	16984-48-8	N2			
Sulfate	27.7	mg/L	10.0	5.5	10		06/12/24 16:19	14808-79-8				



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-SCL4A-FB-1	Lab ID:	60453818004	Collected	d: 05/29/24	14:10	Received: 05/	30/24 05:35 Ma	atrix: 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 Anal	ytical Services	- Kansas C	ity								
Boron	<6.4	ug/L	100	6.4	1	06/05/24 15:40	06/07/24 16:05	7440-42-8				
Calcium	<26.9	ug/L	200	26.9	1	06/05/24 15:40	06/07/24 16:05	7440-70-2				
Iron	<9.1	ug/L	50.0	9.1	1	06/05/24 15:40	06/07/24 16:05	7439-89-6				
Magnesium	<20.1	ug/L	50.0	20.1	1	06/05/24 15:40	06/07/24 16:05	7439-95-4				
Manganese	<0.39	ug/L	5.0	0.39	1	06/05/24 15:40	06/07/24 16:05	7439-96-5				
Potassium	102J	ug/L	500	69.7	1	06/05/24 15:40	06/07/24 16:05	7440-09-7	В			
Sodium	237J	ug/L	500	115	1	06/05/24 15:40	06/07/24 16:05	7440-23-5	В			
2320B Alkalinity	Analytical Method: SM 2320B											
	Pace Anal	ytical Services	- Kansas C	ity								
Alkalinity, Total as CaCO3	<10.5	mg/L	20.0	10.5	1		06/07/24 13:55					
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C									
	Pace Anal	ytical Services	- Kansas C	ity								
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		06/04/24 12:49					
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0									
	Pace Anal	ytical Services	- Kansas C	ity								
Chloride	<0.53	mg/L	1.0	0.53	1		06/12/24 16:34	16887-00-6				
Fluoride	<0.12	mg/L	0.20	0.12	1		06/12/24 16:34	16984-48-8	N2			
Sulfate	<0.55	mg/L	1.0	0.55	1		06/12/24 16:34	14808-79-8				



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-TMW-1	Lab ID:	60453818005	Collecte	d: 05/30/24	1 09:30	Received: 06/	/01/24 07:05 Ma	atrix: 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 Anal	ytical Services	- Kansas C	ity									
Boron	85.5J	ug/L	100	6.4	1	06/07/24 09:46	06/12/24 11:09	7440-42-8					
Calcium	124000	ug/L	200	26.9	1	06/07/24 09:46	06/12/24 11:09	7440-70-2	M1,P6				
Iron	20.0J	ug/L	50.0	9.1	1	06/07/24 09:46	06/12/24 11:09	7439-89-6					
Magnesium	23700	ug/L	50.0	20.1	1	06/07/24 09:46	06/12/24 11:09	7439-95-4					
Manganese	665	ug/L	5.0	0.39	1	06/07/24 09:46	06/12/24 11:09	7439-96-5					
Potassium	4670	ug/L	500	69.7	1	06/07/24 09:46	06/12/24 11:09	7440-09-7					
Sodium	4410	ug/L	500	115	1	06/07/24 09:46	06/12/24 11:09	7440-23-5					
2320B Alkalinity	Analytical	Method: SM 23	20B										
	Pace Anal	ytical Services	- Kansas C	ity									
Alkalinity, Total as CaCO3	354	mg/L	20.0	10.5	1		06/07/24 13:58						
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C										
	Pace Anal	ytical Services	- Kansas C	ity									
Total Dissolved Solids	465	mg/L	10.0	10.0	1		06/05/24 12:21						
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0										
	Pace Anal	ytical Services	- Kansas C	ity									
Chloride	12.8	mg/L	1.0	0.53	1		06/15/24 14:32	16887-00-6	D6,M1, R1				
Fluoride	<0.12	mg/L	0.20	0.12	1		06/15/24 14:32	16984-48-8	M1,N2				
Sulfate	57.6	mg/L	10.0	5.5	10		06/15/24 15:28	14808-79-8	D6,M1, R1				



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-UG-3	Lab ID:	Collected: 05/28/24 15:44			Received: 05/				
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	od: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas Ci	ty					
Boron	345	ug/L	100	6.4	1	06/05/24 14:26	06/07/24 12:36	7440-42-8	
Calcium	129000	ug/L	200	26.9	1	06/05/24 14:26	06/07/24 12:36	7440-70-2	
Iron	12.3J	ug/L	50.0	9.1	1	06/05/24 14:26	06/07/24 12:36	7439-89-6	
Magnesium	24600	ug/L	50.0	20.1	1	06/05/24 14:26	06/07/24 12:36	7439-95-4	
Manganese	276	ug/L	5.0	0.39	1	06/05/24 14:26	06/07/24 12:36	7439-96-5	
Potassium	4950	ug/L	500	69.7	1	06/05/24 14:26	06/07/24 12:36	7440-09-7	
Sodium	35500	ug/L	500	115	1	06/05/24 14:26	06/07/24 12:36	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Alkalinity, Total as CaCO3	391	mg/L	20.0	10.5	1		06/06/24 13:04		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Total Dissolved Solids	517	mg/L	10.0	10.0	1		06/03/24 13:07		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas Ci	ty					
Chloride	28.0	mg/L	10.0	5.3	10		06/13/24 02:19	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		06/13/24 02:02	16984-48-8	N2
Sulfate	81.8	mg/L	10.0	5.5	10		06/13/24 02:19	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-BMW-1S	Lab ID:	60453812001	Collected	d: 05/28/24	4 11:35	Received: 05/	30/24 05:35 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	ration Meth	nod: EP	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	58.1J	ug/L	100	6.4	1	06/05/24 14:26	06/07/24 12:09	7440-42-8	
Calcium	133000	ug/L	200	26.9	1	06/05/24 14:26	06/07/24 12:09	7440-70-2	
Iron	27.5J	ug/L	50.0	9.1	1	06/05/24 14:26	06/07/24 12:09	7439-89-6	
Magnesium	25800	ug/L	50.0	20.1	1	06/05/24 14:26	06/07/24 12:09	7439-95-4	
Manganese	606	ug/L	5.0	0.39	1	06/05/24 14:26	06/07/24 12:09	7439-96-5	
Potassium	404J	ug/L	500	69.7	1	06/05/24 14:26	06/07/24 12:09	7440-09-7	
Sodium	6070	ug/L	500	115	1	06/05/24 14:26	06/07/24 12:09	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	408	mg/L	20.0	10.5	1		06/05/24 17:24		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	470	mg/L	10.0	10.0	1		06/03/24 13:05		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	10.1	mg/L	1.0	0.53	1		06/12/24 18:30	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		06/12/24 18:30	16984-48-8	N2
Sulfate	37.7	mg/L	10.0	5.5	10		06/12/24 18:47	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60453818

Sample: S-BMW-3S	Lab ID: 60453812002		Collected: 05/28/24 14:20			Received: 05/			
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP/	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	54.1J	ug/L	100	6.4	1	06/05/24 14:26	06/07/24 12:11	7440-42-8	
Calcium	116000	ug/L	200	26.9	1	06/05/24 14:26	06/07/24 12:11	7440-70-2	
Iron	33.4J	ug/L	50.0	9.1	1	06/05/24 14:26	06/07/24 12:11	7439-89-6	
Magnesium	20500	ug/L	50.0	20.1	1	06/05/24 14:26	06/07/24 12:11	7439-95-4	
Manganese	140	ug/L	5.0	0.39	1	06/05/24 14:26	06/07/24 12:11	7439-96-5	
Potassium	618	ug/L	500	69.7	1	06/05/24 14:26	06/07/24 12:11	7440-09-7	
Sodium	6410	ug/L	500	115	1	06/05/24 14:26	06/07/24 12:11	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	364	mg/L	20.0	10.5	1		06/05/24 17:47		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	529	mg/L	10.0	10.0	1		06/03/24 13:05		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	11.1	mg/L	1.0	0.53	1		06/12/24 19:05	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		06/12/24 19:05	16984-48-8	N2
Sulfate	19.7	mg/L	1.0	0.55	1		06/12/24 19:05	14808-79-8	



Project:	AMERE	N SCL4A												
Pace Project No.:	6045381	8												
QC Batch:	896847	7		Analysis Method:			EPA 200.7							
QC Batch Method:	EPA 20	0.7		Anal	ysis Descri	ption:	200.7 Metals	, Total						
				Labo	oratory:		Pace Analyti	cal Servi	ces - Kan	sas C	ity			
Associated Lab Sar	nples:	604538120	01, 6045381200	2, 6045381	2011, 604	53818001	,				,			
METHOD BLANK:	3549596	6			Matrix: W	ater								
Associated Lab Sar	nples:	604538120	01, 6045381200	2, 6045381	2011, 604	53818001								
				Blai	nk	Reporting								
Parar	neter		Units	Res	ult	Limit	MDL		Analyze	ed	Qu	alifiers		
Boron			ug/L		<6.4	10	0	6.4 0	06/07/24 1	11:57				
Calcium			ug/L		<26.9	20	0	26.9 0	06/07/24 1	11:57				
Iron			ug/L		<9.1	50.	0	9.1 (06/07/24 1	11:57				
Magnesium			ug/L		<20.1	50.	0	20.1 0	06/07/24 1	11:57				
Manganese			ug/L		<0.39	5.	0	0.39 (06/07/24 1	11:57				
Potassium			ug/L		<69.7	50	0	69.7 0	06/07/24 1	11:57				
Sodium			ug/L		<115	50	0	115 (06/07/24 1	11:57				
LABORATORY CO		AMPLE:	3549597											
				Spike	LC	S	LCS	% F	Rec					
Parar	neter		Units	Conc.	Res	sult	% Rec	Lim	nits	Qua	alifiers			
Boron			ug/L	100	00	954	95		85-115			_		
Calcium			ug/L	1000	00	10200	102		85-115					
Iron			ug/L	1000	00	10300	103		85-115					
Magnesium			ug/L	1000	00	9920	99		85-115					
Manganese			ug/L	100	00	1040	104		85-115					
Potassium			ug/L	1000	00	10000	100		85-115					
Sodium			ug/L	1000	00	10100	101		85-115					
MATRIX SPIKE & N	IATRIX SI	PIKE DUPL	ICATE: 3549	598		3549599	1							
				MS	MSD									
			60453805002	Spike	Spike	MS	MSD	MS	MSD	%	6 Rec		Max	
Paramete	r	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	: L	imits	RPD	RPD	Qual
Boron		ug/L	64.1J	1000	1000	1030	1020	96	;	96	70-130	1	20	
Calcium		ug/L	112000	10000	10000	122000	121000	99) (91	70-130	1	20	
Iron		ug/L	8240	10000	10000	18500	18500	102	2 10	03	70-130	0	20	
Magnesium		ug/L	25600	10000	10000	35600	35100	100) :	96	70-130	1	20	
Manganese		ug/L	572	1000	1000	1610	1580	104	l 10	01	70-130	2	20	
Potassium		ug/L	3410	10000	10000	13600	13400	102	2 10	00	70-130	1	20	
Sodium		ug/L	6260	10000	10000	16300	16300	100) 1(01	70-130	0	20	
MATRIX SPIKE SA	MPLE:	:	3549600											
				60453	812008	Spike	MS		MS		% Rec			
Parar	neter		Units	Re	sult	Conc.	Result	0	% Rec		Limits		Qualif	iers
Boron			ug/L		113	1000	1(060	9	5	70	-130		
Calcium			ug/L		144000	10000	1500	000	6	2	70	-130 M	1	

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



Project: AMEREN SCL4A Pace Project No.: 60453818

	3349000							
		60453812008	Spike	MS	MS	% Rec		
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers	
Iron	ug/L		10000	10300	102	70-130		
Magnesium	ug/L	30000	10000	39100	91	70-130		
Manganese	ug/L	232	1000	1260	103	70-130		
Potassium	ug/L	2300	10000	12500	102	70-130		
Sodium	ug/L	5820	10000	16000	102	70-130		
Potassium Sodium	ug/L ug/L	2300 5820	10000 10000	12500 16000	102 102	70-130 70-130		

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



Project:	AMEREN SCL4A								
Pace Project No.:	60453818								
QC Batch:	896850		Analysis Metl	hod:	EPA 200).7			
QC Batch Method:	EPA 200.7		Analysis Des	cription:	200.7 M	etals, Total			
			Laboratory:		Pace Ar	alytical Ser	vices - Kansas City		
Associated Lab Sar	nples: 60453818002,	60453818003, 6	60453818004						
METHOD BLANK:	3549612		Matrix:	Water					
Associated Lab Sar	mples: 60453818002,	60453818003, 6	60453818004						
			Blank	Reporting					
Parar	neter	Units	Result	Limit		MDL	Analyzed	Qualifiers	
Boron		ug/L	<6.4	1	00	6.4	06/07/24 15:57		
Calcium		ug/L	<26.9	2	200	26.9	06/07/24 15:57		
Iron		ug/L	<9.1	5	0.0	9.1	06/07/24 15:57		
Magnesium		ug/L	<20.1	5	0.0	20.1	06/07/24 15:57		
Manganese		ug/L	<0.39	:	5.0	0.39	06/07/24 15:57		
Potassium		ug/L	99.7J	5	00	69.7	06/07/24 15:57		
Sodium		ug/L	287J	5	00	115	06/07/24 15:57		

LABORATORY CONTROL SAMPLE: 3549613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	946	95	85-115	
Calcium	ug/L	10000	10000	100	85-115	
Iron	ug/L	10000	10400	104	85-115	
Magnesium	ug/L	10000	9990	100	85-115	
Manganese	ug/L	1000	1040	104	85-115	
Potassium	ug/L	10000	9990	100	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SP	PIKE DUPI	LICATE: 3549	614	MOD	3549615	;						
		60453819001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron	ug/L		1000	1000	1040	1060	97	99	70-130	2	20	
Calcium	ug/L	96800	10000	10000	104000	108000	69	115	70-130	4	20	M1
Iron	ug/L	<9.1	10000	10000	10300	10600	103	106	70-130	3	20	
Magnesium	ug/L	22000	10000	10000	31400	32600	94	106	70-130	4	20	
Manganese	ug/L	425	1000	1000	1470	1470	104	104	70-130	0	20	
Potassium	ug/L	4930	10000	10000	15100	15400	101	105	70-130	2	20	
Sodium	ug/L	3830	10000	10000	13800	14200	100	103	70-130	2	20	
MATRIX SPIKE SAMPLE:		3549616										
			60453	3862001	Spike	MS		MS	% Rec	;		
Parameter		Units	Re	esult	Conc.	Result	%	6 Rec	Limits		Qual	ifiers
Boron		ug/L		317	1000	1	280	96	70	-130		
Calcium		ug/L		111000	10000	117	000	62	70	-130 M	1	

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



Project: AMEREN SCL4A Pace Project No.: 60453818

MATRIX SPIKE SAMPLE:	3549616						
		60453862001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L	295	10000	10900	106	70-130	
Magnesium	ug/L	61300	10000	69500	81	70-130	
Manganese	ug/L	15.7	1000	1050	104	70-130	
Potassium	ug/L	15300	10000	24900	97	70-130	
Sodium	ug/L	254000	10000	256000	21	70-130 N	Л1

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



Project:	AMEREN SCL4A							
Pace Project No.:	60453818							
QC Batch:	897107		Analysis Meth	nod:	EPA 200.7			
QC Batch Method:	EPA 200.7		Analysis Des	cription:	200.7 Metals, To	tal		
			Laboratory:		Pace Analytical S	Services - Kansas City	/	
Associated Lab Sam	nples: 60453818005							
METHOD BLANK:	3550877		Matrix:	Water				
Associated Lab Sam	nples: 60453818005							
			Blank	Reporting				
Param	neter	Units	Result	Limit	MDL	Analyzed	Qualifiers	
Boron		ug/L	<6.4	1	00 6.	4 06/12/24 11:05		
Calcium		ug/L	31.3J	2	00 26.	9 06/12/24 11:05		
Iron		ug/L	<9.1	50).0 9.	1 06/12/24 11:05		
Magnesium		ug/L	<20.1	50).0 20.	1 06/12/24 11:05		
Manganese		ug/L	<0.39	Į	5.0 0.3	9 06/12/24 11:05		
Potassium		ug/L	<69.7	5	00 69.	7 06/12/24 11:05		
Sodium		ug/L	<115	5	00 11	5 06/12/24 11:05		

LABORATORY CONTROL SAMPLE: 3550878

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	10200	102	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1040	104	85-115	
Potassium	ug/L	10000	9950	99	85-115	
Sodium	ug/L	10000	10200	102	85-115	

MATRIX SPIKE & MATRIX SP	PIKE DUP	LICATE: 3550	879		3550880	1						
			MS	MSD								
		60453818005	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron	ug/L		1000	1000	1050	1060	96	97	70-130	1	20	
Calcium	ug/L	124000	10000	10000	130000	130000	62	59	70-130	0	20	M1
Iron	ug/L	20.0J	10000	10000	10200	10100	102	101	70-130	1	20	
Magnesium	ug/L	23700	10000	10000	33000	32900	93	92	70-130	0	20	
Manganese	ug/L	665	1000	1000	1660	1670	100	100	70-130	0	20	
Potassium	ug/L	4670	10000	10000	14600	14700	99	100	70-130	1	20	
Sodium	ug/L	4410	10000	10000	14500	14400	101	100	70-130	0	20	
MATRIX SPIKE SAMPLE:		3550881										
			60454	1095001	Spike	MS		MS	% Rec			
Parameter		Units	Re	esult	Conc.	Result	%	Rec	Limits		Qual	ifiers
Boron		ug/L		322	1000	1	340	102	70	-130		
Calcium		ug/L		53900	10000	69	500	155	70	-130 P	6	

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



Project: AMEREN SCL4A Pace Project No.: 60453818

MATRIX SPIKE SAMPLE:	3550881	60454095001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L		10000	10300	103	70-130	
Magnesium	ug/L	14900	10000	26300	114	70-130	
Manganese	ug/L	21.9	1000	1060	104	70-130	
Potassium	ug/L	9750	10000	21100	113	70-130	
Sodium	ug/L	113000	10000	135000	220	70-130 P	6

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



Project: AME	REN SCL4A								
Pace Project No.: 6045	53818								
QC Batch: 89	6743		Analysis Me	ethod:	SM 2320B				
QC Batch Method: SM	1 2320B		Analysis De	escription:	2320B Alkalin	ity			
			Laboratory:		Pace Analytic	al Serv	/ices - Kar	nsas Ci	ty
Associated Lab Samples	60453812	2001, 60453812002							
METHOD BLANK: 3549	9169		Matrix	: Water					
Associated Lab Samples:	60453812	2001, 60453812002							
			Blank	Reporting					
Parameter		Units	Result	Limit	MDL		Analyz	zed	Qualifiers
Alkalinity. Total as CaCO	3	ma/L	<10.5	20	.0	10.5	06/05/24	16:02	
,		5		-	-				
LABORATORY CONTRO	L SAMPLE:	3549170							
			Spike	LCS	LCS	%	Rec		
Parameter		Units	Conc.	Result	% Rec	Li	mits	Qua	lifiers
Alkalinity, Total as CaCO	3	mg/L	500	518	104		90-110		
SAMPLE DUPLICATE:	3549171								
			60453805003	Dup			Max		
Parameter		Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as CaCO	3	mg/L	265	26	65	0		10	
SAMPLE DUPLICATE:	3549172			_					
David		11-20-	60453812001	Dup	000		Max		0
Parameter		Units	Result	Result	КРО		RPD		Qualifiers
Alkalinity, Total as CaCO3	3	mg/L	408	41	13	1		10	

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



Project: AN	IEREN SCL4A										
Pace Project No.: 604	453818										
QC Batch: 8	96830		Analysis Me	thod:	SM 2320B						
QC Batch Method: S	M 2320B		Analysis De	scription:	2320B Alkalinity						
			Laboratory:		Pace Analytic	al Serv	vices - Kar	nsas Ci	ty		
Associated Lab Sample	s: 60453812	011									
METHOD BLANK: 354	49482		Matrix	Water							
Associated Lab Sample	s: 60453812	011									
			Blank	Reporting							
Paramete	r	Units	Result	Limit	MDL		Analyz	zed	Qualifiers		
Alkalinity, Total as CaCC)3	mg/L	<10.5	20.	0	10.5	06/06/24	12:54			
LABORATORY CONTR	OL SAMPLE:	3549483									
			Spike	LCS	LCS	%	Rec				
Paramete	r	Units	Conc.	Result	% Rec	Li	mits	Qua	lifiers		
Alkalinity, Total as CaCC	03	mg/L	500	512	102		90-110				
SAMPLE DUPLICATE:	3549484										
_			60453812020	Dup			Max				
Paramete	r	Units	Result	Result	RPD		RPD		Qualifiers		
Alkalinity, Total as CaCO	03	mg/L	382	38	2	0		10			
SAMPLE DUPLICATE:	3549485			_							
Den		L La Sta	60453815004	Dup	000		Max		0		
Paramete	r	Units	Result	Result	KPD		RPD		Qualifiers		
Alkalinity, Total as CaCO	03	mg/L	370	37	1	0		10			

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



Project:	AMEREN SCL4A								
Pace Project No.:	60453818								
QC Batch:	896832		Analysis M	lethod:	SM 2320B				
QC Batch Method:	SM 2320B		Analysis D	escription:	2320B Alkalir	nity			
			Laboratory	/:	Pace Analytic	al Services - k	ansas Cit	ty	
Associated Lab Sar	mples: 60453818	001							
METHOD BLANK:	3549490		Matr	ix: Water					
Associated Lab Sar	mples: 60453818	001							
			Blank	Reporting					
Parar	neter	Units	Result	Limit	MDL	Ana	lyzed	Qualifiers	
Alkalinity, Total as C	CaCO3	mg/L	<10.	5 20	0.0	10.5 06/06/2	24 15:44		
LABORATORY CO	NTROL SAMPLE:	3549491							
			Spike	LCS	LCS	% Rec			
Para	neter	Units	Conc.	Result	% Rec	Limits	Qua	lifiers	
Alkalinity, Total as C	CaCO3	mg/L	500	518	104	90-11	0		
SAMPLE DUPLICA	TE: 3549492								
			60453817003	3 Dup		Ma	x		
Para	neter	Units	Result	Result	RPD	RPI	<u> </u>	Qualifiers	
Alkalinity, Total as C	CaCO3	mg/L	53	9 5	44	1	10		

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



Project:	AMEREN SCL4A								
Pace Project No.:	60453818								
QC Batch:	897229		Analysis Me	ethod:	SM 2320B				
QC Batch Method:	SM 2320B		Analysis De	escription:	2320B Alkalin	ity			
			Laboratory:		Pace Analytic	al Serv	vices - Kar	nsas Ci	ty
Associated Lab Sar	mples: 60453818	002, 60453818003	, 60453818004,	60453818005					
METHOD BLANK:	3551348		Matrix	: Water					
Associated Lab Sar	mples: 60453818	002, 60453818003	, 60453818004,	60453818005					
			Blank	Reporting					
Parar	neter	Units	Result	Limit	MDL		Analyz	ed	Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	<10.5	20	.0	10.5	06/07/24	13:26	
LABORATORY CO	NTROL SAMPLE:	3551349							
			Spike	LCS	LCS	%	Rec		
Parar	neter	Units	Conc.	Result	% Rec	Li	mits	Qua	lifiers
Alkalinity, Total as C	CaCO3	mg/L	500	520	104		90-110		
SAMPLE DUPLICA	TE: 3551350								
			60453818005	Dup			Max		
Parar	neter	Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	354	36	8	4		10	
	TE: 3551351								
	12. 0001001		60453819001	Dup			Max		
Parar	neter	Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	276	28	30	1		10	

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



Project:	AMEREN SCL4A							
Pace Project No.:	60453818							
QC Batch:	896436		Analysis Me	ethod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	scription:	2540C Total D	issolved Solids		
			Laboratory:		Pace Analytic	al Services - Kai	nsas City	
Associated Lab Sar	mples: 60453812	2001, 6045381200	02, 60453812011					
METHOD BLANK:	3548054		Matrix	: Water				
Associated Lab Sar	nples: 60453812	2001, 604538120	02, 60453812011					
			Blank	Reporting				
Parar	neter	Units	Result	Limit	MDL	Analyz	zed Qualifiers	
Total Dissolved Soli	ds	mg/L		5.	0	5.0 06/03/24	13:04	
LABORATORY CO	NTROL SAMPLE:	3548055						
			Spike	LCS	LCS	% Rec		
Parar	neter	Units	Conc.	Result	% Rec	Limits	Qualifiers	
Total Dissolved Soli	ids	mg/L	1000	931	93	80-120		
SAMPLE DUPLICA	TE: 3548056							
			60453848004	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD	Qualifiers	
Total Dissolved Soli	ids	mg/L	3530	393	0	11	10 D6,H1	
SAMPLE DUPLICA	TE: 3548057							
			60453812008	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD	Qualifiers	
Total Dissolved Soli	ds	mg/L	481	48	9	2	10	

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



Project:	AMEREN SCL4A							
Pace Project No.:	60453818							
QC Batch:	896439		Analysis Me	ethod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total D	Dissolved Solids		
			Laboratory:		Pace Analytic	al Services - Ka	nsas Ci	ty
Associated Lab Sar	mples: 60453818	3001, 6045381800	2, 60453818003,	60453818004				
METHOD BLANK:	3548058		Matrix	: Water				
Associated Lab Sar	nples: 60453818	3001, 6045381800	2, 60453818003,	60453818004				
			Blank	Reporting				
Parar	neter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Soli	ds	mg/L		5	5.0	5.0 06/04/24	12:47	
LABORATORY CO	NTROL SAMPLE:	3548059						
			Spike	LCS	LCS	% Rec		
Parar	neter	Units	Conc	Result	% Rec	Limits	Qua	lifiers
Total Dissolved Soli	ds	mg/L	1000	973	97	80-120		
SAMPLE DUPLICA	TE: 3548060							
			60453775001	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds	mg/L	2820	26	60	6	10	
SAMPLE DUPLICA	TE: 3548067							
			60453819001	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds	mg/L	381	3	94	3	10	

