REPORT

2020 Annual Groundwater Monitoring and Corrective Action Report

SCPC Surface Impoundment, Sioux Energy Center, St. Charles County, Missouri, USA

Submitted to:

Ameren Missouri
1901 Chouteau Avenue
St. Louis, Missouri 63103

Submitted by:

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021

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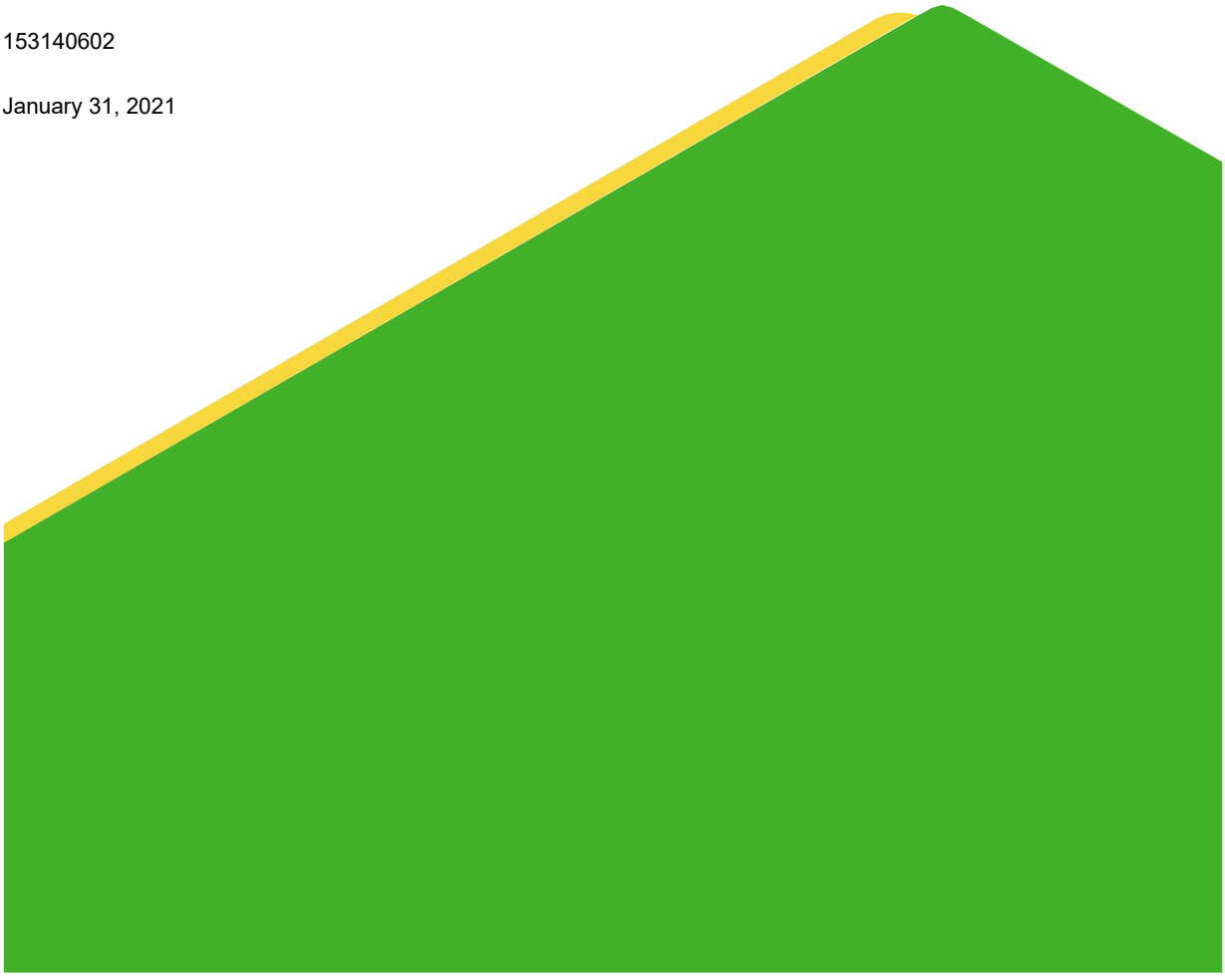
153140602

January 31, 2021



1.0 EXECUTIVE SUMMARY AND STATUS OF THE SCPC 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) SCPC Surface Impoundment (or Cell 1) at the Sioux Energy Center (SEC) is subject to the requirements of the CCR Rule. This Annual Report for the SCPC describes CCR Rule groundwater monitoring activities from January 1, 2020 through December 31, 2020, including verification results related to late 2019 sampling.

Throughout 2020, the SCPC 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 2020, SSIs were determined for one sampling event and a summary of the SSIs for the past year is provided in **Table 1**.

Table 1 – Summary of 2020 SCPC Sampling Events, Previous Year Verification, and Statistical Evaluations

Event Name	Type of Event and Sampling Dates	Laboratory Analytical Data Receipt Date	Parameters Collected	Verified SSI	SSI Determination Date	ASD Completion Date
November 2019 Sampling Event	Detection Monitoring, November 13-15, 2019	December 9, 2019	Appendix III, Major Cations and Anions	None	February 25, 2020	NA
	Verification Sampling, January 2, 2020	None (See Note 1)	Detected Appendix III parameters (See Note 2)			
April 2020 Sampling Event	Detection Monitoring, April 22-28, 2020	June 3, 2020	Appendix III, Major Cations and Anions	**Fluoride:** DG-4	August 20, 2020	November 10, 2020
	Verification Sampling, June 17, 2020	June 26, 2020	Detected Appendix III parameters (See Note 2)			
November 2020 Sampling Event	Detection Monitoring, November 16-17, 2020	December 28, 2020	Appendix III, Major Cations and Anions	To be determined after statistical analysis and Verification Sampling are completed in 2021.		

Notes:
1) pH was the only parameter tested for during the January Verification Sampling, therefore, no laboratory analytical data was required.
2) Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.
3) SSI – Statistically Significant Increase.
4) ASD – Alternative Source Demonstration.
5) NA – Not applicable.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An Alternative Source Demonstration was prepared for the April 2020 Detection Monitoring sampling event and is discussed further in this Annual Report.

There were no changes made to the monitoring system in 2020 with no new wells being installed or decommissioned.

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2.0 INSTALLATION OR DECOMMISSIONING OF MONITORING WELLS

In accordance with the CCR Rule, a groundwater monitoring system has been installed to monitor the SCPC. The groundwater monitoring system consists of eight (8) groundwater monitoring wells screened in the uppermost aquifer and is displayed in **Figure 1**. No new monitoring wells were installed or decommissioned in 2020 as a part of the CCR Rule monitoring program for the SCPC. For more information on the groundwater monitoring network, details are provided in the previous Annual Groundwater Monitoring Reports for the SCPC.

3.0 GROUNDWATER SAMPLING RESULTS AND DISCUSSION

The following sections discuss the sampling events completed for the SCPC CCR Unit in 2020. **Table 2** below provides a summary of the groundwater samples collected in 2020 including the number of samples, the date of sample collection, and the monitoring program.

Table 2 – Summary of Groundwater Sampling Dates

Sampling Event	Groundwater Monitoring Wells								Monitoring Program
	BMW-1S	BMW-3S	UG-1A	UG-2	DG-1	DG-2	DG-3	DG-4	
	Date of Sample Collection								
January 2020 Verification Sampling	-	-	-	-	-	1/2/2020	-	-	Detection
April 2020 Detection Monitoring	4/22/2020	4/22/2020	4/28/2020	4/27/2020	4/28/2020	4/28/2020	4/28/2020	4/28/2020	Detection
June 2020 Verification Sampling	-	-	6/17/2020	-	6/17/2020	-	-	6/17/2020	Detection
November 2020 Detection Monitoring	11/16/2020	11/16/2020	11/17/2020	11/17/2020	11/17/2020	11/17/2020	11/17/2020	11/16/2020	Detection
Total Number of Samples Collected	2	2	3	2	3	3	2	3	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.

3.1 Detection Monitoring Program

A Detection Monitoring sampling event was completed November 13-15, 2019. Verification sampling and the statistical analysis to evaluate for SSIs for the November 2019 event were not completed until 2020 and are, therefore, included in this report. Detections of Appendix III analytes triggered a verification sampling event, which was completed on January 2, 2020 and did not verify any SSIs. **Table 3** summarizes the results of the statistical analysis of the November 2019 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

Detection Monitoring samples were collected April 22-28, 2020, and testing was completed for all Appendix III analytes, as well as major cations and anions. Detections of Appendix III analytes triggered Verification Sampling, which was completed June 17, 2020. Statistical analysis of the data determined an SSI. **Table 4** summarizes the results of the statistical analysis of the April 2020 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

As outlined in section 257.94(e)(2) of the CCR Rule, the owner or operator may demonstrate that a source other than the CCR Unit has caused an SSI and that the apparent SSI was the result of an alternative source or resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. An ASD was completed for the SSI and is provided in **Appendix B**. This ASD demonstrates that the SSI reported for DG-4 was not caused by the SCPC CCR Unit and the SCPC CCR Unit remains in Detection Monitoring.

A Detection Monitoring sampling event was completed November 16-17, 2020, and testing was performed for all Appendix III analytes, as well as major cations and anions. Statistical analyses to evaluate for SSIs in the November 2020 data were not completed in 2020 and the results will be provided in the 2021 Annual Report. **Table 5** summarizes the results of the November 2020 Detection Monitoring event and laboratory analytical data are provided in **Appendix A**.

3.2 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 found in **Appendix C**. As shown on the potentiometric surface maps, groundwater flow direction within the uppermost aquifer is dynamic and influenced by seasonal changes in the water level in the adjacent Mississippi and Missouri Rivers, since the alluvial aquifer is hydraulically connected to these water bodies. Groundwater in the alluvial aquifer will generally flow from the higher of the two rivers toward the lower elevation river. The SCPA Surface Impoundment and Poeling Lake also locally affect water levels and flow directions. 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 were estimated for the alluvial aquifer wells at the SEC using commercially available software. Results from this assessment indicate that while groundwater flow direction is variable, the overall net groundwater flow in the alluvial aquifer at the SEC was toward the northeast but ranged from north to south. Horizontal gradients calculated by the program range from 0.00006 to 0.001 feet/foot with an estimated net annual groundwater movement of approximately three (3) feet.

3.3 Sampling Issues

Verification sampling and a Corrective Action Sampling event for the SEC were planned to start June 1, 2020. However, from approximately June 1, 2020 to June 14, 2020 some of the monitoring wells at the SEC were not accessible or partially submerged due to the flooding of the Mississippi and Missouri Rivers which caused a delay in the planned sampling dates. Prior to collecting water levels or groundwater samples, Golder performed a post-flood monitoring well inspection and based on this evaluation, no monitoring wells were impacted by the flood.

No additional notable sampling issues were encountered at the SCPC in 2020.

4.0 ACTIVITIES PLANNED FOR 2021

Detection Monitoring is scheduled to continue a semi-annual basis in the second and fourth quarters of 2021. Statistical analysis of the November 2020 Detection Monitoring data will be completed in 2021 and included in the 2021 Annual Report.

Tables

Table 3
November 2019 Detection Monitoring Results
SCPC Surface Impoundment
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS											
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-1A	UG-1A	Prediction Limit UG-2	UG-2	Prediction Limit DG-1	DG-1	Prediction Limit DG-2	DG-2	Prediction Limit DG-3	DG-3	Prediction Limit DG-4	DG-4
November 2019 Detection Monitoring Event															
DATE	NA	11/13/2019	11/13/2019	NA	11/14/2019	NA	11/14/2019	NA	11/14/2019	NA	11/14/2019	NA	11/14/2019	NA	11/15/2019
pH	SU	6.88	7.13	6.436-7.44	6.85	6.63-7.528	7.09	6.714-7.386	7.06	6.773-7.387	6.61	6.355-7.543	6.88	6.527-7.384	6.97
BORON, TOTAL	µg/L	118	80.1 J	327	239	208.9	144	130.1	111	127.6	100	126	93.1 J	119.5	71.0 J
CALCIUM, TOTAL	µg/L	143,000	102,000	177,869	166,000	129,922	115,000	142,166	135,000	139,133	133,000	156,515	144,000	143,189	138,000
CHLORIDE, TOTAL	mg/L	6.4	7.6	145.9	118	108.8	27.8	11.18	6.0	9.596	7.4	16.74	5.4	119.9	96.9 J
FLUORIDE, TOTAL	mg/L	0.28	0.23	0.3643	0.29	0.3308	0.24	0.3797	0.33	0.4315	0.39	0.4424	0.42	0.37	0.30
SULFATE, TOTAL	mg/L	26.5	34.4	107.8	53.0	83.09	43.8	60.32	38.4	45.51	37.8	59.31	51.1	62.54	33.9
TOTAL DISSOLVED SOLIDS	mg/L	551	418	833.4	739	626	480	555.4	524	524.9	512	624.7	576	701	628
January 2020 Verification Sampling Event															
DATE	NA										1/2/2020				
pH	SU										7.01				
BORON, TOTAL	µg/L														
CALCIUM, TOTAL	µg/L														
CHLORIDE, TOTAL	mg/L														
FLUORIDE, TOTAL	mg/L														
SULFATE, TOTAL	mg/L														
TOTAL DISSOLVED SOLIDS	mg/L														

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in green indicate an initial exceedance above the prediction limit that was not confirmed by Verification Sampling (not an SSI).
6. Only analytes/wells that were detected above the prediction limit were tested during Verification Sampling.

Prepared By: EMS
Checked By: BTT
Reviewed By: SCP

Table 4
April 2020 Detection Monitoring Results
SCPC Surface Impoundment
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS											
ANALYTE	UNITS	BMW-1S	BMW-3S	Prediction Limit UG-1A	UG-1A	Prediction Limit UG-2	UG-2	Prediction Limit DG-1	DG-1	Prediction Limit DG-2	DG-2	Prediction Limit DG-3	DG-3	Prediction Limit DG-4	DG-4
April 2020 Detection Monitoring Event															
DATE	NA	4/22/2020	4/22/2020	NA	4/28/2020	NA	4/27/2020	NA	4/28/2020	NA	4/28/2020	NA	4/28/2020	NA	4/28/2020
pH	SU	6.54	6.90	6.436-7.44	6.99	6.63-7.528	7.12	6.714-7.386	7.04	6.773-7.387	7.02	6.355-7.543	7.01	6.527-7.384	6.97
BORON, TOTAL	µg/L	114	95.9 J	327	124	208.9	149	130.1	97.2 J	127.6	89.4 J	126	93.1 J	119.5	82.9 J
CALCIUM, TOTAL	µg/L	150,000	134,000	177,869	138,000	129,922	104,000	142,166	120,000	139,133	118,000	156,515	134,000	143,189	115,000
CHLORIDE, TOTAL	mg/L	8.0	13.2	145.9	37.9	108.8	5.2	11.18	3.3	9.596	7.3	16.74	5.5	119.9	27.1
FLUORIDE, TOTAL	mg/L	0.37	0.43	0.3643	0.39	0.3308	0.28	0.3797	0.39	0.4315	0.43	0.4424	0.42	0.37	0.41
SULFATE, TOTAL	mg/L	27.0	29.6	107.8	68.5	83.09	58.3	60.32	27.6	45.51	32.2	59.31	52.8	62.54	21.7
TOTAL DISSOLVED SOLIDS	mg/L	565	472	833.4	555	626	430	555.4	429	524.9	452	624.7	500	701	517
June 2020 Verification Sampling Event															
DATE	NA				6/17/2020				6/17/2020						6/17/2020
pH	SU														
BORON, TOTAL	µg/L														
CALCIUM, TOTAL	µg/L														
CHLORIDE, TOTAL	mg/L														
FLUORIDE, TOTAL	mg/L				0.36				0.37						0.41
SULFATE, TOTAL	mg/L														
TOTAL DISSOLVED SOLIDS	mg/L														

NOTES:
1. Unit Abbreviations: µg/L - micrograms per liter, mg/L - milligrams per liter, SU - standard units.
2. J - Result is an estimated value.
3. NA - Not applicable.
4. Prediction Limits calculated using Sanitas Software.
5. Values highlighted in 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.

Prepared By: JSI
Checked By: BTT
Reviewed By: MNH

Table 5
November 2020 Detection Monitoring Results
SCPC Surface Impoundment
Sioux Energy Center, St. Charles County, MO

		BACKGROUND		GROUNDWATER MONITORING WELLS					
ANALYTE	UNITS	BMW-1S	BMW-3S	UG-1A	UG-2	DG-1	DG-2	DG-3	DG-4
November 2020 Detection Monitoring Event									
DATE	NA	11/16/2020	11/16/2020	11/17/2020	11/17/2020	11/17/2020	11/17/2020	11/17/2020	11/16/2020
pH	SU	6.96	7.07	7.05	7.32	7.09	7.12	7.02	7.13
BORON, TOTAL	µg/L	75.1 J	66.3 J	148	149	80.9 J	83.4 J	90.6 J	77.4 J
CALCIUM, TOTAL	µg/L	141,000	125,000	139,000	108,000	119,000	145,000	160,000	132,000 J
CHLORIDE, TOTAL	mg/L	7.0	11.4	87.2	20.6	1.3	3.1	3.8	68.5
FLUORIDE, TOTAL	mg/L	0.34	0.40	0.30	0.24	0.35	0.35	0.42	0.41
SULFATE, TOTAL	mg/L	24.8	30.6	48.5	47.9	11.0	28.7	41.0	37.1
TOTAL DISSOLVED SOLIDS	mg/L	505	455	642	448	441	546 J	598	637

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.

Prepared By: BTT
Checked By: EMS
Reviewed By: MNH

Figures

KEY MAP

LEGEND

- Sioux Energy Center Property Boundary
- Proposed Final UWL Perimeter Fence
- SCPC - WFGD Disposal Cell 1
- Water Recycle Pond

Groundwater Monitoring Wells Used for SCPC CCR Rule Monitoring

- SCPC Monitoring Well
- Background Monitoring Well

0 1,000 2,000 3,000

Feet

NOTE(S)

1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2.) UWL - UTILITY WASTE LANDFILL.
3.) WFGD - WASTE FLUE GAS DESULFURIZATION.

REFERENCE(S)

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

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE LOCATION AERIAL MAP AND MONITORING WELL LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-01-15
DESIGNED	JSI
PREPARED	RJF
REVIEWED	EMS
APPROVED	MNH

PROJECT NO.	CONTROL	REV.	FIGURE
153140602	1240	0	1

PATH: G:\Projects\150 Projects\153140\6 - Ameren GW Monitoring Program - MO\Phase 0003 - Sioux Energy\800 - FIGURES-DRAWINGS\PRODUCTION\2019 Annual Report\Figure 1 - SCPC_v2.mxd PRINTED ON: 2020-01-24 AT 10:47:32 AM

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

APPENDIX A

Laboratory Analytical Data

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

June 03, 2020

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory between April 24, 2020 and April 29, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60335359003	**S-UG-1A**	Water	04/28/20 13:51	04/29/20 03:12
60335359004	**S-UG-2**	Water	04/27/20 15:20	04/29/20 03:12
60335359005	**S-DG-1**	Water	04/28/20 12:34	04/29/20 03:12
60335359006	**S-DG-2**	Water	04/28/20 11:45	04/29/20 03:12
60335359007	**S-DG-4**	Water	04/28/20 10:03	04/29/20 03:12
60335359008	**S-SCPC-DUP-1**	Water	04/28/20 08:00	04/29/20 03:12
60335359009	**S-SCPC-FB-1**	Water	04/28/20 11:04	04/29/20 03:12
60335359010	**S-DG-3**	Water	04/28/20 10:54	04/29/20 03:12
60335364013	**S-BMW-1S**	Water	04/22/20 14:55	04/24/20 02:40
60335364014	**S-BMW-3S**	Water	04/22/20 13:40	04/24/20 02:40

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

SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60335359003	**S-UG-1A**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359004	**S-UG-2**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359005	**S-DG-1**	EPA 200.7	HKC, JLH	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359006	**S-DG-2**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359007	**S-DG-4**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359008	**S-SCPC-DUP-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359009	**S-SCPC-FB-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335359010	**S-DG-3**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	MJK	3	PASI-K
60335364013	**S-BMW-1S**	EPA 200.7	JLH	7	PASI-K
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	JWR, LDB	3	PASI-K
60335364014	**S-BMW-3S**	EPA 200.7	JLH	7	PASI-K

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

SAMPLE ANALYTE COUNT

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	MGS	1	PASI-K
		SM 2540C	CNB	1	PASI-K
		EPA 300.0	JWR, LDB	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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

ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-UG-1A **Lab ID: 60335359003** Collected: 04/28/20 13:51 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**124**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 15:48	7440-42-8	
Calcium	**138000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 15:48	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 15:48	7439-89-6	
Magnesium	**31700**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 15:48	7439-95-4	
Manganese	**212**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 15:48	7439-96-5	
Potassium	**6040**	ug/L	500	189	1	05/04/20 10:20	05/05/20 15:48	7440-09-7	
Sodium	**15000**	ug/L	500	107	1	05/04/20 10:20	05/05/20 15:48	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**375**	mg/L	20.0	8.4	1		05/07/20 14:06		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**555**	mg/L	10.0	10.0	1		05/01/20 11:46		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**37.9**	mg/L	10.0	3.9	10		05/08/20 18:47	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	0.075	1		05/08/20 18:31	16984-48-8	
Sulfate	**68.5**	mg/L	10.0	2.8	10		05/08/20 18:47	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-UG-2 **Lab ID: 60335359004** Collected: 04/27/20 15:20 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**149**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 15:50	7440-42-8	
Calcium	**104000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 15:50	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 15:50	7439-89-6	
Magnesium	**23700**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 15:50	7439-95-4	
Manganese	**27.1**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 15:50	7439-96-5	
Potassium	**4030**	ug/L	500	189	1	05/04/20 10:20	05/05/20 15:50	7440-09-7	
Sodium	**10400**	ug/L	500	107	1	05/04/20 10:20	05/05/20 15:50	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**315**	mg/L	20.0	8.4	1		05/07/20 13:19		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**430**	mg/L	10.0	10.0	1		04/30/20 15:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.2**	mg/L	1.0	0.39	1		05/08/20 19:04	16887-00-6	
Fluoride	**0.28**	mg/L	0.20	0.075	1		05/08/20 19:04	16984-48-8	
Sulfate	**58.3**	mg/L	5.0	1.4	5		05/08/20 19:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-DG-1 **Lab ID: 60335359005** Collected: 04/28/20 12:34 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**97.2J**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:04	7440-42-8	
Calcium	**120000**	ug/L	200	32.4	1	05/04/20 10:20	05/06/20 10:43	7440-70-2	
Iron	**344**	ug/L	50.0	26.8	1	05/04/20 10:20	05/06/20 10:43	7439-89-6	
Magnesium	**28800**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:04	7439-95-4	
Manganese	**107**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:04	7439-96-5	
Potassium	**4240**	ug/L	500	189	1	05/04/20 10:20	05/06/20 10:43	7440-09-7	
Sodium	**4620**	ug/L	500	107	1	05/04/20 10:20	05/06/20 10:43	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**379**	mg/L	20.0	8.4	1		05/07/20 14:12		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**429**	mg/L	10.0	10.0	1		05/01/20 11:46		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.3**	mg/L	1.0	0.39	1		05/08/20 21:16	16887-00-6	
Fluoride	**0.39**	mg/L	0.20	0.075	1		05/08/20 21:16	16984-48-8	
Sulfate	**27.6**	mg/L	5.0	1.4	5		05/08/20 21:33	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-DG-2 **Lab ID: 60335359006** Collected: 04/28/20 11:45 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**89.4J**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:07	7440-42-8	
Calcium	**118000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 16:07	7440-70-2	
Iron	**82.6**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 16:07	7439-89-6	
Magnesium	**25600**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:07	7439-95-4	
Manganese	**232**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:07	7439-96-5	
Potassium	**5390**	ug/L	500	189	1	05/04/20 10:20	05/05/20 16:07	7440-09-7	
Sodium	**4860**	ug/L	500	107	1	05/04/20 10:20	05/05/20 16:07	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**360**	mg/L	20.0	8.4	1		05/07/20 14:18		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**452**	mg/L	10.0	10.0	1		05/01/20 11:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**7.3**	mg/L	1.0	0.39	1		05/08/20 21:49	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	0.075	1		05/08/20 21:49	16984-48-8	
Sulfate	**32.2**	mg/L	5.0	1.4	5		05/08/20 22:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-DG-4 **Lab ID: 60335359007** Collected: 04/28/20 10:03 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**82.9J**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:09	7440-42-8	
Calcium	**115000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 16:09	7440-70-2	
Iron	**28.4J**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 16:09	7439-89-6	
Magnesium	**32700**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:09	7439-95-4	
Manganese	**103**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:09	7439-96-5	
Potassium	**5900**	ug/L	500	189	1	05/04/20 10:20	05/05/20 16:09	7440-09-7	
Sodium	**23400**	ug/L	500	107	1	05/04/20 10:20	05/05/20 16:09	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**391**	mg/L	20.0	8.4	1		05/07/20 14:24		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**517**	mg/L	10.0	10.0	1		05/01/20 11:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**27.1**	mg/L	5.0	1.9	5		05/08/20 22:39	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	0.075	1		05/08/20 22:22	16984-48-8	
Sulfate	**21.7**	mg/L	5.0	1.4	5		05/08/20 22:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-SCPC-DUP-1 **Lab ID: 60335359008** Collected: 04/28/20 08:00 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**84.8J**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:11	7440-42-8	
Calcium	**119000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 16:11	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 16:11	7439-89-6	
Magnesium	**33400**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:11	7439-95-4	
Manganese	**83.6**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:11	7439-96-5	
Potassium	**6070**	ug/L	500	189	1	05/04/20 10:20	05/05/20 16:11	7440-09-7	
Sodium	**24100**	ug/L	500	107	1	05/04/20 10:20	05/05/20 16:11	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**393**	mg/L	20.0	8.4	1		05/08/20 12:16		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**528**	mg/L	10.0	10.0	1		05/01/20 11:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**27.4**	mg/L	5.0	1.9	5		05/08/20 23:12	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	0.075	1		05/08/20 22:56	16984-48-8	
Sulfate	**21.9**	mg/L	5.0	1.4	5		05/08/20 23:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-SCPC-FB-1 **Lab ID: 60335359009** Collected: 04/28/20 11:04 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<11.7**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:13	7440-42-8	
Calcium	**51.9J**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 16:13	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 16:13	7439-89-6	
Magnesium	**<19.7**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:13	7439-95-4	
Manganese	**<0.97**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:13	7439-96-5	
Potassium	**<189**	ug/L	500	189	1	05/04/20 10:20	05/05/20 16:13	7440-09-7	
Sodium	**<107**	ug/L	500	107	1	05/04/20 10:20	05/05/20 16:13	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<8.4**	mg/L	20.0	8.4	1		05/08/20 12:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**12.0**	mg/L	5.0	5.0	1		05/01/20 11:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.39**	mg/L	1.0	0.39	1		05/08/20 23:29	16887-00-6	
Fluoride	**<0.075**	mg/L	0.20	0.075	1		05/08/20 23:29	16984-48-8	
Sulfate	**<0.28**	mg/L	1.0	0.28	1		05/08/20 23:29	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-DG-3 **Lab ID: 60335359010** Collected: 04/28/20 10:54 Received: 04/29/20 03:12 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**93.1J**	ug/L	100	11.7	1	05/04/20 10:20	05/05/20 16:15	7440-42-8	
Calcium	**134000**	ug/L	200	32.4	1	05/04/20 10:20	05/05/20 16:15	7440-70-2	
Iron	**69.6**	ug/L	50.0	26.8	1	05/04/20 10:20	05/05/20 16:15	7439-89-6	
Magnesium	**28500**	ug/L	50.0	19.7	1	05/04/20 10:20	05/05/20 16:15	7439-95-4	
Manganese	**295**	ug/L	5.0	0.97	1	05/04/20 10:20	05/05/20 16:15	7439-96-5	
Potassium	**5220**	ug/L	500	189	1	05/04/20 10:20	05/05/20 16:15	7440-09-7	
Sodium	**4600**	ug/L	500	107	1	05/04/20 10:20	05/05/20 16:15	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**412**	mg/L	20.0	8.4	1		05/08/20 12:31		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**500**	mg/L	10.0	10.0	1		05/01/20 11:47		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**5.5**	mg/L	1.0	0.39	1		05/09/20 00:35	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.075	1		05/09/20 00:35	16984-48-8	
Sulfate	**52.8**	mg/L	5.0	1.4	5		05/08/20 23:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-BMW-1S **Lab ID: 60335364013** Collected: 04/22/20 14:55 Received: 04/24/20 02:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**114**	ug/L	100	11.7	1	04/29/20 13:20	04/30/20 17:01	7440-42-8	
Calcium	**150000**	ug/L	200	32.4	1	04/29/20 13:20	04/30/20 17:01	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	04/29/20 13:20	04/30/20 17:01	7439-89-6	
Magnesium	**31500**	ug/L	50.0	19.7	1	04/29/20 13:20	04/30/20 17:01	7439-95-4	
Manganese	**434**	ug/L	5.0	0.97	1	04/29/20 13:20	04/30/20 17:01	7439-96-5	
Potassium	**378J**	ug/L	500	189	1	04/29/20 13:20	04/30/20 17:01	7440-09-7	
Sodium	**4980**	ug/L	500	107	1	04/29/20 13:20	04/30/20 17:01	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**438**	mg/L	20.0	8.4	1		05/01/20 15:49		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**565**	mg/L	10.0	10.0	1		04/28/20 14:16		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**8.0**	mg/L	1.0	0.39	1		05/19/20 02:22	16887-00-6	
Fluoride	**0.37**	mg/L	0.20	0.075	1		05/19/20 02:22	16984-48-8	
Sulfate	**27.0**	mg/L	2.0	0.56	2		05/19/20 15:30	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Sample: S-BMW-3S **Lab ID: 60335364014** Collected: 04/22/20 13:40 Received: 04/24/20 02:40 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**95.9J**	ug/L	100	11.7	1	04/29/20 13:20	04/30/20 17:03	7440-42-8	
Calcium	**134000**	ug/L	200	32.4	1	04/29/20 13:20	04/30/20 17:03	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	04/29/20 13:20	04/30/20 17:03	7439-89-6	
Magnesium	**26000**	ug/L	50.0	19.7	1	04/29/20 13:20	04/30/20 17:03	7439-95-4	
Manganese	**318**	ug/L	5.0	0.97	1	04/29/20 13:20	04/30/20 17:03	7439-96-5	
Potassium	**490J**	ug/L	500	189	1	04/29/20 13:20	04/30/20 17:03	7440-09-7	
Sodium	**5470**	ug/L	500	107	1	04/29/20 13:20	04/30/20 17:03	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**395**	mg/L	20.0	8.4	1		05/01/20 15:54		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**472**	mg/L	10.0	10.0	1		04/29/20 09:58		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**13.2**	mg/L	1.0	0.39	1		05/19/20 03:20	16887-00-6	
Fluoride	**0.43**	mg/L	0.20	0.075	1		05/19/20 03:20	16984-48-8	
Sulfate	**29.6**	mg/L	2.0	0.56	2		05/19/20 15:45	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 651902
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335364013, 60335364014

METHOD BLANK: 2644795 Matrix: Water
Associated Lab Samples: 60335364013, 60335364014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	04/30/20 16:27	
Calcium	ug/L	<32.4	200	32.4	04/30/20 16:27	
Iron	ug/L	<26.8	50.0	26.8	04/30/20 16:27	
Magnesium	ug/L	<19.7	50.0	19.7	04/30/20 16:27	
Manganese	ug/L	<0.97	5.0	0.97	04/30/20 16:27	
Potassium	ug/L	<189	500	189	04/30/20 16:27	
Sodium	ug/L	<107	500	107	04/30/20 16:27	

LABORATORY CONTROL SAMPLE: 2644796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	1000	100	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	9960	100	85-115	
Magnesium	ug/L	10000	10500	105	85-115	
Manganese	ug/L	1000	1020	102	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10300	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2644797 2644798

Parameter	Units	60335364006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	1030	1000	1000	2080	2060	106	103	70-130	1	20	
Calcium	ug/L	83300	10000	10000	94300	93000	109	96	70-130	1	20	
Iron	ug/L	<26.8	10000	10000	10200	10100	102	101	70-130	1	20	
Magnesium	ug/L	20800	10000	10000	31800	31500	110	107	70-130	1	20	
Manganese	ug/L	64.9	1000	1000	1100	1090	104	102	70-130	1	20	
Potassium	ug/L	6980	10000	10000	17400	17200	104	102	70-130	1	20	
Sodium	ug/L	24300	10000	10000	34900	34500	106	102	70-130	1	20	

MATRIX SPIKE SAMPLE: 2644799

Parameter	Units	60335364014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	95.9J	1000	1100	101	70-130	
Calcium	ug/L	134000	10000	145000	109	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

MATRIX SPIKE SAMPLE: 2644799

Parameter	Units	60335364014 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	<26.8	10000	9910	99	70-130	
Magnesium	ug/L	26000	10000	36400	105	70-130	
Manganese	ug/L	318	1000	1330	102	70-130	
Potassium	ug/L	490J	10000	10600	101	70-130	
Sodium	ug/L	5470	10000	15700	103	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 652405
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

METHOD BLANK: 2646770 Matrix: Water
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	05/05/20 15:22	
Calcium	ug/L	<32.4	200	32.4	05/05/20 15:22	
Iron	ug/L	<26.8	50.0	26.8	05/05/20 15:22	
Magnesium	ug/L	<19.7	50.0	19.7	05/05/20 15:22	
Manganese	ug/L	<0.97	5.0	0.97	05/05/20 15:22	
Potassium	ug/L	<189	500	189	05/05/20 15:22	
Sodium	ug/L	307J	500	107	05/05/20 15:22	

LABORATORY CONTROL SAMPLE: 2646771

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	992	99	85-115	
Calcium	ug/L	10000	10200	102	85-115	
Iron	ug/L	10000	10200	102	85-115	
Magnesium	ug/L	10000	10200	102	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	10100	101	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2646772 2646773

Parameter	Units	60335360003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	72.3J	1000	1000	1080	1070	101	100	70-130	1	20	
Calcium	ug/L	111000	10000	10000	121000	123000	98	114	70-130	1	20	
Iron	ug/L	<26.8	10000	10000	9930	9940	99	99	70-130	0	20	
Magnesium	ug/L	20500	10000	10000	30500	30400	100	99	70-130	0	20	
Manganese	ug/L	18.3	1000	1000	1020	1010	100	99	70-130	2	20	
Potassium	ug/L	5760	10000	10000	15800	15900	100	102	70-130	1	20	
Sodium	ug/L	3130	10000	10000	13300	13200	101	101	70-130	1	20	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2646774 2646775

Parameter	Units	60335359004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	149	1000	1000	1150	1140	100	99	70-130	1	20	
Calcium	ug/L	104000	10000	10000	113000	113000	83	88	70-130	0	20	
Iron	ug/L	<26.8	10000	10000	9700	9820	97	98	70-130	1	20	
Magnesium	ug/L	23700	10000	10000	33600	33400	98	96	70-130	1	20	
Manganese	ug/L	27.1	1000	1000	1020	1000	99	98	70-130	1	20	
Potassium	ug/L	4030	10000	10000	13900	14000	98	100	70-130	1	20	
Sodium	ug/L	10400	10000	10000	20300	20300	100	100	70-130	0	20	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 652429
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335364013, 60335364014

METHOD BLANK: 2646871 Matrix: Water
Associated Lab Samples: 60335364013, 60335364014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	05/01/20 14:04	

LABORATORY CONTROL SAMPLE: 2646872

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	513	103	90-110	

SAMPLE DUPLICATE: 2646873

Parameter	Units	60335791001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	271	280	3	10	

SAMPLE DUPLICATE: 2646874

Parameter	Units	60335363001 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	350	345	1	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 653258 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007

METHOD BLANK: 2649872 Matrix: Water
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	05/07/20 11:53	

LABORATORY CONTROL SAMPLE: 2649873

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	500	100	90-110	

SAMPLE DUPLICATE: 2649874

Parameter	Units	60335361003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	459	439	5	10	

SAMPLE DUPLICATE: 2649875

Parameter	Units	60335359004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	315	333	6	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 653471 | Analysis Method: SM 2320B
QC Batch Method: SM 2320B | Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335359008, 60335359009, 60335359010

METHOD BLANK: 2650887 Matrix: Water
Associated Lab Samples: 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	05/08/20 12:04	

LABORATORY CONTROL SAMPLE: 2650888

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	503	101	90-110	

SAMPLE DUPLICATE: 2650889

Parameter	Units	60335359008 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	393	394	0	10	

SAMPLE DUPLICATE: 2650890

Parameter	Units	60335877011 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	244	240	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 651545
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335364013

METHOD BLANK: 2643651 Matrix: Water
Associated Lab Samples: 60335364013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/28/20 14:10	

LABORATORY CONTROL SAMPLE: 2643652

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	995	100	80-120	

SAMPLE DUPLICATE: 2643653

Parameter	Units	60335395021 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	178	178	0	10	

SAMPLE DUPLICATE: 2643654

Parameter	Units	60335247005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	213	216	1	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 651780
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335364014

METHOD BLANK: 2644351 Matrix: Water
Associated Lab Samples: 60335364014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/29/20 09:57	

LABORATORY CONTROL SAMPLE: 2644352

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	993	99	80-120	

SAMPLE DUPLICATE: 2644353

Parameter	Units	60335364014 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	472	471	0	10	

SAMPLE DUPLICATE: 2644354

Parameter	Units	60335364006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	412	420	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 652118
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City

Associated Lab Samples: 60335359004

METHOD BLANK: 2645590 Matrix: Water
Associated Lab Samples: 60335359004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	04/30/20 15:16	

LABORATORY CONTROL SAMPLE: 2645591

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	993	99	80-120	

SAMPLE DUPLICATE: 2645592

Parameter	Units	60335361003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	576	588	2	10	

SAMPLE DUPLICATE: 2645593

Parameter	Units	60335359004 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	430	428	0	10	

SAMPLE DUPLICATE: 2645594

Parameter	Units	60335571008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1370	1390	2	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 652392 | Analysis Method: SM 2540C
QC Batch Method: SM 2540C | Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335359003, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

METHOD BLANK: 2646704 Matrix: Water
Associated Lab Samples: 60335359003, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	05/01/20 11:45	

LABORATORY CONTROL SAMPLE: 2646705

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

SAMPLE DUPLICATE: 2646706

Parameter	Units	60335363005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1370	1360	1	10	

SAMPLE DUPLICATE: 2646707

Parameter	Units	60335359006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	452	476	5	10	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 653569
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

METHOD BLANK: 2651339 Matrix: Water
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/08/20 09:30	
Fluoride	mg/L	<0.075	0.20	0.075	05/08/20 09:30	
Sulfate	mg/L	<0.28	1.0	0.28	05/08/20 09:30	

METHOD BLANK: 2652710 Matrix: Water
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/11/20 09:21	
Fluoride	mg/L	<0.075	0.20	0.075	05/11/20 09:21	
Sulfate	mg/L	<0.28	1.0	0.28	05/11/20 09:21	

METHOD BLANK: 2653309 Matrix: Water
Associated Lab Samples: 60335359003, 60335359004, 60335359005, 60335359006, 60335359007, 60335359008, 60335359009, 60335359010

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/12/20 09:16	
Fluoride	mg/L	<0.075	0.20	0.075	05/12/20 09:16	
Sulfate	mg/L	<0.28	1.0	0.28	05/12/20 09:16	

LABORATORY CONTROL SAMPLE: 2651340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	93	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.9	97	90-110	

LABORATORY CONTROL SAMPLE: 2652711

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.6	92	90-110	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

LABORATORY CONTROL SAMPLE: 2652711

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Fluoride	mg/L	2.5	2.4	94	90-110	
Sulfate	mg/L	5	4.9	98	90-110	

LABORATORY CONTROL SAMPLE: 2653310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.5	91	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2651341 2651342

Parameter	Units	60335360003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.5	5	5	6.0	6.1	89	92	80-120	2	15	
Fluoride	mg/L	0.40	2.5	2.5	2.9	2.9	99	100	80-120	2	15	
Sulfate	mg/L	33.8	25	25	58.2	58.1	98	97	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2651343 2651344

Parameter	Units	60335359004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.2	5	5	10.1	10.2	98	99	80-120	1	15	
Fluoride	mg/L	0.28	2.5	2.5	2.7	2.8	98	99	80-120	1	15	
Sulfate	mg/L	58.3	25	25	83.0	82.3	99	96	80-120	1	15	

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QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

QC Batch: 655383
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60335364013, 60335364014

METHOD BLANK: 2658521 Matrix: Water
Associated Lab Samples: 60335364013, 60335364014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/18/20 11:43	
Fluoride	mg/L	<0.075	0.20	0.075	05/18/20 11:43	
Sulfate	mg/L	<0.28	1.0	0.28	05/18/20 11:43	

METHOD BLANK: 2659286 Matrix: Water
Associated Lab Samples: 60335364013, 60335364014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	05/19/20 09:16	
Fluoride	mg/L	<0.075	0.20	0.075	05/19/20 09:16	
Sulfate	mg/L	<0.28	1.0	0.28	05/19/20 09:16	

LABORATORY CONTROL SAMPLE: 2658522

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	5.0	101	90-110	
Fluoride	mg/L	2.5	2.4	95	90-110	
Sulfate	mg/L	5	5.4	108	90-110	

LABORATORY CONTROL SAMPLE: 2659287

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.7	94	90-110	
Fluoride	mg/L	2.5	2.3	93	90-110	
Sulfate	mg/L	5	4.8	96	90-110	

MATRIX SPIKE SAMPLE: 2658523

Parameter	Units	60335416011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5.8	250	963	383	80-120	M1
Fluoride	mg/L	0.50	125	139	111	80-120	
Sulfate	mg/L	8.8	250	359	140	80-120	M1

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

QUALITY CONTROL DATA

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2658524 2658525

Parameter	Units	60335364006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	20.4	10	10	31.0	31.8	106	114	80-120	3	15	
Fluoride	mg/L	0.44	2.5	2.5	2.8	2.9	95	97	80-120	2	15	
Sulfate	mg/L	106	50	50	153	160	95	110	80-120	5	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

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

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SIOUX ENERGY CTR SCPC
Pace Project No.: 60335359