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



Project: AMEREN SCL4A							
Pace Project No.: 60453818							
QC Batch: 896817		Analysis Mo	ethod:	SM 2540C			
QC Batch Method: SM 2540C		Analysis De	escription:	2540C Total D	issolved Solids	;	
		Laboratory	:	Pace Analytic	al Services - Ka	insas Ci	ity
Associated Lab Samples: 60453818	3005						
METHOD BLANK: 3549433		Matrix	k: Water				
Associated Lab Samples: 60453818	3005						
		Blank	Reporting				
Parameter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Solids	mg/L		5	.0	5.0 06/05/24	12:20	
LABORATORY CONTROL SAMPLE:	3549434						
		Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Qua	lifiers
Total Dissolved Solids	mg/L	1000	909	91	80-120		
SAMPLE DUPLICATE: 3549437							
		60453818005	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solids	mg/L	465	5 46	67	0	10	
SAMPLE DUPLICATE: 3549438							
		60453805003	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solids	mg/L	423	3 41	5	2	10	

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



Project:	AMEREN SCL4A												
Pace Project No.:	60453818												
QC Batch:	897826		Anal	ysis Metho	d: I	EPA 300.0							
QC Batch Method:	EPA 300.0		Anal	ysis Descri	ption:	300.0 IC An	ions						
			Labo	oratory:		Pace Analyt	ical Serv	vices - Kans	as City				
Associated Lab Sar	mples: 60453812	001, 6045381200	2, 6045387	12011, 604	53818001,	604538180	02						
METHOD BLANK:	3554025			Matrix: W	ater								
Associated Lab Sar	mples: 604538120	001, 6045381200	2, 604538 ²	12011, 604	53818001,	604538180	02						
			Bla	nk	Reporting								
Parar	neter	Units	Res	ult	Limit	MD	L	Analyze	d	Qualifier	S		
Chloride		mg/L		<0.53	1.	0	0.53	06/11/24 17	7:27				
Fluoride		mg/L		<0.12	0.2	0	0.12	06/11/24 17	7:27 N2				
Sulfate		mg/L		<0.55	1.	0	0.55	06/11/24 17	7:27				
LABORATORY CO	NTROL SAMPLE:	3554026											
			Spike	LC	S	LCS	%	Rec					
Parar	neter	Units	Conc.	Res	sult	% Rec	Li	imits	Qualifier	S			
Chloride		mg/L		5	4.6	92	2	90-110					
Fluoride		mg/L	2	.5	2.4	98	В	90-110 N	2				
Sulfate		mg/L		5	5.2	104	4	90-110					
MATRIX SPIKE & M	MATRIX SPIKE DUP	LICATE: 3554	027		3554028	3							
			MS	MSD					_				
Paramete	r Units	60453805001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Re Limits	c RPD	M RI	lax PD	Qual
Chloride	ma/l		5	5	18.3	18.3	16	63 16	3 80-1	20 0	- —	15	M1
Fluoride	mg/L	<0.12	2.5	2.5	4.5	4.5	18	BO 17	9 80-1	20 (5 D	15	M1,N2
Sulfate	mg/L	25.0	50	50	135	126	22	20 20	2 80-1	20	7	15 I	M1
MATRIX SPIKE SA	MPLE:	3554029											
			60453	3812008	Spike	MS		MS	% F	lec			
Parar	meter	Units	Re	esult	Conc.	Result		% Rec	Lim	its	Q	ualifi	iers
Chloride		mg/L		7.8	5		12.5	94	•	80-120	_		
Fluoride		mg/L		<0.12	2.5		2.5	102	2	80-120 N	1 2		
Sulfate		mg/L		41.3	50	ę	94.3	106	;	80-120			

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

REPORT OF LABORATORY ANALYSIS



Project: Pace Project No.:	AMEREN SCL4A 60453818											
QC Batch: QC Batch Method:	897827 EPA 300.0		Analy Analy Labo	ysis Metho ysis Descri pratory:	d: E ption: 3 F	EPA 300.0 300.0 IC An Pace Analyt	ions ical Servic	es - Kansas	City			
Associated Lab San	nples: 604538180	003, 60453818004	4									
METHOD BLANK:	3554031			Matrix: W	ater							
Associated Lab San	nples: 604538180	003, 60453818004	4									
Paran	neter	Units	Blaı Res	nk ult	Reporting Limit	MDI	-	Analyzed	Qı	ualifiers		
Chloride		mg/L		<0.53	1.0		0.53 0	6/11/24 08:5	9			
Fluoride		mg/L		<0.12	0.20)	0.12 0	6/11/24 08:5	9 N2			
Sulfate		mg/L		<0.55	1.()	0.55 0	6/11/24 08:5	9			
LABORATORY COM	NTROL SAMPLE:	3554032										
Paran	neter	Units	Spike Conc.	LC Res	S Sult	LCS % Rec	% R Limi	ec its C	ualifiers			
Chloride		ma/l		5	4.8	90		90-110				
Fluoride		mg/L	2	.5	2.7	10	7	90-110 N2				
Sulfate		mg/L		5	4.8	9	7	90-110				
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 35540	033 MS	MSD	3554034							
		60453819001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	2.1	5	5	11.4	11.1	186	180	80-120	3	15	M1
Fluoride	mg/L	0.16J	2.5	2.5	4.9	4.7	191	183	80-120	4	15	M1,N2
Sulfate	mg/L	73.9	50	50	196	172	244	196	80-120	13	15	M1
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 35540	036 MS	MSD	3554037							
Parameter	Units	60453805003 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	48.7	50	50	107	102	117	106	80-120	5	15	
Fluoride	mg/L	0.13J	2.5	2.5	3.0	2.9	113	111	80-120	2	15	N2
Sulfate	mg/L	73.1	50	50	129	127	113	108	80-120	2	15	
SAMPLE DUPLICA	TE: 3554035											
Paran	neter	Units	604538 Res	19001 ult	Dup Result	RPE)	Max RPD	Qualif	iers		
Chloride		mg/L		2.1	2.7	1	0	15				
Fluoride		mg/L		0.16J	0.16	J		15	N2			
Sulfate		mg/L		73.9	73.6	6	0	15				

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

REPORT OF LABORATORY ANALYSIS



Project: AMEREN SCL4A Pace Project No.: 60453818

SAMPLE DUPLICATE: 3554038						
		60453805003	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	48.7	49.5	1		15
Fluoride	mg/L	0.13J	0.14J			15 N2
Sulfate	mg/L	73.1	73.4	0		15

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

REPORT OF LABORATORY ANALYSIS



Project: Pace Project No.:	AMEREN SCL4A 60453818											
QC Batch: QC Batch Method:	898112 EPA 300.0		Analy Analy Labo	ysis Metho ysis Descri pratory:	d: ption:	EPA 300.0 300.0 IC An Pace Analyt	ions ical Servio	ces - Kansas	s City			
Associated Lab Sar	mples: 60453818	005										
METHOD BLANK:	3555148			Matrix: W	ater							
Associated Lab Sar	mples: 60453818	005										
Parar	neter	Units	Blai Res	nk sult	Reporting Limit	MDI	_	Analyzed	Qı	ualifiers		
Chloride		mg/L		<0.53	1	.0	0.53 0	6/17/24 08:5	57			
Fluoride		mg/L		<0.12	0.2	20	0.12 0	6/17/24 08:5	57 N2			
Sulfate		mg/L		<0.55	1	.0	0.55 0	06/17/24 08:5	57			
LABORATORY CO	NTROL SAMPLE:	3555149										
-			Spike	LC	S	LCS	% F	Rec				
Parar	neter	Units	Conc.		Sult	% Rec	Lim		Qualifiers	_		
Chloride		mg/L		5	4.9	98	3	90-110				
Fluoride		mg/L	2	.5 5	2.7	110)	90-110 N2				
Sunate		iiig/L		5	4.0	5.	-	30-110				
MATRIX SPIKE & M	ATRIX SPIKE DUP	LICATE: 3555	151		355515	2						
		60453912020	MS Spiko	MSD Spiko	MS	MSD	MS	MSD	% Poc		Max	
Paramete	r Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	8.6	5	5	13.9	14.5	106	118	80-120	4	15	
Fluoride	mg/L	<0.12	2.5	2.5	2.5	2.6	101	105	80-120	4	15	N2
Sulfate	mg/L	73.5	100	100	193	219	119	145	80-120	13	15	M1
MATRIX SPIKE & M	ATRIX SPIKE DUP	LICATE: 3555	153		355515	4						
			MS	MSD								
Paramete	r Units	60453818005 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	12.8	5	5	12.7	19.1	-2	127	80-120	41	15	M1,R1
Fluoride	mg/L	<0.12	2.5	2.5	<0.12	3.2	1	127	80-120		15	M1,N2
Sulfate	mg/L	57.6	50	50	55.6	121	-4	128	80-120	74	15	M1,R1
SAMPLE DUPLICA	TE: 3555150											
Derer	notor	Linita	604538 Boo	12020	Dup Bosult	סחם	h	Max	Qualit	iore		
Parar			Kes	ouit	Result		, 	κευ 		1612		
Chloride		mg/L		8.6 -0.12	8	.3	4	15	N2			
Sulfate		mg/L		73.5	<0. 27	i∠ '6	17	15 15				
Guilate		iiig/L		10.0	07	.0	17	10	00			

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

REPORT OF LABORATORY ANALYSIS



Project: AMEREN SCL4A Pace Project No.: 60453818

SAMPLE DUPLICATE: 3555155						
		60453818005	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	12.8	17.8	32	1	5 D6
Fluoride	mg/L	<0.12	2.5		1:	5 N2
Sulfate	mg/L	57.6	111	63	1	5 D6

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.



QUALIFIERS

Project: AMEREN SCL4A

Pace Project No.: 60453818

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.
- 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.
- N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
- P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
- R1 RPD value was outside control limits.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	AMEREN SCL4A
Pace Project No .:	60453818

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60453812001	S-BMW-1S	EPA 200.7	896847	EPA 200.7	897011
60453812002	S-BMW-3S	EPA 200.7	896847	EPA 200.7	897011
60453812011	S-UG-3	EPA 200.7	896847	EPA 200.7	897011
60453818001	S-TMW-2	EPA 200.7	896847	EPA 200.7	897011
60453818002	S-TMW-3	EPA 200.7	896850	EPA 200.7	896993
60453818003	S-SCL4A-DUP-1	EPA 200.7	896850	EPA 200.7	896993
60453818004	S-SCL4A-FB-1	EPA 200.7	896850	EPA 200.7	896993
60453818005	S-TMW-1	EPA 200.7	897107	EPA 200.7	897349
60453812001	S-BMW-1S	SM 2320B	896743		
60453812002	S-BMW-3S	SM 2320B	896743		
60453812011	S-UG-3	SM 2320B	896830		
60453818001	S-TMW-2	SM 2320B	896832		
60453818002	S-TMW-3	SM 2320B	897229		
60453818003	S-SCL4A-DUP-1	SM 2320B	897229		
60453818004	S-SCL4A-FB-1	SM 2320B	897229		
60453818005	S-TMW-1	SM 2320B	897229		
60453812001	S-BMW-1S	SM 2540C	896436		
60453812002	S-BMW-3S	SM 2540C	896436		
60453812011	S-UG-3	SM 2540C	896436		
60453818001	S-TMW-2	SM 2540C	896439		
60453818002	S-TMW-3	SM 2540C	896439		
60453818003	S-SCL4A-DUP-1	SM 2540C	896439		
60453818004	S-SCL4A-FB-1	SM 2540C	896439		
60453818005	S-TMW-1	SM 2540C	896817		
60453812001	S-BMW-1S	EPA 300.0	897826		
60453812002	S-BMW-3S	EPA 300.0	897826		
60453812011	S-UG-3	EPA 300.0	897826		
60453818001	S-TMW-2	EPA 300.0	897826		
60453818002	S-TMW-3	EPA 300.0	897826		
60453818003	S-SCL4A-DUP-1	EPA 300.0	897827		
60453818004	S-SCL4A-FB-1	EPA 300.0	897827		
60453818005	S-TMW-1	EPA 300.0	898112		

1		1				WO#	:60453818
	Pace	DC#_Title: EN	V-FRM-LENE	-0009_	Sample	Cc 6045381	8
		Revision: 2	Effective	ate: 01/	12/2022	Issued By: Le	inexa
Client Nan	ne: <u>Ra</u>	cksmith Geog	ng			a second as the	/
Courier:	FedEx 🗋 UPS		ay 🗆 🛛 PEX 🗋	ECI	D Pa	ice C Xroads	Client 🗆 Other 🗆
racking #:	on Coolor/Pey	Descent: Ves	Pace Ship	oing Lab	el Used?		
Packing Mate	rial: Bubble	e Wrap Bubb	ble Bags []	s mact: Foa	n ⊡		ither 🗆
hermometer	Used: T2	9	Type of Ice: 🖉	Blu	e None		
Cooler Temp	erature (°C):	As-read 2.1 C	Corr. Factor	00	orrected	2.1	Date and initials of person examining contents:
emperature sh	ould be above free	zing to 6°C					pvs/30ky
Chain of Custo	ody present:		ØYe	s 🗆 No	□n/A		
Chain of Custo	ody relinquished:		ZYe	s □No	□n/A		
Samples arrive	ed within holding	time:	ÅYe	s □No	□n/a		
Short Hold Ti	me analyses (<	72hr):	□Ye	s 🗖 No	□n/A		
Rush Turn Ar	ound Time reau	vested:	□Ye	ZNO			
Sufficient volu	me:		- Ve				
correct contai	hers used:		- Alve				
ace containe	re used.						
	act:						
ppropopulation	0254 / TV1005/	1006 apile frazen in 4					
iltered volum							
literea volum	e received for dis						
ample labels	match COC: Dat	te / time / ID / analyse					(+(
amples conta	in multiple phase	es? Matrix: W		No	□N/A		non lat #'n of proconcisius and the
[,] ontainers req -INO ₃ , H ₂ SO ₄ , H	uiring pH presen ICI<2; NaOH>9 Su	vation in compliance <i>:</i> ilfide, NaOH>10 Cyanid	e)	i LINO	dat	e/time added.	nes, lot # 5 of preservative and the
Exceptions: VC	A, Micro, O&G, KS	STPH, OK-DRO)	LOT#: 67/	81	_		
ead acetate s	trip turns dark? (Record only)	□Yes	□No			
otassium iodi	de test strip turns	s blue/purple? (Prese	rve) 🛛 Yes	□No	-		
rip Blank pres	ent:		□ Yes	□No	N/A		
eadspace in '	VOA vials (>6mr	m):	□Yes				
amples from	USDA Regulated	Area: State:	□Yes	□No	IN/A		
dditional labe	s attached to 50	35A / TX1005 vials in	the field?				
lient Notifica	tion/ Resolution	n: Co	ppy COC to Client?	Y /	N	Field Data Require	d? Y / N
erson Contac	ted:		Date/Time:				
omments/ Re	solution:			-			

Project Manager Review:

Pace Location Requested (City/s Pace Analytical Kansas 9608 Loiret Blvd., Lenexa, KS 66219	state):	CHAIN Chain	I-OF-CUSTO in-of-Custody is a I	DY Analytica	I Request Dc	ocument t fields			LAB USE ONLY-	Affix Workorde	rr/Login Label Here		
Company Name: Rocksmith Geoengineering, LLC. Street Address: 2320 Creve Coeur Mill Road, Maryla 63043	ind Heights, M	Contact/i D Phone #: E-Mail: Cc E-Mail	Report To: Mar 314- marl	: Haddock 974-6578 haddock@rocksn	lithgeo.com				Scan OR	OV53	B/B Letions		
Project Name AMEREN SCI AA		-							Specify Container Size **		Container Size: ((1) 1L, (2) 500mL, (3) 250mL, (4)	-
			o: Mari	Haddock			-	-			TerraCore, (9) 90m	, (6) 40mL vial, (7) EnCore, (8) nL, (10) Other	
Site Collection Info/Facility ID (as applicable):		Durchare	-Mail: mar	.haddock@rocksn	ithgeo.com			P	intify Container Preservative T	ype***	••• Preservative Ty	Vpes: (1) None, (2) HNO3, (3)	-
		applicable	e):				_	10	Ambuelo Dammered		NaH504, (4) HCI, (5) NaH504, (8) Sod. T) NaOH, (6) Zn Acetate, (7) Thiosulfate, (9) Ascorbic Acid, (10	~
		Quote #:						-	Daisanbay sickipity		MeOH, (11) Other		-
Time Zone Collected: [] AK [] PT [] MT []	ल] घ	County /	State origin of sam	ole(s): Misso	uri			*			Proj. Mgr: Jamie Chu	l fot	-
Data Deliverables:	Program (DW, F	(CRA, etc.) as appl	icable: Repo	table Yes] No			(2 00			AcctNum / C	Client ID:	_
[] Level II [] Level II] Level IV	Rush	(Pre-approval	required):	DW PV	VSID # or WW Permit	# as applicable:) S) S			Aluc	e ider	-
[] EQUIS	e Day [] 1 Day	[] 2 Day [] 3	Day [] Other				ejeji	letəl	_	_	Use Table #:	ovem	10
Date Result	tts :			Field Filtered (if Analysis:	applicable): [] Y	es []No	uS/abi	V M nAV			2 Profile / Terr	nplate:	eduure
 Matrix Codes (Insert in Matrix box below): Drinking Water (D. (B). Vapor (V). Surface Water (SW), Sediment (SED). Sludge (SL) 	W), Ground Wa), Caulk (CK), Lea	ter (GW), Waste V chate (LL), Biosolic	Vater (WW), Produ d (BS), Other (OT)	ct (P), Soil/Solid (SS),	Oil (OL), Wipe (WP)	, Tissue (TS), Bioassay	/Fluori	(nniis) isO br			Prelog / Bott	on non-	-
Customer Sample ID	Matrix •	omp / C	omposite Start	Collected or C	omposite End	# Res. Chlorine	/əpiro	na (i 16 (l)		_	EZ 30870	030	_
		Grab Dat	te Time	Date	Time	int. Results Units	оцар	ddA			Sample	le Comment	_
S-TMW-1	τw			/				,					1
S-TMW-2	Ţ			5-29-24	1213			-					-
S-TMW-3	ŢŴ		/	-	HOHI			Ke .					
S-SCL4A-DUP-1	WT		/		1			-					-
S-SCL4A-FB-1	WT			-1	0141			-					-
S-SCL4A-MS-1	Ţ		/										-
S-SCL4A-MSD-1	Ţ		/					1					1
5-BMW-15	15	6		5-28-24	1135 2		2	2					-
5-13 MW-35	5	6		T	1420	5	1	5					
5-06-3	Tw	61		5-28-20	(1544 -	-	1	1					-
Additional Instructions from Pace [®] : * - App III and Cat/An Metals* - EPA 200.7: B, Ca, Fe, Mg, Mn,	, K, Na		Collected (Printed N	BY: Grant	Anora		Custome	er Remarks	/ Special Conditions / Possible	: Hazards:			-
			Signature	Chry	y y	1	# Coole	:su	Thermometer ID: Corre	ction Factor (°C):	Obs. Temp. ("C) Co	orrected Temp. ("C) On ice:	
Reightiched Miconfrage (Signature)	<u> </u>	rte/Time:	11600	Roceived Michael	Inv (Signatura)	L			Date/Tipe:	20.0	racking Number:	i	
Relinquished by/Company: (Signature) -D	ă	ite/Time:		Receive by/Comp	ury: (Signature)				Date/Time:	6100	elivered by: [] In- Per	rson [] Courier	-
Ondersteed by/Company: (Signature)	č	ite/Time:		Received by/Comp.	inv. (Signature)				Date/Time:]] FedEX] UPS [] Other	
Punquished by/Company: (Signature)	ä	ite/Time:		Received by/Compa	iny: (Signature)				Date/Time:		Page:	of	-
500 mitting a sample via this chain of custody constitutes ackn	owledgment and	aantaa af el	Torrad Barren	 								-	_

, s-BMW-35 and s-	Officer SPLC MPDU BP3Z BP3C	9/1 + 854 on 600			*								Misc.	120ml Coliform Na Thiosul	Ziploc Bag	Air Filter	Air Cassettes	Terracore Kit	Summa Can			Matrix	Water	Solid	Non-aqueous Liquid	OIL	Wipe	Drinking Water		
w-15	BP35	501	-			t	Ħ	t	Ħ	1	-			P51	PLC	٨F	~	~					VT	SL SL	VAL	٥L	٨P	N		
-BM	ВРЗF	1			>	1	Ħ	t	1	T	T		1			4			1	T	t	Τ			-	Ĭ	-		Τ	Τ
09 5	врзи	-	-	_	-		1	T	T	T	T												filtere							
149	BP1N						T	Ħ	T	T						stic	e	0		nlastic	retate		c - field		plastic	<u>.</u>	cetate	plastic		lic olstic
204	BP3U						1	I	T		T		tic	stic	astic	ed plas	Acetal	I plasti	5 plasti	served	Zn A	plasti	blasti	blasti	served	4 plast	A nZ I	served	blastic	4 plasi erved
Notes	BP2U					1	Π	1	T				Plas	O3 pla:	504 pl	reserv	DH, Zn	NAOF	HNO	UD02H	-OeN	NaOF	ONH	NNO	unpre	H2SO	NaOF	unpre	ONH	
	BP1U	-	-	-	-		Π		Π				IN NAME	1L HN	1L H2	1L unp	1L Na(500mL		500ml	500ml	250mL	250mL	250mL	250mL	250mL	250mL	125mL	125mL	125mL 16oz u
	Medu							I									í													
	Mekn												2010	BPIN	BP1S	BP1U	BP1Z	BP2C		BP2U	RP27	BP3C	BP3F	BP3N	BP3U	BP3S	BP3Z	BP4U	BP4N	WPDU
	IGEU							Π						Τ						goo										
	NGÐA															ide	ŝ					ss	ss	s	s	S	ŝ			
	N¢64U						I									nber w	er glas		lass loc-for	dlass	er alass	ber glas	ber glas	er glas	er glas	er glas	er glas			
	SE9A			Y									ar	<u></u>	iar	ved an	s amb	SO4 amber of	nber g	amber	3 ambe	04 amb	A amb	s amb	s amb	s amb	s amb			
	NZÐĄ						T						ar soil	ear soil	ear soil	preser	nnore		Thiss:	Iniosui npres a	ÖNH	H2SC	H2SC	unpre	unpre	unpre	unpre			
	Urða						T				1		Roz cle	4oz cle	2oz cle	4oz un	100mL			1 liter u	500ml	500mL	250mL	500mL	250mL	125mL	100mL			
	Hrəa																	41												
	BG1U												WGKI	WGFU	WG2L	JGFU	AGOU	AG1H		AG1U	AG2N	AG2S	AG3S	AG2U	AG3U	AG4U	AG5U			
	DC9B											18	G																	
	DG9M												1								rial				s					
	N69CI												r via	Da vial	vial	ial .	er vial	er vial	SCIVED	r vial	clear v	glass		Jlass	ar glas:					
	∩69∧												te clea	nber vi	clear	mber	4 ambt	in amp	alquu	o clea	terved	clear	glass	Clear (es Clei	oil jar				
Site:	DG9O												bisulfa	HCI an	MeOH	TSP al	HZSO	IN IN	HCI OF	Na Thi	unpres	12SO4	Inpres	HCL	- Unpr	clear so				
	DG9H												40ml	40mL	40mL	40mL	40mL	40mL		40mL	40mL	1liter	1liter L	250ml	250ml	16oz c				
	нөэл				1																									
1.1.1	XUIBINI	H	T					T	IT			odes	G9B	39H	G9N	0690	CBS	201		G9T	G9U	G1S	G10	B3H	33U	GD				

DC#_Title: ENV-FRM-LENE-0001_Sample Container Count Revision: 3 | Effective Date: | Issued by: Lenexa

00U53818

Qualtrax Document ID: 30422

Pace Analytical Services, LLC

Page 35 of 38

						WO#:60453818
	Pace	DC#_Title: EN	V-FRM-LEN	E-0009_S	ample C	60453818
	AWALYTICAL SERVICES	Revision: 2	Effective	Date: 01/1	2/2022	Issued By: Lenexa
Client Name	: /4	locksmith 6	eveng			
Courier: Fe	dEx 🗆 UPS I		Clay 🗆 🛛 PEX		Pace	e □ Xroads Client □ Other □
Fracking #:	<u>.</u>	/	Pace Sh	pping Label	Used? Y	∕es □ Ng ⊡
Custody Seal of	n Cooler/Box I	Present: Yes	No 🗆 Se	als intact: Y	es 🗖 N	
Packing Materia	al: Bubble	e Wrap ∐ Bul 2 9	ble Bags Li	Foam	None	Nonge U Other L
	seu.	11	Type of ice:	Wel Blue	None	Date and initials of person
Cooler Tempera	d he shove frees	s-read <u>1/3/1-7</u>	Corr. Factor	<u>0.0</u> 00	rrected _	examining contents:
	u be above meez					p 615107
Shain of Custody	/ present:				N/A	
Jhain of Custody	relinquished:			res LINo L	N/A	
Samples arrived	within holding	time:		∕es ⊡No □	N/A	
Short Hold Time	e analyses (<7	2hr):		res No 🗆	N/A	
Rush Turn Arou	nd Time requ	ested:	· []	res No	N/A	
Sufficient volume	:		1	res 🗆 No 🗆	N/A	
Correct container	s used:		1º	′es □No □	N/A	
ace containers	used:		Į.	∕es □No □	N/A	
Containers intact				′es □No □	N/A	
Inpreserved 503	5A / TX1005/1	006 soils frozen in	48hrs?	es 🗆 No 💋	N/A	
iltered volume r	eceived for dis	solved tests?			N/A	
	atch COC: Dat					
	multiple phase					
ampies contain	ing off process	vation in compliance				sample IDs. volumes. lot #'s of preservative and the
HNO_3 , H_2SO_4 , HCl^2	<2; NaOH>9 Sul	fide, NaOH>10 Cyan	de)		date/	time added.
Exceptions: VOA,	Micro, O&G, KS	TPH, OK-DRO)	LOT#: 6	11821	_	
ead acetate strip	turns dark? (F	Record only)		′es □No		
otassium iodide	test strip turns	blue/purple? (Pres	erve) 🗆 Y	′es □No		
rip Blank presen	t:		Ωγ	es 🗆 No 💋	N/A	
eadspace in VO	A vials (>6mm	n);	ΩY	es 🗆 No 💋	N/A	
amples from LIS		Area: State			N/A	
dditional labels	attached to E00					
lient Notificatio	n/ Resolution		Copy COC to Clien	t? Y / N		Field Data Required? Y / N
erson Contacted			Date/Time:	-		
comments/ Resol	ution					