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60335364013	**S-BMW-1S**	EPA 200.7	651902	EPA 200.7	651984
60335364014	**S-BMW-3S**	EPA 200.7	651902	EPA 200.7	651984
60335359003	**S-UG-1A**	EPA 200.7	652405	EPA 200.7	652604
60335359004	**S-UG-2**	EPA 200.7	652405	EPA 200.7	652604
60335359005	**S-DG-1**	EPA 200.7	652405	EPA 200.7	652604
60335359006	**S-DG-2**	EPA 200.7	652405	EPA 200.7	652604
60335359007	**S-DG-4**	EPA 200.7	652405	EPA 200.7	652604
60335359008	**S-SCPC-DUP-1**	EPA 200.7	652405	EPA 200.7	652604
60335359009	**S-SCPC-FB-1**	EPA 200.7	652405	EPA 200.7	652604
60335359010	**S-DG-3**	EPA 200.7	652405	EPA 200.7	652604
60335364013	**S-BMW-1S**	SM 2320B	652429		
60335364014	**S-BMW-3S**	SM 2320B	652429		
60335359003	**S-UG-1A**	SM 2320B	653258		
60335359004	**S-UG-2**	SM 2320B	653258		
60335359005	**S-DG-1**	SM 2320B	653258		
60335359006	**S-DG-2**	SM 2320B	653258		
60335359007	**S-DG-4**	SM 2320B	653258		
60335359008	**S-SCPC-DUP-1**	SM 2320B	653471		
60335359009	**S-SCPC-FB-1**	SM 2320B	653471		
60335359010	**S-DG-3**	SM 2320B	653471		
60335364013	**S-BMW-1S**	SM 2540C	651545		
60335364014	**S-BMW-3S**	SM 2540C	651780		
60335359003	**S-UG-1A**	SM 2540C	652392		
60335359004	**S-UG-2**	SM 2540C	652118		
60335359005	**S-DG-1**	SM 2540C	652392		
60335359006	**S-DG-2**	SM 2540C	652392		
60335359007	**S-DG-4**	SM 2540C	652392		
60335359008	**S-SCPC-DUP-1**	SM 2540C	652392		
60335359009	**S-SCPC-FB-1**	SM 2540C	652392		
60335359010	**S-DG-3**	SM 2540C	652392		
60335364013	**S-BMW-1S**	EPA 300.0	655383		
60335364014	**S-BMW-3S**	EPA 300.0	655383		
60335359003	**S-UG-1A**	EPA 300.0	653569		
60335359004	**S-UG-2**	EPA 300.0	653569		
60335359005	**S-DG-1**	EPA 300.0	653569		
60335359006	**S-DG-2**	EPA 300.0	653569		
60335359007	**S-DG-4**	EPA 300.0	653569		
60335359008	**S-SCPC-DUP-1**	EPA 300.0	653569		
60335359009	**S-SCPC-FB-1**	EPA 300.0	653569		
60335359010	**S-DG-3**	EPA 300.0	653569		

REPORT OF LABORATORY ANALYSIS

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60335359

60335359

Client Name: Golder Assoc

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

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

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

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

Thermometer Used: T-296 **Type of Ice:** Wet Blue None

Cooler Temperature (°C): As-read 2.0, 18.2 Corr. Factor +0.1 Corrected 2.1, 18.3

Date and initials of person examining contents: 4/24/20

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☑No ☐N/A	
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☑No ☐N/A	
Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Lot # 603173	☑Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☑N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☑N/A	
Samples from USDA Regulated Area: State	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jami Church 4/24/20 Date

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman
Purchase Order No.:	COC #10
Project Name:	Ameren Sioux Energy Center SCPC
Project Number:	153140602.0003D

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates Inc
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285, line 3

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

Valid Matrix Codes

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Chloride/Fluoride/Sulfate	App III and Cat/An Metals*	Alkalinity	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
				DATE	TIME	DATE	TIME											Y/N	N	N	N	N		60135359
1	S-UG-1A	WT	G																					
2	S-UG-2	WT	G																					
3	S-DG-1	WT	G																					
4	S-DG-2	WT	G																					
5	S-DG-4	WT	G																					
6	S-SCPC-DUP-1	WT	G																					
7	S-SCPC-FB-1	WT	G																					
8	S-SCPC-MS-1	WT	G																					
9	S-SCPC-MSD-1	WT	G																					
10	S-BMW-1S	WT	G			4/22/20	1455		2	1		1							X	X	X	X		
11	S-BMW-3S	WT	G			"	1340		"	"		"							"	"	"	"		
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
App III and Cat/An Metals - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	[signature] / Golder	4/23/20	1800	EBrackett / Pace	4/24/20	0240	2.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schnieder

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 04/23/20

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

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

Pace Analytical www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60335359

60335359

Client Name: Golder Assoc

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

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

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ Zplc

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

Cooler Temperature (°C): As-read 0.5 Corr. Factor +0.1 Corrected 0.6

Date and initials of person examining contents: 4-29-20 WP

Temperature should be above freezing to 6°C 21.4, 20.2, 0.6, 0.8, 0.1, 1.4 21.5, 20.3, 0.7, 0.9, 0.2, 1.5

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	All coolers out of temp had only Radium
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO3, H2SO4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) Lot # 609173	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jami Church 4/29/20 Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Eric Schnieder, Ryan Feldman
Purchase Order No.:	COC #10
Project Name:	Ameren Sioux Energy Center SCPC
Project Number:	153140602.0003D

Section C Invoice Information:

Attention:	
Company Name:	Golder Associates Inc
Address:	
Pace Quote Reference:	
Pace Project Manager:	Jamie Church
Pace Profile #:	9285, line 3

REGULATORY AGENCY

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

Site Location STATE: MO

Section D Required Client Information

Valid Matrix Codes

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: N	N	N	N	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Chloride/Fluoride/Sulfate	App III and Cat/An Metals*	Alkalinity	TDS		60555359
1	S-UG-1A	WT	G			4/28/20	1351		2	1		1						X	X	X	X		
2	S-UG-2	WT	G			4/27/20	1520		2	1		1						X	X	X	X		
3	S-DG-1	WT	G			4/28/20	1234		2	1		1						X	X	X	X		
4	S-DG-2	WT	G			4/28/20	1145		2	1		1						X	X	X	X		
5	S-DG-4	WT	G			4/28/20	1003		2	1		1						X	X	X	X		
6	S-SCPC-DUP-1	WT	G			4/28/20	[redacted]		2	1		1						X	X	X	X		
7	S-SCPC-FB-1	WT	G			4/28/20	1104		2	1		1						X	X	X	X		
8	S-SCPC-MS-1	WT	G			4/27/20	1520		1	1		1						1	1	1	1		S-SCPC-MS-1-UG-2
9	S-SCPC-MSD-1	WT	G			1	1		1	1		1						1	1	1	1		S-SCPC-MSD-1-UG-2
10	S-BMW-1S	WT	G																				
11	S-BMW-3S	WT	G																				
12	S-DG-3	WT	G			4/28/20	1054		2	1		1						X	X	X	X		

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
App III and Cat/An Metals - EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	[signature] Golder	4/28/20	1600	[signature]	4/28/20	1600
	[signature]	4/28/20	1700	[signature] Lzipf Mgs	4/29/20	0312

SAMPLE CONDITIONS			
Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
1.5 0.2	Y	N	Y
0.6			
2.1 2.0.3			
0.0 0.9			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schnieder

SIGNATURE of SAMPLER: [signature]

DATE Signed (MM/DD/YY): 04/28/20

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

MEMORANDUM

DATE July 1, 2020 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCPC – DETECTION MONITORING - DATA PACKAGE 60335359

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

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

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260,
Ballwin, Missouri, USA 63021

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates Inc.
Project Manager: J. Ingram
Project Name: Ameren - SEC - SCPC
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 06/25/2020

Laboratory: Pace Analytical
SDG #: 60335359
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2320B (Alkalinity); SM2540C (TDS); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-UG-1A, S-UG-2, S-DG-1, S-DG-2, S-DG-4, -S-SCPC-DUP-1, S-SCPC-FB-1, S-DG-3, S-BMW-1S, S-BMW-3S

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			04/22 - 04/28/2020
b) Sampling team indicated?	x			
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?	x			S-SCPC-DUP-1 @ S-DG-4
b) Were field dup. precision criteria met (note RPD)?		x		See Notes
c) Were lab duplicates analyzed (note original and duplicate samples)?	x			
d) Were lab dup. precision criteria met (note RPD)?	x			

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

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

Comments/Notes:

Some coolers were outside of temperature limits, however they contained only Radium samples.

Chloride and Sulfate were diluted in several samples, no qualification necessary.

MB: 2646770: Sodium (307 J), associated with samples -59003 through 59010, detections are > RL or non-detect, no qualification necessary.

FB: S-SCPC-FB-1 @ S-DG-3: Calcium (51.9 J), TDS (12.0), detections in sample > 10x the blank result, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

DUP: S-SCPC-DUP-1: RPD limit (>20%) exceeded for Manganese, Iron detected in sample and non-detect in DUP.

MS/MSD: 2658523: MS % recovery exceeded limits for Chloride and Sulfate, associated with sample 60335416011 (unrelated sample).

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-DG-4	Manganese	103	J	DUP RPD exceeds limit
S-DG-4	Iron	28.4	J	Detected in sample, non-detect in DUP
S-SCPC-DUP-1	Manganese	83.6	J	DUP RPD exceeds limit
S-SCPC-DUP-1	Iron	26.8	UJ	Detected in sample, non-detect in DUP

Signature: Ann Muhlfarth Date: 06/25/2020

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

June 26, 2020

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on June 19, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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SAMPLE SUMMARY

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60340574001	**S-DG-1**	Water	06/17/20 09:55	06/19/20 04:22
60340574004	**S-DG-4**	Water	06/17/20 11:00	06/19/20 04:22
60340574005	**S-SCPC-DUP-1**	Water	06/17/20 08:00	06/19/20 04:22
60340574006	**S-UG-1A**	Water	06/17/20 14:30	06/19/20 04:22
60340574007	**S-SCPC-FB-1**	Water	06/17/20 14:46	06/19/20 04:22

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SAMPLE ANALYTE COUNT

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60340574001	**S-DG-1**	EPA 300.0	JWR	1	PASI-K
60340574004	**S-DG-4**	EPA 300.0	JWR	1	PASI-K
60340574005	**S-SCPC-DUP-1**	EPA 300.0	JWR	1	PASI-K
60340574006	**S-UG-1A**	EPA 300.0	JWR	1	PASI-K
60340574007	**S-SCPC-FB-1**	EPA 300.0	JWR	1	PASI-K

PASI-K = Pace Analytical Services - Kansas City

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Sample: S-DG-1 **Lab ID: 60340574001** Collected: 06/17/20 09:55 Received: 06/19/20 04:22 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.37**	mg/L	0.20	0.075	1		06/23/20 16:28	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Sample: S-DG-4 **Lab ID: 60340574004** Collected: 06/17/20 11:00 Received: 06/19/20 04:22 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.41**	mg/L	0.20	0.075	1		06/23/20 17:50	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Sample: S-SCPC-DUP-1 **Lab ID: 60340574005** Collected: 06/17/20 08:00 Received: 06/19/20 04:22 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.41**	mg/L	0.20	0.075	1		06/23/20 18:07	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Sample: S-UG-1A **Lab ID: 60340574006** Collected: 06/17/20 14:30 Received: 06/19/20 04:22 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**0.36**	mg/L	0.20	0.075	1		06/23/20 18:24	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Sample: S-SCPC-FB-1 **Lab ID: 60340574007** Collected: 06/17/20 14:46 Received: 06/19/20 04:22 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Fluoride	**<0.075**	mg/L	0.20	0.075	1		06/23/20 18:40	16984-48-8	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

QC Batch: 661608
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60340574001, 60340574004, 60340574005, 60340574006, 60340574007

METHOD BLANK: 2682113 Matrix: Water
Associated Lab Samples: 60340574001, 60340574004, 60340574005, 60340574006, 60340574007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	06/23/20 09:24	

METHOD BLANK: 2684011 Matrix: Water
Associated Lab Samples: 60340574001, 60340574004, 60340574005, 60340574006, 60340574007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Fluoride	mg/L	<0.075	0.20	0.075	06/24/20 17:55	

LABORATORY CONTROL SAMPLE: 2682114

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

LABORATORY CONTROL SAMPLE: 2684012

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

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2682115 2682116

Parameter	Units	60340572001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.61J	12.5	12.5	13.3	13.3	101	101	80-120	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2682117 2682118

Parameter	Units	60340573001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.38	2.5	2.5	2.8	2.9	96	101	80-120	5	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2682119 2682120

Parameter	Units	60340574001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Fluoride	mg/L	0.37	2.5	2.5	2.8	2.8	97	98	80-120	2	15	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SCPC-VS
Pace Project No.: 60340574

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60340574001	**S-DG-1**	EPA 300.0	661608		
60340574004	**S-DG-4**	EPA 300.0	661608		
60340574005	**S-SCPC-DUP-1**	EPA 300.0	661608		
60340574006	**S-UG-1A**	EPA 300.0	661608		
60340574007	**S-SCPC-FB-1**	EPA 300.0	661608		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60340574

60340574

Client Name: Golder Associates

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

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

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

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

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

Cooler Temperature (°C): As-read 09.0 Corr. Factor +0.1 Corrected 10.1

Date and initials of person examining contents: 20192041216

Temperature should be above freezing to 6°C

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

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: Jami Church Date: 6/22/20

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	Golder Associates	Report To:	Jeffrey Ingram	Attention:	
Address:	13515 Barrett Parkway Drive, Ste 260	Copy To:	Ryan Feldmann/Eric Schneider	Company Name:	
	Ballwin, MO 63021			Address:	
Email To:	jeffrey_ingram@golder.com	Purchase Order No.:		Pace Quote Reference	
Phone: 636-724-9191	Fax: 636-724-9323	Project Name:	Ameren SCPC - VS	Pace Project Manager:	Jamie Church
Requested Due Date/TAT:	Standard	Project Number:	153140602	Pace Profile #:	9285

REGULATORY AGENCY: NPDES | GROUND WATER | DRINKING WATER | UST | RCRA | OTHER

Site Location STATE: MO

Requested Analysis Filtered (Y/N)

Valid Matrix Codes: DRINKING WATER DW; WATER WT; WASTE WATER WW; PRODUCT P; SOIL/SOLID SL; OIL OL; WP; AR; OT; TS

ITEM #	Section D Required Client Information: SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	200.7 Calcium	Fluoride	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 00340574
1	S-D6-1	WT	G			6/17/20	0955		1	1								N	N	N	N			
2	S-SCPC-MS-1	WT	G						1	1														S-D6-1-MS-1
3	S-SCPC-MSD-1	WT	G						1	1														S-D6-1-MSD-1
4	S-D6-4	WT	G				1100		1	1														
5	~~S-DUP~~ S-SCPC-DUP-1	WT	G				—		1	1														
6	S-U6-1R	WT	G				1230		1	1														
7	S-SCPC-FB-1	WT	G				1245		1	1														
8		WT	G																					
9		WT	G																					
10		WT	G																					
11		WT	G																					
12		WT	G																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	Golder	06/18/20	1320	Angela McManus	6/18/20	1325				
	Angela McM	6/18/20	1325	Miller/Pace	6/18/20	0822	1.0	Y	Y	Y
							0.7	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 06/18/20

MEMORANDUM

DATE July 1, 2020 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SCPC-VS – VERIFICATION SAMPLING - DATA PACKAGE 60340574

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

- None.

Golder Associates Inc.
13515 Barrett Parkway Drive, Suite 260,
Ballwin, Missouri, USA 63021

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates Inc.
Project Manager: J. Ingram
Project Name: Ameren - SEC - SCPC-VS
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 06/30/2020

Laboratory: Pace Analytical
SDG #: 60340574
Analytical Method (type and no.): EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-DG-1, S-DG-4, S-SCPC-DUP-1, S-UG-1A, S-SCPC-FB-1

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			06/17/2020
b) Sampling team indicated?				
c) Sample location noted?	x			
d) Sample depth indicated (Soils)?			x	
e) Sample type indicated (grab/composite)?	x			Grab
f) Field QC noted?	x			See Notes
g) Field parameters collected (note types)?	x			pH, Sp.Cond, ORP, Temp, DO, Turb
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Blanks	**YES**	**NO**	**NA**	**COMMENTS**
a) Were analytes detected in the method blank(s)?	☐	☒	☐	
b) Were analytes detected in the field blank(s)?	☐	☒	☐	
c) Were analytes detected in the equipment blank(s)?	☐	☐	☒	
d) Were analytes detected in the trip blank(s)?	☐	☐	☒	

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

Duplicates	**YES**	**NO**	**NA**	**COMMENTS**
a) Were field duplicates collected (note original and duplicate sample names)?	☒	☐	☐	S-SCPC-DUP-1 @ S-DG-4
b) Were field dup. precision criteria met (note RPD)?	☒	☐	☐	
c) Were lab duplicates analyzed (note original and duplicate samples)?	☐	☒	☐	
d) Were lab dup. precision criteria met (note RPD)?	☐	☐	☒	

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

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

Comments/Notes:

FB: S-SCPC-FB-1 @ S-UG-1A

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason

Signature: _____ Ann Muhlfeith _____ Date: 06/30/2020

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

December 28, 2020

Jeffrey Ingram
Golder Associates
13515 Barrett Parkway Drive
Suite 260
Ballwin, MO 63021

RE: Project: AMEREN SCPC
Pace Project No.: 60354704

Dear Jeffrey Ingram:

Enclosed are the analytical results for sample(s) received by the laboratory on November 18, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

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

- Pace Analytical Services - Kansas City

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

Sincerely,

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

Enclosures

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

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

CERTIFICATIONS

Project: AMEREN SCPC
Pace Project No.: 60354704

Pace Analytical Services Kansas
9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Inorganic Drinking Water Certification #: 10090
Arkansas Drinking Water
Arkansas Certification #: 20-020-0
Arkansas Drinking Water
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212020-2
Oklahoma Certification #: 9205/9935
Florida: Cert E871149 SEKS WET
Texas Certification #: T104704407-19-12
Utah Certification #: KS000212019-9
Illinois Certification #: 004592
Kansas Field Laboratory Accreditation: # E-92587
Missouri SEKS Micro Certification: 10070

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

SAMPLE SUMMARY

Project: AMEREN SCPC
Pace Project No.: 60354704

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60354704001	**S-UG-1A**	Water	11/17/20 13:40	11/18/20 04:15
60354704002	**S-UG-2**	Water	11/17/20 14:55	11/18/20 04:15
60354704003	**S-DG-1**	Water	11/17/20 12:45	11/18/20 04:15
60354704004	**S-DG-2**	Water	11/17/20 11:58	11/18/20 04:15
60354704005	**S-DG-3**	Water	11/17/20 11:10	11/18/20 04:15
60354704006	**S-DG-4**	Water	11/17/20 14:33	11/18/20 04:15
60354704007	**S-SCPC-DUP-1**	Water	11/17/20 08:00	11/18/20 04:15
60354704008	**S-SCPC-FB-1**	Water	11/17/20 11:55	11/18/20 04:15
60354369018	**S-BMW-1S**	Water	11/16/20 14:50	11/18/20 04:15
60354369011	**S-BMW-3S**	Water	11/16/20 12:20	11/18/20 04:15

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SAMPLE ANALYTE COUNT

Project: AMEREN SCPC
Pace Project No.: 60354704

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60354704001	**S-UG-1A**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704002	**S-UG-2**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704003	**S-DG-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704004	**S-DG-2**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704005	**S-DG-3**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704006	**S-DG-4**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704007	**S-SCPC-DUP-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354704008	**S-SCPC-FB-1**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354369018	**S-BMW-1S**	EPA 200.7	HKC	7	PASI-K
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K
60354369011	**S-BMW-3S**	EPA 200.7	HKC	7	PASI-K

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SAMPLE ANALYTE COUNT

Project: AMEREN SCPC
Pace Project No.: 60354704

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		SM 2320B	BLA	1	PASI-K
		SM 2540C	MAP	1	PASI-K
		EPA 300.0	CRN2	3	PASI-K