Project Manager Review:

Date:

Pace [®] Location Requested (City/State): Pace Analytical Kansas 9608 Loiret Blvd, Leneva, KS 66219		E	AIN-OF-C Chain-of-Ous	USTOD tody is a LEG	(Analytic: AL DOCUMENT -	al Reque	ist Doc	ument			語源	LABUSE	ONLY-Affix Wo	orkorder/Lo	gin Label Here	
Comparty Name: Rocksmith Geoengineering, ILC. Street Address: 2320 Creve Coeur Mill Road, Maryland Heig 63043	ghts, M	C Photo	tact/Report To ne #: ail: -Mail:	o: Mark H 314-97/ mark.h;	addock 4-6578 sddock@rocks	mithgeo.co	E					0	an aR code fo	S	3818 **	
Customer Project #: COC# 11 Project Name: AMEREN SCL4A		Imroi	toe To:	Mark H	addock						5	ecify Contair	er Size **	-	**Container Size: [1] 11, [2] 500m 12 Sml, [5] 100m4, (6) 40mL vial, [TerraCore, (9) 90m4, (10) Other	, (3) 250mL, (4) 2) EnCore, (8)
		Invo	ice E-Mail:	mark.hi	addock@rocks	mithgeo.co	E				Identify (ontainer Pre	ervative Type***		Preservative Types. (1) None,	(2) HNO3, (3)
Site Collection Info/Facility ID (as applicable):		Purc	chase Order # licable):	(if					1		10	Analysis Rec	uested		H2SO4, (4) HCI, (5) NaOH, (6) Zn A NaHSO4, (8) Sod Thiosulfate, (9) / MeOH, (11) Other	celate, (7) Iscorbic Acid, (10
		ong -	te #						1	1	1				Proj. Mgr.	ot
Time Zone Collected: [] AK [] PT [] MT [] CT [Data Deliverables: Regulatory Program	m (DW,	RCRA, etc.) as	nty / State ori, applicable:	gin of sample Reporta	(s): Mis ble [] Yes	[]No			T	_	*(7.0			-	Jamie Church AcctNum / Client ID:	d follow
[]Level II []Level III []Level IV	Rus	h (Pre-appr	oval require	d):	Ma	PWSID# or W	W Permit a	as applicable:	et	-	02) sie		-		0 Table #:	nance ld
[] EQUIS [] EQUIS Date Leave Lay [Date Results	PATE	Apri 7 [] Å	1 April 1) outer	Field Filtered	(if applicable	1] Yes	on[] s	eliu2/e		teM nA	-		_	Brofile / Template:	
Other Marcix Codes (Insert in Matrix box below); Drinking Water (DW); Gri	M puno	ater (GW), We	aste Water (W	W), Product	Analysis: (P), Soil/Solid (S	N, (JO) 10, (2	(ipe (WP),	lissue (TS), Bi	Dinorid	elinity	d Cat/				15856 Prelog/ Bottle Ord. ID:	uon noi:
(ib), Vapor (V), Sunace Water (SW), Seament (Stu), Suoge (St), Cauk	(N), LES	Como /	Composity	e Start	Collected or	r Composite	# pug	Res. Chic	ie eik	× ™ /	ns III	_			EZ 308/030	Serve
Customer Sample ID	latrix.	Grab	Cate	Time	Date	Tim	· log	Results	CHIO	Sat	dd∀				Sample Comme	바
I-MWL-S	WT	9			5-30-2	24 095	0 2		د ا	2	1					
S-TMW-2	WT			/												
S-TMW-3	WT			/												
S-SCL4A-DUP-1	WT			/												
S-SCI4A-FB-1	WT						-					_				
S-SCI4A-MS-1	WT	9	/		5-30-5	24 09:	000		-	2	3				Collockede 5-T.	1-m
S-SCI4A-MSD-1	WT	0	-		-1	69	50 2			2	5				+	
							-			-						-
						-										
Additional Instructions from Pace®: *				Collected B	Gra	+-	Nor		3	stomer R	emarks / Sp	ecial Condítio	ns / Possible Hazar			
··· App III and Lary An INNERSE ·· Er'A 200./: 5, Ca, F6, MG, MCL 5, F8				Signature	n and a second	De	m	7	1	A Cooters	É	TP99	Correction Fac	ه (۲) ۱۹	bs. Temp. (°C) Corrected Temp.	(1) On toe:
reingisted by Company Experiments / Dec Ran h		Date/Time:	1441	1160	Received by Ko	In the second	De	757			8	61,12	1 070	L Track	ảng Number:	
Relinquished by/Company: (SignaRure) U	1	Date/Time:		Ì.	Receiver	mpany: (Signatu	ten l	-			<u>8</u>	te/Time:		Deliv	vered by: [] In- Person []	Courier
D Relinquished by/Company: (Signature)		Date/Time:			Received by/Co.	mpany: (Signatu	(au				B	te/Tŝme:		Г	[]FedEX []UPS [] Other
Petinguisted by/Company: (Signature)		Date/Time:			Received by/Co	mpany: (Signatu	ire)				đ	te/Time:		•	age: of	
0. 20 Submitting a sample via this chain of custody constitutes actnowleds	gment a	nd acceptance	e of the Pace®	Terms and C	conditions found	1 at https://w	ww.pacela	bs.com/resou	roe-library	Inscence	Inscriterin	ind-condition	mel	NH NH	V-FRM-CORQ-0019 V02 1	10123 @

100455818	SPLAC											Mico	Wipe/Swab	120mL Coliform Na Thiosulf	Ziploc Bag	All Fliter Air Cassattas	Terracore Kit	Summa Can			Matrix	Mature	Solid	Non-aqueous Liquid	OIL	Wipe	Drinking Water		
p	SEGE								T				-	SP5T	ZPLC		R a	n				T/V/T	N	NAL	OL	WP	DW		
	BP3F																	1				7	2	T	Γ	Π			
201	NEde	M																		<u>ں</u>		d filter		0			0		
- In list	8P1N														stic	ate	tic	tic	stic	d plast	Acetate			d plast	stic	Acetate	d plast	. <u>o</u> :	stic
X	BP3U								Ĩ			stic	astic	Stic	ued pla	n Acet	H plas	3 plast	O4 plas	eserve		2 plact	3 plast	eserve	D4 plas	H, Zn /	serve	3 plast	J4 plas
Note	BP2U											d	Id HOV	Id SON	Dreser	DH.Z	L NAO	L HNO	L H2S	un :		HND	HNO	L unpr	L H2S(L NaO	L unpr	L HNO	L HZV
	BP1U	M											11 N/			1L Na	500m	500m	500m			250m	250m	250m	250m	250m	125m	125m	
	MGDU																												
	MGKN												BP1C	2100	BP11	BP1Z	BP2C	BP2N	BP2S			BP3F	BP3N	BP3U	BP3S	BP3Z	BP4U	BP4N	0410
	1GFU																		lass										
	NGÐA			_											vide	SS			mberg		0 0	50	SS	SS	SS	ss			
	N¢9∀														mber v	ber gla	s	glass	clear/a	o dass	her dia	ber ala	ber gla	ber gla:	ber gla:	ber gla:			
	AG3S												il jar		rved a	es am	er glas	mber	ultate (alline		04 am	es amt	es amt	es amt	es amt			
	NSBA												ear so	Par so	uprese	L unor	l ambe	SC4 a	I hios		H2S(H	L H2S(nupr	- unpr	T unpre	nnpr			
	UrəA												802 C	207 0	40Z UI	100ml	112		1L Na	2002	500m	250m	500m	250m	125m	100ml			
	нгөа																						0						
	BG1U											SSE	WGK	WG21	JGFU	AGOU	AG1H	AG N	AGT	NCOA NCOA	AG2S	AG3S	AG2U	AG3U	AG4U	AG5U			
	DC9B											G														Ì			
	DG9M																1							5					
	neea			_/									Ir vial	vial	lal	er vial	er vial	Served	r vial	clear v	lass		lass	ar glas:					
	N69V												te clea	clear	mber v	4 amb	o amb	aidin		Perved	clear o	glass	Clear g	es Clea	il ar				
olle	DG9O												bisulta HCI an	MeOH	TSP a	H2SO.	Na Th			Innres	12SO4	npres	HCL	Unpr	lear sc				
	DC9H												40mL	40mL	40mL	40mL	40mL			40ml	1liter H	1liter u	250mL	250mL	160Z C				
	H69A																			Ī									
			11	T	1		-	1		-	10	1	nΠ	IΣ	101	S		213	=IH-		S		T		สเ	1			

DC#_Title: ENV-FRM-LENE-0001_Sample Container Count Revision: 3 | Effective Date: | Issued by: Lenexa

(pouszeie

Page 38 of 38


Memorandum August 5, 2024

То:	Project File Rocksmith Geoengineering, LLC	Project Number: 23009-24
CC:	Mark Haddock, Jeffrey Ingram	
From:	Grant Morey	Email: grant.morey@rocksmithgeo.com
RE:	Data Validation Summary, Sioux Energy Center – So	CL4A – Data Package 60453818

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 duplicate criterion was not met, the associated sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When a compound was detected in a sample result between the Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).
- When a matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result
 was qualified as an estimate (J, J+ for estimates based high, and J- for estimates based low). When
 matrix spike recovery was less than 10%, and the associated sample result was a non-detect, the result
 was rejected (R).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Rocksmith Geoengineering	Project Manager: J. Ingram
Project Name: Ameren SCL4A	_ Project Number: _ ²³⁰⁰⁹⁻²⁴
Reviewer: G. Morey	Validation Date: 8/5/2024
Laboratory: <u>Pace Analytical</u> Analytical Method (type and no.): <u>EPA 200.7 (Total Metals); SM</u> Matrix: Air Soil/Sed. Water Waste Sample Names <u>S-TMW-2, S-TMW-3, S-SCL4A-DUP-1, S-SCL4A-F</u>	SDG #: 60453818 2320B (Alkalinity); SM 2540C (TDS); EPA 300.0 (Anions) B-1, S-TMW-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 II	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	х			5/28/2024 - 5/30/2024
b)	Sampling team indicated?	X			GTM/JTA
c)	Sample location noted?	X			
d)	Sample depth indicated (Soils)?			х	
e)	Sample type indicated (grab/composite)?	X			Grab
f)	Field QC noted?	х			See Notes
g)	Field parameters collected (note types)?	х			pH, Spec Cond, Turb, Temp, DO, ORP
h)	Field Calibration within control limits?	X			
i)	Notations of unacceptable field conditions/performa	nces fro	om field lo	ogs or field	notes?
			X		
j)	Does the laboratory narrative indicate deficiencies?			х	No lab narrative.
	Note Deficiencies:				
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
Chain- a)	of-Custody (COC) Was the COC properly completed?	YES	NO	NA	COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field	YES ×	NO		COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	YES ×	NO	NA	COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	XES × × ×	NO		COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × ×	NO		COMMENTS
Chain- a) b) c) Genera	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES	NO		COMMENTS
Chain- a) b) c) Genera a)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? al (reference QAPP or Method) Were hold times met for sample pretreatment?	YES × × YES	NO		COMMENTS
Chain- a) b) c) Genera a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis?	YES	NO		COMMENTS
Chain- a) b) c) Genera a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	YES × × × YES × × × ×	NO		COMMENTS
Chain- a) b) c) Genera a) b) c) d)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	YES × × × YES × × × × ×	NO		COMMENTS
Chain- a) b) c) Genera a) b) c) d) e)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved?	YES × × × YES × × × × × × × ×	NO		COMMENTS
Chain- a) b) c) Genera a) b) c) d) e) f)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved? Were any sample dilutions noted?	YES × × × × × × × × × × × × ×	NO		COMMENTS COMMENTS 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)?	х			See Notes
c)	Were analytes detected in the equipment blank(s)?			X	
d)	Were analytes detected in the trip blank(s)?			×	
Labora	tory Control Sample (LCS)	YES	NO	NA	COMMENTS
a)	Was a LCS analyzed once per SDG?	х			
b)	Were the proper analytes included in the LCS?	х			
c)	Was the LCS accuracy criteria met?	Х			
Duplica	ites	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	plicate	sample n	ames)?	S-SCL4A-DUP-1 @ S-TMW-2
		х			See Notes
b)	Were field dup. precision criteria met (note RPD)?		x		
c) Were lab duplicates analyzed (note original and duplicate samples)?					
		х			See Notes
d)	Were lab dup. precision criteria met (note RPD)?		х		
Blind S	tandards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			х	
	analytes included and concentrations)?				
b)	Was the %D within control limits?			х	
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?		х		See Notes
-	Recovery could not be calculated since sample contained high concentration of analyte?			X	
c)	Were MS/MSD precision criteria met?		х	X	See Notes

Comments/Notes:

General:
Chloride and sulfate diluted in some samples, no qualification necessary.

Method Blanks:

3549612: potassium (99.7J) and sodium (287J). Associated with samples -002 through -004. Potassium at -002 > RL and < 10x blank, result qualified as estimate. Results at -004 < RL, results qualified as ND at RL. Other results > RL and > 10x blank, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Method Blanks, continued:

3550877: calcium (31.3 J). Associated with sample -005. Result > RL and > 10x blank, no qualification necessary.

Field Blanks:

S-SCL4A-FB-1 @ S-TMW-3: potassium (102J) and sodium (287J). Potassium > RL and < 10x blank, result qualified as estimate. Sodium > RL and 10x blank, no qualification necessary.

Duplicates:

S-SCL4A-DUP-1 @ S-TMW-2: field duplicate RPD exceeds control limit (20%) for sulfate (20.4%), results qualified as estimates.

Lab duplicate max RPD: 10%: alkalinity, TDS; 15%: chloride, fluoride, sulfate

3548056: Lab duplicate exceeds max RPD for TDS, associated with unrelated sample, no qualification necessary.

3555150: Lab duplicate exceeds max RPD for sulfate, associated with unrelated sample, no qualification necessary.

3555155: Lab duplicate exceeds max RPD for chloride and sulfate, associated with sample -005, results qualified as estimates.

MS/MSD:

3549600: MS recovery low for calcium, associated with unrelated sample, no qualification necessary.

3549614/3549615: MS recovery low for calcium, MSD recovery and RPD within control limits, associated with unrelated sample, no qualification necessary.

3549616: MS recoveries low for calcium and sodium, associated with unrelated sample, no qualification necessary.

3550879/3550880: MS/MSD recoveries low for calcium, RPD within control limits, associated with sample -005, result gualified as estimate.

3550881: MS recovery high for calcium and sodium, associated with unrelated sample, no qualification necessary.

3554027/3554028: MS/MSD recoveries high for chloride, fluoride, and sulfate, RPDs within control limits, associated with unrelated sample, no gualification necessary.

3554033/3554034: MS/MSD recoveries high for chloride, fluoride, and sulfate, RPDs within control limits, associated with unrelated sample, no qualification necessary.

3555151/3555152: MSD recovery high for sulfate, MS recovery and RPD within control limits, associated with unrelated sample, no qualification necessary.

3555153/3555154: MS recovery low (<10%), MSD recovery high, and RPD outside of control limits for chloride, fluoride, and sulfate. Associated with sample -005. Chloride and sulfate results gualified as estimates. Flouride result is a ND and therefore rejected.

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

				-
Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-3	Potassium	677	J	Detected in method and field blank, result > RL and < 10x blank
S-SCL4A-FB-1	Potassium	500	U	Detected in method blank, result < RL
"	Sodium	500	U	11
S-TMW-2	Sulfate	34	J	Field DUP RPD exceeds control limits
S-SCL4A-DUP-1	"	27.7	J	11
S-TMW-1	Chloride	12.8	J	Lab DUP RPD exceeds control limits
"	Sulfate	57.6	J	11
"	Calcium	124000	J-	MS/MSD recoveries low, RPD OK
"	Chloride	12.8	J	MS recovery low, MSD recovery high, RPD exceeds control limit
"	Sulfate	57.6	J	"
"	Fluoride	0.12	R	MS recovery <10%, result is a non detect
$\overline{\}$				

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
Circacture	Grant More	ey.		08/05/2024
Signature:	North Contraction	ð		Date:



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

August 13, 2024

Mark Haddock Rocksmith Geoengineering, LLC. 2320 Creve Coeur Mill Road Maryland Heights, MO 63043

RE: Project: AMEREN SCL4A - VERIFICATION Pace Project No.: 60457662

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory on July 31, 2024. 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,

Jame Church

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC. Lisa Meyer, Ameren Grant Morey, Rocksmith Geoengineering, LLC.





CERTIFICATIONS

Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219 Arkansas Certification #: 88-00679 Illinois Certification #: 2000302023-6 Colorado Division of Oil and Public Safety Iowa Certification #: 118 Kansas Field Laboratory Certification #: E-92587 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Missouri Inorganic Drinking Water Certification Nevada Certification #: KS000212024-1 Oklahoma Certification #: 2023-073 Texas Certification #: T104704407-23-17 Utah Certification #: KS000212022-13



SAMPLE SUMMARY

Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60457662001	S-TMW-1	Water	07/29/24 11:20	07/31/24 07:07
60457662002	S-TMW-2	Water	07/30/24 10:36	07/31/24 07:07
60457662003	S-TMW-3	Water	07/30/24 09:33	07/31/24 07:07
60457662004	S-SCL4A-DUP-1	Water	07/30/24 00:00	07/31/24 07:07
60457662005	S-SCL4A-FB-1	Water	07/30/24 10:46	07/31/24 07:07



SAMPLE ANALYTE COUNT

Project:AMEREN SCL4A - VERIFICATIONPace Project No.:60457662

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60457662001	S-TMW-1	EPA 200.7	ARMN	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	1	PASI-K
60457662002	S-TMW-2	EPA 200.7	ARMN	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	1	PASI-K
60457662003	S-TMW-3	EPA 200.7	ARMN	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	1	PASI-K
60457662004	S-SCL4A-DUP-1	EPA 200.7	ARMN	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	1	PASI-K
60457662005	S-SCL4A-FB-1	EPA 200.7	ARMN	1	PASI-K
		SM 2540C	KVI	1	PASI-K
		EPA 300.0	PL	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Sample: S-TMW-1	Lab ID:	60457662001	Collected	l: 07/29/24	11:20	Received: 07/	31/24 07:07 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I Pace Analy	Method: EPA 2 /tical Services	00.7 Prepa - Kansas Ci	ration Meth ty	od: EP	A 200.7			
Calcium	125000	ug/L	200	26.9	1	07/31/24 15:20	08/12/24 18:17	7440-70-2	M1,P6
2540C Total Dissolved Solids	Analytical I Pace Analy	Vethod: SM 25 /tical Services	540C - Kansas Ci	ty					
Total Dissolved Solids	440	mg/L	10.0	10.0	1		07/31/24 09:38		
300.0 IC Anions 28 Days	Analytical I Pace Analy	Method: EPA 3 /tical Services	00.0 - Kansas Ci	ty					
Chloride	9.0	mg/L	1.0	0.53	1		08/07/24 00:53	16887-00-6	M1



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Sample: S-TMW-2	Lab ID:	60457662002	Collected	d: 07/30/24	10:36	Received: 07/	/31/24 07:07 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Pace Anal	Method: EPA 2 ytical Services	00.7 Prepa - Kansas C	aration Meth ity	od: EP	A 200.7			
Calcium	134000	ug/L	200	26.9	1	07/31/24 15:20	08/12/24 18:22	7440-70-2	
2540C Total Dissolved Solids	Analytical Pace Anal	Method: SM 25 ytical Services	40C - Kansas C	ity					
Total Dissolved Solids	469	mg/L	10.0	10.0	1		07/31/24 09:39		
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3 ytical Services	00.0 - Kansas C	ity					
Chloride	3.4	mg/L	1.0	0.53	1		08/07/24 02:07	16887-00-6	



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Sample: S-TMW-3	Lab ID:	60457662003	Collected	I: 07/30/24	09:33	Received: 07/	31/24 07:07 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Pace Anal	Method: EPA 2 ytical Services	00.7 Prepa - Kansas Ci	ration Meth ty	od: EP	A 200.7			
Calcium	131000	ug/L	200	26.9	1	07/31/24 15:20	08/12/24 18:23	7440-70-2	
2540C Total Dissolved Solids	Analytical Pace Anal	Method: SM 25 ytical Services	540C - Kansas Ci	ty					
Total Dissolved Solids	474	mg/L	10.0	10.0	1		07/31/24 09:39		
300.0 IC Anions 28 Days	Analytical Pace Anal	Method: EPA 3 ytical Services	00.0 - Kansas Ci	ty					
Chloride	19.1	mg/L	1.0	0.53	1		08/07/24 02:25	16887-00-6	



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Sample: S-SCL4A-DUP-1	Lab ID:	60457662004	Collected	d: 07/30/24	00:00	Received: 07/	/31/24 07:07 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I Pace Analy	Method: EPA 2	00.7 Prepa - Kansas Ci	ration Meth ity	od: EP	A 200.7			
Calcium	126000	ug/L	200	26.9	1	07/31/24 15:20	08/12/24 18:25	7440-70-2	
2540C Total Dissolved Solids	Analytical I Pace Analy	Method: SM 25 /tical Services	40C - Kansas Ci	ity					
Total Dissolved Solids	470	mg/L	10.0	10.0	1		07/31/24 09:39		
300.0 IC Anions 28 Days	Analytical I Pace Analy	Vethod: EPA 3 /tical Services	00.0 - Kansas Ci	ity					
Chloride	18.9	mg/L	1.0	0.53	1		08/07/24 02:43	16887-00-6	



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Sample: S-SCL4A-FB-1	Lab ID:	60457662005	Collecte	d: 07/30/24	10:46	Received: 07/	/31/24 07:07 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical I Pace Analy	Method: EPA 2 /tical Services	00.7 Prepa - Kansas C	aration Meth ity	od: EP	A 200.7			
Calcium	<26.9	ug/L	200	26.9	1	07/31/24 15:20	08/12/24 18:27	7440-70-2	
2540C Total Dissolved Solids	Analytical I Pace Analy	Method: SM 25 /tical Services	40C - Kansas C	ity					
Total Dissolved Solids	5.0	mg/L	5.0	5.0	1		07/31/24 09:39		
300.0 IC Anions 28 Days	Analytical I Pace Analy	Method: EPA 3 /tical Services	00.0 - Kansas C	ity					
Chloride	<0.53	mg/L	1.0	0.53	1		08/07/24 03:02	16887-00-6	



Project:	AMEREN SCL4A	VERIFICATION										
Pace Project No.:	60457662											
QC Batch:	903723		Analy	sis Method	d: E	PA 200.7						
QC Batch Method:	EPA 200.7		Analy	sis Descrip	otion: 2	00.7 Metals	s, Total					
			Labo	ratory:	F	Pace Analyti	cal Servi	ces - Kansa	s City			
Associated Lab Sam	ples: 60457662	001, 6045766200	2, 6045766	2003, 604	57662004, 6	6045766200)5					
METHOD BLANK:	3576524			Matrix: Wa	ater							
Associated Lab Sam	ples: 60457662	001, 6045766200	2, 6045766	2003, 604	57662004, 6	6045766200)5					
			Blan	ik l	Reporting							
Param	neter	Units	Resu	Result Limit		MDL		Analyzed	Qı	ualifiers		
Calcium		ug/L		27.5J	200)	26.9 (08/12/24 18:	13			
LABORATORY CON	ITROL SAMPLE:	3576525										
			Spike	LC	S	LCS	% I	Rec				
Param	neter	Units	Conc.	Res	ult	% Rec	Lin	nits	Qualifiers	_		
Calcium		ug/L	1000	0	10800	108	}	85-115				
						100						
MATRIX SPIKE & M	ATRIX SPIKE DUP	PLICATE: 3576	526		3576527							
MATRIX SPIKE & M	ATRIX SPIKE DUP	PLICATE: 3576	526 MS	MSD	3576527							
MATRIX SPIKE & M	ATRIX SPIKE DUP	2LICATE: 3576	526 MS Spike	MSD Spike	3576527 MS	MSD	MS	MSD	% Rec		Max	
MATRIX SPIKE & M Parameter	ATRIX SPIKE DUP	CLICATE: 3576 60457662001 Result	526 MS Spike Conc.	MSD Spike Conc.	3576527 MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual

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.



Project:	AMEREN SCL4A	- VERIFICATION								
Pace Project No.:	60457662									
QC Batch:	903652		Analysis Me	ethod:	SM 2540C					
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total E	Dissol	ved Solids			
			Laboratory:		Pace Analytic	al Sei	vices - Kar	nsas C	ity	
Associated Lab San	nples: 60457662	2001, 60457662002	, 60457662003,	60457662004,	60457662005	5				
METHOD BLANK:	3576269		Matrix	: Water						
Associated Lab San	nples: 60457662	2001, 60457662002	, 60457662003,	60457662004,	60457662005	5				
			Blank	Reporting						
Paran	neter	Units	Result	Limit	MDL		Analyz	ed	Qualifiers	
Total Dissolved Solie	ds	mg/L	<5.0	5	.0	5.0	07/31/24	09:36		-
LABORATORY COM	NTROL SAMPLE:	3576270								
_			Spike	LCS	LCS	%	% Rec	•		
Paran	neter	Units	Conc.	Result	% Rec	L	_imits	Qua	alifiers	
Total Dissolved Solie	ds	mg/L	1000	927	93		80-120			
SAMPLE DUPLICA	TE: 3576307									
_			60457660002	Dup			Max			
Paran	neter	Units	Result	Result	RPD		RPD		Qualifiers	
Total Dissolved Solid	ds	mg/L	1030) 103	30	1		10		
SAMPLE DUPLICA	TE: 3576332									
Paran	neter	Units	60457662001 Result	Dup Result	RPD		Max RPD		Qualifiers	
Total Dissolved Solie	ds	mg/L	440	46	65	6		10		
SAMPLE DUPLICA	TE: 3576333									
			60457663003	Dup			Max			
Paran	neter	Units	Result	Result	RPD		RPD		Qualifiers	
Total Dissolved Solie	ds	mg/L	573	57	74	0		10		

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.