PASI-K = Pace Analytical Services - Kansas City

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-UG-1A **Lab ID: 60354704001** Collected: 11/17/20 13:40 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**148**	ug/L	100	11.7	1	12/06/20 12:00	12/08/20 20:03	7440-42-8	
Calcium	**139000**	ug/L	200	32.4	1	12/06/20 12:00	12/08/20 20:03	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	12/06/20 12:00	12/08/20 20:03	7439-89-6	
Magnesium	**33400**	ug/L	50.0	19.7	1	12/06/20 12:00	12/08/20 20:03	7439-95-4	
Manganese	**323**	ug/L	5.0	0.97	1	12/06/20 12:00	12/08/20 20:03	7439-96-5	
Potassium	**10600**	ug/L	500	189	1	12/06/20 12:00	12/08/20 20:03	7440-09-7	
Sodium	**35700**	ug/L	500	107	1	12/06/20 12:00	12/08/20 20:03	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**403**	mg/L	20.0	8.4	1		11/23/20 13:03		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**642**	mg/L	10.0	10.0	1		11/19/20 08:36		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**87.2**	mg/L	10.0	3.9	10		12/08/20 04:13	16887-00-6	
Fluoride	**0.30**	mg/L	0.20	0.075	1		12/08/20 03:58	16984-48-8	
Sulfate	**48.5**	mg/L	10.0	2.8	10		12/08/20 04:13	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-UG-2 **Lab ID: 60354704002** Collected: 11/17/20 14:55 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**149**	ug/L	100	11.7	1	12/06/20 12:00	12/10/20 12:00	7440-42-8	
Calcium	**108000**	ug/L	200	32.4	1	12/06/20 12:00	12/10/20 12:00	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	12/06/20 12:00	12/10/20 12:00	7439-89-6	
Magnesium	**24600**	ug/L	50.0	19.7	1	12/06/20 12:00	12/10/20 12:00	7439-95-4	
Manganese	**190**	ug/L	5.0	0.97	1	12/06/20 12:00	12/10/20 12:00	7439-96-5	
Potassium	**4820**	ug/L	500	189	1	12/06/20 12:00	12/10/20 12:00	7440-09-7	
Sodium	**30600**	ug/L	500	107	1	12/06/20 12:00	12/10/20 12:00	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**315**	mg/L	20.0	8.4	1		11/23/20 13:08		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**448**	mg/L	10.0	10.0	1		11/19/20 08:36		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**20.6**	mg/L	5.0	1.9	5		12/08/20 04:42	16887-00-6	
Fluoride	**0.24**	mg/L	0.20	0.075	1		12/08/20 04:27	16984-48-8	
Sulfate	**47.9**	mg/L	5.0	1.4	5		12/08/20 04:42	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-DG-1 **Lab ID: 60354704003** Collected: 11/17/20 12:45 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**80.9J**	ug/L	100	11.7	1	12/06/20 12:00	12/10/20 12:03	7440-42-8	
Calcium	**119000**	ug/L	200	32.4	1	12/06/20 12:00	12/10/20 12:03	7440-70-2	
Iron	**275**	ug/L	50.0	26.8	1	12/06/20 12:00	12/10/20 12:03	7439-89-6	
Magnesium	**29200**	ug/L	50.0	19.7	1	12/06/20 12:00	12/10/20 12:03	7439-95-4	
Manganese	**100**	ug/L	5.0	0.97	1	12/06/20 12:00	12/10/20 12:03	7439-96-5	
Potassium	**3660**	ug/L	500	189	1	12/06/20 12:00	12/10/20 12:03	7440-09-7	
Sodium	**3730**	ug/L	500	107	1	12/06/20 12:00	12/10/20 12:03	7440-23-5	B
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**394**	mg/L	20.0	8.4	1		11/23/20 13:14		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**441**	mg/L	10.0	10.0	1		11/19/20 08:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**1.3**	mg/L	1.0	0.39	1		12/08/20 04:56	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	0.075	1		12/08/20 04:56	16984-48-8	
Sulfate	**11.0**	mg/L	1.0	0.28	1		12/08/20 04:56	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-DG-2 **Lab ID: 60354704004** Collected: 11/17/20 11:58 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**83.4J**	ug/L	100	11.7	1	12/06/20 11:13	12/08/20 15:55	7440-42-8	
Calcium	**145000**	ug/L	200	32.4	1	12/06/20 11:13	12/08/20 15:55	7440-70-2	
Iron	**63.8**	ug/L	50.0	26.8	1	12/06/20 11:13	12/08/20 15:55	7439-89-6	
Magnesium	**28400**	ug/L	50.0	19.7	1	12/06/20 11:13	12/08/20 15:55	7439-95-4	
Manganese	**402**	ug/L	5.0	0.97	1	12/06/20 11:13	12/08/20 15:55	7439-96-5	
Potassium	**6020**	ug/L	500	189	1	12/06/20 11:13	12/08/20 15:55	7440-09-7	
Sodium	**4540**	ug/L	500	107	1	12/06/20 11:13	12/08/20 15:55	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**410**	mg/L	20.0	8.4	1		11/23/20 13:20		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**546**	mg/L	10.0	10.0	1		11/19/20 08:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.1**	mg/L	1.0	0.39	1		12/08/20 05:25	16887-00-6	
Fluoride	**0.35**	mg/L	0.20	0.075	1		12/08/20 05:25	16984-48-8	
Sulfate	**28.7**	mg/L	5.0	1.4	5		12/08/20 05:40	14808-79-8	

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-DG-3 **Lab ID: 60354704005** Collected: 11/17/20 11:10 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**90.6J**	ug/L	100	11.7	1	12/06/20 11:13	12/08/20 15:57	7440-42-8	
Calcium	**160000**	ug/L	200	32.4	1	12/06/20 11:13	12/08/20 15:57	7440-70-2	
Iron	**341**	ug/L	50.0	26.8	1	12/06/20 11:13	12/08/20 15:57	7439-89-6	
Magnesium	**38400**	ug/L	50.0	19.7	1	12/06/20 11:13	12/08/20 15:57	7439-95-4	
Manganese	**885**	ug/L	5.0	0.97	1	12/06/20 11:13	12/08/20 15:57	7439-96-5	
Potassium	**6580**	ug/L	500	189	1	12/06/20 11:13	12/08/20 15:57	7440-09-7	
Sodium	**5540**	ug/L	500	107	1	12/06/20 11:13	12/08/20 15:57	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**451**	mg/L	20.0	8.4	1		11/23/20 13:26		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**598**	mg/L	10.0	10.0	1		11/19/20 08:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.8**	mg/L	1.0	0.39	1		12/08/20 05:55	16887-00-6	
Fluoride	**0.42**	mg/L	0.20	0.075	1		12/08/20 05:55	16984-48-8	
Sulfate	**41.0**	mg/L	5.0	1.4	5		12/08/20 06:09	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-DG-4 **Lab ID: 60354704006** Collected: 11/17/20 14:33 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**77.4J**	ug/L	100	11.7	1	12/06/20 11:13	12/08/20 16:00	7440-42-8	
Calcium	**132000**	ug/L	200	32.4	1	12/06/20 11:13	12/08/20 16:00	7440-70-2	M1
Iron	**<26.8**	ug/L	50.0	26.8	1	12/06/20 11:13	12/08/20 16:00	7439-89-6	
Magnesium	**42000**	ug/L	50.0	19.7	1	12/06/20 11:13	12/08/20 16:00	7439-95-4	
Manganese	**518**	ug/L	5.0	0.97	1	12/06/20 11:13	12/08/20 16:00	7439-96-5	
Potassium	**8100**	ug/L	500	189	1	12/06/20 11:13	12/08/20 16:00	7440-09-7	
Sodium	**35400**	ug/L	500	107	1	12/06/20 11:13	12/08/20 16:00	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**457**	mg/L	20.0	8.4	1		11/23/20 13:32		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**637**	mg/L	10.0	10.0	1		11/19/20 08:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**68.5**	mg/L	5.0	1.9	5		12/09/20 11:54	16887-00-6	
Fluoride	**0.41**	mg/L	0.20	0.075	1		12/09/20 11:08	16984-48-8	
Sulfate	**37.1**	mg/L	5.0	1.4	5		12/09/20 11:54	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-SCPC-DUP-1 **Lab ID: 60354704007** Collected: 11/17/20 08:00 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**91.7J**	ug/L	100	11.7	1	12/06/20 11:13	12/08/20 16:07	7440-42-8	
Calcium	**153000**	ug/L	200	32.4	1	12/06/20 11:13	12/08/20 16:07	7440-70-2	
Iron	**282**	ug/L	50.0	26.8	1	12/06/20 11:13	12/08/20 16:07	7439-89-6	
Magnesium	**36600**	ug/L	50.0	19.7	1	12/06/20 11:13	12/08/20 16:07	7439-95-4	
Manganese	**833**	ug/L	5.0	0.97	1	12/06/20 11:13	12/08/20 16:07	7439-96-5	
Potassium	**6300**	ug/L	500	189	1	12/06/20 11:13	12/08/20 16:07	7440-09-7	
Sodium	**5370**	ug/L	500	107	1	12/06/20 11:13	12/08/20 16:07	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**440**	mg/L	20.0	8.4	1		11/23/20 13:55		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**626**	mg/L	10.0	10.0	1		11/19/20 08:37		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**3.7**	mg/L	1.0	0.39	1		12/09/20 13:13	16887-00-6	
Fluoride	**0.46**	mg/L	0.20	0.075	1		12/09/20 13:13	16984-48-8	
Sulfate	**41.7**	mg/L	5.0	1.4	5		12/09/20 13:28	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-SCPC-FB-1 **Lab ID: 60354704008** Collected: 11/17/20 11:55 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**<11.7**	ug/L	100	11.7	1	12/06/20 11:13	12/08/20 16:17	7440-42-8	
Calcium	**<32.4**	ug/L	200	32.4	1	12/06/20 11:13	12/08/20 16:17	7440-70-2	
Iron	**<26.8**	ug/L	50.0	26.8	1	12/06/20 11:13	12/08/20 16:17	7439-89-6	
Magnesium	**<19.7**	ug/L	50.0	19.7	1	12/06/20 11:13	12/08/20 16:17	7439-95-4	
Manganese	**<0.97**	ug/L	5.0	0.97	1	12/06/20 11:13	12/08/20 16:17	7439-96-5	
Potassium	**<189**	ug/L	500	189	1	12/06/20 11:13	12/08/20 16:17	7440-09-7	
Sodium	**<107**	ug/L	500	107	1	12/06/20 11:13	12/08/20 16:17	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**<8.4**	mg/L	20.0	8.4	1		11/23/20 13:59		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**400**	mg/L	125	125	1		11/19/20 08:38		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**<0.39**	mg/L	1.0	0.39	1		12/09/20 13:44	16887-00-6	
Fluoride	**<0.075**	mg/L	0.20	0.075	1		12/09/20 13:44	16984-48-8	
Sulfate	**<0.28**	mg/L	1.0	0.28	1		12/09/20 13:44	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-BMW-1S **Lab ID: 60354369018** Collected: 11/16/20 14:50 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**75.1J**	ug/L	100	11.7	1	12/06/20 12:00	12/08/20 19:46	7440-42-8	
Calcium	**141000**	ug/L	200	32.4	1	12/06/20 12:00	12/08/20 19:46	7440-70-2	
Iron	**52.0**	ug/L	50.0	26.8	1	12/06/20 12:00	12/08/20 19:46	7439-89-6	
Magnesium	**27800**	ug/L	50.0	19.7	1	12/06/20 12:00	12/08/20 19:46	7439-95-4	
Manganese	**1240**	ug/L	5.0	0.97	1	12/06/20 12:00	12/08/20 19:46	7439-96-5	
Potassium	**366J**	ug/L	500	189	1	12/06/20 12:00	12/08/20 19:46	7440-09-7	B
Sodium	**4800**	ug/L	500	107	1	12/06/20 12:00	12/08/20 19:46	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**422**	mg/L	20.0	8.4	1		11/19/20 16:19		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**505**	mg/L	10.0	10.0	1		11/19/20 15:05		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**7.0**	mg/L	1.0	0.39	1		12/07/20 22:38	16887-00-6	
Fluoride	**0.34**	mg/L	0.20	0.075	1		12/07/20 22:38	16984-48-8	
Sulfate	**24.8**	mg/L	2.0	0.56	2		12/07/20 22:52	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AMEREN SCPC
Pace Project No.: 60354704

Sample: S-BMW-3S **Lab ID: 60354369011** Collected: 11/16/20 12:20 Received: 11/18/20 04:15 Matrix: Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 Metals, Total	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7 Pace Analytical Services - Kansas City								
Boron	**66.3J**	ug/L	100	11.7	1	12/06/20 12:00	12/08/20 19:19	7440-42-8	
Calcium	**125000**	ug/L	200	32.4	1	12/06/20 12:00	12/08/20 19:19	7440-70-2	
Iron	**35.3J**	ug/L	50.0	26.8	1	12/06/20 12:00	12/08/20 19:19	7439-89-6	
Magnesium	**23000**	ug/L	50.0	19.7	1	12/06/20 12:00	12/08/20 19:19	7439-95-4	
Manganese	**344**	ug/L	5.0	0.97	1	12/06/20 12:00	12/08/20 19:19	7439-96-5	
Potassium	**440J**	ug/L	500	189	1	12/06/20 12:00	12/08/20 19:19	7440-09-7	B
Sodium	**5250**	ug/L	500	107	1	12/06/20 12:00	12/08/20 19:19	7440-23-5	
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Kansas City								
Alkalinity, Total as CaCO3	**378**	mg/L	20.0	8.4	1		11/19/20 15:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Kansas City								
Total Dissolved Solids	**455**	mg/L	10.0	10.0	1		11/19/20 15:05		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Pace Analytical Services - Kansas City								
Chloride	**11.4**	mg/L	1.0	0.39	1		12/08/20 14:12	16887-00-6	
Fluoride	**0.40**	mg/L	0.20	0.075	1		12/08/20 14:12	16984-48-8	
Sulfate	**30.6**	mg/L	2.0	0.56	2		12/07/20 17:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 693106
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354369011, 60354369018, 60354704001, 60354704002, 60354704003

METHOD BLANK: 2799492 Matrix: Water
Associated Lab Samples: 60354369011, 60354369018, 60354704001, 60354704002, 60354704003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	12/08/20 18:54	
Calcium	ug/L	47.9J	200	32.4	12/08/20 18:54	
Iron	ug/L	<26.8	50.0	26.8	12/08/20 18:54	
Magnesium	ug/L	<19.7	50.0	19.7	12/08/20 18:54	
Manganese	ug/L	<0.97	5.0	0.97	12/08/20 18:54	
Potassium	ug/L	224J	500	189	12/08/20 18:54	
Sodium	ug/L	378J	500	107	12/08/20 18:54	

LABORATORY CONTROL SAMPLE: 2799493

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	967	97	85-115	
Calcium	ug/L	10000	10100	101	85-115	
Iron	ug/L	10000	10000	100	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	10400	104	85-115	
Sodium	ug/L	10000	10400	104	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2799494 2799495

Parameter	Units	60354702003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	86.3J	1000	1000	1050	1070	96	98	70-130	2	20	
Calcium	ug/L	147000	10000	10000	151000	155000	39	77	70-130	2	20	M1
Iron	ug/L	<26.8	10000	10000	9650	9840	96	98	70-130	2	20	
Magnesium	ug/L	36300	10000	10000	44400	45000	81	87	70-130	1	20	
Manganese	ug/L	804	1000	1000	1750	1760	94	96	70-130	1	20	
Potassium	ug/L	8290	10000	10000	17900	18300	96	100	70-130	2	20	
Sodium	ug/L	28900	10000	10000	37600	38400	87	95	70-130	2	20	

MATRIX SPIKE SAMPLE: 2799496

Parameter	Units	60354369012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	66.8J	1000	1020	96	70-130	
Calcium	ug/L	98100	10000	108000	102	70-130	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

MATRIX SPIKE SAMPLE: 2799496

Parameter	Units	60354369012 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	5380	10000	14900	95	70-130	
Magnesium	ug/L	22100	10000	32000	100	70-130	
Manganese	ug/L	382	1000	1370	99	70-130	
Potassium	ug/L	3660	10000	13700	100	70-130	
Sodium	ug/L	5190	10000	15100	99	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 693107
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 Metals, Total
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

METHOD BLANK: 2799497 Matrix: Water
Associated Lab Samples: 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Boron	ug/L	<11.7	100	11.7	12/08/20 15:50	
Calcium	ug/L	<32.4	200	32.4	12/08/20 15:50	
Iron	ug/L	<26.8	50.0	26.8	12/08/20 15:50	
Magnesium	ug/L	<19.7	50.0	19.7	12/08/20 15:50	
Manganese	ug/L	<0.97	5.0	0.97	12/08/20 15:50	
Potassium	ug/L	<189	500	189	12/08/20 15:50	
Sodium	ug/L	<107	500	107	12/08/20 15:50	

LABORATORY CONTROL SAMPLE: 2799498

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	1000	961	96	85-115	
Calcium	ug/L	10000	10400	104	85-115	
Iron	ug/L	10000	10600	106	85-115	
Magnesium	ug/L	10000	10100	101	85-115	
Manganese	ug/L	1000	1010	101	85-115	
Potassium	ug/L	10000	10200	102	85-115	
Sodium	ug/L	10000	10700	107	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2799499 2799500

Parameter	Units	60354704006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	77.4J	1000	1000	1050	1010	97	93	70-130	4	20	
Calcium	ug/L	132000	10000	10000	147000	140000	154	84	70-130	5	20	M1
Iron	ug/L	<26.8	10000	10000	9970	9860	100	98	70-130	1	20	
Magnesium	ug/L	42000	10000	10000	54000	50500	119	84	70-130	7	20	
Manganese	ug/L	518	1000	1000	1520	1440	101	93	70-130	5	20	
Potassium	ug/L	8100	10000	10000	18700	17600	106	95	70-130	6	20	
Sodium	ug/L	35400	10000	10000	47200	44800	118	93	70-130	5	20	

MATRIX SPIKE SAMPLE: 2799501

Parameter	Units	60354705002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	87.9J	1000	1010	93	70-130	
Calcium	ug/L	128000	10000	129000	8	70-130	M1

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

MATRIX SPIKE SAMPLE: 2799501

Parameter	Units	60354705002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Iron	ug/L	217	10000	9830	96	70-130	
Magnesium	ug/L	23400	10000	31000	76	70-130	
Manganese	ug/L	551	1000	1450	90	70-130	
Potassium	ug/L	5850	10000	14900	91	70-130	
Sodium	ug/L	3720	10000	13300	96	70-130	

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 690355
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354369011, 60354369018

METHOD BLANK: 2788858 Matrix: Water
Associated Lab Samples: 60354369011, 60354369018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	11/19/20 14:53	

LABORATORY CONTROL SAMPLE: 2788859

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	500	488	98	90-110	

SAMPLE DUPLICATE: 2788860

Parameter	Units	60354702003 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	460	461	0	10	

SAMPLE DUPLICATE: 2788861

Parameter	Units	60354369012 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	310	309	0	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 690813 — Analysis Method: SM 2320B
QC Batch Method: SM 2320B — Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354704001, 60354704002, 60354704003, 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

METHOD BLANK: 2791510 — Matrix: Water
Associated Lab Samples: 60354704001, 60354704002, 60354704003, 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<8.4	20.0	8.4	11/23/20 12:47	

LABORATORY CONTROL SAMPLE: 2791511

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

SAMPLE DUPLICATE: 2791512

Parameter	Units	60354704006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	457	472	3	10	

SAMPLE DUPLICATE: 2791513

Parameter	Units	60354705002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	355	363	2	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 690324
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354704001, 60354704002, 60354704003, 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

METHOD BLANK: 2788738 Matrix: Water
Associated Lab Samples: 60354704001, 60354704002, 60354704003, 60354704004, 60354704005, 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/19/20 08:34	

LABORATORY CONTROL SAMPLE: 2788739

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	981	98	80-120	

SAMPLE DUPLICATE: 2788740

Parameter	Units	60354595009 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1250	1250	1	10	

SAMPLE DUPLICATE: 2788741

Parameter	Units	60354704006 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	637	633	1	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 690481
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354369011, 60354369018

METHOD BLANK: 2789436 Matrix: Water
Associated Lab Samples: 60354369011, 60354369018

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<5.0	5.0	5.0	11/19/20 15:03	

LABORATORY CONTROL SAMPLE: 2789437

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

SAMPLE DUPLICATE: 2789438

Parameter	Units	60354702003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	628	606	4	10	

SAMPLE DUPLICATE: 2789439

Parameter	Units	60354369012 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	396	412	4	10	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 693100
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354369011, 60354369018, 60354704001, 60354704002, 60354704003, 60354704004, 60354704005

METHOD BLANK: 2799457 Matrix: Water
Associated Lab Samples: 60354369011, 60354369018, 60354704001, 60354704002, 60354704003, 60354704004, 60354704005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/07/20 08:24	
Fluoride	mg/L	<0.075	0.20	0.075	12/07/20 08:24	
Sulfate	mg/L	<0.28	1.0	0.28	12/07/20 08:24	

METHOD BLANK: 2802268 Matrix: Water
Associated Lab Samples: 60354369011, 60354369018, 60354704001, 60354704002, 60354704003, 60354704004, 60354704005

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/08/20 08:14	
Fluoride	mg/L	<0.075	0.20	0.075	12/08/20 08:14	
Sulfate	mg/L	<0.28	1.0	0.28	12/08/20 08:14	

LABORATORY CONTROL SAMPLE: 2799458

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.9	99	90-110	
Fluoride	mg/L	2.5	2.5	101	90-110	
Sulfate	mg/L	5	4.7	95	90-110	

LABORATORY CONTROL SAMPLE: 2802269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	96	90-110	
Fluoride	mg/L	2.5	2.6	102	90-110	
Sulfate	mg/L	5	5.1	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2799459 2799460

Parameter	Units	60354369012 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	13.4	5	5	17.6	17.9	84	91	80-120	2	15	
Fluoride	mg/L	0.34	2.5	2.5	2.3	2.5	79	86	80-120	7	15	
Sulfate	mg/L	38.1	10	10	50.9	54.3	128	162	80-120	7	15	E

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

MATRIX SPIKE SAMPLE: 2799461

Parameter	Units	60354369019 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	76.7	50	125	96	80-120	
Fluoride	mg/L	0.16J	2.5	2.4	90	80-120	
Sulfate	mg/L	462	250	705	97	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

QC Batch: 693762
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Kansas City
Associated Lab Samples: 60354704006, 60354704007, 60354704008

METHOD BLANK: 2801621 Matrix: Water
Associated Lab Samples: 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/09/20 08:45	
Fluoride	mg/L	<0.075	0.20	0.075	12/09/20 08:45	
Sulfate	mg/L	<0.28	1.0	0.28	12/09/20 08:45	

METHOD BLANK: 2803421 Matrix: Water
Associated Lab Samples: 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/09/20 08:45	
Fluoride	mg/L	<0.075	0.20	0.075	12/09/20 08:45	
Sulfate	mg/L	<0.28	1.0	0.28	12/09/20 08:45	

METHOD BLANK: 2803443 Matrix: Water
Associated Lab Samples: 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/10/20 10:44	
Fluoride	mg/L	<0.075	0.20	0.075	12/10/20 10:44	
Sulfate	mg/L	<0.28	1.0	0.28	12/10/20 10:44	

METHOD BLANK: 2804050 Matrix: Water
Associated Lab Samples: 60354704006, 60354704007, 60354704008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/L	<0.39	1.0	0.39	12/10/20 10:44	
Fluoride	mg/L	<0.075	0.20	0.075	12/10/20 10:44	
Sulfate	mg/L	<0.28	1.0	0.28	12/10/20 10:44	

LABORATORY CONTROL SAMPLE: 2801622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	

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REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: AMEREN SCPC
Pace Project No.: 60354704

LABORATORY CONTROL SAMPLE: 2801622

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

LABORATORY CONTROL SAMPLE: 2803422

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.5	98	90-110	
Sulfate	mg/L	5	5.0	100	90-110	

LABORATORY CONTROL SAMPLE: 2803444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

LABORATORY CONTROL SAMPLE: 2804051

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	5	4.8	97	90-110	
Fluoride	mg/L	2.5	2.4	98	90-110	
Sulfate	mg/L	5	5.0	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2801623 2801624

Parameter	Units	60354704006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	68.5	25	25	95.8	94.7	109	105	80-120	1	15	
Fluoride	mg/L	0.41	2.5	2.5	2.9	3.4	101	119	80-120	14	15	
Sulfate	mg/L	37.1	25	25	62.0	61.2	100	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.