Project:	AMEREN SCL4A	VERIFICATION										
Pace Project No.:	60457662											
QC Batch:	904194		Analy	sis Methoo	l :t	EPA 300.0						
QC Batch Method:	EPA 300.0		Analy	vsis Descrip	otion:	300.0 IC An	ions					
			Labo	ratory:		Pace Analyt	ical Servic	es - Kansas	s City			
Associated Lab Sa	mples: 60457662	001, 6045766200	2, 6045766	2003, 6045	57662004,	604576620	05					
METHOD BLANK:	3578340			Matrix: Wa	ater							
Associated Lab Sa	mples: 60457662	001, 6045766200	2, 6045766	2003, 6045	57662004,	604576620	05					
Deve		Linita	Blar	nk F	Reporting		1	A se e la se e el	0			
Para	meter	Units		uit	Limit		L	Analyzed		Jailfiers		
Chloride		mg/L		<0.53	1.	0	0.53 08	8/06/24 11:0	06			
METHOD BLANK:	3580377			Matrix: Wa	ater							
Associated Lab Sa	mples: 60457662	001, 6045766200	2, 6045766	2003, 6045	57662004,	604576620	05					
5			Blar	nk F	Reporting				-			
Para	meter	Units	Resi	ult	Limit	MD		Analyzed	Q(alifiers		
Chloride		mg/L		<0.53	1.	0	0.53 08	3/08/24 09:	44			
LABORATORY CO	NTROL SAMPLE:	3578341										
Para	meter	l Inite	Spike Conc	LC Res	S	LCS % Rec	% R	ec ts (Qualifiers			
		mg/l			4.6	Q			guamers	_		
Chionae		iiig/L		0	4.0		<u> </u>					
LABORATORY CO	NTROL SAMPLE:	3580378	0."									
Para	meter	Units	Spike	LC Res	S ult	LCS % Rec	% R Limi	ec ts (Qualifiers			
Chloride		mg/l			<u> </u>	01100		<u> </u>	guainero	_		
Chionae		mg/∟		5	4.0	5		50-110				
MATRIX SPIKE & M	MATRIX SPIKE DUP	LICATE: 3578	342		3578343	;						
		00457050000	MS	MSD	MC	MOD	MO	MOD	0/ Dee		Max	
Paramete	er Units	60457658003 Result	Spike Conc.	Spike Conc.	Result	Result	MS % Rec	MSD % Rec	% Rec	RPD	RPD	Qual
Chloride	mg/L		50	50	61.9	64.6	67	73	80-120	4	15	M1
			0.45		05700 10							
WATRIX SPIKE & I	VIATRIX SPIKE DUP	LICATE: 3578	345 MS	MSD	3578346	1						
		60457660002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Paramete	er Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	54.4	250	250	248	248	78	77	80-120	0	15	M1

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



Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

MATRIX SPIKE & MATR	RIX SPIKE DUPI	LICATE: 3578	348		3578349							
		60457662001	MS Spiko	MSD Spiko	MS	MSD	MS	MSD	% Poc		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	9.0	5	5	11.6	11.5	51	50	80-120	0	15	M1
MATRIX SPIKE & MATR	RIX SPIKE DUPI	LICATE: 3578	351		3578352							
		00457000000	MS	MSD		MOD		MOD	04 D			
Parameter	Units	60457663003 Result	Spike Conc.	Spike Conc.	Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	34.0	25	25	45.7	45.7	47	47	80-120	0	15	M1
SAMPLE DUPLICATE:	3578344											
Paramete	r	Units	604576 Res	58003 sult	Dup Result	RPI	C	Max RPD	Qualif	iers		
Chloride		mg/L		28.2	19.7	,	35	15	5 D6			
SAMPLE DUPLICATE:	3578347											
Paramete	r	Units	604576 Res	60002 sult	Dup Result	RPI	C	Max RPD	Qualif	iers		
Chloride		mg/L		54.4	64.8	3	17	15	5 D6			
SAMPLE DUPLICATE:	3578350											
Paramete	r	Units	604576 Res	62001 Sult	Dup Result	RPI	C	Max RPD	Qualif	iers		
Chloride		mg/L		9.0	8.9)	1	15	5			
SAMPLE DUPLICATE:	3578353											
Doromoto	r	Linite	604576 Poo	63003	Dup	וחם	٦	Max	Qualif	iore		
	l 	mal		34.0	21 0					1612		
UNUNUE		mg/L		0.+0	51.8	,	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

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.



QUALIFIERS

Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

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

- D6 The precision between the sample and sample duplicate exceeded laboratory control limits.
- M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
- P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SCL4A - VERIFICATION

Pace Project No.: 60457662

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60457662001	S-TMW-1	EPA 200.7	903723	EPA 200.7	903753
60457662002	S-TMW-2	EPA 200.7	903723	EPA 200.7	903753
60457662003	S-TMW-3	EPA 200.7	903723	EPA 200.7	903753
60457662004	S-SCL4A-DUP-1	EPA 200.7	903723	EPA 200.7	903753
60457662005	S-SCL4A-FB-1	EPA 200.7	903723	EPA 200.7	903753
60457662001	S-TMW-1	SM 2540C	903652		
60457662002	S-TMW-2	SM 2540C	903652		
60457662003	S-TMW-3	SM 2540C	903652		
60457662004	S-SCL4A-DUP-1	SM 2540C	903652		
60457662005	S-SCL4A-FB-1	SM 2540C	903652		
60457662001	S-TMW-1	EPA 300.0	904194		
60457662002	S-TMW-2	EPA 300.0	904194		
60457662003	S-TMW-3	EPA 300.0	904194		
60457662004	S-SCL4A-DUP-1	EPA 300.0	904194		
60457662005	S-SCL4A-FB-1	EPA 300.0	904194		

[Rosa	DC#_Title: EN	NV-FRM-LENE-0009_Sample	e Col
	AMALYTICAL STRUCTS	Revision: 2	Effective Date: 01/12/202	50457662
Client Nam	o. //	Per les miss	C	
Courier: F	edEx 🗇 UPS			Pace 🔲 Xroads 🗹 Client 🗆 Other 🗆
Tracking #:			Pace Shipping Label Used?	
Custody Seal	on Cooler/Box	Present: Yes	No □ Seals intact: Yes Z	No 🗆
Packing Mater	rial: Bubbl	le Wrap 🗆 🛛 But	bble Bags 🗆 💦 Foam 🗆	Non
Thermometer	Used: T	299	Type of Ice: Ver Blue None	Date and initials of person
Cooler Tempe -	rature (°C):	As-read 1.4 11.0	Corr. Factor 0.6 Corrected	d 1.4/1.0 examining contents:
l emperature sho	ould be above free	ezing to 6°C		pr 1131129
Chain of Custo	dy present:		Yes LINO LIN/A	
Chain of Custo	dy relinquished	1	Yes No N/A	
Samples arrive	d within holding	i time:		
Short Hold Tin	ne analyses (<	72hr):		
Rush Turn Aro	ound Time requ	uested:	Yes ZNo N/A	
Sufficient volum	ne:		Yes No N/A	
Correct containe	ers used:			
Pace containers	s used:		Yes No N/A	
Containers intac	ct:		Yes No N/A	
Jnpreserved 50)35A / TX1005/1	1006 soils frozen in 4	48hrs? 🛛 Yes 🖾 No 🖉 N/A	
iltered volume	received for dis	ssolved tests?	□Yes □No ZN/A	
ample labels n	natch COC: Dat	te / time / ID / analys	ses Yes No N/A	
amples contair	n multiple phase	es? Matrix:		
ontainers requ	iring pH preser	vation in compliance	? AYes DNO DN/A Li	st sample IDs, volumes, lot #'s of preservative and the ate/time added
HNO ₃ , H ₂ SO ₄ , HC Exceptions: VOA	CI<2; NaOH>9 Su Micro, O&G, KS	Ilfide, NaOH>10 Cyanic S TPH, OK-DRO)	de) LOT#: 67/87	
yanide water s	ample checks:	Decenderal (
otassium iodid	e test strip turns	s blue/purple? (Prese	erve) $\Box_{Yes} \Box_{No}$	
rip Blank prese	ent:			
eadspace in V	OA vials (>6mr	m):		
amples from U	SDA Regulated	Area: State		
dditional labels	attached to 50	354 / TX1005 viole in		
lient Notificati	on/ Resolution	1: C	copy COC to Client? Y / N	Field Data Required? Y / N
erson Contacte	d:		Date/Time:	_

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

Section A Required C	lient Information:	Section B Required Project Inform	nation:				Section	on C Information:							Page:	-	oť	-
Company	Rocksmith Geoengineering, LLC	Report To: Mark Had	ldock				Attenti	in:				Γ						
Address.	5233 Roanoke Drive	Copy To: Jeffery Inc	gram, Gra	ant Morey			Compa	ny Name:	Rocksmith			1 M	GULATO	RY AGENC				
	St. Charles, MO 63304						Addres	:0					NPDES	GRO		L		VALTED
Email To:	mark.haddock@rocksmithgeo.com	Purchase Order No	COC #3				Pace Q Referen	lote				T	UST	F RCR		n L.	OTHER	
Phone: 3	14-974-5678 Fax:	Project Name: Amer	ren SCL4	A - Verific	ation San	pling	Pace P	oject Jan	nie Church			0	ite Locati	E				
Requested	Due Date/TAT: Standard	Project Number. COC	¥3				Pace P	ofile #. 158	156, line 1			Т	STAT					
l										-	Requi	ested Ana	alysis Filt	ered (Y/N)	10			
S Å	ection D Valid Matrix (quired Client Information MATRIX	Codes CODE CODE CODE		COLLE	СТЕD			Pres	ervatives	↑ N /A	z	z z z	z	Z				
	PRINKING WATER WATER WATER WATER WASER WATER PRODUCT SOLUSOLID OIL	은 은 은 은 은 C = C 은 C = C = C = C = C = C	COMPOSITE	ESTART	COMPOSIT		S			1	w	8:100.020			(N/A)			
# MƏT	SAMPLE ID (A-Z, 0-9 /) Sample IDS MUST BE UNIQUE	류요요 2) ЭСОО ХІЯТАМ 2) ЭСОО ХІЯТАМ 2) ЭСТ ТҮРЕ (С=						NO ³ SO ⁴ ubleselved	CI a ₂ S ₂ O ₃ lethanol	ther Analysis Test	الأهاد كم أدزار	19551 17220			eninoln') Isubise	Ľ	457	662
-	S-TMW-1	s O	DAIE	TIME	DATE	1 2 0 C	# (2	H	N N	1			-		Ы	Pace	Project N	o./ Lab I.D.
2	S-TMW-2	WT G			-36-34	336	d	1) 11			1	5						
e	S-TMW-3	WT G		1	-30.24 C	933	3)]			1	3						
4	S-SCL4A-DUP-1	WT G		1	1-30.24	1	3	1 1			2	5						
'n	S-SCL4A-FB-1	WT G	_	1	1-30-24 1	otto	3	1 1			2							
9	S-SCL4A-MS-1	WT G	V	4	12424	120	6	1 1			2	}				Collect	205T	1-142
2	S-SCL4A-MSD-1	WT G			1 12-92-	000	d	1 1			1	5						
80		WT G						_				_						
o 1		MT G	-		1	1		-										
9 7		9 IN			1			-		T	1							
12										T	-	-						
	ADDITIONAL COMMENTS	RELINQUIS	SHED BY //	AFFILIATIO	z	DATE	Ē		Accel	PTED BY	AFFILIAT	NOI	DATE	TIME		SAME	LE CONDIT	ons
	ที	the Russiese I	the M.	/ Rowy	-tims:	7-30-2	12	43	de	m	125	N	144	Don	1.4	×	>	×
		s	-							-					10	×	×	X
F								-										
Page				SAMPLER	NAME ANI	O SIGNATU	R								р.	() 101	oolet À	ISEJF
17 c				₫	RINT Name	of SAMPLE	С Ж	tent	More						ui du	bəviə: 4\Y) ə	botsu ed Co (V/Y)	il selq (N\Y)
of 18				s	IGNATURE	of SAMPLE	ä	5	m		DATE SH (MM/DD	gned ().	10511	24	IÐT	ol Rec	Sea C	lms2

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 15% per month for any invoices not paid within 30 days,

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

	APDU BP3Z	NCD N	121											-	Misc.	Wipe/Swab	Ziplog Bog	Air Filter	Air Cassettes	Terracore Kit	Summa Can			Matrix		Water	Solid	Non-aqueous Liquid	UIL	Drinking Water	5	
	3638	1610	111															2														
	3632			-	-	-	-	-		-	-	-	-		-	-0		AF 1	U	R	∍	-	+	1	_	5	SL	IN		MO		
	3P3F	-	+		-	+	H	H	-	-	-	-	-													ered						
	3P3N	3	-	-	•	-	-	H	-	-	-	-	-										astic	ate		field fill		astic	t t	astic		
	NIde	-	-	\vdash	+	-	-		-	-	-	-	-					plastic	cetate	astic	astic	olastic	ved pl	In Acet	astic	astic -	astic	ved pi	Diastic	ved pl	astic	plastic
ites			-		-	-	-	$\left \right $	-	-	-	-	-		Plastic	plastic	A nlast	served	, Zn Ac	AOH p	NO3 pl	2S04	prese	aOH. Z	aOH pl	NO3 pl	NO3 pl	presel	SSC4 1	Dresel	NO3 pl	2S04 1
°Z				-	+			+	-		-		-			NAOH		unpres	NaOH	0mL N	omL HI	OmL H	omL ur	N N N	ÜmL N		OmL H			5mL ur	5mL H	5mL H
Ĩ		-		-	-	-		H		1	-	-	-			14	╡╤	12	=	20	20	20	20	20	25	25	25	27	22	12	12	12
	MGKD	-	-	-	-	-					-	-	-		_	118	z vio	10	21Z	^{22B}	2N	2S	22U	22	38	ЗF	NEC	230	227	14U	04N	o4S
	neru	-			-	-	Η			-		-		-	-	80			B	笛		SS B				Ē					B	B
	 ₩G£N	-		1	t		Ħ				-				18			e				ber glas										
	N₽9∀						Ħ	Ħ	F									ber wid	r glass		ISS	ar/amt	glass	glass	er glass	er glass	r glass	r glass	r glass	D		
	SEÐA				T		Ħ	Ħ								ar		ed am	s ambe	glass	ber gla	fate cle	Imper	amber	4 ambe	4 ambe	s ambe	ampe	ambe			
	∿es∩						I	I					-			ar soil	ar soil	reserv	unores	amber	04 am	hiosul	pres a	EONH:	H2SQ	UZ20	unpres	unpres	unpres			
	UIÐA			-			T	Ħ								Soz cle	Poz cle	un zot	100mL	EFG	IL H2S	L Na	litter ur									
	HIÐA							T																					I	1		
	BG1U														SS	WGKL	WG2U	JGFU	AGOU	AG1H	AG1S	AGIT	AG10	AGZN	AG2S	AG35	AG2U	AGSU	AG5U			
	BG9B			1											Gla		1												1	1		
	DG9W																							Iai								
	N690															Ir vial	rial	lal	er vial	er vial	served	-		clear v	glass		lass	ar ylas.				
	U69V															te clea	clear	mber v	4 ambe	o amb	unpre	ear via	o clea	served	clear	glass	Clear	es cic				
Site	ପରେପ															HCI an	MeOH	TSP a	H2SO	Na Th	amber	HCIG	Na In	unpres	12504	Sandhi		laar en	ic ippin			
	H690															40mL	40mL	40m	40m	40m	40mL	40m	40mL	40mL	Tilter	Line	Imnez	1807.0	17001			
	H69A						1																					-				
[Matrix	3	_			>	P	1						Codes	0000	DG9H	DG9N	DG9C	DG9S	DG91	1951	L902	1001	2020			1000	NCON	2024			
		- 1	-	-		-	1			-	-	-	-	_		_	_	_	-	_	_	-	-	-	_	-	-	-	-	1.1		

DC#_Tritle: ENV-FRM-LENE-0001 v07_Sample Container Count Effective Date: 7/12/2024

Lours7662 Work Order Number:

Page 18 of 18



Memorandum August 14, 2024

То:	Project File Rocksmith Geoengineering, LLC	Project Number: 23009-24
CC:	Mark Haddock, Jeffrey Ingram	
From:	Jack Rasmussen	Email: jack.rasmussen@rocksmithgeo.com
RE:	Data Validation Summary, Sioux Energy Center – SC	CL4A – Data Package 60453818

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Rocksmith Geoengineering	Project Manager: _ ^{Ingram}	
Project Name: Ameren SCL4A- Verification	Project Number: 23009-24	
Reviewer: J. Rasmussen	Validation Date: 08/14/2024	
Laboratory: Pace Analytical	SDG #: 60457662 M 2540C (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	

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

Field Ir	nformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	x			7/29/2024 - 7/30/2024
b)	Sampling team indicated?	×			JTR/GTM
c)	Sample location noted?	×			
d)	Sample depth indicated (Soils)?			X	
e)	Sample type indicated (grab/composite)?	×			Grab
f)	Field QC noted?	x			See Notes
g)	Field parameters collected (note types)?	X			pH, Spec Cond, Turb, Temp, DO, ORP
h)	Field Calibration within control limits?	×			
i)	Notations of unacceptable field conditions/performa	nces fro	om field lo	ogs or field no	otes?
			X		
j)	Does the laboratory narrative indicate deficiencies?			X	No lab narrative.
	Note Deficiencies:			· · · · · · · · · ·	
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
Chain-	of-Custody (COC) Was the COC properly completed?	YES	NO	NA	COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field	YES	NO	NA	COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	YES ×	NO	NA	COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × ×	NO	NA	COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × ×	NO		COMMENTS
Chain- a) b) c) Genera	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × × YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × × YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis?	YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b) c) d)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b) c) d) e)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved?	YES × × × × YES × × × × ×	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b) c) d) e) f)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved? Were any sample dilutions noted?	YES × × YES × × × × × ×	NO	NA	COMMENTS

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks		YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	х			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)?			×	
Labora	tory 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?	×			
c)	Was the LCS accuracy criteria met?	Х			
Duplica	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	iplicate	sample n	ames)?	S-SCL4A-DUP-1 @ S-TMW-3
		x			
b)	Were field dup. precision criteria met (note RPD)?	x			All RPD's within control limits
c)	Were lab duplicates analyzed (note original and du	olicate	samples)?)	
		х			See Notes
d)	Were lab dup. precision criteria met (note RPD)?		X		
Blind S	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			×	
	analytes included and concentrations)?				
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?		×		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?			X	
c)	Were MS/MSD precision criteria met?	х			

Comments/Notes:

Method Blanks:
3576524: calcium (27.5J), associated with samples -001 through -005. Samples -001 through -004 results > RL and 10x blank,
no qualification necessary. Sample -005 result detected as non-detect, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Field Blank:

S-SCL4A-FB-1 @ S-TMW-2: TDS (5.0), result > RL and 10x blank, no qualification necessary.

Duplicate:

Lab duplicate max RPD: 10%: TDS; 15%: chloride, sulfate.

3578344: Lab duplicate exceeds max RPD for chloride, associated with unrelated sample, no qualification necessary.

3578347: Lab duplicate exceeds max RPD for chloride, associated with unrelated sample, no qualification necessary.

MS/MSD:

3576526/3576527: MS and MSD recovery low for calcium, RPD okay. Associated with sample -001, results qualified as estimates. 3578342/3578343: MS and MSD recovery low for chloride, RPD okay. Associated with unrelated sample, no qualification necessary. 3578345/3578346: MS and MSD recovery low for chloride, RPD okay. Associated with unrelated sample, no qualification necessary. 3578348/3578349: MS and MSD recovery low for chloride, RPD okay. Associated with sample -001, results qualified as estimates. 3578351/3578352: MS and MSD recovery low for chloride, RPD okay. Associated with unrelated sample, no qualification necessary.

X X

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-TMW-1	Calcium	125000	J-	MS and MSD recovery low, RPD okay
S-TMW-1	Chloride	9.0	J-	"
\backslash				
	<u>_</u>			
			\sum	
				\
		<u> </u>		
				<u>_</u>

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
\mathbf{X}				
		<u> </u>		
			\vdash	
				X
				- <u> </u>
	Int			08/14/2024
Signature:				



December 23, 2024

Mark Haddock Rocksmith Geoengineering, LLC. 2320 Creve Coeur Mill Road Maryland Heights, MO 63043

RE: Project: AMEREN SCL4A Pace Project No.: 60465156

Dear Mark Haddock:

Enclosed are the analytical results for sample(s) received by the laboratory between November 15, 2024 and November 21, 2024. 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,

Church

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

Enclosures

cc: Jeffrey Ingram, Rocksmith Geoengineering, LLC. Lisa Meyer, Ameren Grant Morey, Rocksmith Geoengineering, LLC. Austin Nieman, Ameren





CERTIFICATIONS

Project: AMEREN SCL4A

Pace Project No.: 60465156

Pace Analytical Services Kansas

9608 Loiret Boulevard, Lenexa, KS 66219 Arkansas Certification #: 88-00679 Illinois Certification #: 2000302023-6 Colorado Division of Oil and Public Safety Iowa Certification #: 118 Kansas Field Laboratory Certification #: E-92587 Kansas/NELAP Certification #: E-10116 Louisiana Certification #: 03055 Missouri Inorganic Drinking Water Certification Nevada Certification #: KS000212024-1 Oklahoma Certification #: 2023-073 Texas Certification #: T104704407-23-17 Utah Certification #: KS000212022-13



SAMPLE SUMMARY

Project: AMEREN SCL4A Pace Project No.: 60465156

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60465156001	S-TMW-1	Water	11/20/24 14:00	11/21/24 07:45
60465156002	S-TMW-2	Water	11/19/24 12:18	11/21/24 07:45
60465156003	S-TMW-3	Water	11/19/24 13:10	11/21/24 07:45
60465156004	S-SCL4A-DUP-1	Water	11/19/24 08:00	11/21/24 07:45
60465156005	S-SCL4A-FB-1	Water	11/19/24 13:02	11/21/24 07:45
60464699003	S-UG-3	Water	11/14/24 11:15	11/15/24 05:55
60464699011	S-BMW-1S	Water	11/20/24 09:00	11/21/24 07:45
60464699012	S-BMW-3S	Water	11/20/24 11:43	11/21/24 07:45



SAMPLE ANALYTE COUNT

Project: AMEREN SCL4A Pace Project No.: 60465156

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60465156001	S-TMW-1	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60465156002	S-TMW-2	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60465156003	S-TMW-3	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60465156004	S-SCL4A-DUP-1	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60465156005	S-SCL4A-FB-1	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60464699003	S-UG-3	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60464699011	S-BMW-1S	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K
60464699012	S-BMW-3S	EPA 200.7	ARMN	7	PASI-K
		SM 2320B	TML	1	PASI-K
		SM 2540C	TML	1	PASI-K
		EPA 300.0	AAA	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-TMW-1	Lab ID:	60465156001	Collecte	d: 11/20/24	14:00	Received: 11/	21/24 07:45 Ma	atrix: Water		
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	PA 200.7				
	Pace Anal	ytical Services	- Kansas C	ity						
Boron	83.6J	ug/L	100	6.4	1	11/22/24 08:54	12/10/24 17:02	7440-42-8		
Calcium	118000	ug/L	200	26.9	1	11/22/24 08:54	12/10/24 17:02	7440-70-2		
Iron	13.6J	ug/L	50.0	9.1	1	11/22/24 08:54	12/10/24 17:02	7439-89-6	В	
Magnesium	19900	ug/L	50.0	20.1	1	11/22/24 08:54	12/10/24 17:02	7439-95-4		
Manganese	331	ug/L	5.0	0.39	1	11/22/24 08:54	12/10/24 17:02	7439-96-5		
Potassium	5120	ug/L	500	69.7	1	11/22/24 08:54	12/10/24 17:02	7440-09-7		
Sodium	4000	ug/L	500	115	1	11/22/24 08:54	12/10/24 17:02	7440-23-5		
2320B Alkalinity	Analytical	Method: SM 23	320B							
	Pace Anal	ytical Services	- Kansas C	ity						
Alkalinity, Total as CaCO3	329	mg/L	20.0	10.5	1		12/02/24 18:10			
2540C Total Dissolved Solids	Analytical Method: SM 2540C									
	Pace Analytical Services - Kansas City									
Total Dissolved Solids	460	mg/L	10.0	10.0	1		11/27/24 17:57			
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0							
	Pace Anal	ytical Services	- Kansas C	ity						
Chloride	3.8	mg/L	1.0	0.53	1		12/03/24 13:11	16887-00-6		
Fluoride	0.37	mg/L	0.20	0.12	1		12/03/24 13:11	16984-48-8	M1	
Sulfate	63.3	mg/L	10.0	5.5	10		12/03/24 13:24	14808-79-8		



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-TMW-2	Lab ID:	60465156002	Collecte	d: 11/19/24	12:18	Received: 11/	21/24 07:45 Ma	atrix: Water		
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual	
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7				
	Pace Anal	ytical Services	- Kansas C	ity						
Boron	87.2J	ug/L	100	6.4	1	11/22/24 09:01	12/10/24 11:54	7440-42-8		
Calcium	134000	ug/L	200	26.9	1	11/22/24 09:01	12/10/24 11:54	7440-70-2		
Iron	2310	ug/L	50.0	9.1	1	11/22/24 09:01	12/10/24 11:54	7439-89-6		
Magnesium	24000	ug/L	50.0	20.1	1	11/22/24 09:01	12/10/24 11:54	7439-95-4		
Manganese	462	ug/L	5.0	0.39	1	11/22/24 09:01	12/10/24 11:54	7439-96-5		
Potassium	5570	ug/L	500	69.7	1	11/22/24 09:01	12/10/24 11:54	7440-09-7		
Sodium	4080	ug/L	500	115	1	11/22/24 09:01	12/10/24 11:54	7440-23-5		
2320B Alkalinity	Analytical	Method: SM 23	20B							
	Pace Anal	ytical Services	- Kansas C	ity						
Alkalinity, Total as CaCO3	391	mg/L	20.0	10.5	1		12/02/24 15:03			
2540C Total Dissolved Solids	Analvtical Method: SM 2540C									
	Pace Analytical Services - Kansas City									
Total Dissolved Solids	462	mg/L	10.0	10.0	1		11/26/24 15:38			
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0							
	Pace Anal	ytical Services	- Kansas C	ity						
Chloride	5.8	mg/L	1.0	0.53	1		12/03/24 16:24	16887-00-6		
Fluoride	0.33	mg/L	0.20	0.12	1		12/03/24 16:24	16984-48-8		
Sulfate	27.7	mg/L	10.0	5.5	10		12/03/24 16:37	14808-79-8		


Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-TMW-3	Lab ID:	60465156003	Collected	: 11/19/24	13:10	Received: 11/	21/24 07:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepar	ation Meth	od: EP/	A 200.7			
	Pace Anal	ytical Services	- Kansas Cit	у					
Boron	93.4J	ug/L	100	6.4	1	11/22/24 09:01	12/10/24 11:56	7440-42-8	
Calcium	128000	ug/L	200	26.9	1	11/22/24 09:01	12/10/24 11:56	7440-70-2	
Iron	1830	ug/L	50.0	9.1	1	11/22/24 09:01	12/10/24 11:56	7439-89-6	
Magnesium	23200	ug/L	50.0	20.1	1	11/22/24 09:01	12/10/24 11:56	7439-95-4	
Manganese	667	ug/L	5.0	0.39	1	11/22/24 09:01	12/10/24 11:56	7439-96-5	
Potassium	6170	ug/L	500	69.7	1	11/22/24 09:01	12/10/24 11:56	7440-09-7	
Sodium	4790	ug/L	500	115	1	11/22/24 09:01	12/10/24 11:56	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas Cit	у					
Alkalinity, Total as CaCO3	353	mg/L	20.0	10.5	1		12/02/24 15:09		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas Cit	у					
Total Dissolved Solids	467	mg/L	10.0	10.0	1		11/26/24 15:38		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas Cit	у					
Chloride	18.7	mg/L	1.0	0.53	1		12/03/24 16:50	16887-00-6	
Fluoride	0.32	mg/L	0.20	0.12	1		12/03/24 16:50	16984-48-8	
Sulfate	43.7	mg/L	10.0	5.5	10		12/03/24 17:28	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-SCL4A-DUP-1	Lab ID:	Collected: 11/19/24 08:00			Received: 11/21/24 07:45 Matrix: Water				
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Anal	vtical Services	- Kansas C	ity					
Boron	81.9J	ug/L	100	6.4	1	11/22/24 09:01	12/10/24 11:57	7440-42-8	
Calcium	127000	ug/L	200	26.9	1	11/22/24 09:01	12/10/24 11:57	7440-70-2	
Iron	2230	ug/L	50.0	9.1	1	11/22/24 09:01	12/10/24 11:57	7439-89-6	
Magnesium	22500	ug/L	50.0	20.1	1	11/22/24 09:01	12/10/24 11:57	7439-95-4	
Manganese	433	ug/L	5.0	0.39	1	11/22/24 09:01	12/10/24 11:57	7439-96-5	
Potassium	5170	ug/L	500	69.7	1	11/22/24 09:01	12/10/24 11:57	7440-09-7	
Sodium	3800	ug/L	500	115	1	11/22/24 09:01	12/10/24 11:57	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	vtical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	389	mg/L	20.0	10.5	1		12/02/24 15:15		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	vtical Services	- Kansas C	ity					
Total Dissolved Solids	455	mg/L	10.0	10.0	1		11/26/24 15:38		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	vtical Services	- Kansas C	ity					
Chloride	6.3	mg/L	1.0	0.53	1		12/03/24 17:41	16887-00-6	
Fluoride	0.33	mg/L	0.20	0.12	1		12/03/24 17:41	16984-48-8	
Sulfate	27.7	mg/L	10.0	5.5	10		12/03/24 17:53	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-SCL4A-FB-1	Lab ID:	60465156005	Collecte	d: 11/19/24	13:02	Received: 11/	21/24 07:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	nod: EF	PA 200.7			
	Pace Anal	vtical Services	- Kansas C	ity					
Boron	<6.4	ug/L	100	6.4	1	11/22/24 08:54	12/10/24 17:10	7440-42-8	
Calcium	36.3J	ug/L	200	26.9	1	11/22/24 08:54	12/10/24 17:10	7440-70-2	В
Iron	<9.1	ug/L	50.0	9.1	1	11/22/24 08:54	12/10/24 17:10	7439-89-6	
Magnesium	<20.1	ug/L	50.0	20.1	1	11/22/24 08:54	12/10/24 17:10	7439-95-4	
Manganese	<0.39	ug/L	5.0	0.39	1	11/22/24 08:54	12/10/24 17:10	7439-96-5	
Potassium	<69.7	ug/L	500	69.7	1	11/22/24 08:54	12/10/24 17:10	7440-09-7	
Sodium	184J	ug/L	500	115	1	11/22/24 08:54	12/10/24 17:10	7440-23-5	В
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	vtical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	<10.5	mg/L	20.0	10.5	1		12/02/24 15:21		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	vtical Services	- Kansas C	lity					
Total Dissolved Solids	<5.0	mg/L	5.0	5.0	1		11/26/24 15:38		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	vtical Services	- Kansas C	ity					
Chloride	<0.53	mg/L	1.0	0.53	1		12/03/24 18:06	16887-00-6	
Fluoride	0.22	mg/L	0.20	0.12	1		12/03/24 18:06	16984-48-8	
Sulfate	<0.55	mg/L	1.0	0.55	1		12/03/24 18:06	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-UG-3	Lab ID:	60464699003	Collected	d: 11/14/24	11:15	Received: 11/	15/24 05:55 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP/	A 200.7			
	Pace Anal	ytical Services	- Kansas C	ity					
Boron	418	ug/L	100	6.4	1	11/15/24 15:15	11/20/24 12:56	7440-42-8	
Calcium	120000	ug/L	200	26.9	1	11/15/24 15:15	11/20/24 12:56	7440-70-2	
Iron	14.9J	ug/L	50.0	9.1	1	11/15/24 15:15	11/20/24 12:56	7439-89-6	В
Magnesium	22100	ug/L	50.0	20.1	1	11/15/24 15:15	11/20/24 12:56	7439-95-4	
Manganese	894	ug/L	5.0	0.39	1	11/15/24 15:15	11/20/24 12:56	7439-96-5	
Potassium	4590	ug/L	500	69.7	1	11/15/24 15:15	11/20/24 12:56	7440-09-7	
Sodium	24500	ug/L	500	115	1	11/15/24 15:15	11/20/24 12:56	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	ytical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	339	mg/L	20.0	10.5	1		11/27/24 17:27		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	ytical Services	- Kansas C	ity					
Total Dissolved Solids	497	mg/L	10.0	10.0	1		11/19/24 12:19		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	ytical Services	- Kansas C	ity					
Chloride	19.7	mg/L	10.0	5.3	10		12/13/24 16:32	16887-00-6	H1
Fluoride	0.47	mg/L	0.20	0.12	1		12/13/24 16:19	16984-48-8	H1,IC
Sulfate	79.1	mg/L	10.0	5.5	10		12/13/24 16:32	14808-79-8	H1



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-BMW-1S	Lab ID:	60464699011	Collecte	d: 11/20/24	1 09:00	Received: 11/	21/24 07:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	nod: EP	PA 200.7			
	Pace Anal	vtical Services	- Kansas C	ity					
Boron	61.9J	ug/L	100	6.4	1	11/22/24 09:01	12/10/24 11:19	7440-42-8	
Calcium	175000	ug/L	200	26.9	1	11/22/24 09:01	12/10/24 11:19	7440-70-2	
Iron	121	ug/L	50.0	9.1	1	11/22/24 09:01	12/10/24 11:19	7439-89-6	
Magnesium	33700	ug/L	50.0	20.1	1	11/22/24 09:01	12/10/24 11:19	7439-95-4	
Manganese	1070	ug/L	5.0	0.39	1	11/22/24 09:01	12/10/24 11:19	7439-96-5	
Potassium	450J	ug/L	500	69.7	1	11/22/24 09:01	12/10/24 11:19	7440-09-7	
Sodium	5690	ug/L	500	115	1	11/22/24 09:01	12/10/24 11:19	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	320B						
	Pace Anal	vtical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	347	mg/L	20.0	10.5	1		12/02/24 16:57		
2540C Total Dissolved Solids	Analytical	Method: SM 25	540C						
	Pace Anal	vtical Services	- Kansas C	ity					
Total Dissolved Solids	613	mg/L	13.3	13.3	1		11/27/24 17:56		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	vtical Services	- Kansas C	ity					
Chloride	14.2	mg/L	1.0	0.53	1		12/14/24 17:32	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		12/14/24 17:32	16984-48-8	
Sulfate	37.1	mg/L	10.0	5.5	10		12/14/24 17:46	14808-79-8	



Project: AMEREN SCL4A

Pace Project No.: 60465156

Sample: S-BMW-3S	Lab ID:	60464699012	Collecte	d: 11/20/24	11:43	Received: 11/	21/24 07:45 Ma	atrix: Water	
Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical	Method: EPA 2	00.7 Prepa	aration Meth	od: EP	A 200.7			
	Pace Anal	vtical Services	- Kansas C	ity					
Boron	57.3J	ug/L	100	6.4	1	11/22/24 09:01	12/10/24 11:21	7440-42-8	
Calcium	113000	ug/L	200	26.9	1	11/22/24 09:01	12/10/24 11:21	7440-70-2	
Iron	28.9J	ug/L	50.0	9.1	1	11/22/24 09:01	12/10/24 11:21	7439-89-6	
Magnesium	19800	ug/L	50.0	20.1	1	11/22/24 09:01	12/10/24 11:21	7439-95-4	
Manganese	268	ug/L	5.0	0.39	1	11/22/24 09:01	12/10/24 11:21	7439-96-5	
Potassium	452J	ug/L	500	69.7	1	11/22/24 09:01	12/10/24 11:21	7440-09-7	
Sodium	5840	ug/L	500	115	1	11/22/24 09:01	12/10/24 11:21	7440-23-5	
2320B Alkalinity	Analytical	Method: SM 23	20B						
	Pace Anal	vtical Services	- Kansas C	ity					
Alkalinity, Total as CaCO3	166	mg/L	20.0	10.5	1		12/02/24 17:03		
2540C Total Dissolved Solids	Analytical	Method: SM 25	40C						
	Pace Anal	vtical Services	- Kansas C	ity					
Total Dissolved Solids	413	mg/L	10.0	10.0	1		11/27/24 17:57		
300.0 IC Anions 28 Days	Analytical	Method: EPA 3	00.0						
	Pace Anal	vtical Services	- Kansas C	ity					
Chloride	13.1	mg/L	1.0	0.53	1		12/14/24 18:00	16887-00-6	
Fluoride	<0.12	mg/L	0.20	0.12	1		12/14/24 18:00	16984-48-8	
Sulfate	17.1	mg/L	1.0	0.55	1		12/14/24 18:00	14808-79-8	



Project:	AMEREN SCL4A								
Pace Project No.:	60465156								
QC Batch:	916636		Analysis Meth	nod:	EPA 200	.7			
QC Batch Method:	EPA 200.7		Analysis Des	cription:	200.7 Me	etals, Total			
			Laboratory:		Pace Ana	alytical Serv	vices - Kansas City		
Associated Lab Sar	nples: 60464699003								
METHOD BLANK:	3629486		Matrix:	Water					
Associated Lab Sar	nples: 60464699003								
			Blank	Reporting					
Parar	neter	Units	Result	Limit	Ν	/IDL	Analyzed	Qualifiers	
Boron		ug/L	<6.4	1	00	6.4	11/20/24 12:05		
Calcium		ug/L	<26.9	2	00	26.9	11/20/24 12:05		
Iron		ug/L	43.4J	50	0.0	9.1	11/20/24 12:05		
Magnesium		ug/L	<20.1	50	0.0	20.1	11/20/24 12:05		
Manganese		ug/L	2.4J	į	5.0	0.39	11/20/24 12:05		
Potassium		ug/L	<69.7	5	00	69.7	11/20/24 12:05		
Sodium		ug/L	<115	5	00	115	11/20/24 12:05		

LABORATORY CONTROL SAMPLE: 3629487

		Spike	LCS	LCS	% Rec	
Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Boron	ug/L	1000	934	93	85-115	
Calcium	ug/L	10000	9970	100	85-115	
Iron	ug/L	10000	10300	103	85-115	
Magnesium	ug/L	10000	9570	96	85-115	
Manganese	ug/L	1000	1060	106	85-115	
Potassium	ug/L	10000	9760	98	85-115	
Sodium	ug/L	10000	9790	98	85-115	

MATRIX SPIKE & MATRIX SP	PIKE DUPLI	CATE: 3629	488		3629489)						
			MS	MSD								
	(60464695001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron	ug/L	113	1000	1000	1070	1080	96	96	70-130	1	20	
Calcium	ug/L	265	10000	10000	10300	10300	100	101	70-130	1	20	
Iron	ug/L	4810	10000	10000	15600	15800	107	110	70-130	2	20	
Magnesium	ug/L	ND	10000	10000	9500	9570	95	95	70-130	1	20	
Manganese	ug/L	591	1000	1000	1670	1690	107	110	70-130	1	20	
Potassium	ug/L	9450	10000	10000	20200	20200	107	108	70-130	0	20	
Sodium	ug/L	153000	10000	10000	171000	173000	179	197	70-130	1	20	M1
MATRIX SPIKE SAMPLE:	3	629490										
			60464	1293011	Spike	MS		MS	% Rec			
Parameter		Units	Re	esult	Conc.	Result	9	6 Rec	Limits		Quali	fiers
Boron		ug/L		11200	1000	11	900	76	70	-130		
Calcium		ug/L		18400	10000	27	900	95	70	-130		

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

REPORT OF LABORATORY ANALYSIS



Project: AMEREN SCL4A Pace Project No.: 60465156

MATRIX SPIKE SAMPLE:	3629490						
		60464293011	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Iron	ug/L	148	10000	10700	105	70-130	
Magnesium	ug/L	1270	10000	10800	95	70-130	
Manganese	ug/L	21.1	1000	1070	104	70-130	
Potassium	ug/L	4880	10000	14500	96	70-130	
Sodium	ug/L	209000	10000	215000	62	70-130 M	Л1

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



Project:	AMEREN SCL4A											
Pace Project No.:	60465156											
QC Batch:	917371		Analy	sis Metho	d: E	EPA 200.7						
QC Batch Method:	EPA 200.7		Analy	/sis Descri	ption: 2	200.7 Metals	s, Total					
			Labo	ratory:	F	Pace Analyti	cal Servic	es - Kansa	s City			
Associated Lab Sar	nples: 60464699	011, 6046469901	2, 6046515	6002, 6046	65156003, 6	6046515600	4					
METHOD BLANK:	3632816			Matrix: W	ater							
Associated Lab Sar	nples: 60464699	011, 6046469901	2, 6046515	6002, 6046	65156003, 6	6046515600	4					
			Blar	nk	Reporting							
Parar	neter	Units	Res	ult	Limit	MDL		Analyzed	Qu	alifiers		
Boron		ug/L		<6.4	100	D	6.4 1	2/10/24 11	09			
Calcium		ug/L		<26.9	200	D	26.9 1	2/10/24 11	09			
Iron		ug/L		<9.1	50.0	D	9.1 1	2/10/24 11	09			
Magnesium		ug/L		<20.1	50.0	0	20.1 1	2/10/24 11	09			
Manganese		ug/L		<0.39	5.0	0	0.39 1	2/10/24 11	09			
Potassium		ug/L		<69.7	500	0	69.7 1	2/10/24 11	09			
Sodium		ug/L		<115	500	0	115 1	2/10/24 11	09			
		2022047										
LABORATORY COI	NTROL SAMPLE:	3032017	Snike		2	105	% R					
Parar	neter	Units	Conc.	Res	sult	% Rec	Lim	its	Qualifiers			
Boron		ua/L		0	972	97		 85-115		_		
Calcium		ug/L	1000	0	10300	103		85-115				
Iron		ug/L	1000	0	10200	102		85-115				
Magnesium		ug/L	1000	0	10200	102		85-115				
Manganese		ug/L	100	0	1070	107		85-115				
Potassium		ug/L	1000	0	10000	100		85-115				
Sodium		ug/L	1000	0	10300	103		85-115				
			010		2622010							
MATRIX SFIRE & N	ATRIA SPIRE DUP	LICATE. 3032	MS	MSD	3032019							
		60464699019	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Paramete	r Units	s Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Boron	ua/I	56.8J	1000	1000	1040	1040	98		70-130	0	20	
Calcium	ug/L	115000	10000	10000	129000	127000	148	119	70-130	2	20	M1
Iron	ug/L	6100	10000	10000	16700	16700	106	106	70-130	0	20	
Magnesium	ug/L	27700	10000	10000	38800	37700	111	101	70-130	3	20	
Manganese	ug/L	395	1000	1000	1450	1440	106	105	70-130	1	20	
Potassium	ug/L	3270	10000	10000	13500	13600	103	104	70-130	1	20	
Sodium	ug/L	6960	10000	10000	17300	17200	104	103	70-130	1	20	
		2022022										
WATKIN SPIKE SA		3032820	60404	600049	Spiles	MO		MC	0/ Dc-			
Parar	neter	Units	00464 Re	sult	Spike Conc.	Result	9	% Rec	-‰ κec Limits		Quali	fiers
Boron				55.2.1	1000	1(ga	70	-130		
Calcium		ug/L		127000	10000	1380	000	110	70	-130		

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

REPORT OF LABORATORY ANALYSIS



Project: AMEREN SCL4A Pace Project No.: 60465156

MATRIX SPIKE SAMPLE:	3632820						
Parameter	Units	60464699018 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	8380	10000	19100	107	70-130	
Magnesium	ug/L	30800	10000	41500	106	70-130	
Manganese	ug/L	714	1000	1790	108	70-130	
Potassium	ug/L	4270	10000	14600	103	70-130	
Sodium	ug/L	7240	10000	17700	105	70-130	

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



Project:	AMEREN SCL4A									
Pace Project No.:	60465156									
QC Batch:	917373		Analysis Me	ethod:	EPA 200	.7				
QC Batch Method:	EPA 200.7		Analysis De	escription:	200.7 Me	etals, Total	l			
			Laboratory:		Pace Ana	alytical Se	rvices - Kar	nsas City		
Associated Lab Sa	mples: 604651560	001, 60465156005								
METHOD BLANK:	3632823		Matrix	: Water						
Associated Lab Sa	mples: 604651560	001, 60465156005								
			Blank	Reporting	g					
Para	meter	Units	Result	Limit	Ν	/IDL	Analyz	zed	Qualifiers	
Boron		ug/L	<6.4		100	6.4	12/10/24	16:58		
Calcium		ug/L	43.2J	2	200	26.9	12/10/24	16:58		
Iron		ug/L	18.1J	5	0.0	9.1	12/10/24	16:58		
Magnesium		ug/L	<20.1	5	0.0	20.1	12/10/24	16:58		
Manganese		ug/L	<0.39	1	5.0	0.39	12/10/24	16:58		
Potassium		ug/L	<69.7		500	69.7	12/10/24	16:58		
Sodium		ug/L	184J	Ę	500	115	12/10/24	16:58		
LABORATORY CC	NTROL SAMPLE:	3632824								
			Spike	LCS	LCS	Q	% Rec			
Para	meter	Units	Conc.	Result	% Rec		imits	Qualifier	s	

Parameter	Units	Conc.	Result	% Rec	Limits	Qualifiers
Boron	ug/L	1000	954	95	85-115	
Calcium	ug/L	10000	10300	103	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1040	104	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX S	SPIKE DUPL	.ICATE: 3632	825 MS	MSD	3632826							
Parameter	Units	60465156001 Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L		1000	1000	932	881	85	80	70-130	6	20	
Calcium	ug/L	118000	10000	10000	128000	131000	107	132	70-130	2	20	M1
Iron	ug/L	13.6J	10000	10000	8860	8280	88	83	70-130	7	20	M1
Magnesium	ug/L	19900	10000	10000	29200	29100	92	92	70-130	0	20	M1
Manganese	ug/L	331	1000	1000	1240	1180	91	85	70-130	6	20	M1
Potassium	ug/L	5120	10000	10000	14300	13700	92	86	70-130	4	20	
Sodium	ug/L	4000	10000	10000	13000	12500	90	85	70-130	4	20	M1

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



Project: Al	MEREN SCL4A							
Pace Project No.: 60	0465156							
QC Batch:	917909		Analysis Met	thod:	SM 2320B			
QC Batch Method:	SM 2320B		Analysis Des	scription:	2320B Alkalini	ty		
			Laboratory:		Pace Analytica	al Services - Ka	nsas Ci	ty
Associated Lab Sample	es: 60464699	003						
METHOD BLANK: 36	34992		Matrix:	Water				
Associated Lab Sample	es: 60464699	003						
			Blank	Reporting				
Paramete	er	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Alkalinity, Total as CaC	O3	mg/L	<10.5	20.	0	10.5 11/27/24	15:47	
LABORATORY CONTR	ROL SAMPLE:	3634993						
			Spike	LCS	LCS	% Rec		
Paramete	er	Units	Conc. I	Result	% Rec	Limits	Qua	lifiers
Alkalinity, Total as CaC	03	mg/L	500	480	96	90-110		
SAMPLE DUPLICATE:	3634994							
			60464293013	Dup		Max		
Paramete	er	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaC	03	mg/L	343	34	7	1	10	
SAMPLE DUPLICATE:	3634995							
			60464699001	Dup		Max		
Paramete	er	Units	Result	Result	RPD	RPD		Qualifiers
Alkalinity, Total as CaC	03	mg/L	337	33	9	1	10	

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



Project:	AMEREN SCL4A								
Pace Project No.:	60465156								
QC Batch:	918130		Analysis Me	ethod:	SM 2320B				
QC Batch Method:	SM 2320B		Analysis De	escription:	2320B Alkalin	ity			
			Laboratory:		Pace Analytic	al Ser	vices - Kar	nsas Ci	ity
Associated Lab Sar	mples: 60465156	6002, 60465156003	, 60465156004,	60465156005					
METHOD BLANK:	3635810		Matrix	: Water					
Associated Lab Sar	mples: 60465156	002, 60465156003	, 60465156004,	60465156005					
			Blank	Reporting					
Para	neter	Units	Result	Limit	MDL		Analyz	ed	Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	<10.5	20	.0	10.5	12/02/24	15:36	
LABORATORY CO	NTROL SAMPLE:	3635811							
			Spike	LCS	LCS	%	Rec		
Para	neter	Units	Conc.	Result	% Rec	L	imits	Qua	lifiers
Alkalinity, Total as C	CaCO3	mg/L	500	481	96		90-110		
SAMPLE DUPLICA	TE: 3635812								
_			60464769008	Dup			Max		0
Para	neter	Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	301	29	94	2		10	
SAMPLE DUPLICA	TE: 3635813								
_			60465166003	Dup			Max		0
Para	neter	Units	Result	Result			RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	428	43	38	2		10	

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



Project:	AMEREN SCL4A								
Pace Project No.:	60465156								
QC Batch:	918131		Analysis Me	thod:	SM 2320B				
QC Batch Method:	SM 2320B		Analysis De	scription:	2320B Alkalin	ity			
			Laboratory:	Pace Analytic	al Servio	ces - Kar	nsas Ci	ty	
Associated Lab Sar	mples: 60464699	0011, 60464699012	2, 60465156001						
METHOD BLANK:	3635814		Matrix	: Water					
Associated Lab Sar	mples: 60464699	011, 60464699012	2, 60465156001						
			Blank	Reporting					
Parar	neter	Units	Result	Limit	MDL		Analyz	ed	Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	<10.5	20.	0	10.5 1	2/02/24	16:17	
LABORATORY CO	NTROL SAMPLE:	3635815							
			Spike	LCS	LCS	% F	Rec		
Parar	neter	Units	Conc.	Result	% Rec	Lim	nits	Qua	lifiers
Alkalinity, Total as C	CaCO3	mg/L	500	487	97		90-110		
SAMPLE DUPLICA	TE: 3635816								
_			60464699019	Dup			Max		
Parar	neter	Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	306	30	6	0		10	
SAMPLE DUPLICA	TE: 3635817								
_			60465156001	Dup			Max		
Parar	neter	Units	Result	Result	RPD		RPD		Qualifiers
Alkalinity, Total as C	CaCO3	mg/L	329	34	7	5		10	

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



Project: AMEREN SC	L4A						
Pace Project No.: 60465156							
QC Batch: 916954		Analysis Me	thod:	SM 2540C			
QC Batch Method: SM 2540C		Analysis De	scription: 2	2540C Total Di	issolved Solids		
		Laboratory:	F	Pace Analytica	al Services - Ka	nsas Ci	ty
Associated Lab Samples: 60464	4699003						
METHOD BLANK: 3630622		Matrix	Water				
Associated Lab Samples: 60464	4699003						
		Blank	Reporting				
Parameter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Solids	mg/L		5.0	0	5.0 11/19/24	12:16	
LABORATORY CONTROL SAMPL	E: 3630623						
		Spike	LCS	LCS	% Rec		
Parameter	Units	Conc.	Result	% Rec	Limits	Qua	lifiers
Total Dissolved Solids	mg/L	1000	1020	102	80-120		
SAMPLE DUPLICATE: 3630624							
		60464559003	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solids	mg/L	140	140	0	0	10	
SAMPLE DUPLICATE: 3630625							
		60464294022	Dup		Max		
Parameter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Solids	mg/L	647	664	4	3	10	

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



Project:	AMEREN SCL4A							
Pace Project No.:	60465156							
QC Batch:	917791		Analysis Me	ethod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	escription:	2540C Total D	Dissolved Solids	;	
			Laboratory:		Pace Analytic	al Services - Ka	insas Ci	ty
Associated Lab Sa	mples: 60465150	6002, 604651560	03, 60465156004,	60465156005				
METHOD BLANK:	3634577		Matrix	: Water				
Associated Lab Sa	mples: 6046515	6002, 604651560	03, 60465156004,	60465156005				
			Blank	Reporting				
Para	meter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Sol	ids	mg/L		5	5.0	5.0 11/26/24	15:36	
LABORATORY CO	NTROL SAMPLE:	3634578						
			Spike	LCS	LCS	% Rec		
Para	meter	Units	Conc.	Result	% Rec	Limits	Qua	lifiers
Total Dissolved Sol	ids	mg/L	1000	979	98	80-120		
SAMPLE DUPLICA	TE: 3634579							
			60464925008	Dup		Max		
Para	meter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Sol	ids	mg/L	6220	638	80	3	10	
SAMPLE DUPLICA	TE: 3634580							
			60465166003	Dup		Max		
Para	meter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Sol	ids	mg/L	556	5 5	53	0	10	