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: AMEREN SCPC
Pace Project No.: 60354704

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

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

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
E	Analyte concentration exceeded the calibration range. The reported result is estimated.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AMEREN SCPC
Pace Project No.: 60354704

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60354369011	**S-BMW-3S**	EPA 200.7	693106	EPA 200.7	693137
60354369018	**S-BMW-1S**	EPA 200.7	693106	EPA 200.7	693137
60354704001	**S-UG-1A**	EPA 200.7	693106	EPA 200.7	693137
60354704002	**S-UG-2**	EPA 200.7	693106	EPA 200.7	693137
60354704003	**S-DG-1**	EPA 200.7	693106	EPA 200.7	693137
60354704004	**S-DG-2**	EPA 200.7	693107	EPA 200.7	693138
60354704005	**S-DG-3**	EPA 200.7	693107	EPA 200.7	693138
60354704006	**S-DG-4**	EPA 200.7	693107	EPA 200.7	693138
60354704007	**S-SCPC-DUP-1**	EPA 200.7	693107	EPA 200.7	693138
60354704008	**S-SCPC-FB-1**	EPA 200.7	693107	EPA 200.7	693138
60354369011	**S-BMW-3S**	SM 2320B	690355		
60354369018	**S-BMW-1S**	SM 2320B	690355		
60354704001	**S-UG-1A**	SM 2320B	690813		
60354704002	**S-UG-2**	SM 2320B	690813		
60354704003	**S-DG-1**	SM 2320B	690813		
60354704004	**S-DG-2**	SM 2320B	690813		
60354704005	**S-DG-3**	SM 2320B	690813		
60354704006	**S-DG-4**	SM 2320B	690813		
60354704007	**S-SCPC-DUP-1**	SM 2320B	690813		
60354704008	**S-SCPC-FB-1**	SM 2320B	690813		
60354369011	**S-BMW-3S**	SM 2540C	690481		
60354369018	**S-BMW-1S**	SM 2540C	690481		
60354704001	**S-UG-1A**	SM 2540C	690324		
60354704002	**S-UG-2**	SM 2540C	690324		
60354704003	**S-DG-1**	SM 2540C	690324		
60354704004	**S-DG-2**	SM 2540C	690324		
60354704005	**S-DG-3**	SM 2540C	690324		
60354704006	**S-DG-4**	SM 2540C	690324		
60354704007	**S-SCPC-DUP-1**	SM 2540C	690324		
60354704008	**S-SCPC-FB-1**	SM 2540C	690324		
60354369011	**S-BMW-3S**	EPA 300.0	693100		
60354369018	**S-BMW-1S**	EPA 300.0	693100		
60354704001	**S-UG-1A**	EPA 300.0	693100		
60354704002	**S-UG-2**	EPA 300.0	693100		
60354704003	**S-DG-1**	EPA 300.0	693100		
60354704004	**S-DG-2**	EPA 300.0	693100		
60354704005	**S-DG-3**	EPA 300.0	693100		
60354704006	**S-DG-4**	EPA 300.0	693762		
60354704007	**S-SCPC-DUP-1**	EPA 300.0	693762		
60354704008	**S-SCPC-FB-1**	EPA 300.0	693762		

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt

WO# : 60354704

60354704

Client Name: Golder

Courier: FedEx ☐ UPS ☐ VIA ☐ 11.19.20 Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☒ Client ☐ Other ☐

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

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

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☒ Ice

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

Cooler Temperature (°C): **As-read** 0.6 **Corr. Factor** +0.2 **Corrected** 0.8

Date and initials of person examining contents: 11.18.2020 JS

Temperature should be above freezing to 6°C 0.1, 2.2, 0.6 0.3, 2.4, 0.8

Chain of Custody present:	☒Yes ☐No ☐N/A	
Chain of Custody relinquished:	☒Yes ☐No ☐N/A	
Samples arrived within holding time:	☒Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☒No ☐N/A	
Rush Turn Around Time requested:	☐Yes ☒No ☐N/A	
Sufficient volume:	☒Yes ☐No ☐N/A	
Correct containers used:	☒Yes ☐No ☐N/A	
Pace containers used:	☒Yes ☐No ☐N/A	
Containers intact:	☒Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☒N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☒N/A	
Sample labels match COC: Date / time / ID / analyses	☒Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: WT	☐Yes ☒No ☐N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO) LOT# 602173	☒Yes ☐No ☐N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☐Yes ☐No ☒N/A	
Headspace in VOA vials (>6mm):	☐Yes ☐No ☒N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☒N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☒N/A	

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

Person Contacted: _____ Date/Time: _____

Comments/ Resolution:

REVIEWED
By jchurch at 7:55 am, 11/19/20

Project Manager Review: _____ Date: _____

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

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

Section B Required Project Information:

Report To:	Jeffrey Ingram
Copy To:	Ryan Feldmann/Eric Schneider
Purchase Order No.:	
Project Name:	Ameren SCPC Sioux Energy Center
Project Number:	153-140602.0003C (COC #10)

Section C Invoice Information:

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

REGULATORY AGENCY

NPDES / GROUND WATER DRINKING WATER
UST RCRA OTHER

Site Location STATE: MO

Section D Required Client Information

Valid Matrix Codes

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

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: Chloride/Fluoride/Sulfate	App III and Cat/An Metals	Alkalinity	TDS	Appendix IV Metals **	Mercury	Radium 226	Radium 228					Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		N	N	N	N	N	N	N	N						6035 4704
1	S-UG-1A	WT	G			11/17/20	1340		2	1		1							X	X	X	X										
2	S-UG-2	WT	G			11/17/20	1455		1	1		1							1	1	1	1										
3	S-DG-1	WT	G			11/17/20	1245		1	1		1							1	1	1	1										
4	S-DG-2	WT	G			11/17/20	1158		1	1		1							1	1	1	1										
5	S-DG-3	WT	G			11/17/20	1110		1	1		1							1	1	1	1										
6	S-DG-4	WT	G			11/16/20	1433		1	1		1							1	1	1	1										
7	S-SCPC-DUP-1	WT	G			11/17/20	—		1	1		1							1	1	1	1										
8	S-SCPC-FB-1	WT	G			11/17/20	1155		1	1		1							1	1	1	1										
9	S-SCPC-MS-1	WT	G			11/16/20	1433		1	1		1							1	1	1	1										
10	S-SCPC-MSD-1	WT	G			11/16/20	1433		1	1		1							1	1	1	1										
11	S-BMW-1S	WT	G			11/16/20	1450		1	1		1							1	1	1	1										
12	S-BMW-3S	WT	G			11/16/20	1720		1	1		1							1	1	1	1										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
*EPA 200.7: Fe, Mg, Mn, K, Na, Ca, B	Eric Schneider/Golder	11/17/20	1643	Angela McManus	11/17	1650				
	Angela McManus	11/17/20	1650	weight/B.	11-18-20	0415	0.8	Y	Y	Y
							0.3	1	1	1
							2.6			
							0.0			

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Eric Schneider

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 11/17/20

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

MEMORANDUM

DATE January 4, 2021 **Project No.** 153140602

TO Project File
Golder Associates

CC Amanda Derhake, Jeff Ingram

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

DATA VALIDATION SUMMARY, SIOUX ENERGY CENTER – SEC-SCPC – DETECTION MONITORING - DATA PACKAGE 60354704

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 MDL and the PQL the results were recorded at the detection value and qualified as estimates (J).
- 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 matrix spike/matrix spike duplicate (MS/MSD) criterion was not met, the associated sample result was qualified as an estimate (J).

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13515 Barrett Parkway Drive, Suite 260,
Ballwin, Missouri, USA 63021

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

Company Name: Golder Associates
Project Manager: J. Ingram
Project Name: Ameren- Sioux - SCPC
Project Number: 153140602
Reviewer: A. Muehlfarth
Validation Date: 01/04/2021

Laboratory: Pace Analytical - KS
SDG #: 60354704
Analytical Method (type and no.): EPA 200.7 (Total Metals); SM2540C (TDS); SM2320B (Alkalinity); EPA 300.0 (Anions)
Matrix: ☐ Air ☐ Soil/Sed. ■ Water ☐ Waste ☐
Sample Names S-UG-1A, S-UG-2, S-DG-1, S-DG-2, S-DG-3, S-DG-4, S-SCPC-DUP-1, S-SCPC-FB-1, S-BMW-1S, S-BMW-3S

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

Field Information	YES	NO	NA	COMMENTS
a) Sampling dates noted?	x			11/16/2020 - 11/17/2020
b) Sampling team indicated?	x			BTT/EMS
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, S.Cond., Turb, Temp, DO, ORP
h) Field Calibration within control limits?	x			
i) Notations of unacceptable field conditions/performances from field logs or field notes?		x		
j) Does the laboratory narrative indicate deficiencies?			x	

Note Deficiencies:

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

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

QA LEVEL II - INORGANIC DATA EVALUATION CHECKLIST

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

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

Duplicates	YES	NO	NA	COMMENTS
a) Were field duplicates collected (note original and duplicate sample names)?				S-SCPC-DUP-1 @ S-DG-3
	x			
b) Were field dup. precision criteria met (note RPD)?	x			Max RPD: Iron, 18.9% (<20%)
c) Were lab duplicates analyzed (note original and duplicate samples)?				
	x			
d) Were lab dup. precision criteria met (note RPD)?	x			Max RPD 4% (<10%)

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

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

Comments/Notes:

Sulfate and chloride were diluted in several samples, no qualification necessary.

MB:

2799492: Calcium (47.9J), associated with samples -69011, -69018, -04001 through -04003. Sample results >10x the blank result, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Comments/Notes:

FB:

S-SCPC-FB-1 @ S-DG-2: TDS (400). Sample result >RL, but <10x blank.

MS/MSD:

2799494/2799495: MS % recovery low for Calcium. MS/MSD performed on unrelated sample, no qualification necessary.

2799499/2799500: MS % recovery high for Calcium. Associated with sample 60354704006.

2799501: MS % recovery low for Calcium. MS/MSD performed on unrelated sample, no qualification necessary.

2799459/2799460: MS % recovery low for Fluoride; MS/MSD % recovery high for Sulfate. MS/MSD performed on unrelated sample, no qualification necessary.

QA LEVEL IV - INORGANIC DATA EVALUATION CHECKLIST

Data Qualification:

Sample Name	Constituent(s)	Result	Qualifier	Reason
S-DG-4	Calcium	132000	J	MS % recovery high
S-DG-2	TDS	546	J	Detected in FB, result <10x blank result

Signature: Ann Muehlfarth Date: 01/04/2021

APPENDIX B

Alternative Source Demonstration – April 2020 Sampling Event

SCPC - Alternative Source Demonstration

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

Submitted to:

Ameren Missouri

1901 Chouteau Ave, St. Louis, MO 63103

Submitted by:

Golder Associates Inc.

13515 Barrett Parkway Drive, Suite 260, Ballwin, Missouri, USA 63021

+1 314 984-8800

153140602

November 10, 2020

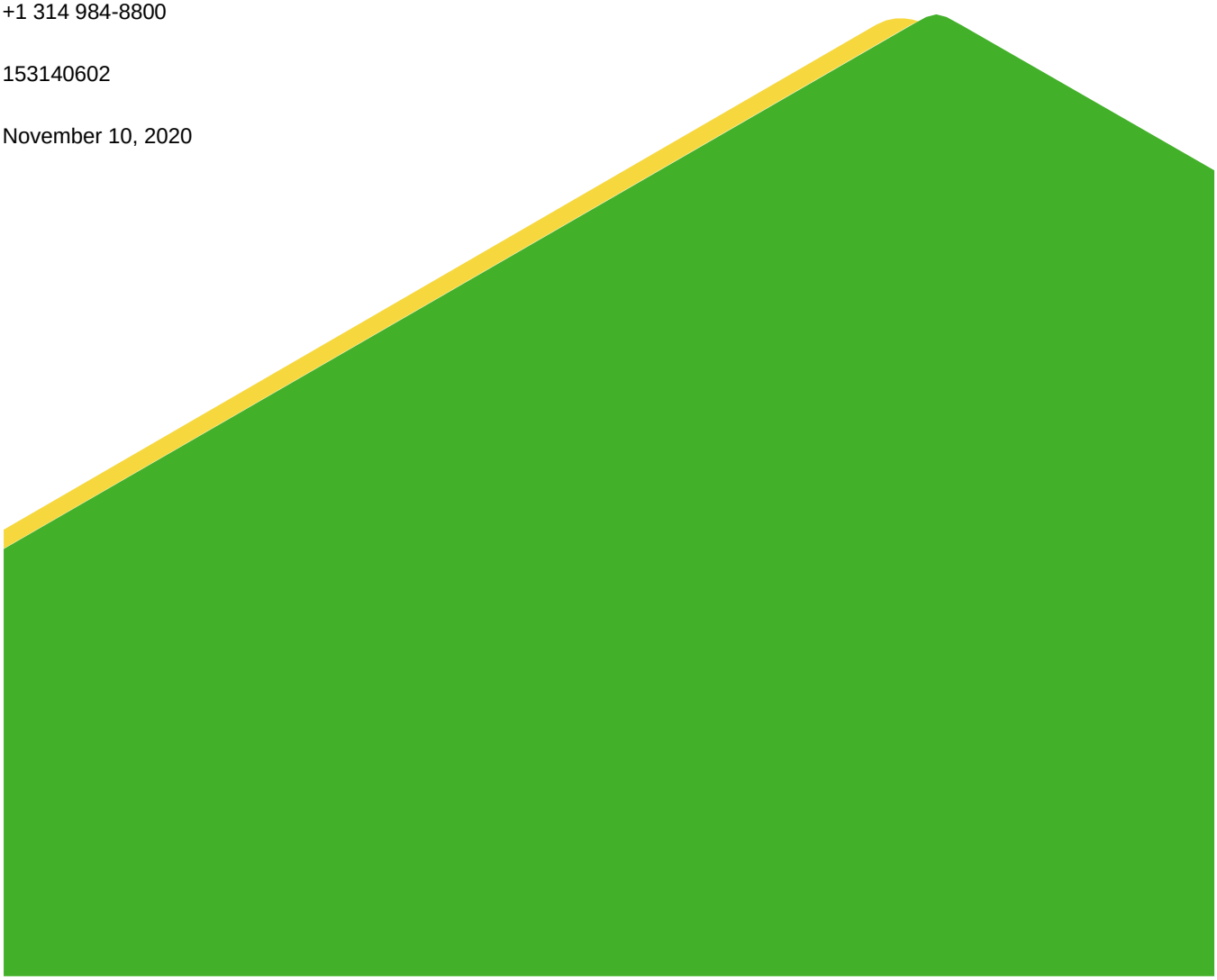

Table of Contents

1.0 CERTIFICATION STATEMENT

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

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

GOLDER ASSOCIATES INC.

_____

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

Principal, Practice Leader

2.0 INTRODUCTION

In accordance with the United States Environmental Protection Agency (EPA) coal combustion residual (CCR) rule (CCR Rule or The Rule), this *SCPC – Alternative Source Demonstration* has been prepared to document an Alternative Source Demonstration (ASD) for a Statistically Significant Increase (SSI) identified for Ameren Missouri's (Ameren's) Sioux Energy Center (SEC), Utility Waste Landfill (UWL) SCPC Cell 1. 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 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.

3.0 SITE DESCRIPTION AND BACKGROUND

Ameren owns and operates the SEC in St. Charles County, Missouri located approximately 12 miles west-northwest of the confluence of the Mississippi and Missouri Rivers. **Figure 1** depicts the site location and layout, including the location of SCPC. The SEC is approximately 1,025 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 SCPC lies between the Mississippi River to the north and the Missouri River to the south. Flow and deposition from these rivers have resulted in thick alluvial deposits which lie unconformably on top of bedrock. These alluvial deposits range from approximately 100 to 130 feet thick and comprise the uppermost aquifer called the alluvial aquifer. Overall, this aquifer is described as a fining upwards sequence of stratified sands and gravels with varying amounts of silts and clays. Drilling in the alluvial aquifer identified different sub-units, including floodplain deposits, natural levee deposits, and channel deposits along with volumetrically less important loess deposits. Grain sizes of these alluvial deposits are highly variable.

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

3.2 Utility Waste Landfill Cell 1 - SCPC

UWL Cell 1 is referred to by Ameren as the SCPC, or "Gypsum Pond" Cell 1. The SCPC is approximately 37.5 acres in size and is located south of the generating plant on the south side of Highway 94 (**Figure 1**). The CCR Unit manages Coal Combustion Residuals (CCR) from the SEC Wet Flue-Gas Desulfurization System (WFGD) which began operation in 2010.

The WFGD process occurs after the removal of slag and fly ash where a crushed limestone ($CaCO_3$) mix is introduced into the boiler flue gas flow. The limestone reacts with the sulfur dioxide (SO_2) in the flue gas and produces 'synthetic' gypsum (calcium sulfate dihydrate ($CaSO_4 * 2H_2O$)). The resultant gypsum material is wet sluiced from the plant across the highway to the SCPC. Once there, the gypsum dewaters by gravity with the sluice conveying water recycled back to the WFGD for reuse. The primary soluble constituents of the gypsum CCR are sulfate, calcium, chloride, and sodium (Gredell and Reitz & Jens, 2014).

The SCPC 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 an 80-mil HDPE geomembrane liner. Information on the design of the UWL is available in the 2014 Proposed Construction Permit Modification, Construction Permit Number 0918301 (Gredell and Reitz & Jens, 2014).

A groundwater monitoring well network was installed in 2007 and 2008 in order to permit the UWL construction. This monitoring well network was approved by the Missouri Department of Natural Resources (MDNR) and consists of 16 monitoring wells ringing the current and proposed future extents of the UWL (**Figure 1**). These monitoring wells are installed in the uppermost portions of the alluvial aquifer, just below the seasonally low elevation for groundwater. Quarterly groundwater samples have been collected in these monitoring wells since June 2008 for the state required UWL parameters.

The permit for the SCPC was issued July 30, 2010 (permit #0918301). Nine (9) sampling events were performed prior to July 30, 2010 and represent groundwater quality prior to WFGD placement in the UWL. 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) eight (8) baseline groundwater sampling events were completed for all Appendix III and Appendix IV parameters of CCR Rule.

The groundwater monitoring system for the SCPC consists of eight (8) monitoring wells screened in the uppermost aquifer (alluvial aquifer) as shown on **Figure 1**. Six (6) existing monitoring wells (UG-1A, UG-2, DG-1, DG-2, DG-3, and DG-4) were installed by Gredell Engineering Resources, Inc. in December 2007 and June 2008 as a part of the state UWL monitoring program. The remaining monitoring wells (BMW-1S and BMW-3S) were installed by Golder in 2016 for CCR Rule groundwater monitoring purposes. More information on the design and installation of the monitoring wells is provided in the SCPC GMP and the SCPC 2017 Annual Report.

Between May 2016 and June 2017, eight (8) baseline sampling events were completed for the SCPC. After baseline sampling, the first Detection Monitoring event was completed in November of 2017. The following Appendix III constituents were sampled during detection monitoring;

- Boron
- Calcium
- Chloride
- pH
- Sulfate
- Total Dissolved Solids (TDS)
- Fluoride

In January 2018, background results from the eight (8) baseline sampling events were used to calculate statistical upper prediction limits (UPLs). These UPLs were then compared to the Detection Monitoring results from the November 2017 samples and subsequent semi-annual detection monitoring sampling events. If results from the Detection Monitoring sampling were higher than the calculated UPL, it was considered to be an initial

exceedance, in which case a verification sample was then collected and tested in accordance with the SCPC Statistical Analysis Plan. The following provide a summary of the detection monitoring results to date.

- In November 2017, initial exceedances were identified in monitoring wells UG-2 for fluoride and DG-4 for boron. Verification sampling results confirmed a Statistically Significant Increase (SSI) for fluoride at UG-2. An ASD was prepared that demonstrated that this SSI was primarily caused by natural temporal and spatial variability in the aquifer, a relatively low calculated UPL when compared to historical data from this well, and low fluoride results that are near the laboratory practical quantitation limit (PQL).
- In May 2018, three (3) initial exceedances were reported for boron at DG-1, DG-3, and DG-4 but none were confirmed by verification sampling.
- In November 2018, five (5) initial exceedances were reported for pH at DG-1, DG-2, and DG-3; boron at DG-1; and sulfate at DG-3. None were confirmed by verification sampling.
- For the August 2019 sampling event, four (4) initial exceedances were reported for calcium and chloride at UG-1A, for fluoride at UG-2, and for sulfate at DG-3. All except sulfate at DG-3 were confirmed by verification sampling. An ASD was prepared that demonstrated that this SSI was primarily due to alluvial aquifer variability, of pre-existing impacts, laboratory method accuracy, and limited baseline data available for the calculation of the UPL.
- In November 2019, one (1) initial exceedance were reported for pH at DG-2 that was not confirmed by verification sampling.
- For the April 2020 sampling event, three (3) initial exceedances were reported for fluoride at UG-1A, DG-1, and DG-4. Only fluoride at DG-4 was confirmed by verification sampling.

4.0 REVIEW OF THE STATISTICALLY SIGNIFICANT INCREASES

Monitoring well DG-4 is screened in the upper portion of the alluvial aquifer just below the average seasonal low for groundwater. As shown in **Figure 1**, DG-4 is located south of the SCPC, Dwiggins Road, the generating plant, and the two surface impoundments near the plant (SCPA and SCPB).

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

The intrawell UPL for fluoride at DG-4 was 0.37 milligrams per liter (mg/L) based on the initial 8 baseline sampling events that ranged from 0.30 to 0.37 mg/L, as summarized in **Table 1**. The results from this small dataset could not be normalized, therefore, a non-parametric limit was used as the prediction limit (i.e., the highest of the baseline sampling results). In August 2019, the baseline data set was expanded to include the first four Detection Monitoring events; however, the dataset could not be normalized, even after the addition of four new data points, so the UPL remained unchanged at 0.37 mg/L.

During the April 2020 Detection Monitoring event, a concentration of 0.41 mg/L was reported for fluoride at DG-4, which was confirmed in June by a verification result of 0.41 mg/L. These values represent an SSI, but it is important to note they are very low (within 0.04 mg/L of the UPLs) and close to the laboratory PQL.

Table 1 - Review of Statistically Significant Increase

Constituent	Well ID	UPL Based on Baseline Events	August 2019 Updated UPL	Baseline Sampling Event Range	State UWL Program Sampling Events Range	April 2020 Results	June 2020 Results
Fluoride (mg/L)	DG-4	0.37	0.37	0.30-0.37	0.23-0.48	0.41	0.41

Notes:

1) mg/L – milligrams per liter.
2) UPL – Upper Prediction Limit. UPL's calculated using Sanitas™ software.

5.0 EVIDENCE OF SSI FROM ALTERNATIVE SOURCE

Several different lines of evidence indicate that the SSI at the SCPC are not caused by a release from the SCPC, but rather from an alternative source. The following section provides details for each of the different lines of evidence, listed below:

- Documentation of pre-existing, low-level concentrations of CCR indicators in groundwater that pre-date the SCPC operation.
- Comparison of key WFGD indicator parameter concentrations (Sulfate, Calcium, Chloride, Sodium, and Boron) prior to and following receipt of CCR in the SCPC.
- Review of historical and current fluoride concentrations at DG-4.
- Documentation of the construction of the SCPC with a 80-mil geomembrane liner and a 2-foot thick clay barrier.

5.1 CCR Indicators

Several types of CCR byproducts are generated by coal-fired power plants. The different types of CCR typically display distinct geochemical signatures and indicator parameters. **Table 2** below describes the different types of CCRs and their typical indicator parameters (USEPA 2018, EPRI 2011, EPRI 2012, and EPRI 2017).

Table 2: Types of CCR and Typical Indicator Parameters

Type of CCR	Description of CCR (USEPA 2018)	Key Indicators (EPRI 2011, 2012, 2017)
Fly Ash	Fine grained, powdery material composed mostly of silica made from the burning of finely ground coal in the boiler.	■ Boron ■ Molybdenum ■ Lithium ■ Sulfate ■ Bromide ■ Potassium ■ Sodium ■ Fluoride
Boiler Slag / Bottom Ash	Molten bottom ash from the slag tap and cyclone type furnaces that turns into pellets that have a smooth	

Type of CCR	Description of CCR (USEPA 2018)	Key Indicators (EPRI 2011, 2012, 2017)
	glassy appearance after quenching with water.	
Flue Gas Desulfurization Material (FGD)	A material leftover from the process of reducing sulfur dioxide emissions from a coal-fired boiler that can be a wet sludge consisting of calcium sulfite or calcium sulfate or a dry powdered material that is a mixture of sulfites and sulfates.	■ Sulfate ■ Fluoride ■ Calcium ■ Boron ■ Bromide ■ Chloride

Notes:

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

In 2011, the Electric Power Research Institute (EPRI) completed a study of FGD composition from many sites across the country and determined that calcium sulfate dihydrate ($CaSO_4*2H_20$) constitutes greater than 90% of the material that is present in FGD deposits. Therefore, impacts from WFGD deposits will likely contain high concentrations in sulfate and calcium compared to background and adjacent samples. No impacts are noted for sulfate or calcium in SCPC monitoring wells, indicating that WFGD is not likely the source of the fluoride SSI reported for monitoring well DG-4. Additionally, chloride, fluoride, and boron concentrations are also potential indicators of WFGD gypsum (EPRI 2012, EPRI 2017) and details on the concentration of these parameters are provided in the following sub-sections.

5.1.1 Sulfate Concentration

Sulfate is a key indicator of potential WFGD impacts because high concentrations of sulfate are found ubiquitously in relatively oxizided WFGD materials. Under strongly reducing conditions, sulfate is converted to sulfide. The groundwater around the SCPC does not demonstrate strongly reducing conditions; dissolved oxygen values are above 0.5 mg/L, oxidation reduction potential (ORP) is positive, dissolved iron concentrations are below 1 mg/L, and no hydrogen sulfide odors are reported at the SCPC. Therefore, if the SSI was a result of impacts from the SCPC, it would be expected that sulfate values would increase following placement of CCR materials but increasing sulfate values are not indicated.

Figure 2 displays the full historical set of sulfate concentrations at DG-4 including the period prior to the receipt of CCR. If the SSI was caused by impacts from the SCPC, sulfate concentrations would be expected to increase following the placement of CCR materials. **Figure 2** demonstrates that current sulfate concentrations are at levels lower than those from pre-CCR placement.

5.1.2 Calcium Concentration

Calcium is a key indicator in FGD impoundments because there are high concentrations of calcium in WFGD (calcium sulfate dihydrate) type impoundments. Like sulfate, if the SSI was caused by impacts from the SCPC, calcium concentrations would be expected to be noticeably higher and at levels statistically higher than pre-CCR placement. **Figure 3** displays calcium concentration at DG-4 from prior to the receipt of CCR through the current

CCR Rule sampling event. **Figure 3** demonstrates that calcium concentrations are not higher than pre-CCR placement concentrations and are at similar levels (or slightly less) to those from pre-CCR placement.

5.1.3 Boron Concentrations

Based on the EPRI (2011, 2012, and 2017) reports, elevated concentrations in boron may indicate FGD impacts. Boron is soluble, mobile, and conservative (i.e., do not interact with geologic materials), and thus a good tracer for CCR related impacts. However, any increased boron concentrations associated with a release from a WFGD type impoundment would be expected to also contain increasing sulfate and calcium concentrations, as discussed in previous sections. If groundwater was impacted by the SCPC, current boron concentrations should be statistically elevated with respect to pre-CCR placement.

Figure 4 displays boron concentrations at DG-4 from prior to the receipt of CCR through the current CCR Rule sampling event. This figure demonstrates that current boron concentrations are at similar levels to those from pre-CCR placement.

5.1.4 Chloride and Sodium Concentrations

Chloride and sodium are potential indicators for WFGD wastes and can be present at elevated concentrations within the SCPC because the water used for transporting the WFGD slurry to the SCPC is in a closed loop, meaning water is being recycled and re-used, resulting in increased chloride and sodium concentration. Chloride and sodium are also highly soluble, mobile, and conservative under most hydrogeological environments, and as such, are routinely used as indicator parameters of landfill leachate migration at municipal waste facilities throughout the United States. Therefore, if the SSI was caused by impact from the SCPC, chloride and sodium concentrations would be expected to increase after the placement of CCR.

Figures 5 and **6** display chloride and sodium concentrations at DG-4 from prior to the receipt of CCR through the current CCR Rule sampling. These figures display a relatively high degree of variability for chloride and sodium over time. However, these plots do not display a consistent increasing or decreasing trend, but instead show large swings in concentrations. While CCR materials can contain high concentrations of sodium and chloride, another common alternative source for both sodium and chloride is road salt (sodium chloride). Road salt is commonly used for road de-icing purposes on Dwiggins Road, which is located within 50 feet to the north of DG-4.

Figure 7 is a multi-constituent time series plot displaying sodium and chloride concentrations. Results from this plot display a good correlation between sodium and chloride results. Seasonal variation in sodium and chloride results is likely caused by road salt application, which subsequently dissolves and infiltrates into the shallow alluvial aquifer upgradient of DG-4.

5.1.5 Fluoride Concentrations

While sulfate and calcium are the two primary components of WFGD byproducts, fluoride (which triggered the SSI at DG-4) also may potentially be an indicator of potential impacts from WFGD deposits. However, any increased fluoride concentrations associated with a release from a FGD type impoundment would be expected to also contain increasing sulfate and calcium concentrations. The absence of increased concentrations for sulfate and calcium appears to nullify WFGD as the source. **Figure 8** shows a time series plot of fluoride and compares data from historic State UWL sampling and CCR Rule sampling with the current UPL used for detection monitoring.

As shown on **Figure 8**, the current fluoride concentrations of 0.41 mg/L in monitoring well DG-4 is similar to those reported prior to the operation of the SCPC. In addition, fluoride concentrations have varied between 0.23 mg/L and 0.48 mg/L over the entire historical monitoring period at DG-4. Based on these data, in addition to the

observations reported above for sulfate and calcium, it is Golder's opinion that the variability in fluoride concentrations over time is not a result of WFGD influence on the groundwater, but is likely a result of natural geochemical variability or other sources not related to the SCPC.

6.0 DEMONSTRATION THAT SSI WAS NOT CAUSED BY SCPC IMPACT

Based on the information presented in Section 5 above, the SSI for fluoride was not caused by impacts from the SCPC. The SSI appears to be caused by numerous factors, but is primarily caused by the following:

- Natural spatial and temporal variability in the alluvial aquifer sampling results that are influenced by pre-existing low-level CCR impacts.
- Relatively low calculated UPLs that do not reflect the full variability within the alluvial aquifer when compared to historical data for DG-4.

As required by the CCR Rule, eight (8) baseline samples were collected prior to the October 2017 deadline which were used to calculate the UPL at each compliance well around the SCPC. A value of 0.37 mg/L was calculated for the UPL using the baseline data. The results from this small dataset could not be normalized, therefore, a non-parametric limit was used as the prediction limit (i.e., the highest of the baseline sampling results). In August 2019, the baseline data set used to calculate the UPL was expanded, however, the dataset still could not be normalized, and the UPL remained unchanged.

As shown in **Figure 8**, the SSI for fluoride is below historical values at DG-4. The 12 sampling events used to calculate the UPL were all collected between 2016 and 2019. When compared to the full suite of data available at DG-4, the results used during this timeframe were lower than historically found at DG-4 which have ranged up to 0.48 mg/L. Nearby monitoring wells DG-2 and DG-3 have also had historical concentrations as high as 0.48 mg/L and 0.49 mg/L, respectively. Therefore, the UPL calculated from the baseline data only represent the lower range of values in the overall population. The SSI at DG-4 was caused by natural variations in the alluvial aquifer as well as limited CCR Rule data available for UPL calculations.

The comparison of key WFGD indicator parameters (sulfate and calcium), as well as other potential indicators (chloride, fluoride, and boron) between current groundwater conditions and those present prior to SCPC operations, support the conclusion that the SCPC is not the source of the SSI. If impacts were caused by the SCPC, an increase in these parameters would be expected, but this is not occurring.

In summary, there are no indications to support migration of CCR contaminants from the SCPC. Instead, the data indicate that the cause for the SSIs is due to alluvial aquifer variability, pre-existing CCR impacts and a limited dataset available for the calculation of the UPL.

7.0 REFERENCES

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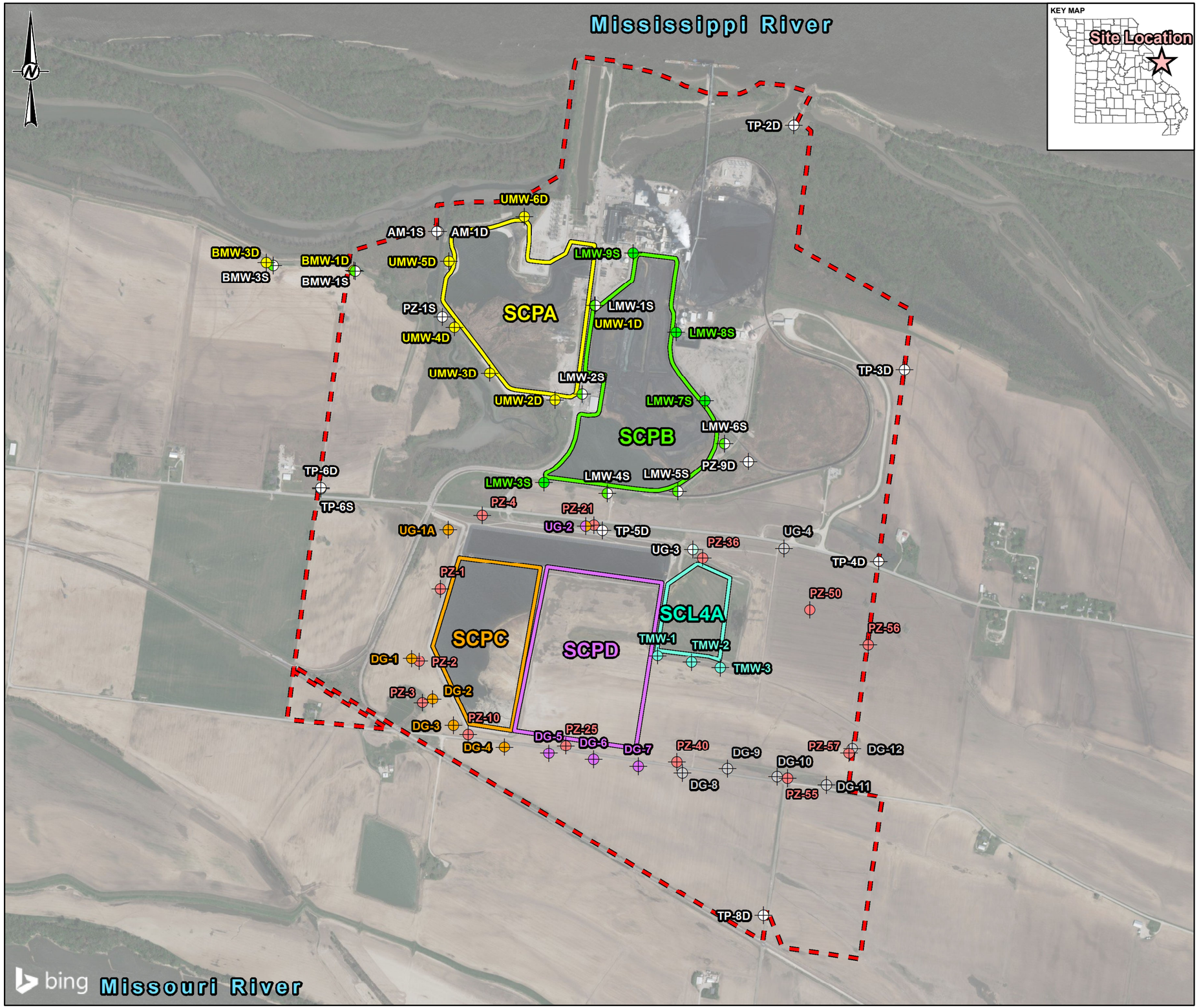
Figures



KEY MAP

LEGEND

- Sioux Energy Center Property Boundary
- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - Active WFGD Disposal Area
- SCL4A - Active Dry CCR Disposal Area
- SCPD - Proposed WFGD Disposal Area

Monitoring Well Networks

- Corrective Action Monitoring Well
- SCPA Detection and Assessment Monitoring Well
- SCPB Detection Monitoring and Corrective Action Monitoring Well
- SCPB Detection Monitoring Well
- SCPC Detection Monitoring and State UWL Monitoring Well
- Proposed SCPD and SCPC Detection Monitoring and State UWL Monitoring Well
- Proposed SCPD Detection Monitoring and State UWL Monitoring Well
- SCL4A Detection Monitoring, Corrective Action Monitoring, and State UWL Monitoring Well
- SCL4A Detection Monitoring and State UWL Monitoring Well
- 2006 Detailed Site Investigation Piezometer and Sample Locations
- Existing UWL Monitoring Well Not Currently Used for CCR Monitoring

0 1,000 2,000 3,000

Feet

NOTE(S)

1.) ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2.) UWL - UTILITY WASTE LANDFILL.
3.) WFGD - WET FLUE GAS DESULFURIZATION.
4.) CCR - COAL COMBUSTION RESIDUALS.
5.) UWL BOUNDARIES, DESIGNATIONS AND EXISTING MONITORING WELL LOCATIONS BASED ON DRAWINGS IN THE UWL PROPOSED LANDFILL PERMIT (#0918301).

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CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
GROUNDWATER MONITORING PROGRAM

TITLE
SITE MONITORING WELL LOCATION AND AERIAL MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-05-20
DESIGNED	JSI
PREPARED	JSI
REVIEWED	EMS
APPROVED	MNH

PROJECT NO.	CONTROL	REV.	FIGURE
153140602	1240	1	1

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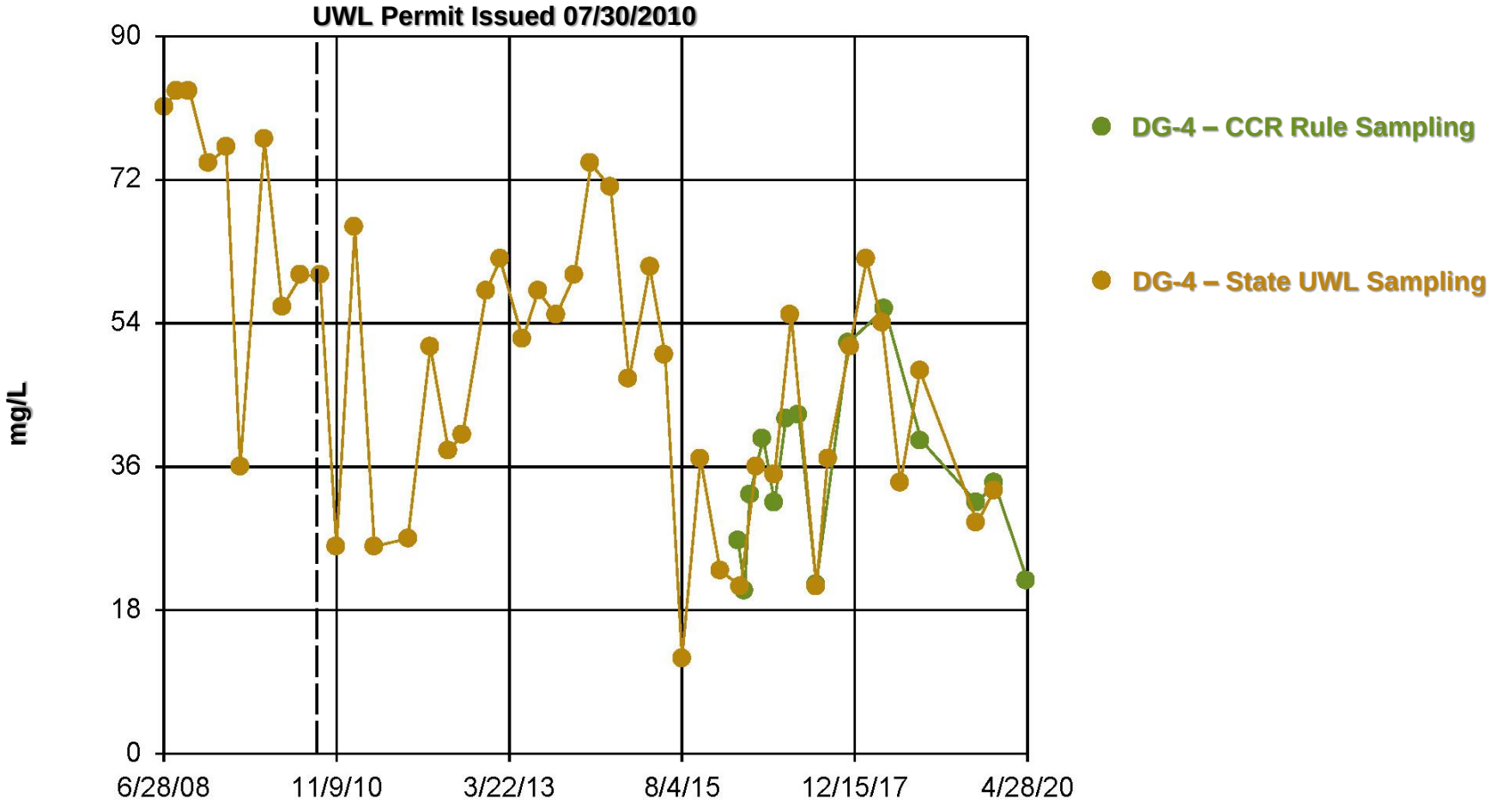
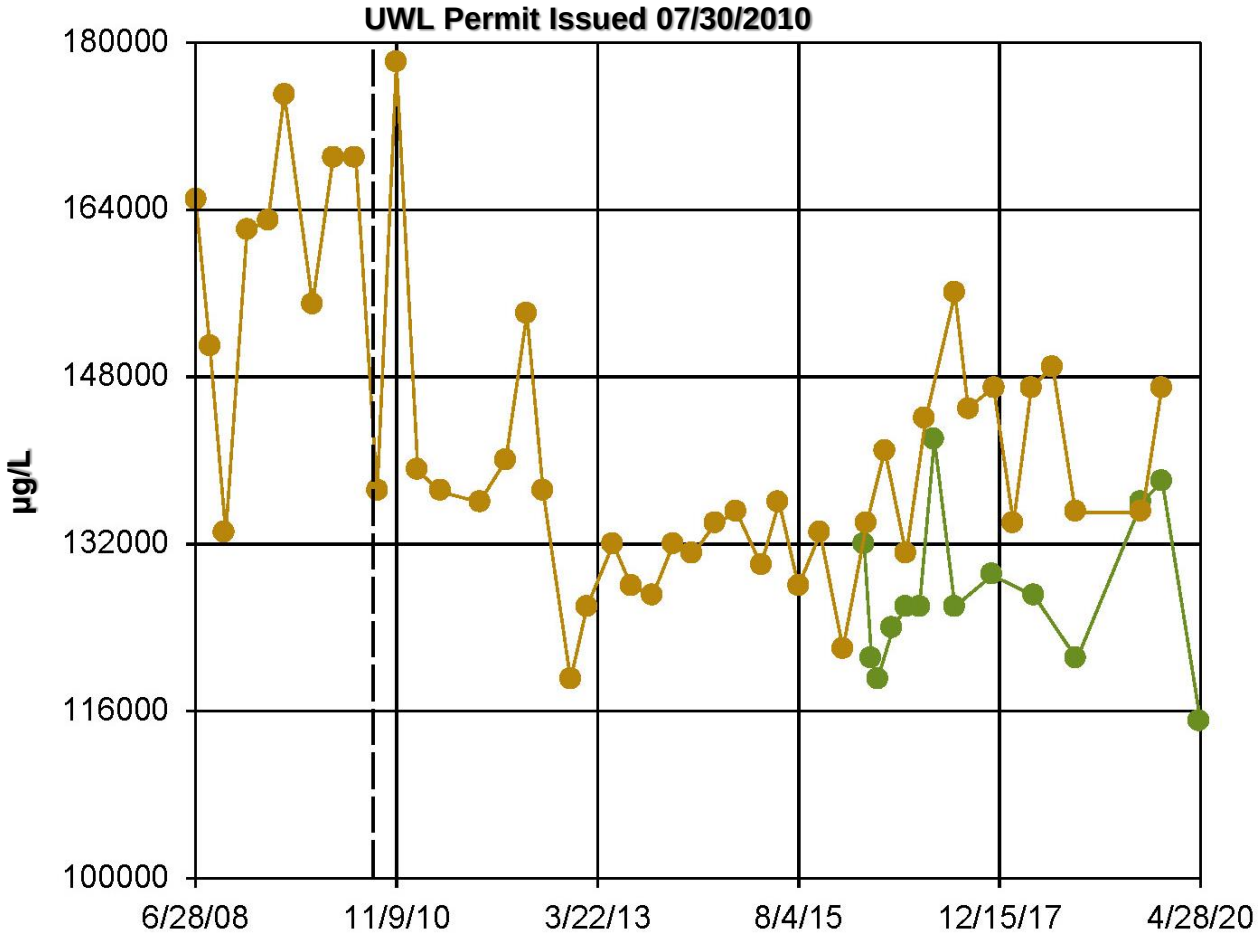
PATH: C:\Users\jingram\Golder Associates\153140601.02 - Ameren CCR GW Monitoring Program 2020 - 1 Proposal and Project Management\5 Technical Work\0003-SEC13.5-Figure-Drawings\PRODUCTION\SCL4A.ASD\Figure 1 - Site Location.mxd PRINTED ON: 2020-05-29 AT: 10:03:38 AM