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



Project:	AMEREN SCL4A							
Pace Project No.:	60465156							
QC Batch:	917911		Analysis Me	thod:	SM 2540C			
QC Batch Method:	SM 2540C		Analysis De	scription:	2540C Total D	issolved Solids	;	
			Laboratory:		Pace Analytic	al Services - Ka	insas Ci	ity
Associated Lab Sar	nples: 60464699	9011, 604646990	12, 60465156001					
METHOD BLANK:	3635001		Matrix	Water				
Associated Lab Sar	nples: 60464699	9011, 604646990 [.]	12, 60465156001					
			Blank	Reporting				
Paran	neter	Units	Result	Limit	MDL	Analy	zed	Qualifiers
Total Dissolved Soli	ds	mg/L		5	.0	5.0 11/27/24	17:56	_
LABORATORY CO	NTROL SAMPLE:	3635002						
			Spike	LCS	LCS	% Rec		
Paran	neter	Units	Conc.	Result	% Rec	Limits	Qua	alifiers
Total Dissolved Soli	ds	mg/L	1000	992	99	80-120		
SAMPLE DUPLICA	TE: 3635003							
			60464699019	Dup		Max		
Parar	neter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds	mg/L	494	49	99	1	10	
SAMPLE DUPLICA	TE: 3635004							
			60465156001	Dup		Max		
Paran	neter	Units	Result	Result	RPD	RPD		Qualifiers
Total Dissolved Soli	ds	mg/L	460	45	52	2	10	

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



Project:	AMEREN SCL4A											
	60465156											
QC Batch:	918072		Analy	/sis Metho	d: E	EPA 300.0						
QC Batch Method:	EPA 300.0		Analy	/sis Descri rotoru:	ption: 3	300.0 IC An	ions iool Sorviv	na Kanaa	City			
Associated Lab Sar	nples: 604651560	001, 6046515600	2, 6046515	6003, 604	٦ 65156004, 6	604651560	05	Jes - Kalisa	SCity			
METHOD BLANK:	3635661			Matrix: W	ater							
Associated Lab Sar	nples: 604651560	001, 6046515600	2, 6046515	6003, 604	65156004, 6	604651560	05					
Derer	motor	Linito	Blar	nk	Reporting			Analyzad	0	olifiara		
		Units		uit				Analyzed	Q(anners		
Chloride		mg/L		< 0.53	1.0		0.53 1	2/03/24 09:	33 22			
Sulfate		mg/L		<0.12	0.20	ן ר	0.12 1	2/03/24 09.	33 33			
Gunate		ing/L		<0.00	1.0	5	0.00	2/03/24 03.	00			
LABORATORY CO	NTROL SAMPLE:	3635662										
Demo		11-20-	Spike	LC	S	LCS	% F	Rec	D			
Paran		Units				% Rec			Juaimers	_		
Chloride		mg/L	2	5	4.6	92	2	90-110				
Sulfate		mg/L	Ζ.	5 5	2.4 5.0	9. 9.	+ D	90-110				
				-		-	-					
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 3635	663		3635664							
		0040500007	MS	MSD		MOD		MOD	04 D			
Parameter	r Units	60465063007 Result	Spike	Spike	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	RPD	Qual
Chlorido			10	10		20.2	27	122	80.120	12	15	
Fluoride	mg/L	0.43	5	5	20.0 6.4	30.2 8.6	119	164	80-120	30	15	M1.R1
Sulfate	mg/L	116	10	10	129	132	128	160	80-120	3	15	E,M1
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 3635	666 MS	MED	3635667							
		60465156001	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	r Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	3.8	5	5	9.3	8.8	111	99	80-120	6	15	
Fluoride	mg/L	0.37	2.5	2.5	3.7	3.3	132	. 118	80-120	10	15	M1
Sulfate	mg/L	63.3	50	50	114	110	101	93	80-120	4	15	
SAMPLE DUPLICA	TE: 3635665											
			6046506	63007	Dup			Max				
Paran	neter	Units	Res	ult	Result)	RPD	Qualif	iers		
Chloride		mg/L		18.0	18.1	1	1	1:	5			
Fluoride		mg/L		0.43	0.43	3	0	15	5			
Sulfate		mg/L		116	104	4	11	1:	Ε			

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



Project: AMEREN SCL4A Pace Project No.: 60465156

SAMPLE DUPLICATE: 3635668						
		60465156001	Dup		Max	
Parameter	Units	Result	Result	RPD	RPD	Qualifiers
Chloride	mg/L	3.8	3.8	0	15	
Fluoride	mg/L	0.37	0.38	3	15	
Sulfate	mg/L	63.3	63.2	0	15	

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



Project:	AMEREN SCL4A											
Pace Project No .:	60465156											
QC Batch:	919543		Anal	ysis Metho	d: E	PA 300.0						
QC Batch Method:	EPA 300.0		Analy	ysis Descri	ption: 3	00.0 IC An	ions					
			Labo	oratory:	Р	ace Analy	tical Servi	ces - Kansas	s City			
Associated Lab San	nples: 60464699	003										
METHOD BLANK:	3641950			Matrix: W	ater							
Associated Lab San	nples: 60464699	003										
			Blai	nk	Reporting							
Paran	neter	Units	Res	ult	Limit	MD	L	Analyzed	Qı	ualifiers		
Chloride		mg/L		<0.53	1.0		0.53	12/13/24 11:	50			
Fluoride		mg/L		<0.12	0.20		0.12	12/13/24 11:	50 IC			
Sulfate		mg/L		<0.55	1.0		0.55	12/13/24 11:	50			
LABORATORY COM	NTROL SAMPLE:	3641951										
			Spike	LC	S	LCS	% I	Rec				
Paran	neter	Units	Conc.	Res	sult	% Rec	Lin	nits (Qualifiers	_		
Chloride		mg/L		5	4.6	9	2	90-110				
Fluoride		mg/L	2	.5	2.4	9	6	90-110 IC				
Sulfate		mg/L		5	4.9	9	8	90-110				
MATRIX SPIKE & N	IATRIX SPIKE DUP	LICATE: 3641	952		3641953							
			MS	MSD								
		60464699002	Spike	Spike	MS	MSD	MS	MSD	% Rec		Max	
Parameter	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	8.9	5	5	12.7	12.7	75	5 75	80-120	0	15	H1,M1
Fluoride	mg/L	0.44	2.5	2.5	3.5	3.5	12'	122	80-120	0	15	H1,IC,
Sulfate	mg/L	35.2	50	50	101	84.2	132	2 98	80-120	18	15	H1,M1, R1

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.



Project:	AMEREN SCL4A											
QC Batch: QC Batch Method:	919641 EPA 300.0		Analy Analy Labo	/sis Methoo /sis Descrij ratory:	d: ption:	EPA 300.0 300.0 IC Anio Pace Analyti	ons cal Servic	es - Kansas	City			
Associated Lab San	nples: 604646990	011, 60464699012										
METHOD BLANK:	3642615			Matrix: W	ater							
Associated Lab San	nples: 604646990	011, 60464699012										
Paran	neter	Units	Blar Res	nk l ult	Reporting Limit	MDI		Analyzed	Qu	alifiers		
Chloride		mg/l		<0.53	1.		0.53 1	2/14/24 04:0	 7		—	
Fluoride		mg/L		<0.12	0.2	0	0.12 1	2/14/24 04:0	7 CL			
Sulfate		mg/L		<0.55	1.	0	0.55 1	2/14/24 04:0	7			
LABORATORY COM	NTROL SAMPLE:	3642616										
Doron	aator	Linita	Spike	LC	S	LCS	% R		uolifioro			
	leter	Units		Kes		% Rec			uaimers	_		
Chioride		mg/L	2	5 5	4.7	93		90-110 90-110 CI				
Sulfate		mg/L	۷.	5	5.2	92 104		90-110 CL				
MATRIX SPIKE & M	IATRIX SPIKE DUP	LICATE: 36426	17		3642618	3						
		60464760007	MS Spike	MSD Spike	MC	MCD	MS	MCD	% Boo		Mov	
Parameter	- Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec	Limits	RPD	RPD	Qual
Chloride	mg/L	5.6	5	5	10.9	9.8	107	85	80-120	11	15	
Fluoride	mg/L	<0.12	2.5	2.5	3.8	3.1	151	126	80-120	18	15	CL,M1,
Sulfate	mg/L	33.6	50	50	92.1	100	117	133	80-120	8	15	M1
MATRIX SPIKE SAM	MPLE:	3642620										
Davaa		l la ita	60464	769012	Spike	MS	0	MS	% Rec		0	:4:
Paran	heter	Units	Re		Conc.	Result		% Kec	Limits		Quai	mers
Chloride		mg/L		12.6 <0.12	5	1	6.1 2.0	72 120	80-	-120 M	1	
Sulfate		mg/L		19.7	2.3 50	7	3.0 2.0	120	80-	-120		
		<u>J</u> .					-			-		
SAMPLE DUPLICA	TE: 3642619											
Paran	neter	Units	6046476 Res	69007 ult	Dup Result	RPD		Max RPD	Qualif	iers		
Chloride		mg/L	·	5.6	5.	6	0	15				
Fluoride		mg/L		<0.12	<0.1	2		15	CL			
Sulfate		mg/L		33.6	31.	7	6	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



QUALIFIERS

Project: AMEREN SCL4A

Pace Project No.: 60465156

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.
- CL The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.
- E Analyte concentration exceeded the calibration range. The reported result is estimated.
- H1 Analysis conducted outside the EPA method holding time.
- IC The initial calibration for this compound was outside of method control limits. The 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.



QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project:	AMEREN SCL4A
Pace Project No .:	60465156

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60464699003	S-UG-3	EPA 200.7	916636	EPA 200.7	916671
60464699011	S-BMW-1S	EPA 200.7	917371	EPA 200.7	917460
60464699012	S-BMW-3S	EPA 200.7	917371	EPA 200.7	917460
60465156001	S-TMW-1	EPA 200.7	917373	EPA 200.7	917466
60465156002	S-TMW-2	EPA 200.7	917371	EPA 200.7	917460
60465156003	S-TMW-3	EPA 200.7	917371	EPA 200.7	917460
60465156004	S-SCL4A-DUP-1	EPA 200.7	917371	EPA 200.7	917460
60465156005	S-SCL4A-FB-1	EPA 200.7	917373	EPA 200.7	917466
60464699003	S-UG-3	SM 2320B	917909		
60464699011	S-BMW-1S	SM 2320B	918131		
60464699012	S-BMW-3S	SM 2320B	918131		
60465156001	S-TMW-1	SM 2320B	918131		
60465156002	S-TMW-2	SM 2320B	918130		
60465156003	S-TMW-3	SM 2320B	918130		
60465156004	S-SCL4A-DUP-1	SM 2320B	918130		
60465156005	S-SCL4A-FB-1	SM 2320B	918130		
60464699003	S-UG-3	SM 2540C	916954		
60464699011	S-BMW-1S	SM 2540C	917911		
60464699012	S-BMW-3S	SM 2540C	917911		
60465156001	S-TMW-1	SM 2540C	917911		
60465156002	S-TMW-2	SM 2540C	917791		
60465156003	S-TMW-3	SM 2540C	917791		
60465156004	S-SCL4A-DUP-1	SM 2540C	917791		
60465156005	S-SCL4A-FB-1	SM 2540C	917791		
60464699003	S-UG-3	EPA 300.0	919543		
60464699011	S-BMW-1S	EPA 300.0	919641		
60464699012	S-BMW-3S	EPA 300.0	919641		
60465156001	S-TMW-1	EPA 300.0	918072		
60465156002	S-TMW-2	EPA 300.0	918072		
60465156003	S-TMW-3	EPA 300.0	918072		
60465156004	S-SCL4A-DUP-1	EPA 300.0	918072		
60465156005	S-SCL4A-FB-1	EPA 300.0	918072		

	0	DC#_Title: EN	V-FRM-LENE-000	9_Sample C	WO#:60465156
	AMALYTICAL SERVICES	Revision: 2	Effective Date:	01/12/2022	60465156 Issued By: Lenexa
Client Nar	no:	ald a star (Encouve Date.	01, 12, 2022	
Courier: Tracking #: Custody Sea Packing Mate Thermomete Cooler Temp	FedEx □ UPS Il on Cooler/Box erial: Bubbl r Used: <u>772</u> perature (°C): 2	Image: Signature VIA Classical Image: Signature Yes Classical Image: Signature Yes Signature Image: Signature Signature Signature Image: Signature Sign	ay PEX PEX Pace Shipping No Seals inta ble Bags Type of Ice: 107 Corr. Factor 107	ECI D Pace Label Used? Y act: Yes A N Foam D Blue None Corrected 2	e Xroads Client Other Yes No No Nore Other 2-3/2-6 Date and initials of person examining contents:
Temperature sh	nould be above free	azing to 6°C 0.4/1.8	3	6	53/1-2 N11/21hy
Chain of Cust	ody present:		Aves D	No 🗆 N/A	/ /
Chain of Cust	ody relinquished	:		No 🗆 N/A	
Samples arriv	ed within holding	time:	AYes DI	No 🗆 N/A	
Short Hold T	ime analyses (<	72hr):	□Yes Ø	No 🗆 N/A	
Rush Turn A	round Time requ	uested:		No 🗆 N/A	
Sufficient volu	ime:		Ç∕res □I	No 🗆 N/A	
Correct conta	iners used:		Yes DI	No 🗆 N/A	
Pace containe	ers used:				
Containers int	act:			No □N/Å	
Jnpreserved :	5035A / TX1005/	1006 soils frozen in 4	8hrs? 🗆 Yes 🗇		
Filtered volum	e received for dis	ssolved tests?	□Yes □I		
Sample labels	match COC: Da	te / time / ID / analvse	es 🖉 Yes 🗆 I	No 🗆 N/A	
Samples cont	ain multiple phase	es? Matrix:	Yes Dr		
Containers red HNO ₃ , H ₂ SO ₄ , Exceptions: V(Cyanide water Lead acetate s Potassium iod	quiring pH preser HCI<2; NaOH>9 St DA, Micro, O&G, KS r sample checks: strip turns dark? (ide test strip turn	vation in compliance? ulfide, NaOH>10 Cyanid <u>S TPH, OK-DRO)</u> (Record only) is blue/purple? (Prese	e) LOT#: 867 UYes In UYes In IYes In	No DN/A List s date/ 2 7	sample IDs, volumes, lot #'s of preservative and t /time added.
Trip Blank pre	sent:		□Yes □N		
Headspace in	VOA vials (>6m	m):	Yes IN		
Samples from	USDA Regulated	d Area: State:	DYes DN		
dditional labe	els attached to 50 ation/ Resolution oted:	035A / TX1005 vials in n: Cc	the field? Yes N ppy COC to Client? Y Date/Time:		Field Data Required? Y / N

Project Manager Review:

Date:

Pace [®] Location Requested (City/State) Pace Analytical Kansas 9608 Loiret Blvo., Lenexa, KS 66219		CHAIN-OF-CU	STODY A dy is a LEGAL D	nalytical Rec	juest Docume	nt		AB USE ONLY- Affix Work	torder/Login Lab	bel Here	
Company Name: Rocksmith Geoengineering, LLC. Street Address: 2320 Creve Coeur Mill Road, Maryland He 63043	eights, MO	Contact/Report To: Phone #: E-Mail: Cc E-Mail:	Mark Hadd 314-974-65 mark hadd	ock 78 ock@rocksmithgec	o com			COULS Scan OR Code for	5156 Instructions		
Customer Projact #: COC# 11						L	Specif	y Container Size **	Cont	amer Size: (1) 11, (2) 500ml, (3) 250m (5) 100ml (2) 70ml (3) 000ml	i. [4]
Project Name AMEREN SCL4A		invoice To:	Mark Hadd	ock		-	8		TerraCo	(2) 2000L, (10) 200Er VIII, (12 - 1201E) bre, (9) 90mL, (10) Other	101
		Invoice E-Mail:	mark haddi	ock@rocksmithge	o com	ŀ	ldentify Conta	iner Preservative Type***	Dre	servetive Types: (1) None, (2) HNO3, 1	3)
(Site Collection Info/Facility (D (as applicable))		Purchase Order # (if applicable):				6 m la	Ana	Ilysis Requested	NaHSOU MeOH,	 (1) The second se	id, (10)
		Quote #:							Pro	j, Mgr:	10
Titme Zone Collected: [] AK [] PT [] MT [] CT	[] ET	County / State origin	of sample(s);	Missouri			*(2		Jar	mie Church	nt borl
Data Deliverables:	ram (DW, RCRA, e	tc.) as applicable:	Reportable	[] Yes [] No			500		Acc	ctNum / Client ID:	nabi
[] Levei h [] Levei h [] Level IV	Rush (Pre-	approval required):		DW PWSID # 0	or WW Permit # as appli	able: 91e) sist		nO asi	ble #:	อวมคน
1 Jaame Jay	I April 1	Uay 1 yeu 2 1 yeu	ther	eld Filtered (if applic	able): [] Yes []	oy N	əM n		U dej	ofile / Template:	nolar alqras
I joner Requested:	10	A1 101-000 101-000	A	alysis:	a IOWN on IN	oriole abinot	VJia AVisO		H	5856 Mor / Bottle Oct 10:	s ;)-uou
16. Vaoor IV. Surface Water (SW) Societan (SED), Sludge (SL), Caul	ik (CK), Leachate	u, waste water vater	r (01)	of the fleet mine line	all works that the second	1[4/C	bne		EZ	2 3163159	noite
Customer Samula ID	Matrix * Comp /	Composite S	tart	Collected or Compo	site End # Re	s Chlorine	A \ 2			Samole Comment	v1929.
	Grab	Date	Time	Date	Time Cont. Re:	ults Units 🖰	ПQA		1		¹ d
S-FMW-1	WT G		11	I rolal 1	400 2	7	11				
S-TMW-2	WT 6		/	1 42-24 1	X 815	2	1				
S-TMW-3	WT D			1 42-21-1	3102	2	5				
S-SCL4A-DUP-1	MT O	/		1-19-24	5	2	3				
S-SCL4A-FB-1	WT O	/		1-19-24	5023	2	11				
S-SCL4A-MS-1	WT G	/		ilzolzy k	100 2	1	11		9	lected @ S-Tr	(-3
S-SCL4A-MSD-1	S IN			Indru	T D	>	11				
		/									
		1									
Additional Instructions from Pace" *	, ex		Collected By: Printed Name)	John R	asmuss a	Custo	mer Remarks / Special	Conditions / Possible Hazards,			1
		01	signature:	Anth /	1	1 1	Partin Thermon	1998 Correction Factor	C Obs Temp	(°C) Corrected Temp. (°C) 2.3/2.5/	5.3 /
Relating and by/Company: [Signature]	pare 1	0/24 /153	00	1014	anna Mos	b	Date/Tr	21 ONYS	Tracking Numb	er:	-
Reimauthed BV/Company: [Signature]	Date/Tir	ne:		aceiver from the to	(instante)		Date/fit	-	Delivered by:	[] In- Person [] Courier	
B B Juhined by/Combany, Signatury	Date/Tir	ne:		teceived by/Company: (5	ignature)		Date/Tit	net	[]	FedEX [] UPS [] Other	
20 Religuished by/Company: (Signature)	Date/Tit	ne:	14	Received by/Company: (S	ignature}		Date/Til	ле:	Page:	/ of /	
S. S	edgment and acc	Potance of the Pace" T	Ferms and Con	ditions found at http		n/resource-library/re	source/pace-terms-and	d-conditions/	ENV-FRM-	CORQ-0019 V02 110123 ©	1

Pace [®] Location Requested (City/State Pace Analytical Kansas 9508 Loiret Blvd., Lenexa, KS 55219	:(a	CHAIN-OF- Chain-of-Cu	CUSTODY Istody is a LEGAL	Analytical R	lequest D	ocument ant fields				AB USE ONLY- Affix I	Vorkorder/Logi	n Label Here	
Compary Names: Rocksmith Geoengineering, LLC, Street Adoress: 2320 Creve Coeur Mill Road, Maryland H 63043	leights, MO	Contact/Report" Phone #: E-Wait: Co E-Mail:	Fo: Mark Ha 314-974 mark had	ddock 6578 idock@rocksmitr	geo.com					Scan QR Code	65 15 for instructions	k °	
Custorie Project # COC# 11 Proviers Names AMEPEN SCI #A			CU 12274	1000					Specify	Container Size **		* Container Size: (1) 1L, (2) 500mL, (3) 250mL, 125mL, (5) 100mL, (6) 40mL via', (7) EnCore, (8)	
		Invoice E-Mail:	mark ha	Juuck Jaock@rocksmith	JEED COM			+	5 Identify Conta	ner Preservative Tvoe **		TerraCore, (9) 90mL, (10) Other	
Site Collection Infc/Facinty 'D (as applicable):		Purchase Order (# []+	J	D		-		d			HEREFORMER TYPES: (1) NONE, (7) HNO3, (3) H2SO4, (4) HCI, (5) NAOH, (6) Zr Acetate, (7)	
		apolicaple):					1_1		Ana	ysis Requested		NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid MeOH, (11) Other	(C)
Time Zone Collected: [] AK [] PT [] MT [] CT	1 3 ET	County / State o	rigin of sample(s	Missouri			1	_	_			Proj. Mgr. Jamie Church	101
Data Deliverables:	ram (DW, RCRA	, etc.) as applicable:	Reportab	e [] Yes []	No				+(7.0C			AcctNum / Client ID:	0.010000
: jisvei i jieveili jlevellV	Rush (Pr	e-approval requir	ed):	IISW4 WC	D # of WW Perm	it # as applicabl			iS) ele		1.0	e Only table #:	ni asu
[] Same Day [] EQUIS Date Results] /sG1[]/	2 Day [] 3 Day [] Other	Field Filtered (if ap	plicable):	i Yes [1 No		Plino	i)9M n			Dofile / Template:	əldun
[1 Other Requested:				Analysis:			-obite	λ) Alio	1AV6			15856	es
Matrix Codes (Inserti in Matrix oox below): Drinking Water (DW), (B), Vacor (V), Surface Water (SW) Sediment (SED), Sludge (SL), Cau	Ground Water (ulk (CK), Leachar	GW), Waste Water (e [11], Biosolid (BS),	WW), Product (P Other (OT)), Soil/Solid (SS), Oi	l (OL), Wipe (W	o), 7 ssue (TS)	Bioassay	a)rriud Ikalin) pue			Prelog / Bottle Ord ID: F7 3163159	1.0000
Customer Sample ID	Matrix * Com	Compos	ite Start	Collected or Con	iposite End	# Res (hlorine	AISC	s III qe			Samole Comment	161300
S-TMW-1	MT TW	Date	Time	Date	Time	conte Results	Units	11	Vt				1
S-TMW-2	WT					-		-					T
S-TMW-3	WT					-							Γ
S-SCL4A-DUP-1	WT		/										Γ
S-SCL4A-FB-1	WT					-		-					1
S-SCL4A-MS-1	WT	/											-
S-SCL4A-MSD-1	WT	/				-							
5-06-3	WT G	/		11-14-24	1115	3		2	2				
		/											
Additional instructions from Pace [®] : * - Ann III and Carl An Metal* - FPA 200.7: B. Ca. Fe. Me. Mn. K. N	ev		Collected By: (Printed Nam	Grant	Morey	-		lustomer Re	marks / Special C	onditions / Possible maza	ds		1
- be from 10 a fan fan fa stanne i menne en stanne i fan ann an ddie			Signature:	Mrg- 1.	à			# Coolers:	Thermom	eter ID: Correction F	actor (°C) Obs T	femp. (°C) Corrected Temp. (°C) On	ce:
Reinauged auffirmage (Sterrige) Ro Claram	Date	/ north	1600	Received by/Company	; (Signature)				Date/Tim		Tracking 1	Number:	
Reimelüched by/Company: (\$Énature) H	Date/T	me:		Received by/Company	: (Signature)				Date/Tim		Delivere	sd by: [] In- Person [] Courier	
Reconstruction of the second o	Date/7	ine:		Received by/Company	: (Signature)				Date/Tim			[] FedEX [] UPS [] Other	
Re(Xuished by/Company: (Signature)	Date/T	ime:		Received by/Company	d (Signature)				Date/Tim		Page	e: 1 of	1
Sussifications a sample via this chain of custody constitutes acknowle	edgment and ac	ceptance of the Pace	° Terms and Co	nditions found at h	ttps://www.pa	celabs com/re	source-libra	w/resource/	nace-terms-and-	conditions/	ENV-FI	RM-CORQ-0019 V02 110123 @	1

Coc,			lisc.	form No Thiosultato			es	<it< th=""><th>L</th><th></th><th></th><th>atrix</th><th></th><th></th><th>us Liquid</th><th></th><th>- ter</th><th>aler</th><th></th><th></th></it<>	L			atrix			us Liquid		- ter	aler		
2	MBD/		N Voust	e/Swap	oc Bad	-ilter	Cassette	acore h	nma Ca			ž	La la		-aqueo		e Line M	NIIA V		
49.0			IALin	DC1	Ziol	Air	Air	Ter	Sun		ľ		IWat	Soli	Nor	ы П				
-	8638			F	0															
109	Stda	-	+	- 0.	ZPI	AF	υ	2	┙	Т	-	1	M	S	INAL	0	d M		-	
+0	Bb3E												ered							
Ma										ctio	ate	2	ield filt		stic		ate	SULC		U
2					0	plastic	etate	astic	astic	ved nls	Acet	astic	astic - 1	astic	ved pla	lastic	n Aceta	actic	lastic	ed plst
tes /			Iastic	plastic	l plasti	erved	Zn Ac	Id HO		Dresen	C HO	OH DI	IO3 pla	103 pla	presen	S04 p	OH, ZI	IO3 pla	SO4 p	esserv
Ž	BESN		HOH	EON-	12SO4	npres	VaOH,	v ∎			eN m	mL Na	H	ML HN	mL un	밀			mL H2	z unpre
1			Ē		17	1L (1	500		2005	500	250	250	250	250	250	250	125	125	160
			æ		s	D	Z		z				L.	Z	2	S	2=		v	DO
	MGRI	-	RP	à	BP	BP	BP	BP		L L L	BP	BP	BP	BPS	BPS	BP	1 Da	BP4	BP4	ЧV
									and a	did 22										
-						r wide	lass		ioque/	SS	ass	lass	glass	lass	lass	ass	lass			
						ambe	mber g	ass	a clear	Der ala	nber al	mber	mber	mber g	mber g	mber g	uper g			
			soil lar	soil lar	soil jar	served	ores a	ber gl	- ambe	es am	VO3 an	S04 a	S04 a	pres al	pres ai	pres ar	pres al			
	ACOLO ACOLO		clear	clear	clear	unpre	mL un		In Thiu		H	mL H2	mL H2	mL un	mL un					
			802	402	202	402	10	; ;	╡╤	1]it	500	500	250	500	250	125				ſ
			KU	D.H.	32U	₽	2	Ξų	2	: ⊇	N	SS	3S	SU	D	2	20			
		Glace	MC	WG	Ň	ġ	90	AG	2 G	AGS OF	AG	AG	AG	AG	Ϋ́Θ	ACA	Dr.			
			IE	lal			10				ar vial	s		S	ass					
			lear via	r voa v	ar vial	er vial	nber vi	V JUDGE V	vial	lear vi	ed clea	ar glas	SS	ar glas:	clear g					
ite:			ulfate c	ambe	OH cle	ambe	504 ar	Per ling	clear	Thio c	reserv	04 cle	es glat	CL Clei	pres (Solija				
<i>o</i> , –			nL bisu	NL HC	nL Me	IL ISI	IL H2	nL Na	IL HCI	nL Na	nL unp	er H2S	ar unpr	JML HC		Z CIER				
-			401	40r	40r	40r	401	404	400	40n	40n	1 lite	1lite	250	250	100				
		5	9B	H6	W6	D o	26	011	He	91	90	1S	10	3H	30	3				0
		ś –	18	8	S		3	36	19	5	9	B	BG	BG	BG	2				

DC#_Title: ENV-FRM-LENE-0001 v07_Sample Container Count Effective Date: 7/12/2024

Pace® Analytical Services, LLC

Page 1 of 1

Qualtrax ID: 30422

Page 33 of 33



Memorandum January 22, 2025

То:	Project File Rocksmith Geoengineering, LLC	Project Number: 23007-24
CC:	Mark Haddock, Jeffrey Ingram	
From:	Grant Morey	Email: grant.morey@rocksmithgeo.com
RE:	Data Validation Summary, Sioux Energy Center – So	CL4A – Data Package 60465156

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 analyzed outside of hold time controls, the sample result was qualified as an estimate (J for detects, UJ for non-detects).
- When an initial laboratory calibration was outside of method control limits, the sample result was qualified as an estimate (J for detects, UJ for non-detects).
- 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 Method Detection Limit (MDL) and Practical Quantification Limit (PQL), the results were recorded at the detection value and qualified as estimates (J).

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Rocksmith Geoengineering	Project Manager: ^{J. Ingram}
Project Name: Ameren SCL4A	Project Number: ²³⁰⁰⁹⁻²⁴
Reviewer: G. Morey	Validation Date: 1/22/2025
Laboratory: <u>Pace Analytical</u> Analytical Method (type and no.): EPA 200.7/200.8 (Total Meta	SDG #: 60465156 als); SM 2320B (Alkalinity); SM 2540C (TDS); EPA 300.0 (Anions)
Matrix: Air Soil/Sed. Water Waste	
Sample Names <u>S-TMW-1, S-TMW-2, S-TMW-3, S-SCL4A-DUP-1</u>	, S-SC4LA-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 II	oformation	YES	NO	NA	COMMENTS
a)	Sampling dates noted?	X			11/19/24-11/20/24
b)	Sampling team indicated?	X			JTR , JDQ, GTM
c)	Sample location noted?	×			
d)	Sample depth indicated (Soils)?			X	
e)	Sample type indicated (grab/composite)?	×			Grab
f)	Field QC noted?	×			See Notes
g)	Field parameters collected (note types)?	×			pH, Spec Cond, Turb, Temp, DO, ORP
h)	Field Calibration within control limits?	×			
i)	Notations of unacceptable field conditions/performa	nces fro	om field lo	ogs or field	notes?
			х		
j)	Does the laboratory narrative indicate deficiencies?			x	No lab narrative.
	Note Deficiencies:				
Chain-	of-Custody (COC)	YES	NO	NA	COMMENTS
Chain- a)	of-Custody (COC) Was the COC properly completed?	YES	NO	NA	COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field	YES	NO	NA	COMMENTS
Chain- a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel?	YES ×	NO	NA	COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × ×	NO	NA	COMMENTS
Chain- a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × ×	NO	NA	COMMENTS
Chain- a) b) c) Genera	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × YES	NO	NA	COMMENTS
Chain- a) b) c) Genera a)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition?	YES × × YES ×	NO	NA	COMMENTS
Chain- a) b) c) Genera a) b)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis?	YES	NO	NA	COMMENTS COMMENTS See Notes
Chain- a) b) c) Genera a) b) c)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used?	YES	NO NO NO	NA	COMMENTS COMMENTS See Notes
Chain- a) b) c) Genera a) b) c) d)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used?	YES	NO	NA	COMMENTS COMMENTS See Notes
Chain- a) b) c) Genera a) b) c) d) e)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved?	YES	NO	NA	COMMENTS COMMENTS See Notes
Chain- a) b) c) Genera a) b) c) d) e) f)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved? Were any sample dilutions noted?	YES	NO	NA	COMMENTS COMMENTS See Notes See Notes See Notes
Chain- a) b) c) Genera a) b) c) d) c) d) e) f) g)	of-Custody (COC) Was the COC properly completed? Was the COC signed by both field and laboratory personnel? Were samples received in good condition? Al (reference QAPP or Method) Were hold times met for sample pretreatment? Were hold times met for sample analysis? Were the correct preservatives used? Was the correct method used? Were appropriate reporting limits achieved? Were any sample dilutions noted?	YES	NO	NA	COMMENTS COMMENTS See Notes See Notes

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blank	5	YES	NO	NA	COMMENTS
a)	Were analytes detected in the method blank(s)?	х			See Notes
b)	Were analytes detected in the field blank(s)?	x			See Notes
c)	Were analytes detected in the equipment blank(s)?			х	S-SCL4A-FB-1 @ S-TMW-3
d)	Were analytes detected in the trip blank(s)?			X	
Labora	atory 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			
Duplic	ates	YES	NO	NA	COMMENTS
a)	Were field duplicates collected (note original and du	uplicate	e sample n	ames)?	
		x			S-SCL4A-DUP-1 collected @ S-TMW-2
b)	Were field dup. precision criteria met (note RPD)?	x			
c)	Were lab duplicates analyzed (note original and du	plicate	samples)?)	
		x			See Notes
d)	Were lab dup. precision criteria met (note RPD)?	X			
Blind	Standards	YES	NO	NA	COMMENTS
a)	Was a blind standard used (indicate name,			x	
	analytes included and concentrations)?				
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?		×		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		See Notes

Comments/Notes:

General:
Chloride and sulfate were diluted in several samples; no qualification necessary.
Chloride, fluoride and sulfate analyzed outside of hold time controls for some samples, results qualified as estimate
Initial calibration for fluoride for one sample was outside method control limits, result qualified as estimate.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

Method Blanks:

3629486: iron (43.4J) and manganese (2.4J), associated with sample -003. Iron < 10x blank and RL, result qualified as non detect. Manganese > 10x blank and RL, no qualification necessary.

3632823: calcium (43.2J), iron (18.1J), and sodium (184J). Associated with samples -001 and -005.

-001 calcium and sodium, results > 10x blank and RL, no qualification necessary. Iron < 10x blank and RL, result qualified as non detect.

-005, calcium and sodium results < 10x blank and RL, results qualified as non detect. Iron result non detect, no qualification necessary. Field Blanks:

Field blank collected at S-TMW-3: calcium (36.3J), sodium (184J), and fluoride (0.22). Calcium and sodium > 10x blank and RL, no qualification necessary. Fluoride < 10x blank and > RL, result qualified as estimate.

Duplicates:

Lab duplicate max RPD: chloride, fluoride, and sulfate: 15%; alkalinity, TDS: 10%.

MS/MSD:

3629488/3629489: MS/MSD recovery high for for sodium. Associated with unrelated sample, no qualification necessary.

3629490: MS recovery low for sodium. Associated with unrelated sample, no qualification necessary.

3632818/3632819: MS recovery high for calcium, MSD and RPD within control. Associated with unrelated sample, no qualification necessary.

3632825/3632826: MSD recovery high for calcium, MS recovery and RPD within control. Associated with sample -001,

no qualification necessary.

3635663/3635664: MSD recovery high for chloride, MS recovery and RPD within control. No qualification necessary.

MSD recovery and RPD high for fluoride, MS recovery within control. MS/MSD recovery high for sulfate, RPD within control. Associated with unrelated sample, no qualification necessary.

3635666/3635667: MS recovery high for fluoride, MSD and RPD within control limits. Associated with -001, no qualification necessary. 3641952/3641953: MS/MSD recovery low for chloride, RPD within control. MS/MSD recovery high for fluoride, RPD within control. MS recovery high for sulfate, MSD recovery and RPD within control. Associated with unrelated sample, no qualification necessary. 3642617/3642618: MS/MSD recovery and RPD high for fluoride. MSD recovery high for sulfate, MS recovery and RPD within control.

Associated within unrelated sample, no qualification necessary.

3642620: MS recovery low for chloride. Associated with unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-UG-3	Chloride	19.7	J	Analyzed outside hold time
"	Fluoride	0.47	J	п
"	Sulfate	79.1	J	п
"	Iron	50	U	Detected in blank, result < 10X blank and RL
S-TMW-1	"	50	U	"
S-SCL4A-FB-1	Calcium	200	U	"
"	Sodium	500	U	"
S-TMW-3	Fluoride	0.32	J	Detected in blank, result < 10x field blank and > RL
S-UG-3	Fluoride	0.47	J	Initial calibration outside control limits
	H I M			1/22/2025
Signature:-	Grand 11 tor	y		Date:

Appendix B Alternative Source Demonstration – November 2023 Sampling Event



REPORT

SCL4A – Alternative Source Demonstration

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

June 24, 2024 Project Number: 23009-24

Submitted to:



Ameren Missouri 1901 Chouteau Ave St. Louis, MO 63103 Submitted by:



Rocksmith Geoengineering, LLC 2320 Creve Coeur Mill Road Maryland Heights, MO 63043



Table of Contents

1.0	Certification Statement	1
2.0	Introduction	2
3.0	Site Description and Background	2
3.1	Geological and Hydrogeological Setting	2
3.2	Utility Waste Landfill Cell 4A – SCL4A	2
3.3	CCR Rule Groundwater Monitoring	3
4.0	Review of the Statistically Significant Increase	4
5.0	Evidence of SSI From Alternative Source	4
5.1	CCR Indicators	5
5.2	Evaluation of SSI	5
5.	2.1 Boron Concentrations	5
5.	2.2 Chloride Concentrations	6
6.0	Demonstration That SSI Was Not Caused by SCL4A Impact	6
7.0	References	7

TABLES

Table 1 – November 2023 Detection Monitoring Results
Table 2 – Review of Statistically Significant Increase (embedded in text)
Table 3 – Types of CCR and Typical Indicator Parameters (embedded in text)

FIGURES

Figure 1 – Sioux Energy Center Groundwater Monitoring Programs and Sample Location Map

Figure 2 – Time Series Plot for Boron Concentrations

Figure 3 – Time Series Plot for Chloride Concentrations

Figure 4 – Time Series Plot for Chloride and Sodium Concentrations – TMW-2

Figure 5 – Time Series Plot for Chloride and Sodium Concentrations – TMW-3



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 Rocksmith Geoengineering, LLC.

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).

Rocksmith Geoengineering, LLC



Mark Haddock, P.E., R.G. Principal Engineer, Senior Partner


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, referred to as the 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 westnorthwest 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 that lie unconformably on top of bedrock. These alluvial deposits, which can range from approximately 100 to 130 feet in thickness, 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 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 high density polyethylene (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 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 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 monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. One 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 Associates Inc. (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 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 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. If results were higher than the calculated UPL, this was considered to be an initial exceedance and a verification sample was then collected and tested in accordance with the SCL4A Statistical Analysis Plan (SAP). In August 2019 and June 2021, the background dataset used to calculate statistical limits was expanded to include a total of eight additional Detection Monitoring events, as outlined in the SAP, bringing the total number of background observations to at least sixteen per constituent per well. The following provides a summary of the Detection Monitoring results to date.

Since November 2017, several ASDs have been prepared for detections in well UG-3, TMW-1, and TMW-2. These previous ASDs are available in the 2018 through 2023 Annual Reports for the SCL4A and are available on Ameren's publicly available CCR Compliance website (https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports). These ASDs have demonstrated that previous SSIs at the site were not caused by the SCL4A, but rather primarily the result of relatively low calculated UPLs



that were not representative of the natural geochemical variability within the alluvial aquifer or primarily caused by the SCL4A being downgradient from the SCPA, which is currently in Corrective Action.

In November 2023, initial exceedances were identified for chloride at TMW-2 and TMW-3. Verification sampling results from February 2024 confirmed these to be SSIs. Results from this sampling event are provided in **Table 1**.

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASE

The November 2023 SSIs for chloride occurred at monitoring wells TMW-2 and TMW-3. These wells are screened the upper portion of the alluvial aquifer just below the average seasonal low elevation for groundwater. As shown in **Figure 1**, TMW-2 and TMW-3 are located south of the SCL4A and Highway 94, and north of Dwiggins Road.

Based on Rocksmith'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.

Table 2 provided in the text provides a summary of the historical UPLs at TMW-2, TMW-3, and the background wells (BMW-1S and BMW-3S) as well as the range of results and most recent sampling results.

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	June 2021 Updated UPL	March 2024 Updated UPL	Baseline Sampling Event Range	Detection Monitoring Sampling Range (November 2017 – May 2023)	November 2023 Result	February 2024 Result
Chloride (mg/L)	TMW-2	4.151	3.954	4.641	4.531	2.4 - 3.9	1.8 - 4.7	5.8	9.1
Chloride (mg/L)	TMW-3	3.1	3.1	3.1	3.383	1.6 - 3.1	1.6 - 3.6	5.1	9.1
Chloride (mg/L)	Background Wells (BMW-1S & BMW-3S)	12.34	12.32	13.12	13.65	1.9 – 16.8	6.3 – 13.2	7.2, 13.4	NS

Table 2: Review of Statistically Significant Increase

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.

6) NS – Not Sampled.

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.

- Presence 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.
- Similarity of chloride concentrations in nearby and background monitoring wells.
- Use of road salt (NaCl) during the construction of the adjacent SCPD Cell and nearby.



Documentation of construction of the SCL4A with a composite liner system including a 60-mil HDPE geomembrane liner and a 2-foot thick compacted clay layer.

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).

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 				
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.	 Bromide Potassium Sodium Fluoride 				
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 				

Table 3: Types	of CCR and	Typical Indi	icator Parameters
----------------	------------	---------------------	-------------------

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



5.2.2 Chloride Concentrations

Chloride is not known to be a key indicator of fly ash or boiler slag/bottom ash (EPRI 2012) but can be an indicator for FGD type wastes and is commonly found in shallow groundwater systems near salt and brine treated roadways. At the SEC, FGD wastes are managed in the SCPC, located west of the SCL4A (see **Figure 1**). The nearest public roadways to TMW-2 are Highway 94 approximately 1,400 feet to the north, and Dwiggins Road approximately 1,100 feet to the south. Additionally, there is a CCR haul road directly north of the SCL4A and there were equipment haul roads to the east and south of the SCL4A in 2023 associated with the construction of the SCPD.

Chloride concentrations for the November 2023 sampling event at TMW-2 and TMW-3 are 5.8 and 5.1 respectively. Chloride concentrations of 9.1 mg/L were present in the February 2024 sampling event for both TMW-2 and TMW-3. These values are just above the original calculated UPL of 4.151 and 3.1 mg/L for chloride concentrations at TMW-2 and TMW-3, which was calculated based on eight baseline sampling events in 2016 and 2017 during which time chloride concentrations ranged from 2.4 to 3.9 and 1.6 to 3.1 mg/L, respectively. There have been subsequent updates for the UPLs since the initial baseline limit, and the latest chloride limits from the March 2024 background updates are 4.531 and 3.383 for TMW-2 and TMW-3, respectively.

Chloride concentrations in shallow alluvial background monitoring wells located 1 mile to the northeast of SCL4A (wells BMW-1S and BMW-3S) have ranged from 1.9 to 16.8 mg/L since they were installed in 2016. Based on baseline sampling, the initial background UPL for chloride was 12.34 mg/L. The current UPL as of the latest background updates (June 2024) is 13.65 mg/L. Each of these background UPLs are greater than any chloride result at TMW-2 and TMW-3.

Figure 3 displays chloride results in the monitoring wells with chloride SSIs (TMW-2 and TMW-3) compared to background results from site background wells BMW-1S and BMW-3S. This figure displays that the concentrations of 5.8 and 5.1 mg/L are well below those reported for background wells at 6.3 – 13.2 mg/L. This demonstrates that the results from TMW-2 and TMW-3 are well below those of unimpacted background limits for chloride in the shallow zone of the alluvial aquifer.

Throughout 2023 and during the time of the November 2023 sampling event, the new SCPD cell was being constructed to the east of the SCL4A. Road salt (NaCl) applied to roadways for ice control is a common alternative source for elevated chloride concentrations, especially in areas near highways or construction zones. **Figures 4** and **5** display a multi-constituent time series plot comparing chloride and sodium values which are the common constituents associated with road salt. This plot displays a notable correlation between sodium and chloride, indicating that these two constituents are moving through the aquifer together. The correlation and coinciding spikes of sodium and chloride are a clear indication that elevated chloride concentrations levels at TMW-2 and TMW-3 are caused by road salt applications associated with the construction of the SCPD and/or nearby roads.

6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCL4A IMPACT

Based on the information presented in Section 5, above, the SSIs for chloride in the November 2023 monitoring event at TMW-2 and TMW-3 are not a result of impacts from the SCL4A. The SSIs appear to be a result of (1) pre-existing low concentrations of CCR indicators from the upgradient SCPA that predate the SCL4A, (2) relatively low calculated UPLs, (3) a relatively small set of baseline data that does not reflect the extent of natural temporal and spatial variability of groundwater chemistry within the aquifer and (4) the use of road salt (NaCI) during the construction of the SCPD and/or use on nearby roads. Chloride concentrations at TMW-2 and TMW-3 are elevated compared to their intrawell UPLs, however, when compared to shallow background monitoring wells, the concentrations are well below the background limits. Additionally, comparisons of chloride and sodium concentrations display that these two constituents are spiking and declining together, indicating that they are moving through the aquifer together. The recent spike in chloride and sodium is associated with de-icing from the construction of the adjacent SCPD and/or salting nearby roads.

Along with the lines of evidence listed above, SCL4A is documented to be properly constructed with 2 feet of low permeability compacted clay overlain by a 60-mil HDPE liner.



7.0 REFERENCES

- Ameren Missouri. 2016. Structural Integrity Criteria & Hydrologic/Hydraulic Capacity Assessment, Sioux Energy Center.
- Electric Power Research Institute (EPRI). 1998, Field Evaluation of the Comanagement of Utility Low-Volume Wastes With High-Volume Coal Combustion By-Products: SX Site. Report TRACE-108409. September 1998.
- Electric Power Research Institute (EPRI). 2011, Composition and Leaching of FGD Gypsum and Mined Gypsum, Report 1022146. November 2011.
- Electric Power Research Institute (EPRI). 2012, Groundwater Quality Signatures for Assessing Potential Impacts from Coal Combustion Product Leachate, Report 1017923. October 2012.
- Electric Power Research Institute (EPRI). 2017, Guidelines for Development of Alternative Source Demonstrations at Coal Combustion Residual Sites, Report 3002010920, October 2017.
- Golder Associates Inc., 2017, 40 CFR Part 257 Groundwater Monitoring Plan, SCL4A Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2018, 2017 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2019a, 2018 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2019b, Updated Statistical Limits With Additional Background Data SCL4A.
- Golder Associates Inc., 2020, 2019 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2021, 2020 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates USA Inc., 2022a, 2021 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates USA Inc., 2022b, Updated Statistical Limits With Additional Background Data, Utility Waste Landfill Cell 4A (SCL4A), Sioux Energy Center St. Charles County, Missouri, USA.
- GREDELL Engineering Resources, Inc. 2006. Detailed Geologic and Hydrologic Site Investigation Report. AmerenUE Sioux Power Plant Proposed Utility Waste Disposal Area. St. Charles County, Missouri. August 2006.
- GREDELL Engineering Resources, Inc. 2009. Background Groundwater Monitoring Report. AmerenUE Sioux Power Plant. St. Charles County, Missouri. June 2009.
- Johnson, A.I. 1967. Specific Yield Compilation of Specific Yields for Various Materials: U.S. Geological Survey Water-Supply Paper 1662-D. Available at: https://pubs.er.usgs.gov/publication/wsp1662D.
- MDNR. 2011. Missouri Well Construction Rules. Missouri Department of Natural Resources Division of Geology and Land Survey. Rolla, MO. August 2011.



- Reitz & Jens, Inc., and GREDELL Engineering Resources, Inc. 2014. Ameren Missouri Sioux Power Plant Utility Waste Landfill – Proposed Construction Permit Modification – Construction Permit Number 0918301 – St. Charles County, Missouri, revised August 2014.
- Rocksmith Geoengineering, LLC. 2024a, 2023 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Rocksmith Geoengineering, LLC. 2024b, Updated Statistical Limits with Additional Background Data, Utility Waste Landfill Cell 4A (SCL4A), Sioux Energy Center St. Charles County, Missouri, USA.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Resource Conservation and Recovery Program Implementation and Information Division. March 2009.
- USEPA. 2015. Federal Register. Volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule/ [EPA-HQ-RCRA-2009-0640; FRL-9919-44-OSWER].
- WSP USA Inc., 2023, 2022 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center – St. Charles County, Missouri, USA.



Tables



Table 4November 2023 Detection Monitoring ResultsSCL4A - Landfill Cell 4ASioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROU	INDWATER M	ONITORING V	VELLS		
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
			No	ovember 2023	Detection M	onitoring Res	ults				
DATE	NA	11/10/2023	11/10/2023	NA	11/13/2023	NA	11/13/2023	NA	11/13/2023	NA	11/13/2023
рН	SU	7.04	7.14	6.678-7.373	7.04	6.531-7.438	7.11	6.71-7.226	6.96	6.573-7.424	7.01
BORON, TOTAL	μg/L	57.9 J	58.9 J	1,105	638	DQR	80.2 J	101.4	85.9 J	109	96.1 J
CALCIUM, TOTAL	μg/L	136,000	114,000	171,791	107,000	118,531	107,000	132,299	123,000	145,416	134,000
CHLORIDE, TOTAL	mg/L	7.2	13.4	84.34	34.5	4.359	2.3	4.531	5.8	3.383	5.1
FLUORIDE, TOTAL	mg/L	ND	ND	0.39	ND	0.4613	ND	0.4211	ND	0.37	ND
SULFATE, TOTAL	mg/L	46.9	12.3	136.3	65.0	62.35	54.8	86.88	28.8	65.78	40.9
TOTAL DISSOLVED SOLIDS	mg/L	475	398	661.4	504	452.6	368	518	430	493	475
			F	ebruary 2024	Verification S	Sampling Ever	nt				
DATE	NA								2/7/2024		2/7/2024
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L										
CHLORIDE, TOTAL	mg/L								9.1		9.1
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L										

NOTES:

1. Unit Abbreviations: $\mu g/L$ - 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.

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: GTM Checked By: ANT Reviewed By: MNH

Figures





SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND SAMPLE LOCATION MAP

Legend

62	Sioux Energy Center Property Boundary
CCR	Units
	SCPA - Bottom Ash Surface Impoundment (Closed)
	SCPB - Fly Ash Surface Impoundment (Closed)
Utility	/ Waste Landfill Cells
	SCL4A - Dry CCR Disposal Area
	SCPC- Inactive FGD Surface Impoundment
	SCPD - FGD Surface Impoundment
Monit	toring Well Networks
\oplus	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
\oplus	SCL4A and Corrective Action Monitoring Well
4	SCI 4A Detection Manitaring Wall

- tion Monitoring Well
- Monitoring Well Used for Water Level Elevation Measurements Only +
- Soil Boring Location for Sequential Extraction Samples 0

NOTES

- All boundaries and locations are approximate.
 FGD Flue Gas Desulfurization.
- 3. CCR Coal Combustion Residuals.

REFERENCES

1. Ameren Missouri Sioux Energy Center, Sioux Property Control Map, February 2011.



PROJEC

CCR RULE GROUNDWATER MONITORING PROGRAM

CLIENT AMEREN MISSOURI SIOUX ENERGY CEI	NTER	Ameren
	DESIGN JSI	YYYYYMM-DD 2023-03-29
	PREPARED JSI	PROJECT No 23009
150	REVIEW GTM	
ROCKSMITH GEOENGINEERING	APPROVED MNH	FIGURE 1









Appendix C Alternative Source Demonstration – May 2024 Sampling Event



REPORT

SCL4A – Alternative Source Demonstration

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

January 3, 2025 Project Number: 23009-24

Submitted to:



Ameren Missouri 1901 Chouteau Ave St. Louis, MO 63103

Submitted by:



Rocksmith Geoengineering, LLC 2320 Creve Coeur Mill Road Maryland Heights, MO 63043



i

Table of Contents

1.0	Ce	rtification Statement	. 1
2.0	Intr	oduction	. 2
3.0	Site	e Description and Background	. 2
3.1		Geological and Hydrogeological Setting	. 2
3.2		Utility Waste Landfill Cell 4A – SCL4A	. 2
3.3		CCR Rule Groundwater Monitoring	. 3
4.0	Rev	view of the Statistically Significant Increase	. 4
5.0	Evi	dence of SSI From Alternative Source	. 4
5.1		CCR Indicators	. 5
5.2		Evaluation of SSIs	. 5
5.	.2.1	Boron Concentrations	. 5
5.	.2.2	Chloride Concentrations	. 6
5.	.2.3	Calcium Concentrations	. 6
6.0	Dei	monstration That SSI Was Not Caused by SCL4A Impact	. 8
7.0	Ref	ferences	. 8

TABLES

Table 1 – May 2024 Detection Monitoring Results

Table 2 – Review of Statistically Significant Increases (embedded in text)

Table 3 – Types of CCR and Typical Indicator Parameters (embedded in text)

 Table 4 – Comparison of Intrawell UPLs for Calcium in Monitoring Wells South of the UWL (embedded in text)

FIGURES

Figure 1 – Sioux Energy Center Groundwater Monitoring Programs and Sample Location Map

- Figure 2 Time Series Plot of Boron Concentrations
- Figure 3 Time Series Plot of Chloride Concentrations
- Figure 4 Time Series Plot of Chloride and Sodium Concentrations TMW-1
- Figure 5 Time Series Plot of Chloride and Sodium Concentrations TMW-2
- Figure 6 Time Series Plot of Chloride and Sodium Concentrations TMW-3
- Figure 7 Time Series Plot of Calcium Concentrations

Figure 8 – Pre-CCR Calcium Plots – Downgradient UWL Monitoring Wells



CERTIFICATION STATEMENT 1.0

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 (USEPA) coal combustion residual (CCR) rule under the direction of a licensed professional engineer with Rocksmith Geoengineering, LLC.