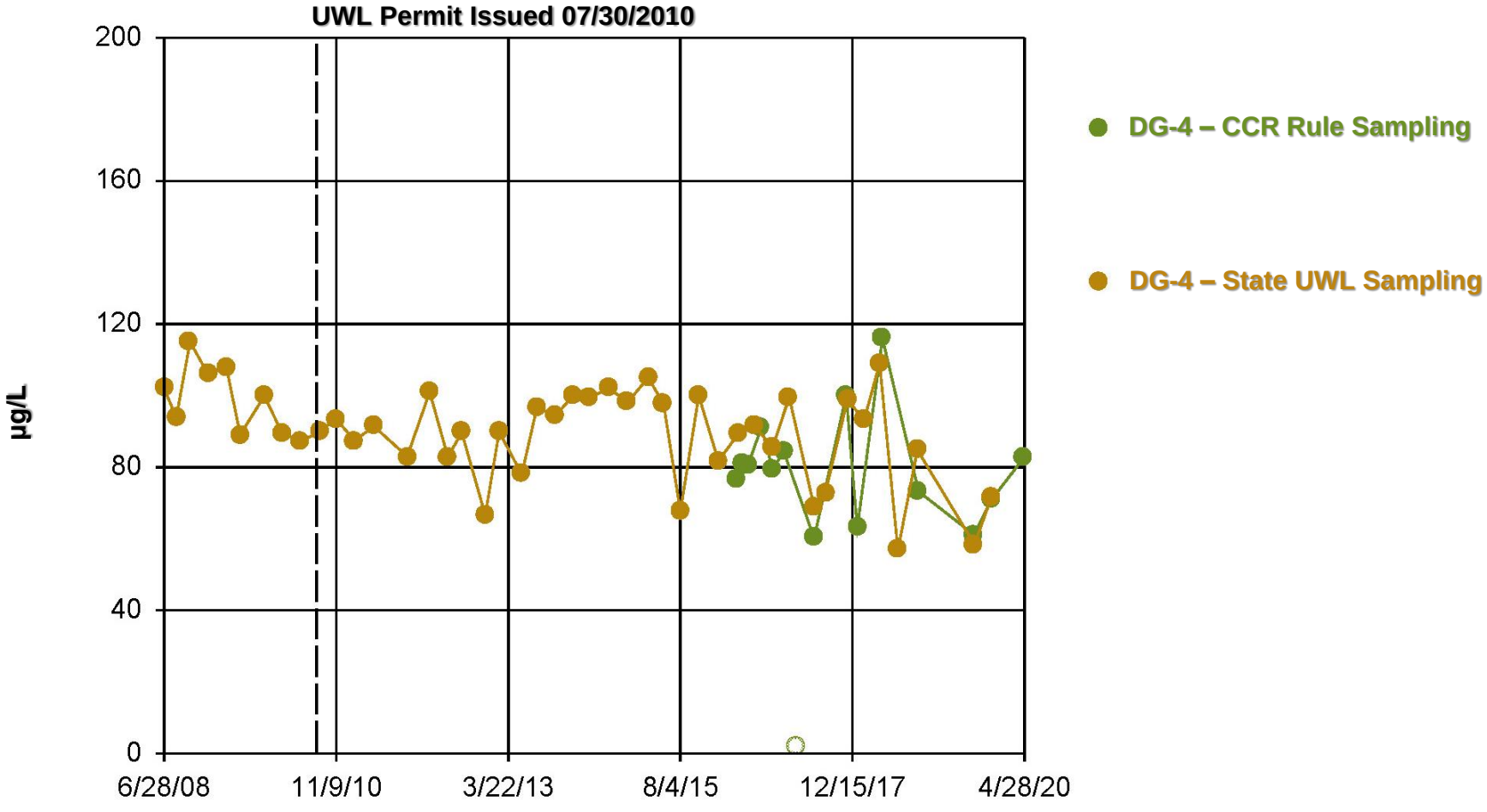
Notes
1) mg/L – Milligrams per liter.
2) CCR – Coal Combustion Residuals.
3) UWL – Utility Waste Landfill.
4) UPL – Upper Prediction Limit.

CLIENT/PROJECT							TITLE			
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Sulfate Time Series Plot at DG-4**			
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMS	JSI	MNH	2020-11-02	N/A	N/A	153140602.0003	N/A	N/A	N/A	**2**



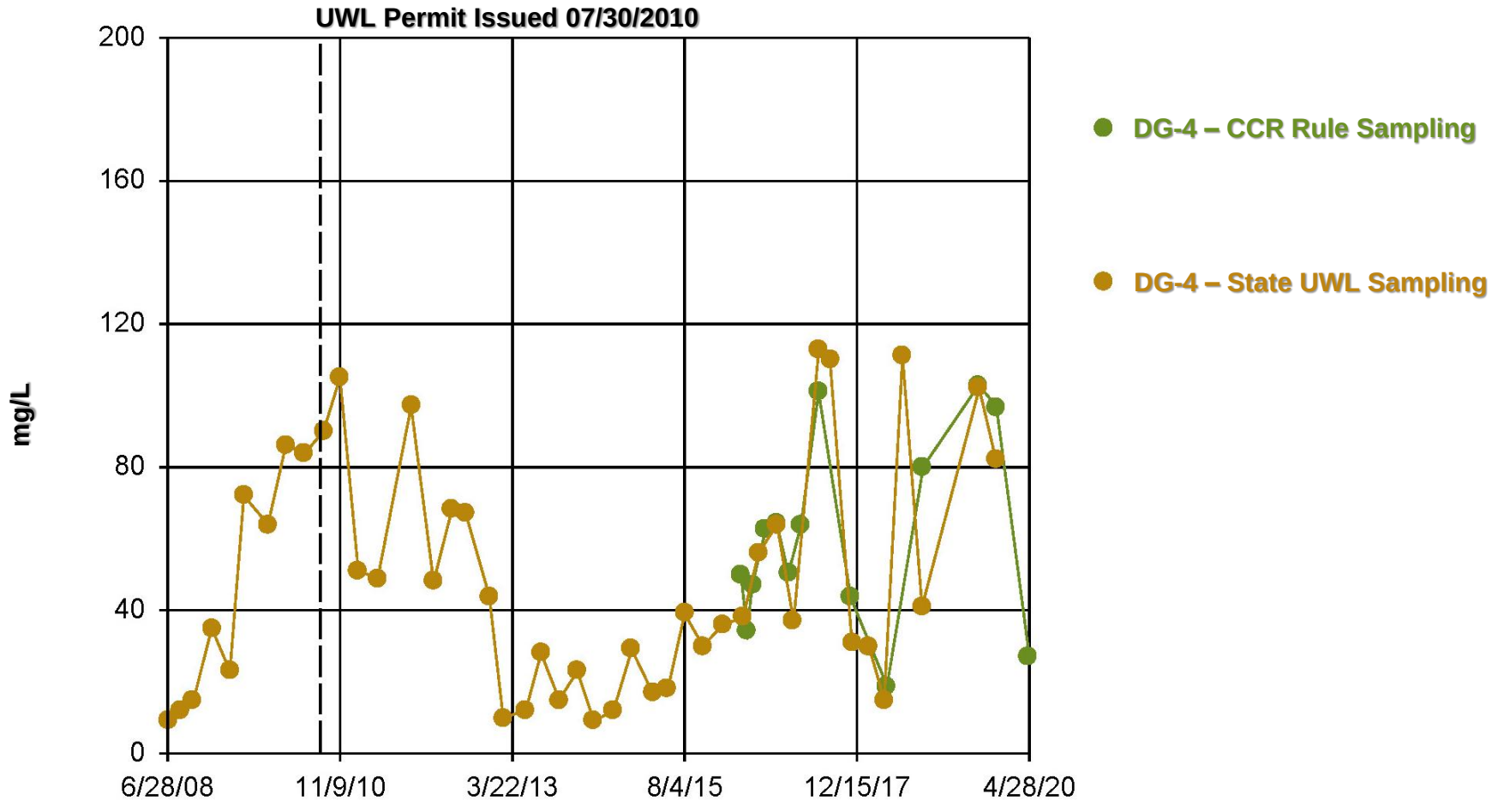
Notes
1) µg/L – Micrograms per liter.
2) CCR – Coal Combustion Residuals.
3) UWL – Utility Waste Landfill.
4) UPL – Upper Prediction Limit.

CLIENT/PROJECT							TITLE			
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Calcium Time Series Plot at DG-4**			
DRAWN EMS	CHECKED JSI	REVIEWED MNH	DATE 2020-11-02	SCALE N/A	FILE NO. N/A	JOB NO. 153140602.0003	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **3**



Notes
1) µg/L – Micrograms per liter.
2) CCR – Coal Combustion Residuals.
3) UWL – Utility Waste Landfill.
4) UPL – Upper Prediction Limit.

CLIENT/PROJECT							TITLE			
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Boron Time Series Plot at DG-4**			
DRAWN EMS	CHECKED JSI	REVIEWED MNH	DATE 2020-11-02	SCALE N/A	FILE NO. N/A	JOB NO. 153140602.0003	DWG NO. N/A	SUBTITLE N/A	REV. NO. N/A	FIGURE **4**



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

CLIENT/PROJECT							TITLE			
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DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
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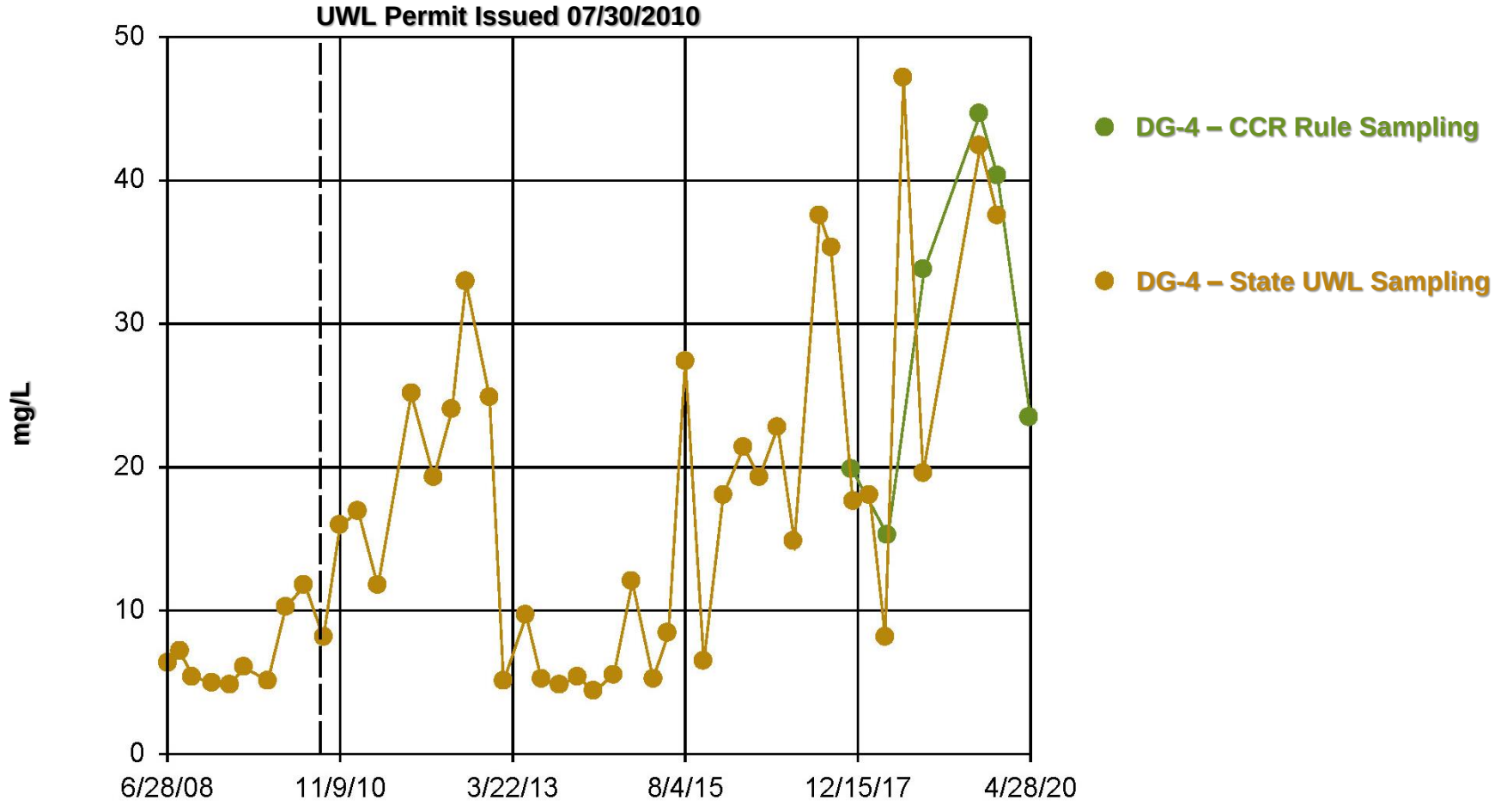
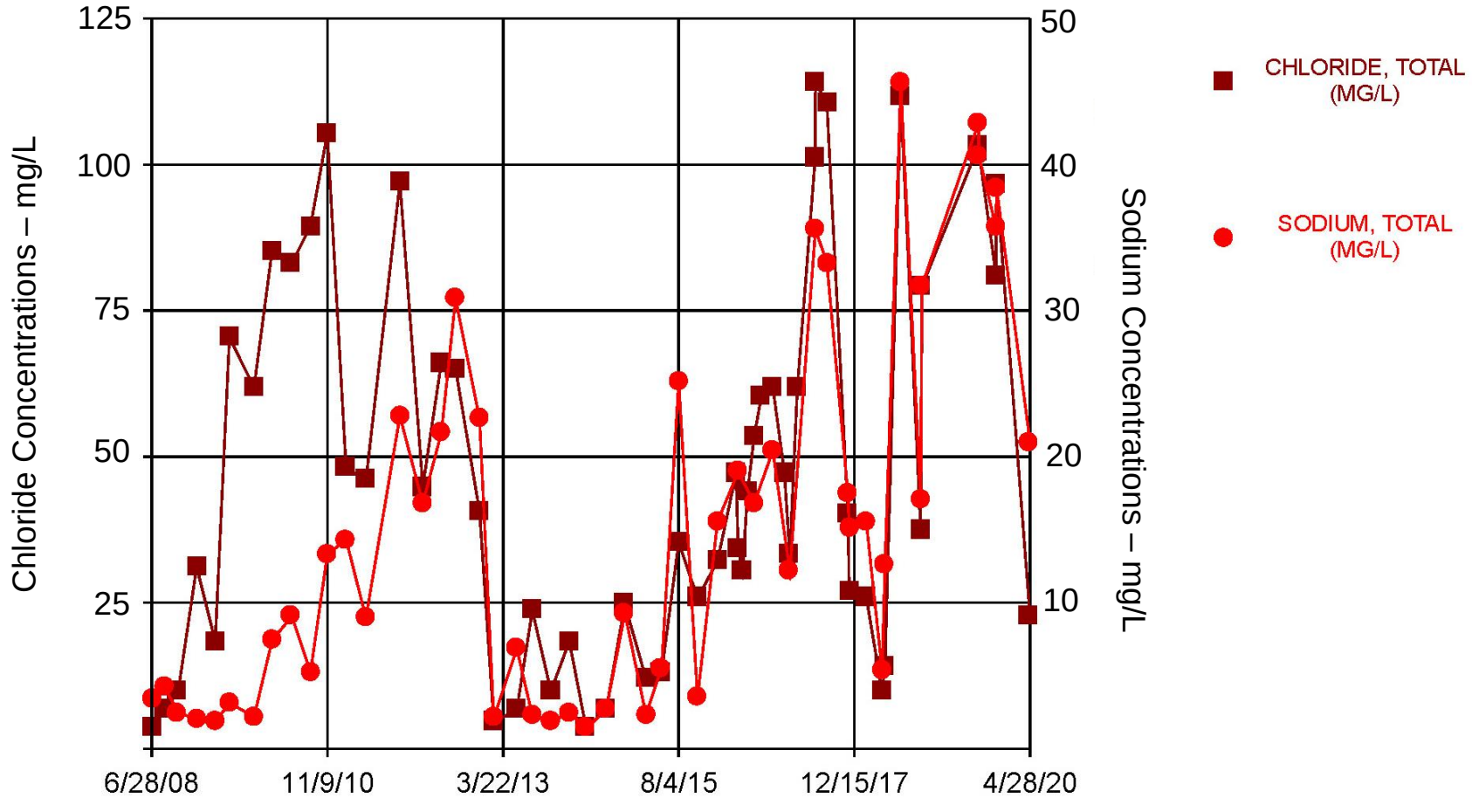


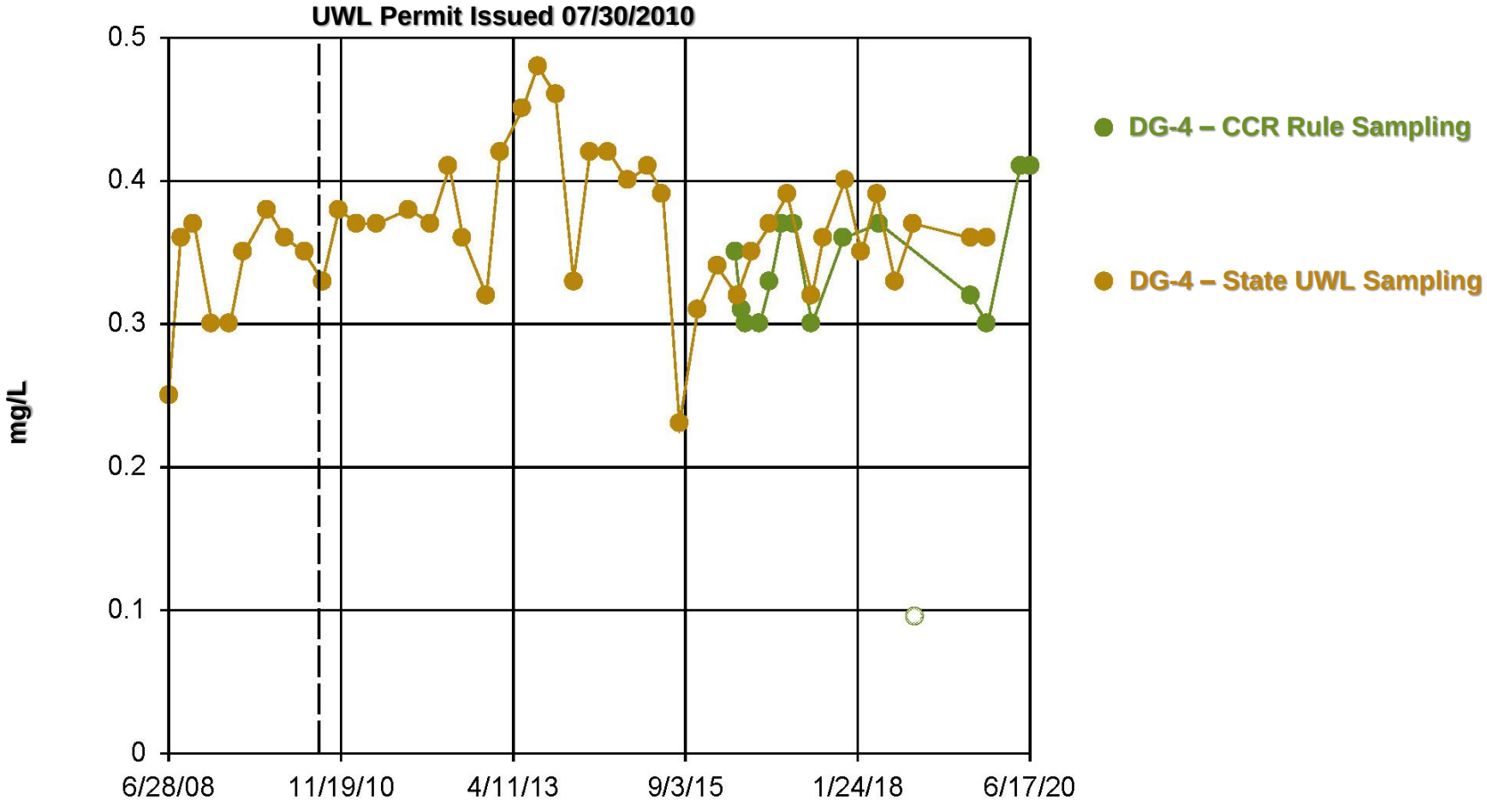
Notes
1) mg/L – Milligrams per liter.
2) CCR – Coal Combustion Residuals.
3) UWL – Utility Waste Landfill.
4) UPL – Upper Prediction Limit.