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).

Rocksmith Geoengineering, LLC



Principal Engineer, Senior Partner



2.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (USEPA) 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 (SSIs) identified for Ameren Missouri's (Ameren) Sioux Energy Center (SEC), Utility Waste Landfill (UWL) Cell 4A, referred to as the 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 westnorthwest 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 that lie unconformably on top of bedrock. These alluvial deposits, which can range from approximately 100 to 130 feet in thickness, 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 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 high density polyethylene (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 SEC UWL was issued July 30, 2010 (permit #0918301) for the SCPC (Cell 1). Nine 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 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 monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. One 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 Associates Inc. (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 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 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. If results were higher than the calculated UPL, this was considered to be an initial exceedance and a verification sample was then collected and tested in accordance with the SCL4A Statistical Analysis Plan (SAP). In March 2024, the background dataset used to calculate statistical limits was expanded to include a total number of background observations to at least 20 per constituent per well. The following provides a summary of the Detection Monitoring results to date.

Since November 2017, several ASDs have been prepared for SSIs at wells UG-3, TMW-1, TMW-2, and TMW-3. These previous ASDs are available in the 2018 through 2023 Annual Reports for the SCL4A and are available on Ameren's publicly available CCR Compliance website (https://www.ameren.com/company/environment-and-sustainability/managing-coal-combustion/ccr-compliance-reports). These ASDs have demonstrated that previous SSIs at the site were not caused by the SCL4A, but rather primarily the result of relatively low calculated UPLs that were not representative of the natural geochemical variability within the alluvial aquifer or primarily caused by the SCL4A being downgradient from the SCPA, which is currently in Corrective Action.



In May 2024, initial exceedances were identified for calcium, chloride, and total dissolved solids at TMW-1, calcium at TMW-2, and chloride at TMW-3. Verification sampling results from July 2024 confirmed SSIs of calcium and chloride at TMW-1, calcium at TMW-2, and chloride at TMW-3. Results from this sampling event are provided in **Table 1**.

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASES

The May 2024 SSIs occurred at monitoring wells TMW-1, TMW-2, and TMW-3. These wells are screened the upper portion of the alluvial aquifer just below the average seasonal low elevation for groundwater. As shown in **Figure 1**, TMW-1, TMW-2, and TMW-3 are located south of the SCL4A and Highway 94, and north of Dwiggins Road.

Based on Rocksmith'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.

Table 2 provided in the text provides a summary of the historical UPLs at TMW-2, TMW-3, and the background wells (BMW-1S and BMW-3S) as well as the range of results and most recent sampling results.

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	June 2021 Updated UPL	Current UPL (March 2024 Update)	Baseline Sampling Event Range	Detection Monitoring Sampling Range (November 2017 – February 2024)	May 2024 Result	July 2024 Result
Calcium (µg/L)	TMW-1	118,318	115,800	119,842	118,531	97,300 – 114,000	91,700 - 119,000	124,000 J	125,000 J
Chloride (mg/L)	TMW-1	5.179	4.463	4.199	4.359	1.8 – 3.9	1.5 – 4.6	12.8 J	9.0 J
Calcium (µg/L)	TMW-2	135,076	134,272	133,759	132,299	105,000 – 127,000	105,000 – 131,000	135,000	134,000
Chloride (mg/L)	TMW-3	3.1	3.1	3.1	3.383	1.6 – 3.1	1.6 – 9.1	14.2	19.1
Calcium (µg/L)	Background Wells (BMW-1S & BMW-3S)	170,705	168,826	166,512	174,465	110,000 – 162,000	102,000 - 184,000	133,000 & 116,000	NS
Chloride (mg/L)	Background Wells (BMW-1S & BMW-3S)	12.34	12.32	13.12	13.65	7.6 – 12.0*	6.3 – 13.4	7.2 & 11.1	NS

Table 2: Review of Statistically Significant Increases

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.

6) NS – Not Sampled.

 The UPLs for the background wells listed are used for the SCPB detection monitoring network. Current UPLs for these wells were most recently updated in September 2023.

8) *Two outliers at BMW-1S are not included in the baseline range. A low outlier of 1.9 mg/L and a high outlier of 16.8 mg/L.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Several different lines of evidence indicate that the SSIs at the SCL4A are 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.



- Presence 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.
- Similarity to chloride and calcium concentrations at nearby and background monitoring wells.
- A lack of elevated boron concentrations that would be expected with impacts from the SCL4A.
- Use of road salt (NaCl) during the construction of the adjacent SCPD Cell and nearby.
- Documentation of construction of the SCL4A with a composite liner system including a 60-mil HDPE geomembrane liner and a 2-foot thick compacted clay layer.

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).

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
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.	 Bromide Potassium Sodium Fluoride
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

Table 3: Types of CCR and Typical Indicator Parameters

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.

Historically, the SCL4A has predominately received fly ash, but other minor amounts of other CCR materials are also managed at the unit. FGD type wastes at the SEC are managed at the SCPC and SCPD, located to the west of the SCL4A.

5.2 Evaluation of SSIs

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 baseline results as well as background monitoring results.

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

5.2.2 Chloride Concentrations

Chloride is not known to be a key indicator of fly ash or boiler slag/bottom ash (EPRI 2012) but can be an indicator for FGD type wastes and is commonly found in shallow groundwater systems near salt and brine treated roadways. At the SEC, FGD wastes are managed in the SCPC and SCPD, located west of the SCL4A (see **Figure 1**). The nearest public roadways to TMW-1, TMW-2, and TMW-3 are Highway 94 approximately 1,400 feet to the north, and Dwiggins Road approximately 1,100 feet to the south. Additionally, there is a CCR haul road directly north of the SCL4A, and there were temporary equipment haul roads constructed in 2023 to the east and south of the SCL4A associated with the construction of the SCPD.

Chloride concentrations from the May 2024 sampling event at TMW-1 and TMW-3 are 12.8 J and 14.2 mg/L, respectively. Chloride concentrations of 9.0 J and 19.1 mg/L were present in the July 2024 sampling event for TMW-1 and TMW-3, respectively. These values are just above the original calculated chloride UPLs of 5.179 and 3.1 mg/L at TMW-1 and TMW-3, which were calculated based on eight baseline sampling events in 2016 and 2017 during which time chloride concentrations ranged from 1.8 to 3.9 (TMW-1) and 1.6 to 3.1 (TMW-3) mg/L. There have been subsequent updates to the UPLs since the initial baseline limits, and most recently, UPLs were updated in March 2024. Current UPLs for chloride are 4.359 mg/L at TMW-1 and 3.383 mg/L at TMW-3.

Chloride concentrations in shallow alluvial background monitoring wells located approximately 1 mile to the northwest of SCL4A (BMW-1S and BMW-3S) have ranged from 6.3 to 13.4 mg/L since their installation in 2016, with outliers of 1.9 and 16.8 mg/L at BMW-1S and 7.6 mg/L at BMW-3S. Based on baseline sampling, the initial UPL for chloride was 12.34 mg/L at these shallow background wells. The UPL as of the latest background updates (completed September 2023) is 13.65 mg/L, which is the limit currently used for the SCPB detection monitoring network. **Figure 3** displays chloride results in at the monitoring wells with chloride SSIs (TMW-1 and TMW-3) compared to results from site background wells BMW-1S and BMW-3S. This figure displays that the May 2024 chloride concentrations of 12.8 J and 14.2 mg/L are largely within the range of background results, which display a degree of natural variability.

Throughout 2023 and into early 2024, the expanded SCPD cell was being constructed to the west of the SCL4A. During construction, road salt (NaCl) was applied to roadways for ice control. The application of road salt is a common alternative source for elevated chloride concentrations, especially in areas near highways or construction zones. **Figures 4, 5** and **6** display a multi-constituent time series plot for each downgradient SCPD monitoring well that compares concentrations of chloride and sodium, the common constituents associated with road salt. This plot displays a notable correlation between sodium and chloride, indicating that these two constituents are moving through the aquifer together. The correlation and coinciding spikes of sodium and chloride concentrations at TMW-1 and TMW-3 are caused by road salt applications associated with the construction of the SCPD and/or nearby roads. The same correlation and coinciding spikes of sodium and chloride are a clear indication and chloride are a clear indication sat TMW-2; however, during this sampling event the chloride concentrations were lower. The correlation and coinciding spikes of sodium and chloride are a clear indication that elevated chloride concentrations at TMW-1 and TMW-3 are caused by road salt applications associated with the construction of the SCPD and/or nearby roads. The SCPD and/or nearby roads.

5.2.3 Calcium Concentrations

Calcium is not known to be a key indicator of fly ash or boiler slag/bottom ash (EPRI 2012, EPRI 2017), but can be an indicator for FGD type wastes. At the SEC, FGD waste is managed in the nearby SCPC and SCPD units to the west of the SCL4A; therefore, elevated concentrations in calcium alone are not a good indicator of CCR impacts from the SCL4A.



Calcium concentrations for the May 2024 sampling event at TMW-1 and TMW-2 are 124,000 J and 135,000 μ g/L, respectively. Calcium concentrations of 125,000 J and 134,000 μ g/L were present in the July 2024 verification sampling event at these respective wells. These values are just above the original calculated UPL of 118,318 μ g/L at TMW-1 and below the original UPL of 135,076 μ g/L at TMW-2. The original UPLs were calculated based on eight baseline sampling events in 2016 and 2017, when calcium concentrations ranged from 91,700 to 114,000 μ g/L at TMW-1 and 105,000 to 131,000 μ g/L at TMW-2. There have been subsequent updates for the UPLs since the initial baseline limits were established, with the latest chloride limits from March 2024 background updates being 118,531 and 132,299 μ g/L for TMW-1 and TMW-3, respectively.

Calcium concentrations in shallow alluvial background monitoring wells located 1-mile to the northwest of SCL4A (BMW-1S and BMW-3S) have ranged from 102,000 to 184,000 μ g/L since they were installed in 2016. Based on baseline sampling, the initial background UPL for calcium was 170,705 μ g/L. The UPL as of the latest background updates (completed September 2023) is 174,465 μ g/L, which is the limit currently used for the SCPB detection monitoring network.

Figure 7 displays calcium results in the monitoring wells with calcium SSIs (TMW-1 and TMW-2) compared to results from site background wells BMW-1S and BMW-3S. This figure displays that the concentrations of 124,000 J μ g/L and 135,000 μ g/L are well below the background UPL of 174,465 μ g/L. This demonstrates that calcium concentrations at TMW-1 and TMW-2 are well below those of unimpacted background groundwater in the shallow zone of the alluvial aquifer. This provides evidence that the data points used to calculate the intrawell UPL for calcium at TMW-1 and TMW-2 do not completely account for the natural geochemical variability within the groundwater.

Table 4, below, displays the current intrawell UPL for each CCR Rule groundwater monitoring well south the UWL cells. As displayed in **Table 4**, the SSI values in TMW-1 and TMW-2 would not be an SSI at any other monitoring wells south of the UWL based on current intrawell UPLs. Therefore, since these calcium results at TMW-1 and TMW-2 are less than results at background monitoring wells and nearby monitoring wells, the SSIs are 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.

Well ID	DG-1	DG-2	DG-3	DG-4	TMW-1	TMW-2	TMW-3	TMW-4	TMW-5	TMW-6
Current Calcium UPL (µg/L)	174,000	166,000	169,490	166,717	118,531	132,299	145,416	146,033	156,060	179,541

Table 4 – Comparison of Intrawell UPLs for Calcium in Monitoring Well South of the UWL

To further investigate the geochemical variability of calcium in the UWL area, the historical data from the state UWL wells (located on the south side of the UWL, outside of the interpreted zone of impact form the SCPA) were reviewed. These UWL wells (labeled "DG-xx") were installed and sampled on at least 8 occasions prior to the receipt of FGD in the SCPC and 25 occasions prior to the placement of CCR (fly ash and bottom ash) in the SCL4A. These DG-xx monitoring wells are screened at approximately the same depth as TMW-1 and TMW-2 in the shallow zone of the alluvial aquifer. **Figure 8** displays a box and whisker plot of the calcium concentrations for the DG-xx wells prior to the receipt of FGD in the SCPC (any CCR placement south of Highway 94), which represents natural variability in local groundwater chemistry. Using all pre-disposal data from the 12 DG-xx wells, the parametric UPL for calcium is 200,170 µg/L. As displayed in **Figure 8**, May 2024 and July 2024 sampling results at TMW-1 and TMW-2 are within the pre-CCR sampling results range for each DG-xx monitoring well and are well below the pre-CCR UPL.

Based on these data, the variability in calcium concentrations over time is not a result of CCR impacts from the SCL4A on the surrounding groundwater. The SSI is likely a result of geochemical variability of the aquifer, which is not captured by the limited dataset used for UPL calculation.



6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCL4A IMPACT

Based on the information presented in Section 5, the SSIs of chloride and calcium observed in May 2024 at TMW-1, TMW-2, and TMW-3 are not a result of impacts from the SCL4A. The SSIs appear to be a result of (1) pre-existing low concentrations of CCR indicators from the upgradient SCPA that predate the SCL4A, (2) relatively low calculated UPLs, (3) a relatively small set of baseline data that does not reflect the extent of natural temporal and spatial variability of groundwater chemistry within the aquifer, (4) a lack of elevated boron, a primary CCR impact indicator, in the monitoring wells with an SSI, and (5) the use of road salt (NaCI) during the construction of the SCPD and/or use on nearby roads.

Chloride concentrations at TMW-1 and TMW-3 are elevated compared to their intrawell UPLs; however, when compared to shallow background monitoring wells, the concentrations are similar to background results. Additionally, comparisons of chloride and sodium concentrations at SCL4A monitoring wells display that these two constituents are historically correlated, indicating that they are moving through the aquifer together. The recent spike in chloride and sodium is associated with deicing from the construction of the adjacent SCPD and/or road salt application on nearby roads.

At least 20 samples have been used to complete the calcium UPL calculations at TMW-1 and TMW-2. However, when the intrawell limits are compared to nearby monitoring wells south of the UWL and background wells, the limits at TMW-1 and TMW-2 are lower. Results from TMW-1 and TMW-2 during the May 2024 sampling event would not have been an SSI at any other well south of the UWL or if the results were compared to background results using an interwell statistical method. It can take many years to of data collection to capture the full range of variability in groundwater concentrations that are representative of natural conditions or pre-existing impacts for any given aquifer. Therefore, because calcium is not a typical CCR indicator parameter and boron is not elevated in the monitoring wells with an SSI, the SSIs observed at TMW-1 and TMW-2 are not caused by impacts from the SCL4A but rather are the result of natural variability of pre-existing calcium concentrations within the alluvial aquifer at the site.

Along with the lines of evidence listed above, SCL4A is documented to be properly constructed with 2 feet of low permeability compacted clay overlain by a 60-mil HDPE liner.

7.0 REFERENCES

- Ameren Missouri. 2016. Structural Integrity Criteria & Hydrologic/Hydraulic Capacity Assessment, Sioux Energy Center.
- Electric Power Research Institute (EPRI). 1998, Field Evaluation of the Comanagement of Utility Low-Volume Wastes With High-Volume Coal Combustion By-Products: SX Site. Report TRACE-108409. September 1998.
- Electric Power Research Institute (EPRI). 2011, Composition and Leaching of FGD Gypsum and Mined Gypsum, Report 1022146. November 2011.
- Electric Power Research Institute (EPRI). 2012, Groundwater Quality Signatures for Assessing Potential Impacts from Coal Combustion Product Leachate, Report 1017923. October 2012.
- Electric Power Research Institute (EPRI). 2017, Guidelines for Development of Alternative Source Demonstrations at Coal Combustion Residual Sites, Report 3002010920, October 2017.
- Golder Associates Inc., 2017, 40 CFR Part 257 Groundwater Monitoring Plan, SCL4A Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2018, 2017 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center - St. Charles County, Missouri, USA.



Golder Associates Inc., 2019a, 2018 Annual Groundwater Monitoring Report, SCL4A - Utility Waste Landfill Cell 4A, Sioux Energy Center - St. Charles County, Missouri, USA.

Golder Associates Inc., 2019b, Updated Statistical Limits With Additional Background Data – SCL4A.

- Golder Associates Inc., 2020, 2019 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates Inc., 2021, 2020 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates USA Inc., 2022a, 2021 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Golder Associates USA Inc., 2022b, Updated Statistical Limits With Additional Background Data, Utility Waste Landfill Cell 4A (SCL4A), Sioux Energy Center St. Charles County, Missouri, USA.
- GREDELL Engineering Resources, Inc. 2006. Detailed Geologic and Hydrologic Site Investigation Report. AmerenUE Sioux Power Plant Proposed Utility Waste Disposal Area. St. Charles County, Missouri. August 2006.
- GREDELL Engineering Resources, Inc. 2009. Background Groundwater Monitoring Report. AmerenUE Sioux Power Plant. St. Charles County, Missouri. June 2009.
- Johnson, A.I. 1967. Specific Yield Compilation of Specific Yields for Various Materials: U.S. Geological Survey Water-Supply Paper 1662-D. Available at: https://pubs.er.usgs.gov/publication/wsp1662D.
- MDNR. 2011. Missouri Well Construction Rules. Missouri Department of Natural Resources Division of Geology and Land Survey. Rolla, MO. August 2011.
- Reitz & Jens, Inc., and GREDELL Engineering Resources, Inc. 2014. Ameren Missouri Sioux Power Plant Utility Waste Landfill – Proposed Construction Permit Modification – Construction Permit Number 0918301 – St. Charles County, Missouri, revised August 2014.
- Rocksmith Geoengineering, LLC. 2024a, 2023 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center St. Charles County, Missouri, USA.
- Rocksmith Geoengineering, LLC. 2024b, Updated Statistical Limits with Additional Background Data, Utility Waste Landfill Cell 4A (SCL4A), Sioux Energy Center St. Charles County, Missouri, USA.
- USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance. Office of Resource Conservation and Recovery Program Implementation and Information Division. March 2009.
- USEPA. 2015. Federal Register. Volume 80. No. 74. Friday April 17, 2015. Part II. Environmental Protection Agency. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule/ [EPA-HQ-RCRA-2009-0640; FRL-9919-44-OSWER].
- WSP USA Inc., 2023, 2022 Annual Groundwater Monitoring Report, SCL4A Utility Waste Landfill Cell 4A, Sioux Energy Center – St. Charles County, Missouri, USA.



Tables



Table 1 May 2024 Detection Monitoring Results SCL4A - Landfill Cell 4A Sioux Energy Center, St. Charles County, MO

		BACKGR	OUND			GROL	JNDWATER M	IONITORING W	/ELLS		
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
				May 2024 D	Detection Mo	nitoring Result	s				
DATE	NA	5/28/2024	5/28/2024	NA	5/28/2024	NA	5/30/2024	NA	5/29/2024	NA	5/29/2024
рН	SU	6.86	6.95	6.678-7.373	7.00	6.531-7.438	7.16	6.71-7.226	7.08	6.573-7.424	6.97
BORON, TOTAL	μg/L	58.1 J	54.1 J	1,105	345	DQR	85.5 J	101.4	84.0 J	109	56.8 J
CALCIUM, TOTAL	μg/L	133,000	116,000	171,791	129,000	118,531	124,000 J	132,299	135,000	145,416	113,000
CHLORIDE, TOTAL	mg/L	10.1	11.1	84.34	28.0	4.359	12.8 J	4.531	4.0	3.383	14.2
FLUORIDE, TOTAL	mg/L	ND	ND	0.39	ND	0.4613	ND	0.4211	ND	0.37	ND
SULFATE, TOTAL	mg/L	37.7	19.7	136.3	81.8	62.35	57.6 J	86.88	34.0 J	65.78	42.4
TOTAL DISSOLVED SOLIDS	mg/L	470	529	661.4	517	452.6	465	518	453	493	433
				July 2024	Verification S	ampling Event					
DATE	NA						7/29/2024		7/30/2024		7/30/2024
рН	SU										
BORON, TOTAL	μg/L										
CALCIUM, TOTAL	μg/L						125,000 J		134,000		
CHLORIDE, TOTAL	mg/L						9.0 J				19.1
FLUORIDE, TOTAL	mg/L										
SULFATE, TOTAL	mg/L										
TOTAL DISSOLVED SOLIDS	mg/L						440				

NOTES:

1. Unit Abbreviations: $\mu g/L$ - 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. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).

7. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.

8. If all background values are less than the Practical Quantitation Limit (PQL) then the Double Quantification Rule (DQR) is used.

9. 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: JTR Checked By: JTA Reviewed By: MNH

Figures





SIOUX ENERGY CENTER GROUNDWATER MONITORING PROGRAMS AND SAMPLE LOCATION MAP

Legend

62	Sioux Energy Center Property Boundary
CCR	Units
	SCPA - Bottom Ash Surface Impoundment (Closed)
	SCPB - Fly Ash Surface Impoundment (Closed)
Utility	/ Waste Landfill Cells
	SCPC - FGD Surface Impoundment (Closed)
	SCL4A - Dry CCR Disposal Area
	SCPD - FGD Surface Impoundment
Monit	toring 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

- \oplus SCL4A and Corrective Action Monitoring Well
- \$ SCL4A Detection Monitoring Well
- 0 Monitoring Well Used for Water Level Elevation Measurements Only

NOTES

- All boundaries and locations are approximate.
 FGD Flue Gas Desulfurization.
- 3. CCR Coal Combustion Residuals.

REFERENCES

1. Ameren Missouri Sioux Energy Center, Sioux Property Control Map, February 2011.



PROJEC

CCR RULE GROUNDWATER MONITORING PROGRAM	
CLIENT AMEREN MISSOURI SIQUX ENERGY CENTER	Ameren

YYYY-MM-DD 2024-12-04
PROJECT No. 23009-24
FIGURE 4
FIGURE 1














Appendix D 2024 Potentiometric Surface Maps





	-			
	~	-		n
		-	N	
_	-	_		-

	Sioux Energy Cent
 -	Property Boundary

CCR Units





SCPB - Fly Ash Surface Impoundment (Closed)



SCPA - Bottom Ash Surface

enter



SCL4A - Dry CCR Disposal Area

SCPD - FGD Surface Impoundn

Groundwa MSL)	ater Elevation Contour (FT
	Groundwater Elevation Contour (FT MSL)
= =	Inferred Groundwater Elevation Contour (FT MSL)
Ground/S Measuren	urface Water nent Locations
•	River Gauge Location
Φ	Monitoring Well or Piezometer
R	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 ROCKSMITH. 4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED

MISSUER RIVER ELEVATION ESTIMATED BASED ON NEARBY UNIT: STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
FGD - FLUE GAS DESULFURIZATION.
TP-1S NOT USED FOR POTENTIOMETRIC SURFACE CONTOURING.

REFERENCES

1.) AMEREN MISSOURI SIOUX ENERGY CENTER, SIOUX PROPERTY CONTROL MAP FEBRUARY 2011

2.401 FEET.

3.) USGS NATIONAL WATER INFORMATION SYSTEM, USGS GAUGES 06935965 (ST. CHARLES), 07010000 (ST. LOUIS), 05587498 (ALTON), GRAFTON (05587450)



TITLE **FEBRUARY 6, 2024 POTENTIOMETRIC** SURFACE MAP

PROJECT

CCR GROUNDWATER MONITORING PROGRAM





1	1	
1	Am	eren

	DESIGN	GTM	YYYY-MM-DD 2024-07-03	
Γ	PREPARED	JTA	PROJECT No. 23009-24	
Γ	REVIEW	GTM		
	APPROVED	MNH	FIGURE D1	



-	-	Sioux Energy Center
-	-	Property Boundary

CCR Units

G	_	_	_		_
L					
Ľ	-	-		_	
-	-				



SCPB - Fly Ash Surface Impoundment (Closed)





SCL4A - Dry CCR Disposal Area

SCPD - FGD Surface Impou

Groundwater Elevation Contour (FT MSL) Groundwater Elevation Contour (FT MSL)

Inferred Groundwater = = Elevation Contour (FT MSL)

Ground/Surface Water Measurement Locations



Monitoring Well or Piezometer Groundwater Flow 5

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 ROCKSMITH. 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.) FGD - FLUE GAS DESULFURIZATION.

REFERENCES

0

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)





SUL

Maren 🖉

2024-07-03

23009-24

PROJECT

ROCKSMITH

CCR GROUNDWATER MONITORING PROGRAM



APPROVED

MNH





-	-	-	100	
	$\hat{}$	c		n .
	•	-	N	
_	-	_		-

Sioux Energy Center Property Boundary - -

CCR Units



- SCPA Bottom Ash Surface Impoundment (Closed)
 - SCPB Fly Ash Surface Impoundment (Closed)
 - SCPC WFGD Surface Impoundment (Closed)



SCL4A - Dry CCR Disposal Area
and a second second second

SCPD - FGD Surface

Groundw MSL)	ater Elevation Contour (FT
	Groundwater Elevation Contour (FT MSL)
= =	Inferred Groundwater Elevation Contour (FT MSL)
Ground/S Measure	Surface Water ment Locations
•	River Gauge Location
Φ	Monitoring Well or Piezometer
-	Groundwater Flow

Direction

2

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 ROCKSMITH. 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.) FGD - FLUE GAS DESULFURIZATION.

7.) TP-1S NOT USED FOR POTENTIOMETRIC SURFACE CONTOURING.

REFERENCES

0

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)

500 1,000 1,500 2,000 Feet

TITLE **NOVEMBER 14, 2024 POTENTIOMETRIC** SURFACE MAP

PROJECT

CCR GROUNDWATER MONITORING PROGRAM