CLIENT/PROJECT							TITLE			
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Sodium Time Series Plot at DG-4**			
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMS	JSI	MNH	2020-11-02	N/A	N/A	153140602.0003	N/A	N/A	N/A	**6**



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

CLIENT/PROJECT							TITLE		
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**DG-4 Time Series Plot Comparing Chloride and Sodium**		
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMS	JSI	MNH	2020-11-02	N/A	N/A	153140602.0003	N/A	N/A	N/A	**7**



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

CLIENT/PROJECT							TITLE			
AMEREN MISSOURI **SIOUX ENERGY CENTER**				GOLDER			**Fluoride Time Series Plot at DG-4**			
DRAWN	CHECKED	REVIEWED	DATE	SCALE	FILE NO.	JOB NO.	DWG NO.	SUBTITLE	REV. NO.	FIGURE
EMS	JSI	MNH	2020-11-02	N/A	N/A	153140602.0003	N/A	N/A	N/A	**8**

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APPENDIX C

Potentiometric Surface Maps

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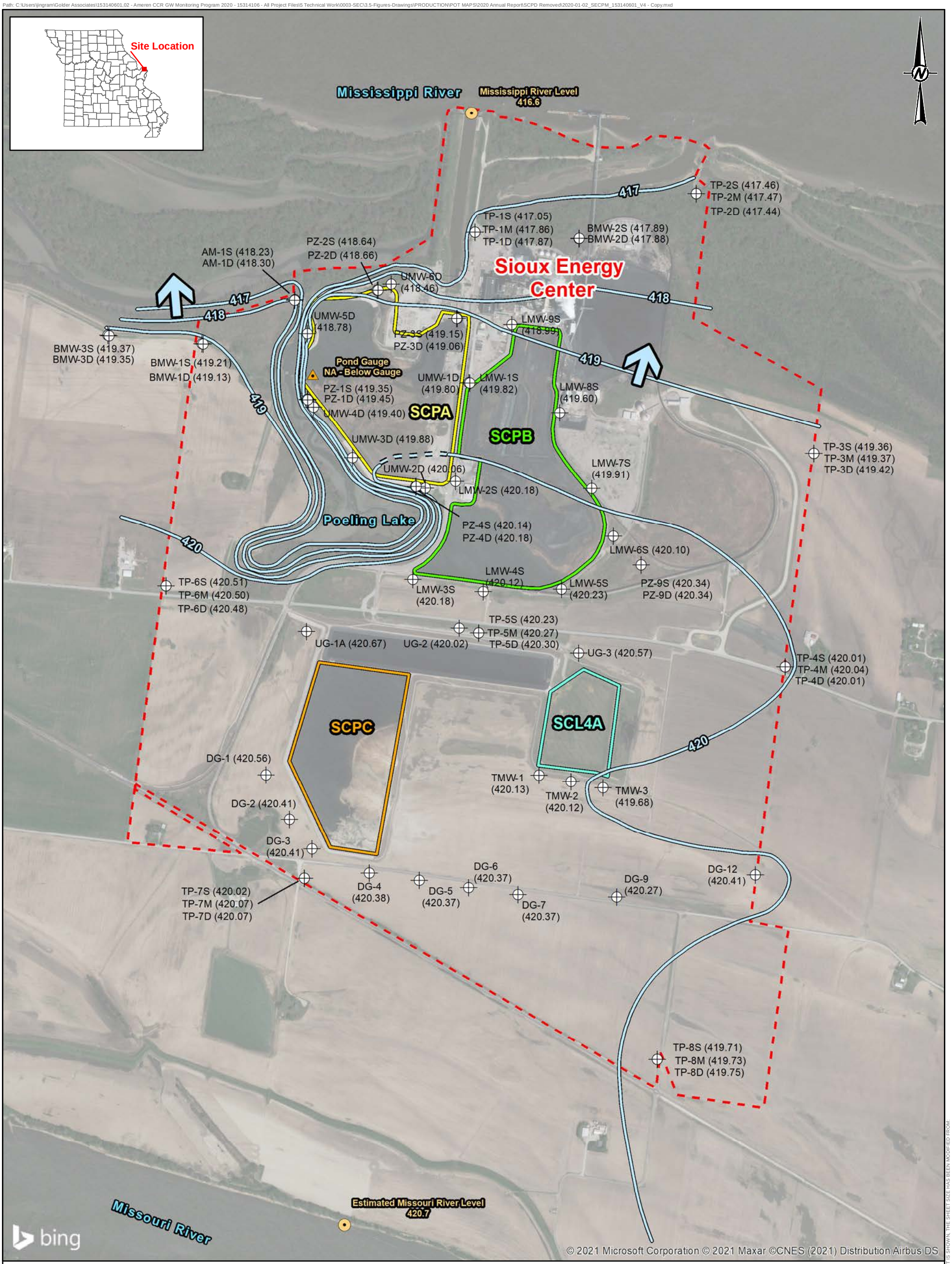

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- SCPA Bottom Ash Surface Impoundment Gauge
- River Gauge Location
- Monitoring Well or Piezometer

NOTES

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

REFERENCE

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

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

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JANUARY 02, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-10
PREPARED	BTT
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0003
FIGURE **C1**

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

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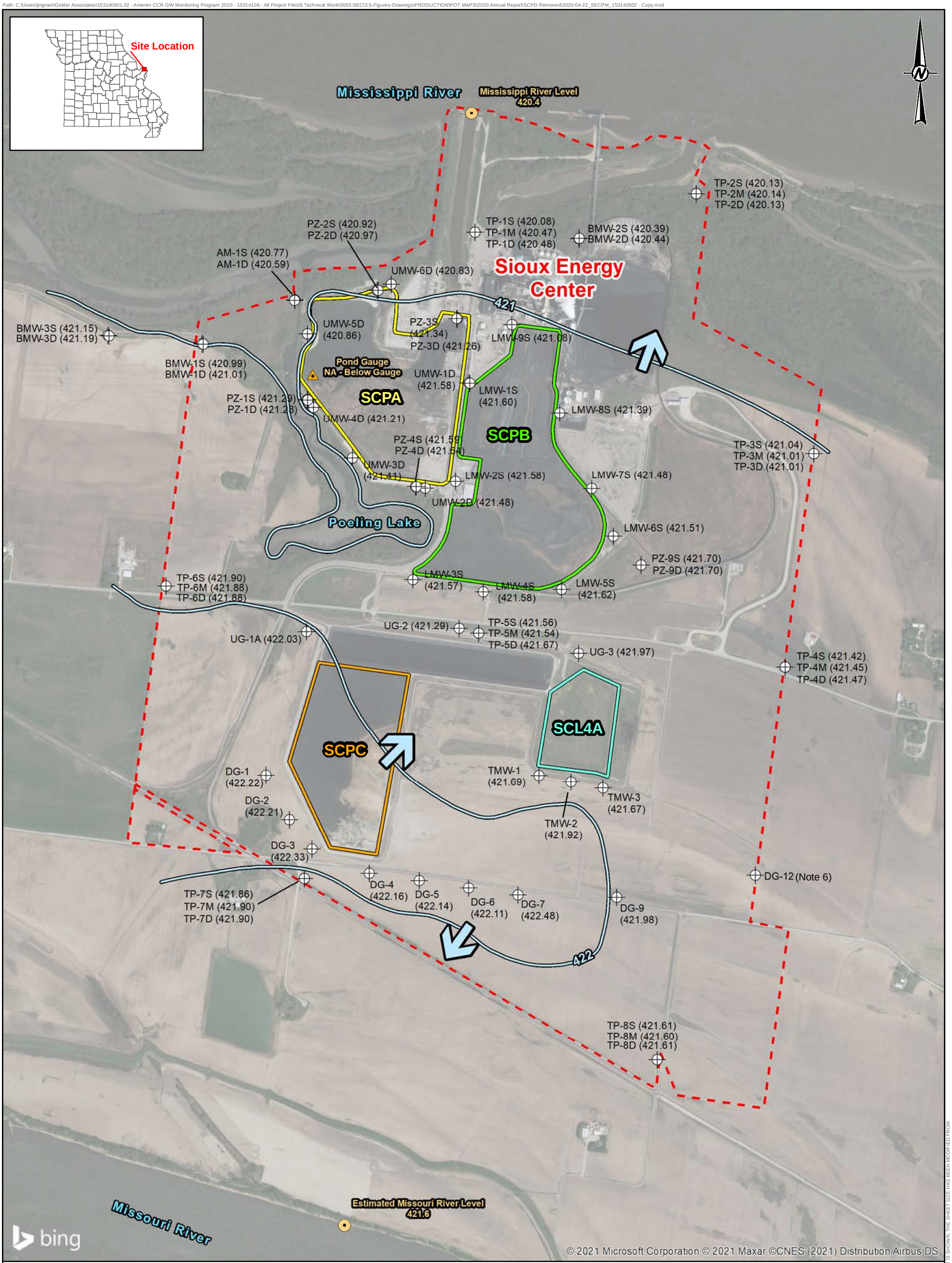

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
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- Groundwater Elevation Contour (FT MSL)
- Inferred Groundwater Elevation Contour (FT MSL)

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- SCPA Bottom Ash Surface Impoundment Gauge
- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) DG-12 WAS NOT USED FOR POTENTIOMETRIC SURFACE MAP CONTOURING DUE TO WATER LEVEL MEASUREMENT ERROR.

REFERENCE

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

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

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
APRIL 22, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-05-14
PREPARED	BTT
DESIGN	JSI
REVIEW	KAB
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0003
FIGURE **C2**

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

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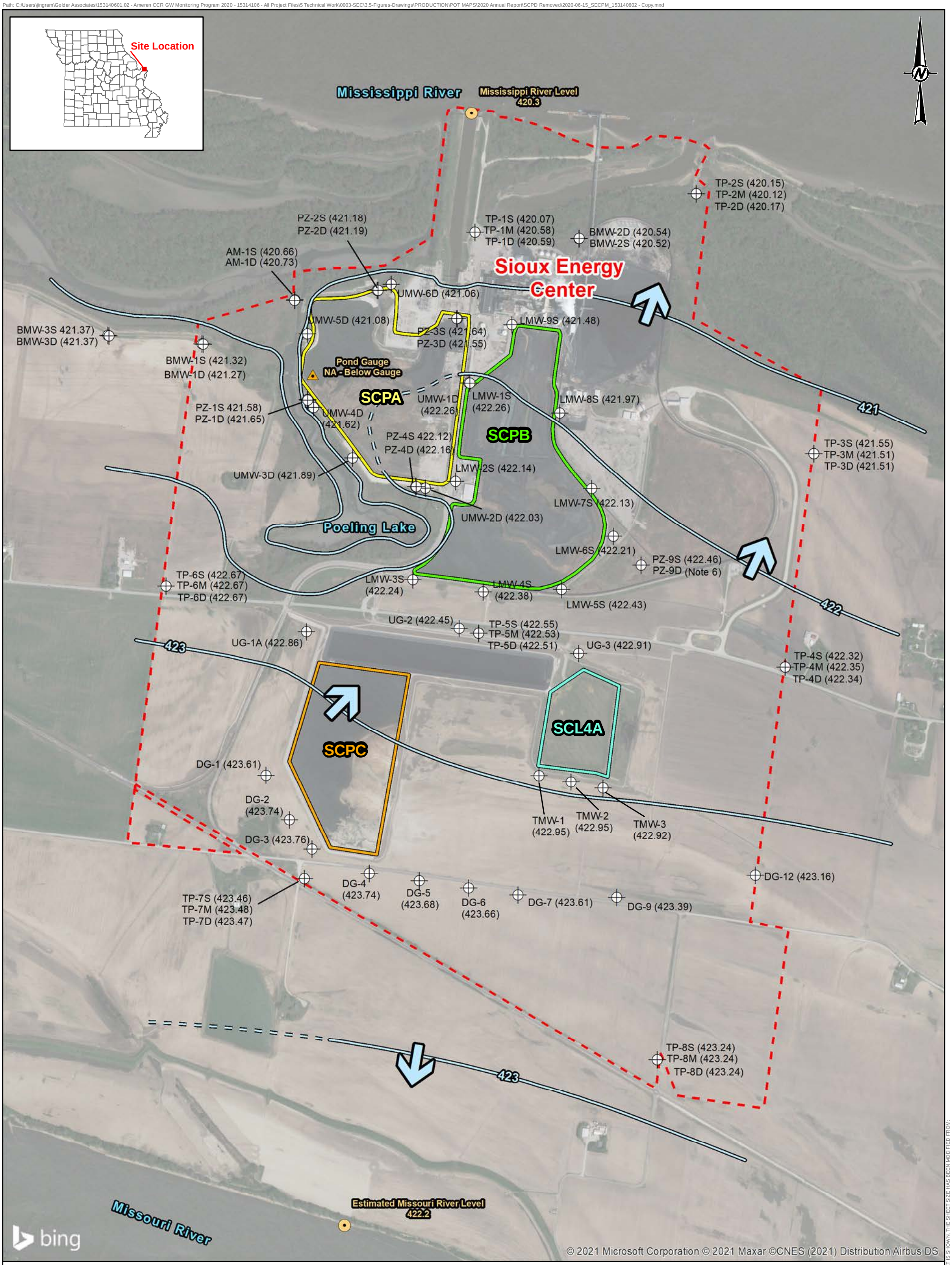

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- SCPA Bottom Ash Surface Impoundment Gauge
- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) PZ-9D WAS NOT USED FOR POTENTIOMETRIC SURFACE MAP CONTOURING DUE TO WATER LEVEL MEASUREMENT ERROR.

REFERENCE

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

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

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
JUNE 15, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-06-24
PREPARED	BTT
DESIGN	JSI
REVIEW	EMS
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0003
FIGURE **C3**

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

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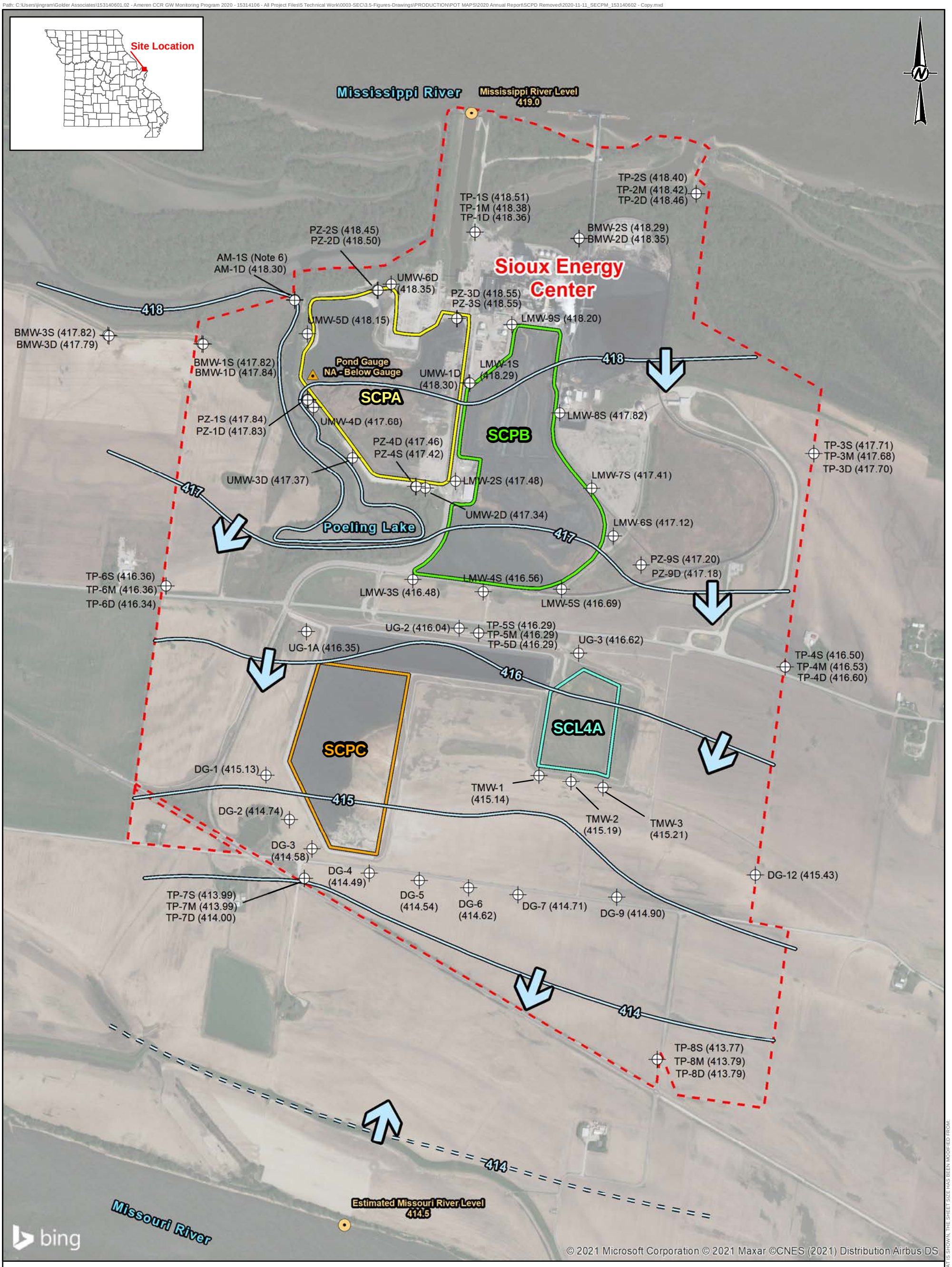

LEGEND

- Sioux Energy Center Property Boundary

CCR Units

- SCPA - Bottom Ash Surface Impoundment
- SCPB - Fly Ash Surface Impoundment
- SCPC - WFGD Surface Impoundmet
- SCL4A - Dry CCR Disposal Area
- Groundwater Flow Direction

Groundwater Elevation Contour (FT MSL)

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

Ground/Surface Water Measurement Locations

- SCPA Bottom Ash Surface Impoundment Gauge
- River Gauge Location
- Monitoring Well or Piezometer

NOTES

1.) ALL LOCATIONS AND BOUNDARIES ARE APPROXIMATE.
2.) GROUNDWATER AND SURFACE WATER ELEVATIONS DISPLAYED IN FEET ABOVE MEAN SEA LEVEL (FT MSL).
3.) GROUNDWATER ELEVATION MEASUREMENTS OBTAINED BY GOLDER.
4.) MISSOURI RIVER ELEVATION ESTIMATED BASED ON NEARBY UNITED STATES GEOLOGICAL SURVEY (USGS) RIVER GAUGING LOCATIONS.
5.) MISSISSIPPI RIVER ELEVATION PROVIDED BY AMEREN MISSOURI.
6.) AM-1S WAS NOT USED IN POTENTIOMETRIC SURFACE CONTOURING DUE TO WATER LEVEL MEASUREMENT ERROR.

REFERENCE

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

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

CLIENT
AMEREN MISSOURI
SIOUX ENERGY CENTER

PROJECT
CCR GROUNDWATER MONITORING PROGRAM

TITLE
NOVEMBER 11, 2020 POTENTIOMETRIC SURFACE MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2020-11-25
PREPARED	BTT
DESIGN	JSI
REVIEW	BTT
APPROVED	MNH

PROJECT No. 153-140602
PHASE 0003
FIGURE **C4**

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

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